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September 1970

NATIONAL GEOGRAPHIC

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New Mexico THE GOLDEN LAND

By ROBERT LAXALT

Photographs by ADAM WOOLFITT

DAY WAS BREAKING in the City of the Holy Faith. The dawn had pushed back the purple of the night sky, and from the grillwork balcony of my room I watched two pigeons come to a fluttering stop in the belfry of an adobe church.

At 7,000 feet, nights can be chilling in New Mexico's capital city of Santa Fe, so the pigeons knew what they were about. When the sun peeped over the rim of the Sangre de Cristo Mountains, its first rays touched the belfry and turned the dun adobe to gold. The same illusion must have struck the conquistadors who came to this land more than 400 years ago in search of gold.

The pigeons preened in the uncertain warmth, but their contentment was short lived. When the bell above them began to toll, they winged away in resignation.

The memory of that morning leaps to mind whenever I think of New Mexico. It cast a mood of peace that is peculiarly Spanish. And

the day ended with the darkness and mystery that is Spanish, too.

Though New Mexican life is a *mélange* of three cultures—Spanish, Indian, and Anglo (the local idiom for anyone not Spanish and not Indian)—it is the Old World Spanish flavor that most deeply pervades our fifth largest state. This is as it should be, since it was the Spanish, pushing up the Rio Grande from Mexico, who were the first Europeans to settle in the area.

Secret Penitente Rites Survive

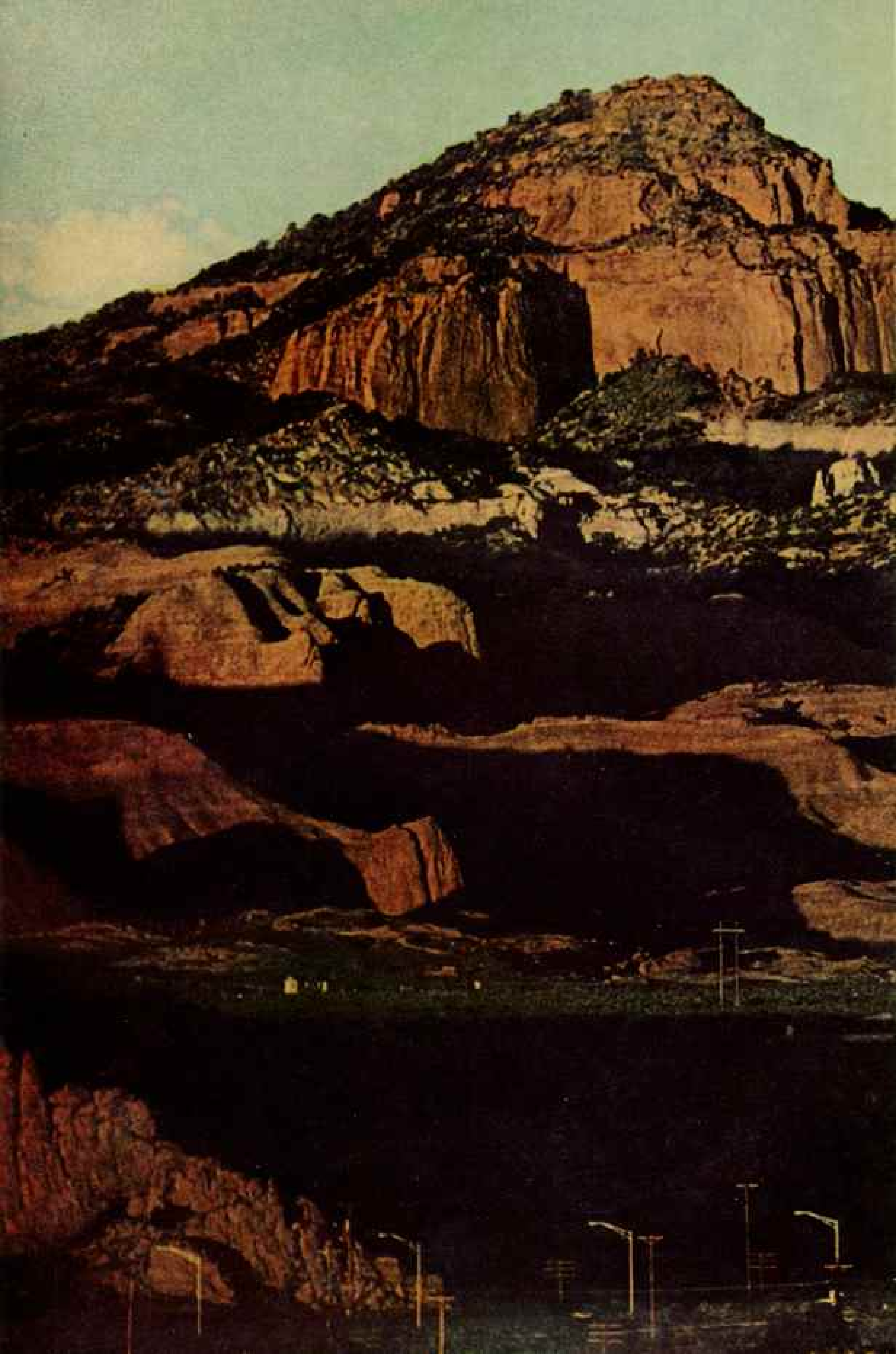
That night—it was Good Friday—I asked, “Will I see a crucifixion?”

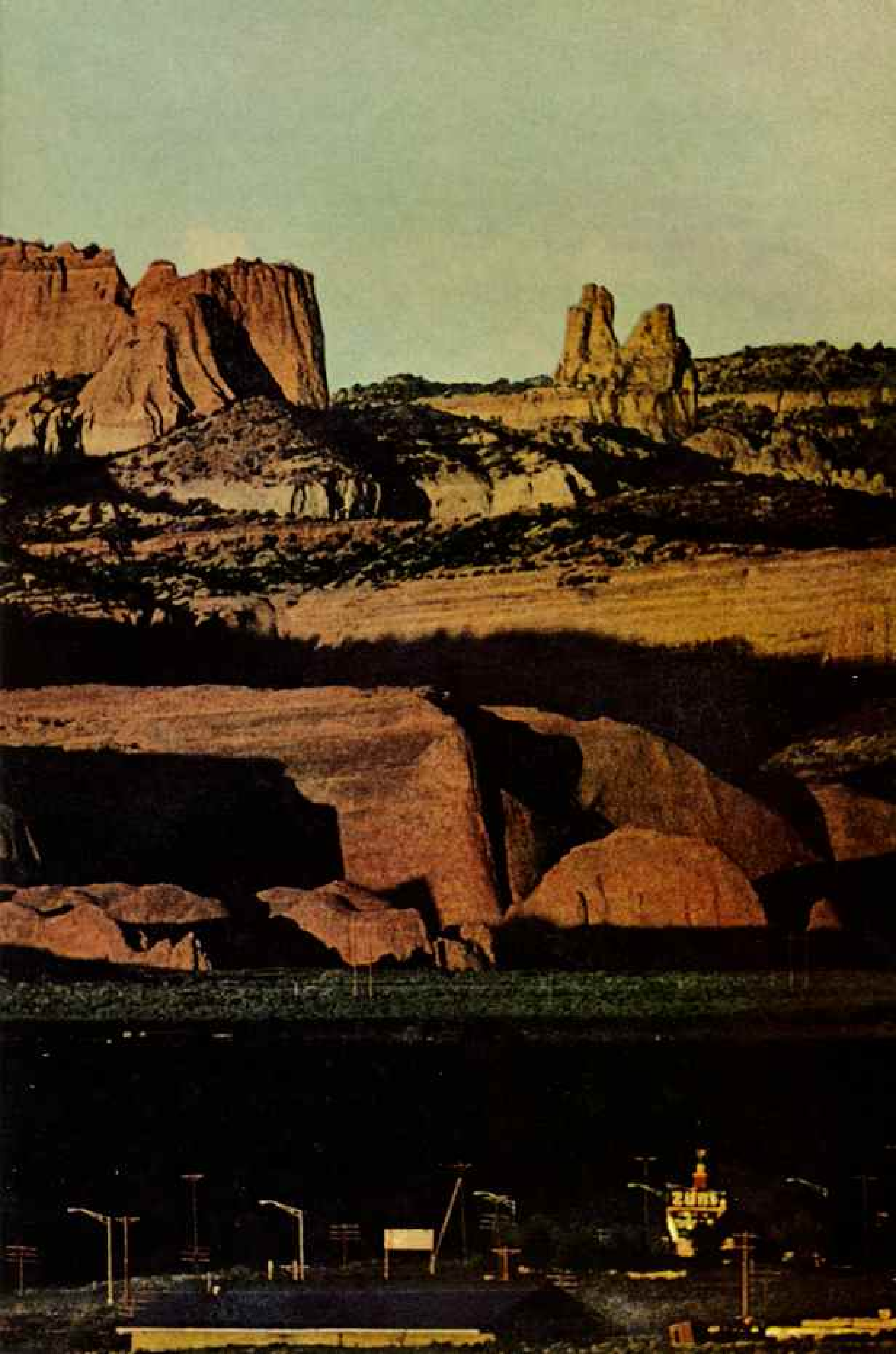
David Ortega shook his head. “That is a thing of the past. There is very little of the ancient tradition left. Yet what there is you will see, and you will be fortunate, for few Anglos are permitted even this far.”

David, a master weaver of the village of Chimayo, and Manuel Martinez, whose father

Big bold land offers ample room for three ways of life: Indian, Spanish, and “Anglo.” Sunset-bronzed cliffs near Gallup (following pages) gleam on high, like one of the legendary Seven Cities of Cibola that lured Francisco Coronado north into this region in 1540. To produce this 47-page presentation, the GEOGRAPHIC combined the talents of Nevada writer Robert Laxalt—author of previous articles on his Basque forebears—and British camera artist Adam Woolfitt, on his first major U.S. assignment.

EXCERPTS FROM (FOLLOWING PAGES) © N.G.S.





is a citizen of consequence in nearby Truchas, were driving with me along a dark and lonely road in the Sangre de Cristo Mountains. They were taking me to Truchas to look into the heart of colonial Spain—the Holy Week rites of the mysterious Penitente sect.

The village was a small cluster of houses and a lone street light burning forlornly. We parked and wound our way on foot through a maze of darkened passageways, and as we neared the old church the sound of chanting, like a wailing lament, was borne down to us.

"In the old days," David said, "there was a giant of a man in my village of Chimayo. He carried a heavy cross to the hill, where he was bound to it, but he was not nailed. The crucifixion was only symbolic, to remind us of what Christ suffered. That is what the Anglos never understood."

A burly figure with a flashlight stepped aside as we entered the church. It was filled with people of the village; shawled women and a few children sat on benches. Near the altar rail men in bulky overcoats knelt in the glow of 13 candles.

Manuel whispered in my ear, "Those are the Penitentes."

"I see no priests," I said to him. "Is this a church without a priest?"

"The Church turns its head," he said. "But the people continue to worship this way. It is the people's religion."

The men began to chant hymns. At the end of each hymn, the Penitentes drew wooden ratchets from their overcoats and whirred them loudly. At the altar an old man leaned forward and snuffed out one of the candles.

A sense of apprehension pervaded the church. The methodical snuffing out of the candles, the dry whirring of the ratchets, the increasing darkness, all cast a hypnotic spell. Finally there was only one tiny flame flickering. When it was extinguished, it was as if the last light in the world had gone out.

"Christ is dead," said Manuel.

There was a moment of black silence. Then, without warning, the church rocked with the deafening crash of heavy chains being beaten against the stone floor. Instinctively, I flattened myself against the wall. The crashing of the chains went on until it seemed my ears would burst. Then, utter silence.

"And now," whispered Manuel, "Christ has descended into Hell to await Resurrection."

When a single light bulb came on, there

were no chains in evidence. The Penitentes, standing now as a group, slowly backed out of the church. I noticed that one was missing. Was his absence just a coincidence? Or was he taking the place of Christ?

"Good Friday is ended," said David. Nor would anyone ever explain the missing Penitente to me.

Priest's Tale Starts a Feverish Quest

The Spanish, who brought these medieval rites to the New World, came for gold. In New Mexico they found a land of tortured red buttes, great mesas, rolling grasslands, and blinding sand dunes.

On a spring day in 1539, the explorer-priest Fray Marcos de Niza, according to his



RODCHURCH © N.A.S.

Modern young Indians, in style with the times, attend the annual Inter-Tribal Ceremonial in Gallup.

Powerful palomino and dogged rider duel in a rodeo at the Indian Ceremonial. Each August the hills around Gallup become tent grounds when thousands of Indians from some twenty tribes stream in by car and pickup truck. The white man finds a welcome too at this red-man's show of parades, dances, sporting events, and handicrafts.



own account, looked down from a height in western New Mexico and saw in the distance a cluster of multistoried houses, one of the fabled Seven Cities of Cibola the Indians had described to him. Fray Marcos hurried back to Mexico, to tell of a people with "Emeralds and other jewels [and] vessels of gold and silver...whereof there is greater use and more abundance than in Peru...."

His report launched the expedition, in 1540, of Francisco Vásquez de Coronado, who became one of history's most disappointed men when he found not cities filled with gold but only the rude pueblos of poor Zuni farmers.



Portrait of elegance, a lady of Santa Fe attends church services during Fiesta. Ramona Pert wears a richly embroidered gown and a lace mantilla crowned with fresh roses. In 1598 Spanish settlers began moving northward from Mexico. They founded Santa Fe—La Villa de Santa Fé de los Españoles—in the winter of 1609-1610.

In 1598, 33 years after the founding of St. Augustine, nine years before the settlement of Jamestown by the English, Juan de Oñate led a caravan of colonists up the Rio Grande Valley, settled the new land, and became New Mexico's first governor. The Spanish impress has endured. Even today, 58 years after New Mexico became the 47th state, the Spanish-Americans and the Indians make up about 30 percent of the population.

The Anglos began to move in shortly after Mexico (and its department of New Mexico) achieved independence from Spain in 1821. Unkempt "mountain men" came searching the beaver streams. Missouri traders plied the hostile Comanche plains in great wheeled schooners. Cattle drovers brought with them their tradition of easy gunplay. Prospectors, unlike Coronado, really did find deposits of gold and silver.

And finally, when war broke out between Mexico and the United States in 1846, an Anglo army marched in and seized the territory. But 40 years were to pass before the last of the magnificent Apache warriors were vanquished in 1886.

Bustling Capital Proud of Its Past

Today New Mexico's capital, Santa Fe, reflects all three faces of its heritage. Its low adobe profile, not yet distorted by high-rise buildings, and its narrow streets, designed for the horse of the *caballero* and the burro cart, would not seem unfamiliar to the *vaqueros*, grandees, and Pueblo Indians of yesteryear.

Civic groups have struggled hard to preserve the old charm of Santa Fe, and I was grateful as I passed small shops with adobe fronts and protruding wooden beams, bars where the sounds of guitar music drifted out, and doors wreathed in red chili peppers hung out to dry. Soft-eyed girls and boys passed by unhurriedly, flashing radiant smiles and leaving behind the sibilant sounds of Spanish. And only a block or two farther on, prosperous ranchers in wide-brimmed hats and high-heeled boots leaned on the fenders of luxury cars and talked with business friends in meticulous city attire.

The calm heart of the city is the tree-lined Plaza (pages 312-13) that once marked the end of the Santa Fe Trail, the famed trade route that linked New Mexico to Missouri from 1821 till the railroad came in 1880. The Plaza is watched over by the oldest public building in the United States, the Palace of the Governors, built in 1610. This graceful structure

with its shady portal—under which Indian artisans gather to sell jewelry and pottery—has been the official seat of some ninety governors of New Mexico.

I called upon the present governor, David F. Cargo, in today's striking new state capitol a few blocks away. He welcomed me to an office whose appointments seemed to symbolize the three cultural strains of the state: modern Anglo furnishings, a huge Spanish crucifix, and an array of Kachina dolls, brightly painted and dressed to teach Pueblo Indian children the distinctive markings of their various gods (next page).⁸

"We Anglos are looked upon as late-comers," he said, "and, in fact, we are. I was born and raised in Michigan. The three cultures that we have here are distinct—that is the first lesson in New Mexico politics. The Indian stays pretty much apart, but the assimilation between Anglo and the Spanish-American is growing. I'm a good example of that. My wife is a Spanish-American who married an Anglo; on the other hand, I'm an Anglo who's learning Spanish."

I asked him about the impact of the state's progress on the heritage of the region.

"We pay much attention to our historical sites," he said. "But it is one thing to appreciate the past and another to live in it. We simply have too much to offer here: not only an equable climate and blue skies—we've always had those—but also enormous mineral, oil, and gas deposits. We furnish most of the natural gas used in California; we have 42 percent of the Nation's uranium reserves and supply 80 percent of the potash produced in the United States. We also have 16 major Space Age research and electronic firms."

Silent Cities Older Than History

In New Mexico, however, the resistance to change is just as intriguing as the ways of progress. Not far from some of the futuristic laboratories there survives one of the oldest continuous cultures in the United States, that of the Pueblo Indians. The ruins of prehistoric dwellings, erected centuries before Coronado by the Pueblos' ancestors, lie over much of western New Mexico like bones lightly covered by the desert sands. The most spectacular of these survivals—at Chaco Canyon, Aztec Ruins, Bandelier, Gila Cliff Dwellings

⁸See "Kachinas: Masked Dancers of the Southwest," by Paul Core, NATIONAL GEOGRAPHIC, August 1957.

⁹See "20th-century Indians Preserve Customs of the Cliff Dwellers," by William Belknap, Jr., NATIONAL GEOGRAPHIC, February 1964.

—are now treasured national monuments.

Over the centuries, in spite of Spanish and Anglos, the Pueblos have maintained an aloof independence.⁹ Thee Keros, a banker and rancher from Santa Fe, offered to take me to one of their 19 communities in the state—Santo Domingo, with 1,850 inhabitants.

Thee is known and liked by the people there; yet as we reached the entrance road, a blanket-wrapped Indian stepped out of the swirling red dust and said, with neither explanation nor apology, "The pueblo is closed."

As we turned around, Thee said, "There
(Continued on page 311)



PHOTOGRAPH BY ADAM WOOLFIT (© R.S.S.)

Remarkably preserved, the Church of St. Francis of Assisi in Rancho de Taos has seen continuous use for nearly two centuries. Spanish settlers, following the design of earlier Franciscan missions, sunbaked adobe bricks on the site for the 5½-foot-thick walls. The church still uses altar screens and silver objects treasured since Spanish days.



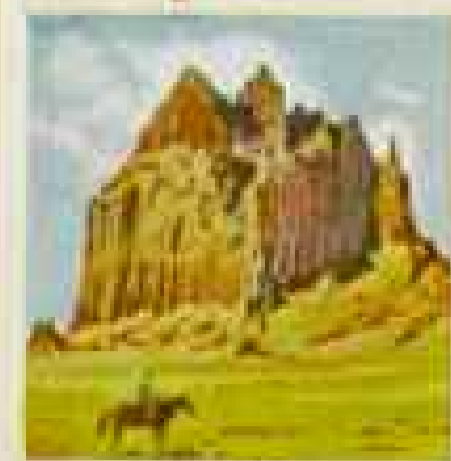
New Mexico

DISTINCTIVE SYMBOLS, depicted on a sheepskin in this painting, typify the Land of Enchantment. Zuni Indians use the beaded and feathered Kachina doll, representing a tribal god, in their Shalako ceremony—blessing of new houses. State tree, the pinyon, or nut pine, clothes mountain slopes. Cutthroat trout, abounding in rivers and streams, inspire Indian silversmiths.

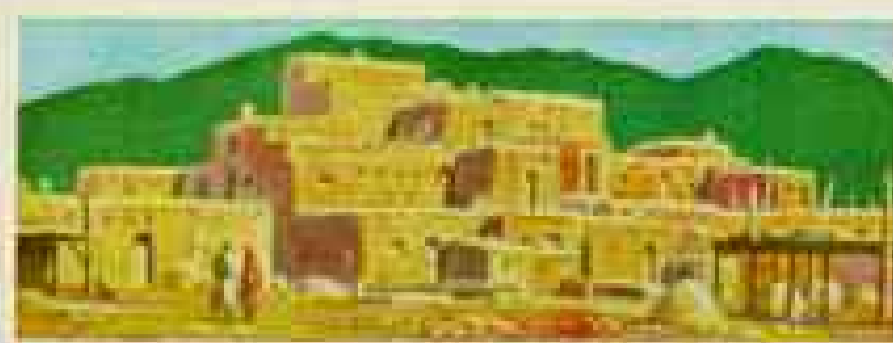
Lancelike yucca, the state flower, spikes the desert. Black bears roam highlands. Indians a century ago made silver canteens for trade; tribesmen of today create jeweled versions of the roadrunner, the state bird.

AREA: 121,666 sq. mi., ranks 5th. **POPULATION:** 509,000, ranks 37th. **ECONOMY:** Agriculture and grazing, scientific research and tourism; copper, oil, natural gas, potash, and uranium. **MAJOR CITIES:** Albuquerque, pop. 242,500 (metropolitan region 314,000); Santa Fe, 41,000, capital; Las Cruces, 38,000. **ADMISSION:** 1912 as 47th state.





SHIP ROCK



TAOS PUEBLO



SAN MIGUEL CHURCH



ACOMA PUEBLO



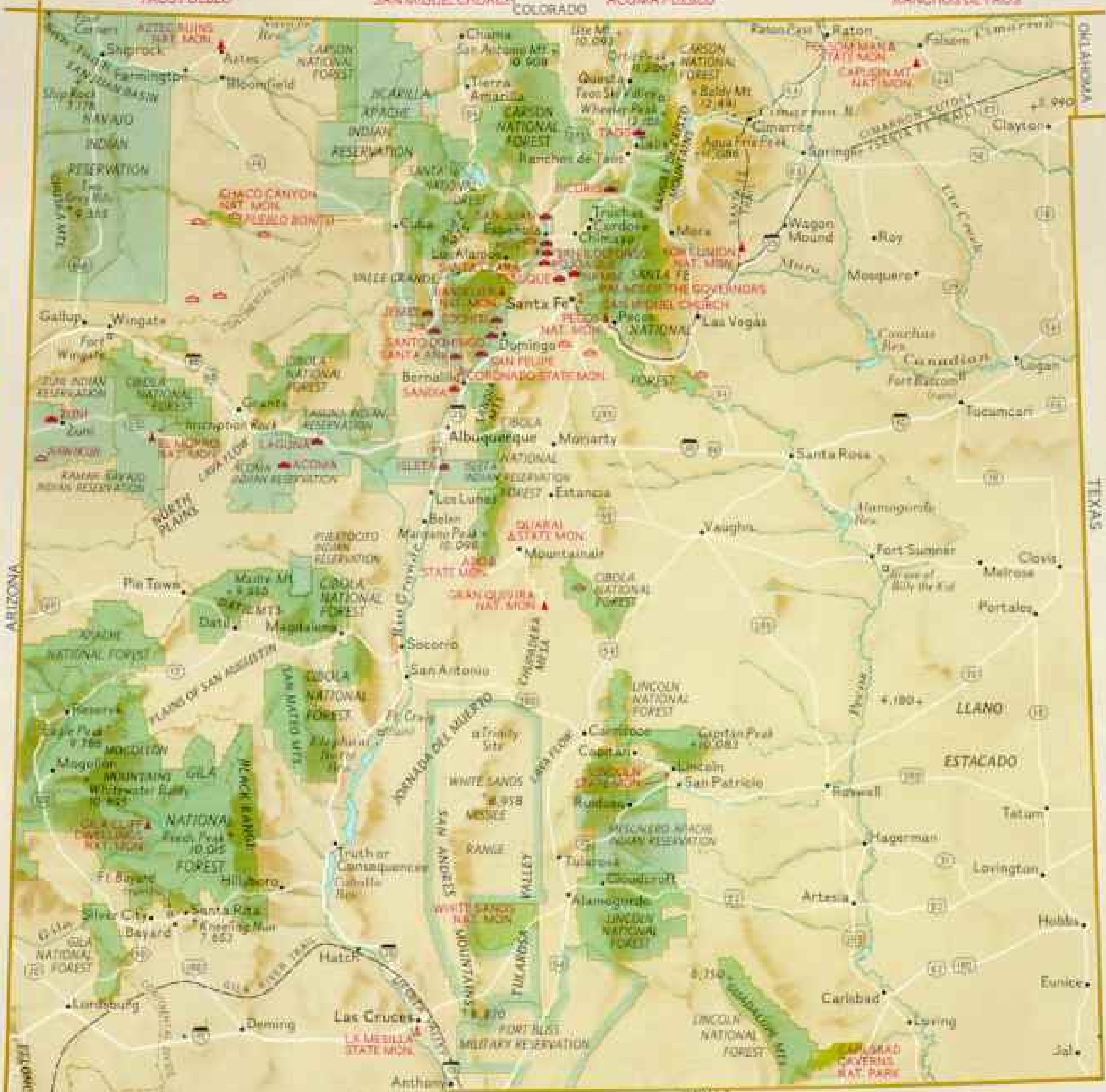
RANCHO DE TAOS



GILA CLIFF DWELLINGS



CARLSBAD CAVERNS



CAPULIN MT.



CHACO CANYON



FORT UNION



PALACE OF THE GOVERNORS



PECOS RUINS



BANDELER



GRAN QUIVIRA



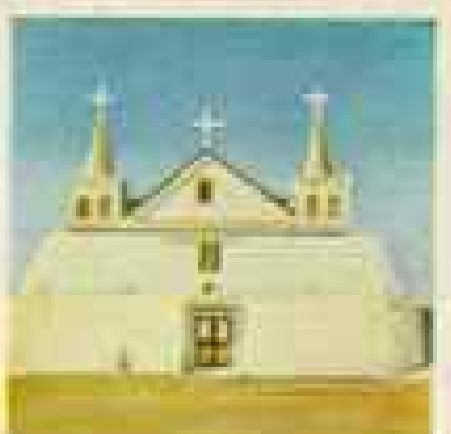
WHITE SANDS



AZTEC RUINS



VALLE GRANDE



ISLETA MISSION



EL MORRO



- National parks and major national monuments
- National forests
- Indian reservations
- Military reservations
- Inhabited pueblos
- Abandoned pueblos
- Other national monuments
- State monuments





EDUCATION © NATIONAL GEOGRAPHIC SOCIETY

Glittering like icicles, stalactites by the thousands drape the King's Palace, 829 feet deep in Carlsbad Caverns National Park. The limestone lances took form over eons when water, seeping out of the ceiling, left a trail of mineral deposits. Droplets falling to the floor built

up stalagmites. At left center a stalactite and a stalagmite come within a whisper of kissing; fittingly, they are called the Frustrated Lovers. Last year half a million visitors toured this subterranean fairyland beneath the foothills of the rugged Guadalupe Mountains.

must be a ceremonial dance in progress. We'll try again another day."

When we did, several days later, the sentry had disappeared, and the sprawling expanse of adobe houses was peaceful under the blue sky. Barefoot children padded happily through the warm dust, and women wrapped in bright shawls visited from house to house.

Diego Tenorio welcomed us to his unadorned pueblo home, speaking slowly but firmly. He had luminous black eyes, and his long black hair was caught up in back in a red ribbon. His wife Crucita, in the old style, wore a shawl and a long many-hued dress.

Their neatly kept dwelling was heated by an oil stove. And against one wall stood a television set—"for the children," Diego said.

Few Santo Domingo homes contain such luxuries. But Diego is a prosperous silver-smith and farmer, and Crucita fashions necklaces of shell, coral, and turquoise which she sells under the portal of the Palace of the Governors in Santa Fe.

"Diego is rich," Thee said teasingly, "because he is a sharp trader. The Navajos and the Zunis hate to see him coming."

Diego waved the compliment aside, but he was pleased. "I'm not that good a trader," he said. "The Navajos and the Zunis just don't know my secret."

"What is your secret?" I asked him.

"I learned their languages," he answered. "I understand what they say to one another when they are trying to get the best of me."

"Do you speak Spanish, too?"

"It's hard to find a Pueblo Indian who doesn't. You know what we say? When we are friendly, we speak Indian. When we are a little mad, we speak Anglo. And when we are angry, we speak Spanish!"

Pueblo Councilmen Serve Full Time

The Indians of Santo Domingo own their lands in common and are governed by a council named by the elders, by their elected governor, and by the chief priest, or medicine man, who is the most important man in the community. The members of the council are cared for by the people and cannot work at any other job during their one-year term.

Thee and Diego smiled about the young Indian who took a job in a factory near Santa Fe. When named to the tribal council, he applied for a year's absence from his job without pay, much to the consternation of company

officialdom. But he was granted the leave, in a polite bow to New Mexico custom.

The bureaucrats also yielded when a Pueblo Indian employed by the state government brought in a statement to explain his sick leave—signed by the medicine man.

I noticed a portrait of a son in a United States Army uniform and asked Diego whether the young men who have been away return with new attitudes toward pueblo life.

"There are always a few who are not content with the old ways," he replied. "Some go to the city, but not many. For those who return, we make a few changes to please, but not many. We try to teach them the pueblo is the only good place for a Pueblo Indian. The white man's world is good for the white man, but not for the Indian."

Modern Tribe Finds a Congenial Home

Perhaps because of the simplicity of the Indian's world and way of life, a growing new tribe is on the scene in Santa Fe, as elsewhere in New Mexico—the casually attired young people so often categorized as "hippies." They operate hole-in-the-wall bookstores, art galleries, curio shops, and experimental theaters, and in outlying areas live in communes or old ghost towns (pages 336-7).

I stopped to chat one afternoon with one long-haired young man who was making adobe bricks out of clay and straw to repair a small house his friends had purchased.

"Fake adobe bricks are too expensive," he said, "so we thought we'd make our own real ones. But we found almost no one who knew how to make a real adobe brick, so we revived the craft."

"Doesn't it take a long time, though?"

"Time, we've got plenty of," he replied.

I walked on, just a few yards, to the traditional old home of retired banker Pito Berardinelli, who had promised to share some of his memories of almost three-quarters of a century in Santa Fe. He was the very image of a courtly old gentleman, with parchment skin, clear hazel eyes, and proper attire. As he stood in his doorway, he glanced up the street toward the brickmakers with the air of quiet tolerance that New Mexicans have learned from their turbulent history.

"Adobe," he said, touching the walls of his house, "makes for coolness in summer and warmth in winter."

I noticed that an old piano stood in the





Fiesta enlivens the City of the Holy Faith



ENTRANCE (BELOW) AND ZOOZOBRA BY ADAM WOOLFIT © N. S. S.

OVER LABOR DAY WEEKEND Santa Fe sheds official mien and dons carefree dress. On the first night the burning of *Zozobra*—Old Man Gloom—inaugurates the festivities: In the public park professional entertainer Jacques Cartier performs a fire dance before igniting the huge papier-mâché figure (above).

Then, for the next three days, as music of mariachi bands fills the air, throngs of residents and visitors jam bannered streets and arcaded sidewalks flanking the central Plaza.

Though gaiety marks the Fiesta, solemnity climaxes it. On Sunday night a candlelight procession winds from the Cathedral of St. Francis to the Cross of the Martyrs, a monument erected in memory of 21 Franciscan friars who lost their lives in the Indian rebellion of 1680.

"The City Different," Santa Fe calls itself. Oldest of state capitals, it is a tangle of narrow winding streets canopied with cottonwoods and lined with pink and brown adobe homes.

Plumed arms flapping, bells jingling, the Eagle Dancers of Santa Clara Pueblo perform at Puye during an annual July ceremonial. Puye, meaning "assembling place of cottontail rabbits" in the Tewa Indian language, holds ruins of cliff and mesatop dwellings built 1,000 to 500 years ago. Today they are jointly protected by the Santa Claras and the Department of the Interior.

living room near a conical corner fireplace in which the wood was stacked on end. Pito was proud of the piano.

"It was brought here in a wagon over the Santa Fe Trail," he told me, "before the state got so crowded. There are almost a million people living here now."

I had to smile at the figure, since New Mexico's 999,000 people in 121,666 square miles make it one of the most thinly populated of the 50 states. Only Alaska, Wyoming, Nevada, and Montana are less crowded.

"I can see," he said, "that you are aware of my doubts about the industrial ferment that is transforming this state. I see progress on every hand, but as the pace of life quickens, not all changes are for the better.

"Take our Santa Fe Fiesta. In the old days it was a true family celebration. The Spanish and the Indians came in carts and on horseback from the ranches and the pueblos. The Indians brought melons and fruit, and the Spanish brought tamales and beans and wine. The food was free, and nobody went hungry.

"The men wore black sombreros, and the women wore mantillas or shawls. We danced *cuadrillas* to guitar music, and how the dust would fly when the women twirled in their long skirts! Now that is in the past, and New Mexico is a modern state. Everything has changed. It is not all good."

First Atom Bomb Lit Desert of Death

Pito's remark had a special impact on me, since only a few weeks before I had roamed a desert in southern New Mexico that bears an old and unforgettable Spanish name—*Jornada del Muerto*, Journey of the Dead. A simple rock monument 60 miles northwest of Alamogordo (page 324) marks the place where a time of change began, not only for New Mexico but for mankind. For it was here, on July 16, 1945, that the first atomic bomb was detonated by physicists from Los Alamos.

Years later I witnessed an atomic explosion in the deserts of southern Nevada. As I stood



at Alamogordo, the memory came back to me like a shock wave—the pinpoint of incandescent white light bursting outward like an opening flower until it eclipsed the sun, and the sound waves rolling over the desert like a Biblical crack of doom.

The emotional chill that almost all visitors feel in the gray waste of this desert of death was dispelled for me at nearby White Sands National Monument. This largest expanse of



FOOTAGE © NATIONAL GEOGRAPHIC SOCIETY

gypsum crystals in the world—more than 270 square miles of them—is an incredible place of almost blinding brightness.*

As Ranger Richard Watts and I drove in his patrol car across the sands, I noticed that his face was like dark leather and that the corners of his eyes were deeply creased from squinting into the sun-flooded desert. Far out

*See "New Mexico's Great White Sands," by William Belknap, Jr., NATIONAL GEOGRAPHIC, July 1957.

in the sands, and far beyond the occasional picnicker sitting under a curved sun shield, we got out of the car and began walking among the dunes, a steady wind in our faces. It rattled through a dagger-tipped yucca. A lizard camouflaged almost entirely white scurried across our path. The ranger ignored him. His eyes were elsewhere, roving over the dunes (pages 340–41).

"My biggest worry is the kids," he said.

"They walk over a dune, and they're gone. Last month, it took a hundred men 24 hours to find two little girls. They'd gone seven miles back into the sands. They were dehydrated, burned, and hopelessly lost, but alive."

I could see what it would be like. All around us stretched a softly breaking sea of sand and moaning wind and no landmarks. I glanced at the sun for direction.

Reading the gesture, Watts said, "Yes, but that won't help when there's a sandstorm and you can't see the sun. Listen, when there's a sandstorm, we just plain shut down."

Back in the car, we circled a huge dune and skidded to a stop at the sight of a blue sports car with a pair of incongruous snow skis glistening from a rooftop rack. On the slope of the dune, two sunburned youths in swimming trunks were trying without much success to master sand-skiing. Each balanced precariously on a single wide-beamed sand ski.

"We thought it would be a good story to tell back home in Austria," Dieter Waldeg said as he and his friend joined us, "sand-skiing one day and snow-skiing the next. We're going to find the snow tomorrow."

White Sands' Missiles Made of Stone

The Austrian travelers headed for Taos Ski Valley, where skiers enjoy what is claimed to be the driest snow in the United States or Europe (page 339). I went on to the 4,000 square miles of sagebrush and saltbush in the White Sands Missile Range. In this vast emptiness, once ruled by the lizard, the snake, and the coyote, 9,000 technicians and scientists test military missiles.

It struck me as an odd coincidence that a state which has become a proving ground for our most modern weapons should also be the one where Ice Age weapons were first found on this continent. In 1926, at Folsom in New Mexico's northeast corner, scientists discovered 10,000-year-old stone dart points—the first generally accepted evidence of the presence of Ice Age nomads. Later, dart points excavated at Clovis, farther south, proved to be some 2,000 years older.*

These primitive weapons sufficed for New Mexico's Indians for thousands of years. By contrast, the revolutionary needle-shaped weapons thrusting their noses high into the

*Archeologists George E. and Gene S. Stuart discuss the latest theories about these points and the people who made them in *Discovering Man's Past in the Americas*. This 212-page book, published in 1969, may be ordered from Dept. 61, National Geographic Society, Washington, D. C. 20036, for \$4.25, plus postage and handling.

Taos, the high-rise pueblo

AS PROTECTION against enemies, Indians built their pueblos, or villages, as high as five stories, with no openings on the ground level. Except for added doors and windows, Taos stands little changed today (below). Women still perform such daily chores as sweeping the dirt plaza and baking bread in beehive ovens. Unlike other New Mexican pueblos, Taos resists modernization, banning electricity and running water.

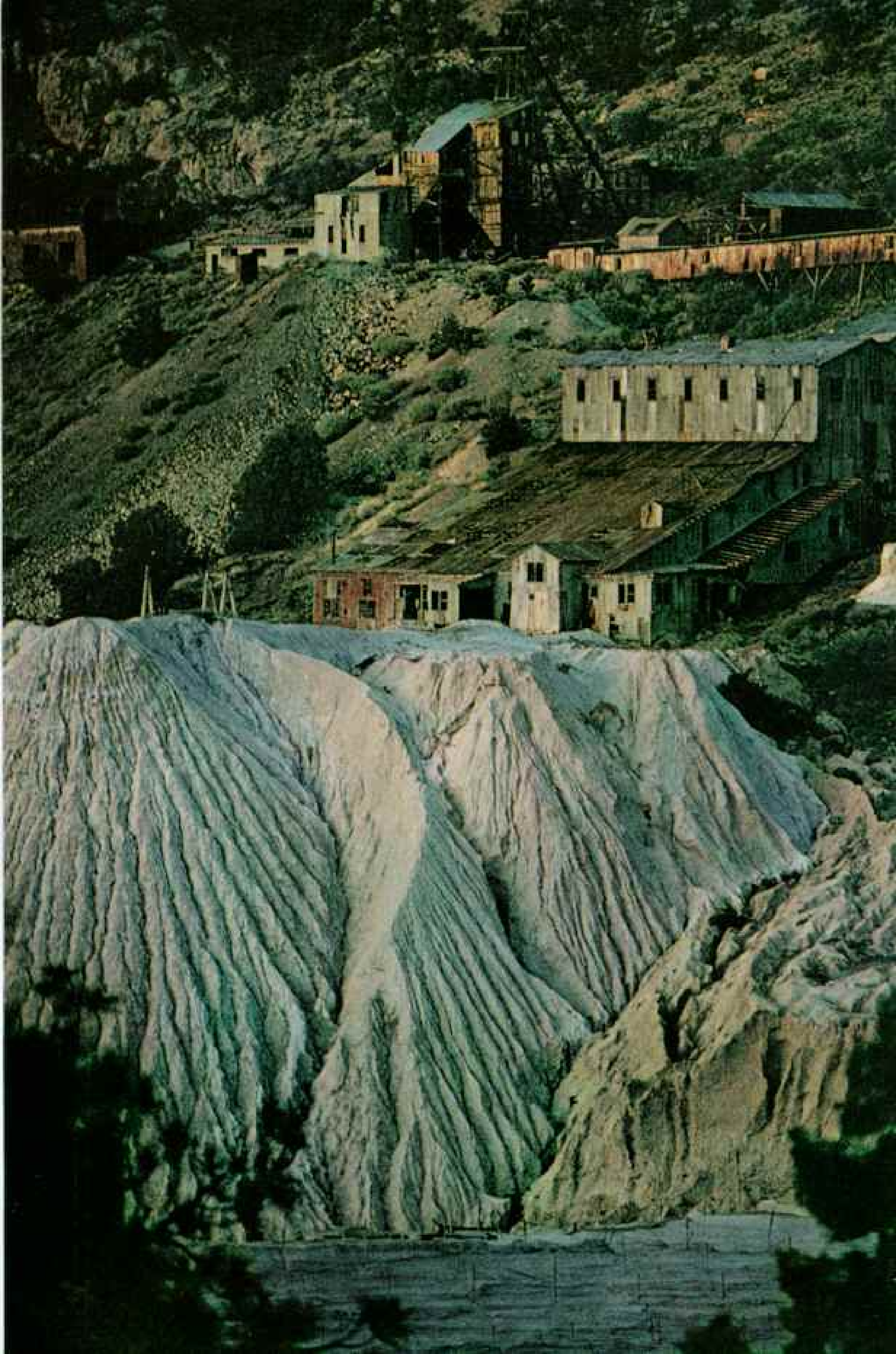
Taos men, like Frank Gomez (right), wrap blankets about their heads. They may have adopted the custom—which distinguishes them from other Pueblo Indians—from Plains Indians to the east, among whom they sought sanctuary from the Spanish invaders.





BOONCHORNWES © NATIONAL GEOGRAPHIC SOCIETY







BACKGROUND BY ALAN WOLFF © W. J. B.

Of mines and memories: Years of working in the tunnels underground and wrangling on the ranges above have furrowed the face of Guillermo Montoya of Hillsboro, but today at 64 he still rides in roundups. Although Mr. Montoya recalls many shoot-outs over cattle and grazing rights, the only bullet that ever creased him was one he caught while serving as an infantry sergeant in Europe in World War II.

Mines of Mogollon (pronounced mo-go-YONE) yielded more than a million dollars a year in silver and gold in the peak years of 1912-15. One of them, the now-deserted Little Fannie Mine, here clings to a 7,400-foot mountain near the Arizona border; white tailings scar the slope (left). The nearby village of Mogollon, which once knew 2,000 inhabitants, withered to a virtual ghost town; today it houses a small but developing art colony.



EDWARD J. HENRY © H. S. S.

Privacy invaded, a mule deer stands riveted after encountering hikers in Carson National Forest. Named in honor of Kit Carson, the noted scout, the green preserve teems with antelope, elk, and black bear; game birds include turkey, grouse, geese, quail, and dove.

Hiking the heights, backpackers follow a wilderness trail in Carson Forest. They head for Wheeler Peak, at 13,161 feet the state's highest point. Early autumn tints the aspens on the lofty slopes near the Colorado border.

sky at White Sands represent the modern expression of pioneering work that took place only 40 years ago, 100 miles away in the old cattle town of Roswell.

There I found a reconstructed small wooden building—now a part of the Roswell Museum and Art Center—that had been the workshop of rocket developer Robert Goddard. In 1930 he came here from Massachusetts to test-fire his early liquid-fueled rockets.

In display cases lay the relics of those crude devices, the designs of which were nonetheless sophisticated, operating on the principles of the great rockets of today. Goddard was ridiculed for even suggesting such a thing as man's ability to reach space in a rocket.

Testing Ground of the Space Age

"From what old-timers say," museum director Eugene Smith told me, "Goddard was accepted by most people here on a 'live-and-let-live' basis. He was friendly and used to relax by playing bridge with the townsfolk.

"He came to New Mexico," Eugene said, "because there was room out here to experiment, ideal weather, and he knew people would leave him alone. He used to make the rockets in his shop and then take them into the desert. His 'tracking station' was a cowboy stationed on a nearby hill. When the rocket went off, the cowboy would race after it on his horse and mark where it landed."

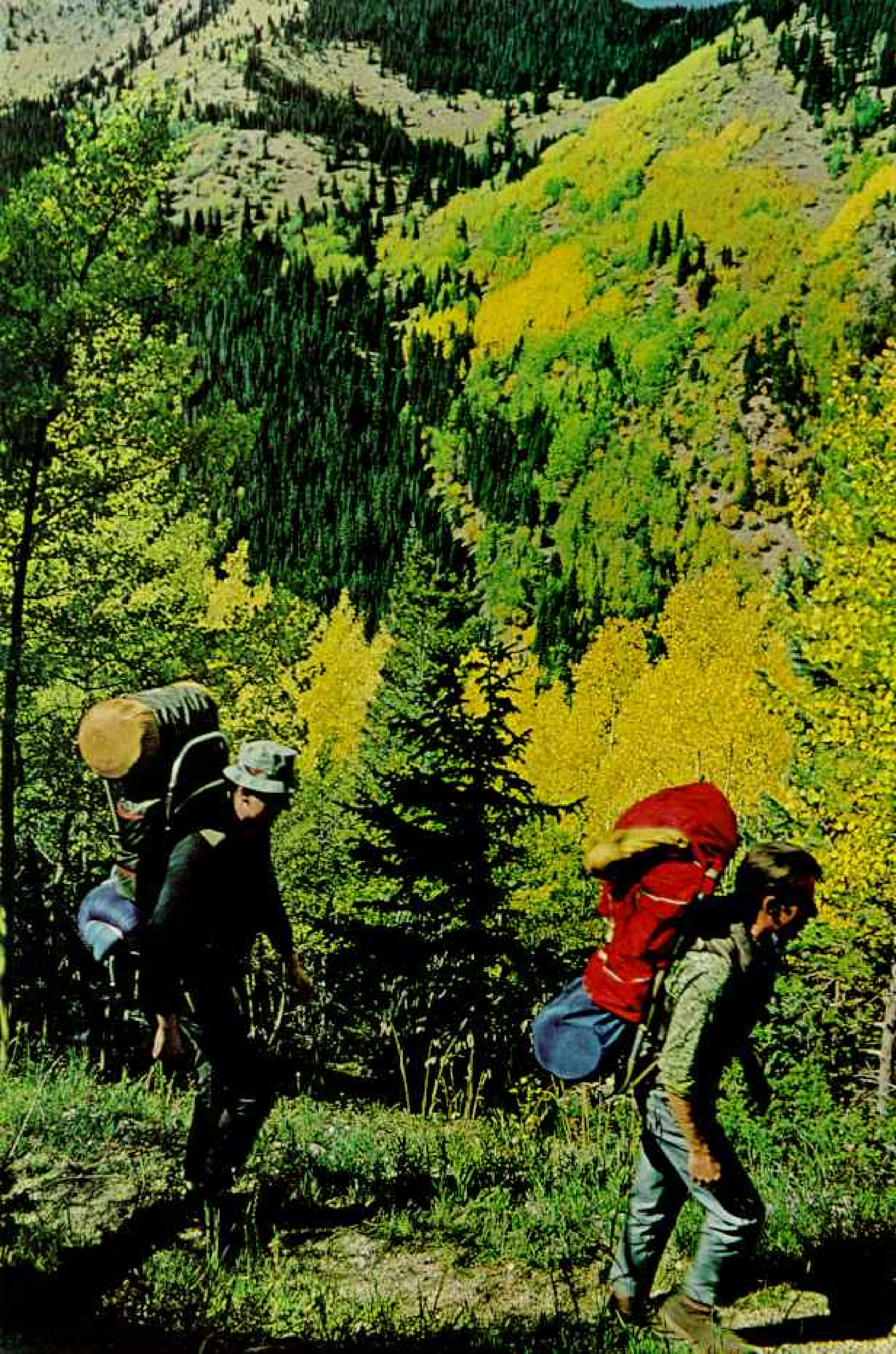
Dr. Goddard's quiet desert has become in recent years a huge laboratory for research and experimentation for the nuclear age.

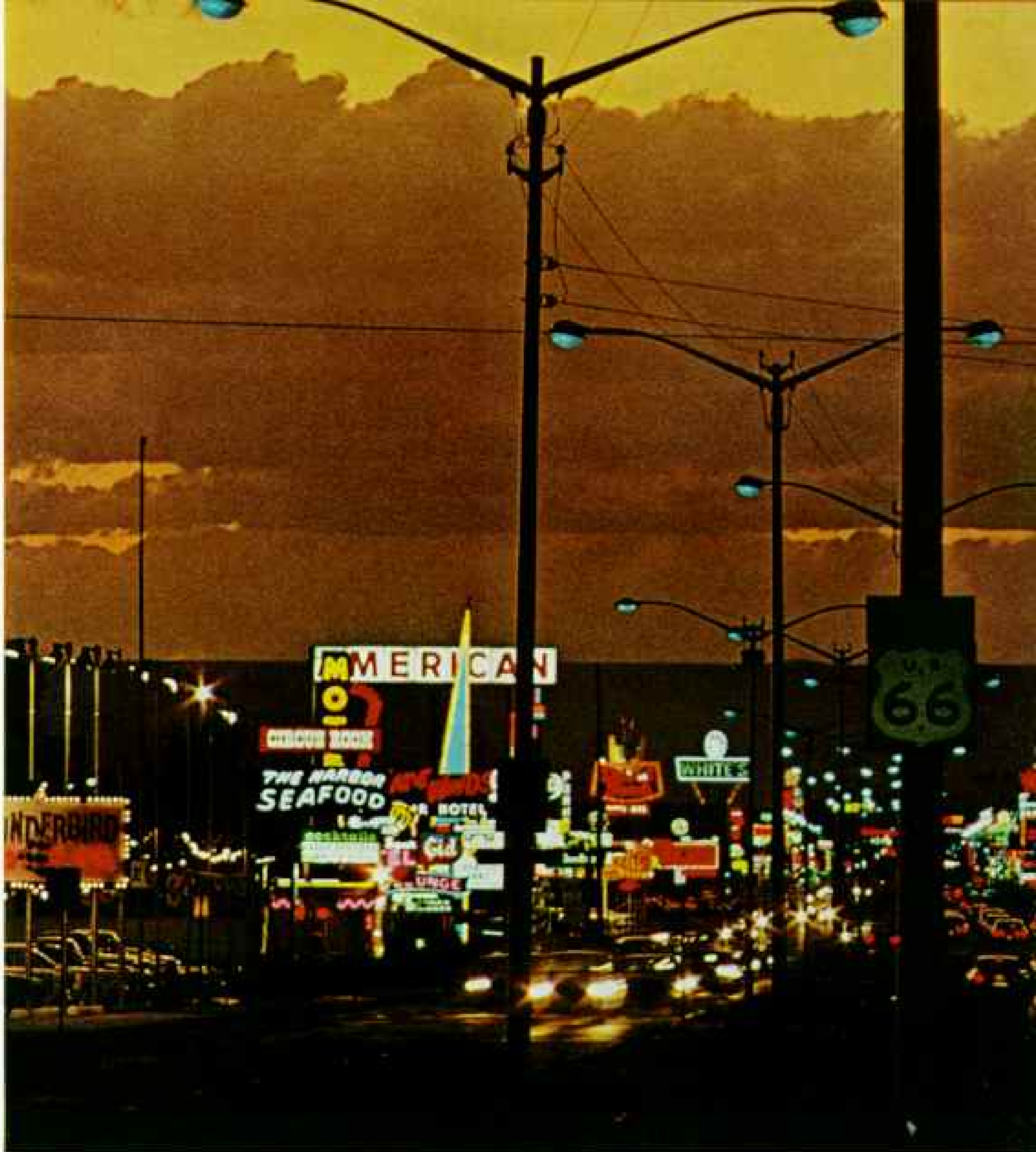
What is now New Mexico's biggest industry in number of people employed began in an isolated place 7,200 feet up in the Jemez Mountains 35 miles northwest of Santa Fe. There, in the World War II year of 1943, a group of key scientists created the Los Alamos Scientific Laboratory. J. Robert Oppenheimer, Enrico Fermi, Niels Bohr, and many others gathered under assumed names and in a secrecy so thorough that even residents of Santa Fe had no inkling of what was going on: the development of the first atomic bomb.

The rough barracks in which the scientists lived and worked in World War II have given way to a maze of modern homes and laboratories. Los Alamos has become a town of 15,000, and many more tourists than that—80,000 each year—come to view a model of the first atomic bomb and such peaceable descendants as reactors and research rockets.

Today Los Alamos is charged with development of a nuclear-propelled rocket capable of interplanetary travel. Though Los Alamos and the gigantic Sandia Laboratories at Albuquerque (page 325) are still engaged in development of nuclear weapons, many of their experiments are bent toward constructive uses of the atom.

In Albuquerque the nuclear age has transformed life. More than 30 percent of New Mexico's population lives in the Albuquerque metropolitan area. An exceptionally high proportion is young, dynamic, and highly educated; New Mexico has more Ph.D.'s per thousand than any other state.





Albuquerque lights up as evening clouds darken the sky above the western horizon. Largest city in New Mexico, the metropolis is home to nearly a third of the state's inhabitants. Motels, restaurants, and service stations line Central Avenue, part of famed U.S. 66 running

From new high-rise buildings in midtown Albuquerque (above), subdivisions in the prevailing Spanish-Pueblo architecture have spread across the Rio Grande Valley. They are inhabited by young professional workers drawn to the Sandia Laboratories and the campus of the University of New Mexico.

Even though San Felipe de Neri Church, at least twice rebuilt, has not missed a service in 264 years, there seems hardly anything left of the sleepy old Spanish town along the Rio

Grande, until you come to Old Town. There Eleonora Sewell, an owner of one of Old Town's sophisticated new shops, joined me for lunch in La Placita Restaurant, whose brick floors, white adobe walls, and heavy wooden beams betoken great age.

"This was one of the first buildings in Albuquerque," Eleonora said. "Old Town is what Albuquerque used to be, but it almost went the way of the bulldozer. By the 1930's the area around the old plaza, and all these



WIDACHOWICZ © S.A.S.

from Chicago to Los Angeles. Astride the Rio Grande in the shadow of the Sandia Mountains, Albuquerque blends Space Age technology and Old World charm. In Old Town, where time-worn buildings ring the original plaza, a small band of Spanish settlers founded the city in 1706.

charming little streets that once were lined with fandango halls and gambling rooms and bars, were on their way to becoming a slum. They were marked for extinction. But a lot of people saw something here to be saved, and little by little, they prevailed. Now we even have a zoning code that demands authentic exteriors and gaslights on the streets.”

For the Anglos of Albuquerque, Old Town represents a romantic Spanish past, but that past is not so romantic to a small band of

modern Spanish revolutionaries. Just as the Indians resented the conquistadors’ intrusions during the 16th and 17th centuries, so the Mexicans resented the intrusions of the Anglos in the 19th century. Some Spanish-Americans still do, claiming that the Anglos cheated them of land held under grants, some of them centuries old, from Spain and Mexico.

The colorful swashbuckling of Pancho Villa as his bandit army swept across the New Mexican border in 1916 has left a lasting



EXTRACTING (RIGHT) BY R. S. LAMAR, SERRIS LABORATORIES, REDACHROME (AP)

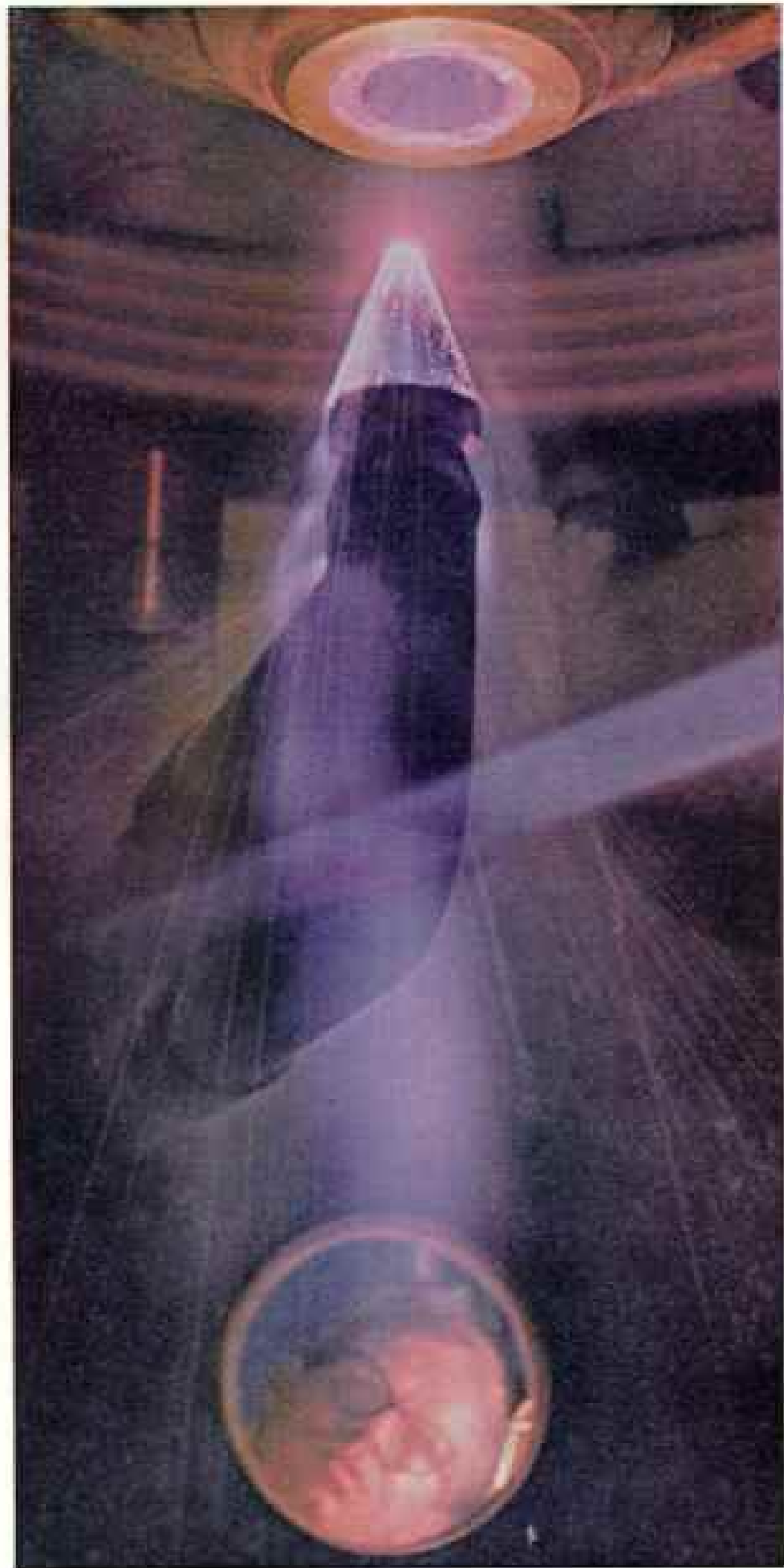
Water jets spray waste copper ore at Santa Rita. As the water filters through the dump, four pounds of copper leach from every ton of waste. From a smelter, the recovered copper goes into tubing, wire, and kitchenware.

The Chino Mines Division of Kennecott Copper Corporation operates Santa Rita's giant open pit, whose riches were discovered by the Spanish in 1800. Mining began on Kneeling Nun mountain in 1910, and today the pit measures more than a mile across. Out of it come 100,000 tons of copper annually. High-quality ore goes to the mill, the waste to this dump.





© ESTACHURRA, BY ADAM WOOLFITZ (CC BY-SA)



Gases heated as high as 10,000° F. pour over the model of a nose cone in a chamber at Sandia Laboratories in Albuquerque. From a porthole Nigel Hey observes the test, which helps researchers design space vehicles capable of withstanding heat generated by re-entry into the earth's atmosphere. Sandia Corporation, a subsidiary of Western Electric, operates the laboratories for the Atomic Energy Commission. With 6,500 workers, it is the state's largest private employer.

Fateful explosion in a desert named Jornada del Muerto—Journey of the Dead—marked the dawn of the nuclear age. Here at the Trinity Site, infrequent visitors who peer through the fence can see faint traces of the foundation of the tower that supported the "Fat Man" bomb in 1945.



ENTACHROMA (OPPOSITE) AND KUSACHROMA BY ADAM BOULTITT © N.E.S.

Mr. Opera of New Mexico, John Crosby founded the Santa Fe company 14 years ago. Each summer sees this 1,366-seat open-air auditorium completely sold out for most performances. For his imaginative productions—which this year included *La Traviata*, *Marriage of Figaro*, and the world premiere of Luciano Berio's *Opera*—Mr. Crosby brings in singers from all over the world.

Music to snooze by: Pace the dachshund—*Pah-chay*, meaning “peace” in Italian—naps serenely while a mirror reflects her owner, Professor Joanna de Keyser, giving a cello lesson at the University of New Mexico in Albuquerque.

popular image of such defiance. It came only too vividly to life in 1967, when followers of a fiery revolutionary, Reies Lopez Tijerina, captured the courthouse at Tierra Amarilla, a tiny county seat northwest of Santa Fe. In the fracas a state policeman and a deputy sheriff were wounded by gunfire; the National Guard finally had to be called in.

Tierra Amarilla is a poor village; more than half its residents receive some form of welfare assistance. The surrounding rangeland is tied up in national forest, Indian reservation, and an old Mexican land grant of nearly 600,000 acres.

From the Valley of Peace to a Revolt

Tijerina's Federal Alliance of Free City States has its headquarters in a shabby building in Albuquerque. I went there to talk to the rebel who was laying claim to millions of acres of such land grants in New Mexico.

I sat in a hard wooden chair in a sparsely furnished room. Across from me two women with closed-down faces sat beside a few young men with hot and hostile eyes. An old Spanish rancher wearing a black shirt and a wide-brimmed black hat stared at me from the moment I entered, as if trying to discover whether I posed a threat to his leader.

When Tijerina arrived, a stocky man with a mane of black hair and gray piercing eyes, everyone relaxed. He and I went into his makeshift office, cluttered with copies of old treaties, maps, and revolutionary literature.

“I'll tell you what made me a rebel,” he

said. “When I was a boy, my grandmother filled my ears with stories about how our own family's land grant was taken from us by the Anglos in Texas. Then, in Arizona, I got together 17 Spanish families, and we built our own city and called it the Valley of Peace. That time the Anglos burned us out. Now we are claiming the land grants that were taken away from us by cheating.”

“Are there going to be any more battles like the one at Tierra Amarilla?”

“No,” he said with a sharp wave of his hand. “Everybody lost their heads on that one. My people and the state police and the National Guard, too. We don't want any more violence. All we want is a Congressional investigation of the whole land-grant problem. We want the land back so it can be divided up and put to productive use. Maybe that way we can get our people off welfare.”

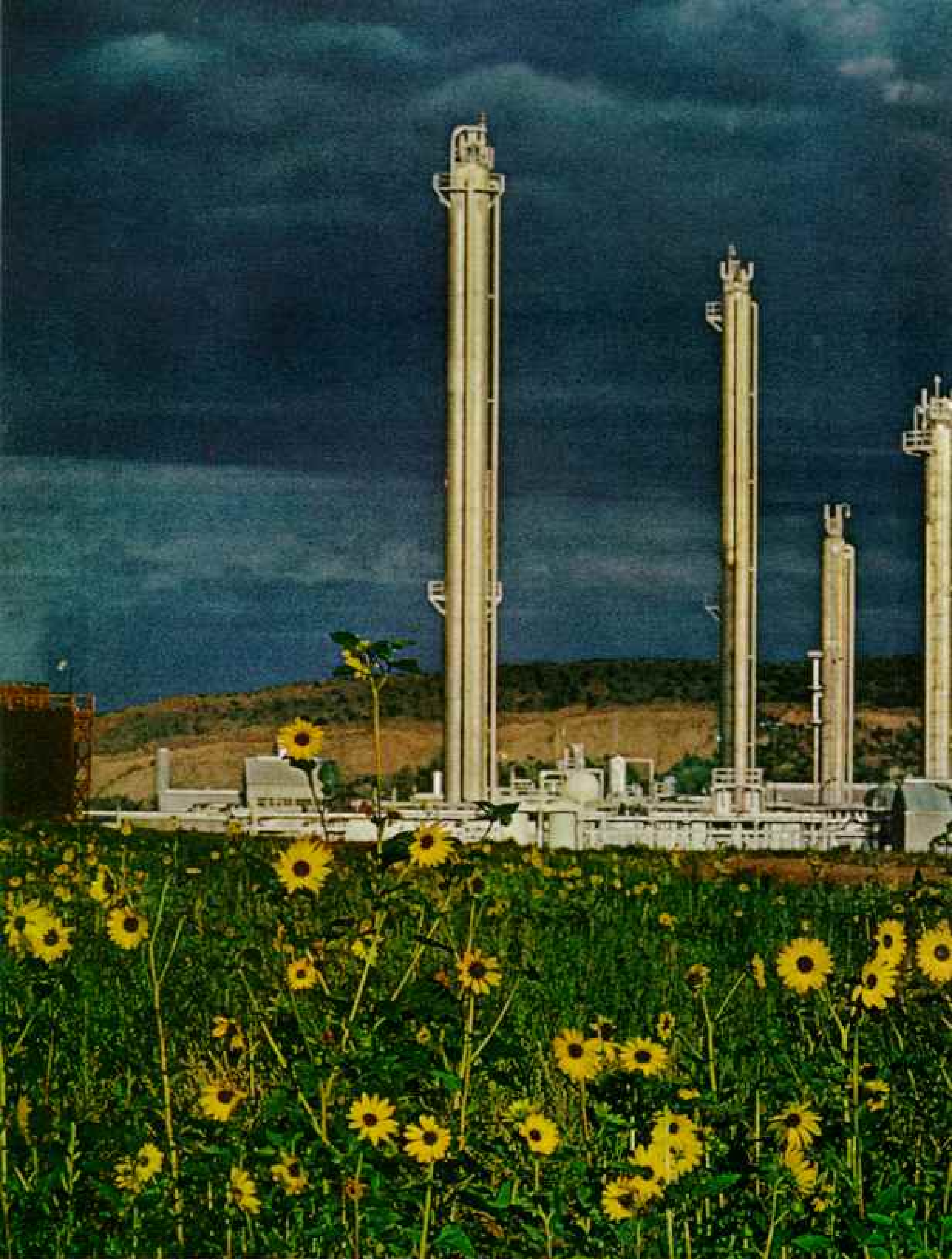
Joseph A. Black, retired Chief of the New Mexico State Police, is not a man to be taken lightly. He once tracked a killer on horseback for five days and nights before capturing him. He agrees that there ought to be a study of the land-grant problem.

“Tijerina went about it in the wrong way, though,” he told me later. “He did an injustice to his people at Tierra Amarilla.”

As I was leaving Tijerina, I asked him, “Are you going to let Anglos into your land grant? From the attitude of your friends, I wouldn't think so.”

He leaned across the table. “Can you blame them?” he said passionately. “Because of the





Fire and storm lend an infernal look to a coneflower-strewn field near Gallup. At the Wingate plant of El Paso Natural Gas Company, flames belch from a waste pit; in the distance rise silvery fractionating towers. Such plants of the El Paso system compress natural



KODACHROME BY ALAN WOLFFITT © R.A.S.

gas, remove liquid hydrocarbons, and then dehydrate the gas, delivering 1.3 trillion cubic feet to the main lines each year. The company supplies natural gas to 11 western states, much of it drawn from wells in southeastern New Mexico and in this Four Corners area.

Cutting a Hereford from the herd, ranch hand Pat Archuleta gallops across plains rimed with October snow. He rides for the 125,000-acre Diamond A, near Wagon Mound. Hereford cattle are being phased out on Diamond A in favor of Brangus, crosses between Brahman and Angus that require less care yet yield more meat. With 77 million acres of the state devoted to grazing, New Mexico realizes nearly \$200,000,000 annually from cattle and sheep.

Anglos, they are living in poverty. And remember, they are the sons of conquistadors.”

Though Tijerina may not reflect the feelings of most Spanish New Mexicans, their relations with the Anglos have not always been cordial. The tie that first bound the two groups was the Santa Fe Trail. The conflict that strained the bond was the Mexican War.

One starlit night, outside Fort Union National Monument northeast of Santa Fe, I traced the deep ruts that still mark the old Santa Fe Trail, in some places more than a hundred yards wide. Thousands of traders passed along this famous path, the first Anglo road west of Missouri (map, page 308).

During the 223 years that New Mexico was under Spanish rule, most imports had to be hauled 1,800 miles over rough country from the Mexican port of Veracruz. Even goods bought in Mexico were painfully high priced.

The New Mexicans began to be tempted by trade opportunities to the east. Franklin, Missouri, in 1821 the most westerly river port in the United States, was only 800 miles away. When, in that year, Mexico won her independence from Spain, she authorized trade between New Mexico and the United States. Though Comanches haunted the wilderness along the way, the huge profits to be made lured daring freighters to pound out the trail—an epic trek along the Arkansas River to Bent’s Fort and over Raton Pass into New Mexico, or, alternatively, over the plains to the Cimarron River and on to Santa Fe.

Fighting for Land and Water Rights

Along the trail rolled huge red-wheeled freight wagons loaded with thousands of pounds of calico and leather and hardware. They took back furs and hides, Mexican pesos, and lively Spanish burros.

When the Mexican War broke out in 1846, Gen. Stephen Watts Kearny led his Army of the West down the trail to claim New Mexico. After him came the Anglo colonizers, the



cattlemen, the land speculators, and the badmen, who opened an era of savage violence.

In Lincoln I talked about those days with Mark Sloan, of a venerable ranching family, as we sat on a warm summer day in an old Mexican saloon across the street from the Lincoln County Courthouse. This had been the center of the Lincoln County War of 1876-78, an armed conflict among sheepmen, ranchers, homesteaders, and squatters, all vying for land and water rights. The war became so heated that President Rutherford B. Hayes sent Gen. Lew Wallace as territorial governor to restore order. He stayed in New Mexico and wrote part of his widely known popular novel *Ben Hur* while there.

The courthouse was also the scene of Billy



STOCKPHOTO © NATIONAL GEOGRAPHIC SOCIETY

the Kid's famous escape of 1881. The Kid, William H. Bonney, was held under guard there by Deputy Sheriff J.W. Bell. At the bottom of a narrow staircase, Mark showed me where Billy killed Bell with Bell's own gun. The bullet holes are still in the wall.

Mark told me that Bell's partner, Deputy Marshal Bob Ollinger, had been standing in the Mexican saloon when he heard the shots.

"He ran across the street to the courthouse," Mark went on. "As he approached he heard a cheery greeting—'Hey, Bob!'—from an upstairs window. Ollinger had only time to look up at the laughing face of Billy the Kid before a full charge from a shotgun killed him instantly."

"What about the story that Billy was a sort

of Robin Hood?" I asked. "Is there any truth to that?"

"Everyone has his own opinion," Mark said. "For my money, he was a punk, a mad dog who killed for the fun of it."

"How about the legend of Billy's escape to Mexico after being shot?"

"Billy was killed all right, just a few months after he broke out of here," Mark replied in that laconic drawl that is the hallmark of the New Mexico range country. "Right in that ranch house near Fort Sumner where Sheriff Pat Garrett finally caught up with him. And not with a pistol, either, as Pat himself claimed and artists always draw it. Pat Garrett was too smart to go after Billy with only a pistol. He had a shotgun, and that's a fact,

because our neighbor Lorenzo Spitz, whose father went over to see the body, told me his father said the Kid was not only dead but you could of throwed a hat through him."

Many a Hollywood script is based on real-life New Mexico history, for the plains and mountains of the state had been the hunting grounds of the Navajos and fierce Apaches since the 16th century. Both tribes moved in from the north.

The Apaches struck terror into the hearts of settlers for 300 years. A series of brilliant tacticians led their warriors against the white man—Mangas Coloradas, Cochise, Victorio, Nana, and the famed Geronimo. But, in the end, the victorious Anglos herded the stubborn tribes onto reservations.

Two Apache bands—the Mescalero and the Jicarilla—the Pueblos, and the Navajos continue to live in New Mexico, which is still home to 77,000 Indians. The most revealing way to see the ancient domains of the Indians is from the air, since many of them are roadless

and accessible only on horseback or in a four-wheel-drive vehicle.

Snow squalls and rain showers buffeted our light plane as my pilot followed a circuitous heading toward northwestern New Mexico. Below us isolated ranches remained locked in wintry valleys, shadowed by snow-dusted mountain ranges as wrinkled as old men's faces.

Acoma Hung On Despite Defeat

We dipped over the lava flows near Grants, classic examples of recent volcanic activity in the continental United States. Moments later, above ancient Pueblo Indian country, we circled an archeologists' paradise, Chaco Canyon National Monument. There stands thousand-year-old Pueblo Bonito, a single multi-storied structure laid out in curving symmetry beneath the shoulder of a cliff. At the height of its civilization, the pueblo contained 800 rooms, together with 37 kivas or ceremonial chambers, and housed 1,200 people.*

The Sky City of Acoma, huddled atop its lonely mesa like a pueblo in a cloud, seemed the very stuff of legend. Acoma had resisted the conquistadors until the soldiers of Don Juan de Oñate scaled the vertical cliff and inflicted devastating defeat upon the Indians—killing hundreds and taking others as prisoners. That crucial battle of 1599 quelled Indian resistance to the Spanish conquest for many years. It did not drive the Indians from their pueblo, however. They are still there—in one of the oldest continuously occupied villages in the United States.

*National Geographic-Smithsonian Institution expeditions, led by Neil M. Judd, excavated and studied these ruins from 1920 to 1927. See NATIONAL GEOGRAPHIC, June 1921, March 1922, July 1923, and September 1925.

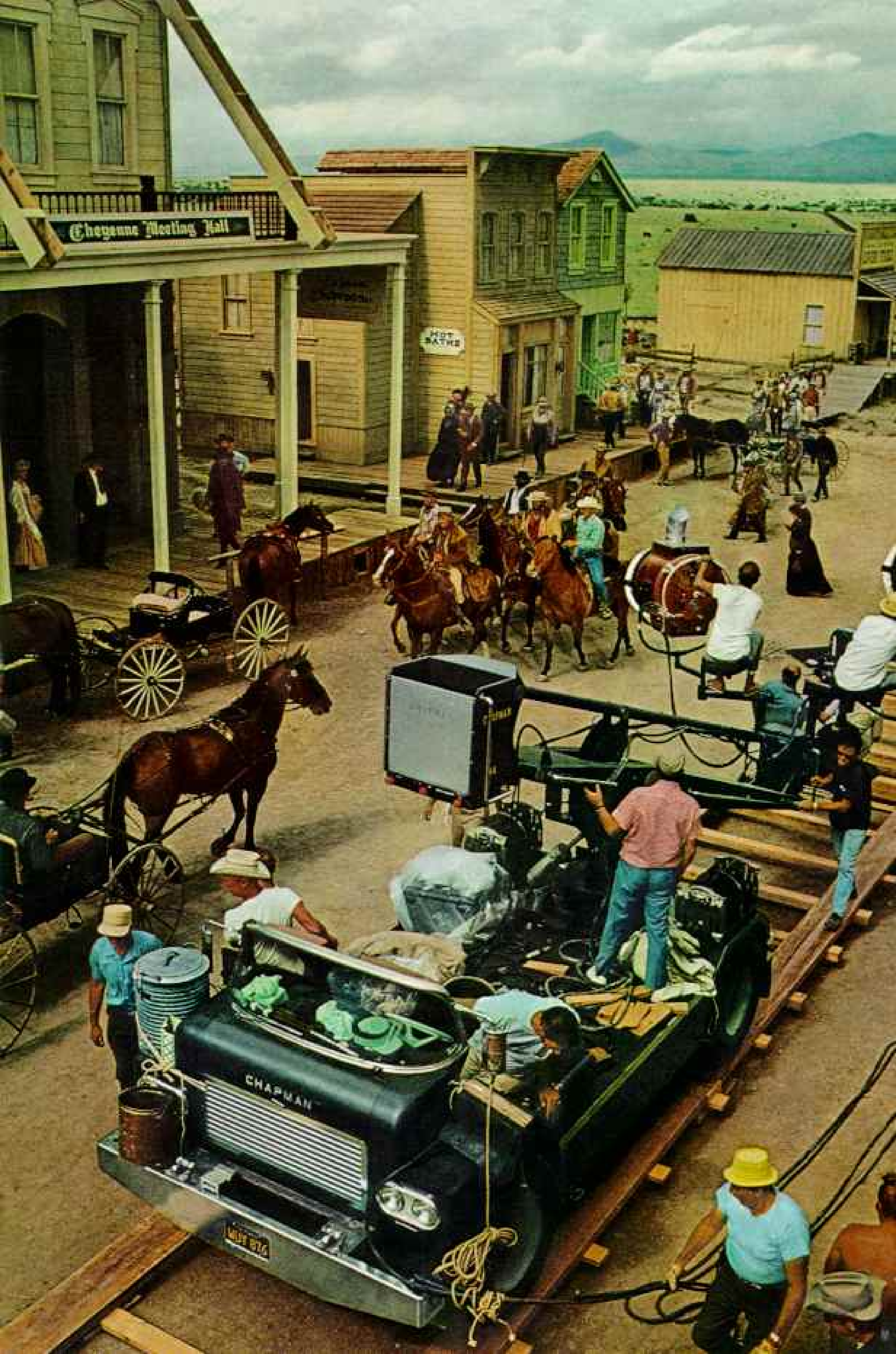
"What does New Mexico mean to me?"

Painter Peter Hurd grins as he ponders the question. "Well, I was born here," he replies, "and I hope to die here. And I can't think of any place I'd rather spend the in-between." Renowned for his landscapes—and for his controversial portrait of President Lyndon Johnson—Mr. Hurd lives on a ranch at San Patricio. His wife Henriette, also a noted painter, is a sister of artist Andrew Wyeth.

Hollywood make-believe: Old Cheyenne, Wyoming, turns up on a ranch near Santa Fe for a film starring James Stewart and Henry Fonda. Clear skies and open spaces draw an increasing number of motion-picture companies to the state.



BOUACOROMES © R.S.S.



When I first saw the volcanic neck known as Ship Rock rising into view, it was enough to make me doubt my senses. Out of the flat desert floor the remarkable pinnacle thrusts more than 1,500 feet into the sky (page 344). From its base razor edges of dark rock radiate like a dinosaur's plated spine. To the early settlers it resembled a giant ship under full sail. To the Navajos it was the "rock with wings," an object of religious awe.

We droned on over desolate lands, where many of the Navajos cling to old nomadic ways. Below lay isolated dome-shaped hogans of wood and mud, crude corrals, and occasional bands of sheep dotting the stark terrain. Then the moon landscape and the lonely

hogans, symbols of the Navajo past, faded behind us, and we landed at Gallup, a bustling center of the Navajo present.*

Bob Robertson, Executive Director of the National Council on Indian Opportunity, told me, "You think that sweep of country you flew over is big. It's only a small part of a reservation larger than West Virginia—16,200,000 acres in New Mexico, Arizona, and Utah. And it's all home to the largest U. S. Indian tribe—120,000 Navajos.

"The Navajos are on the move," Bob said. "Just east of here, they've set up an industrial park. With the help of the Bureau of Indian

*See "Better Days for the Navajos," by Jack Breed, NATIONAL GEOGRAPHIC, December 1958.



Affairs, they've invaded the white-man's world of banking, motels, and restaurants."

"I hear they've found uranium," I said.

"Not only uranium," Bob told me. "They lease out their holdings in petroleum, natural gas, and coal." He chuckled. "I was talking to a Jicarilla Apache a few weeks ago—his band has 742,000 acres on the Colorado border—and he said something that applies to the Navajos, too: 'The white man,' he said, 'stuck us on this God-forsaken plateau, and what do you know, we found gas and oil!'"

Unlike the Navajos and Apaches, the 960 Indians of Taos Pueblo, in a sheltered valley 70 miles north of Santa Fe, do not welcome the Anglos' wealth or ways (pages 316-17).



ESKADRENE BY ADAM WOOLITT © R.R.S.

Such contrivances as electric power, radio and television—even piped water—are still forbidden by their governing councils.

I visited the pueblo on a crisp December day when the sky was the porcelain blue of winter and the ground was covered with a dazzling crust of snow. Gray plumes of wood smoke rose from adobe chimneys.

Blanket-wrapped Indians with graven faces leaned against the walls, basking in the uncertain warmth of a winter sun. An Indian girl picked her way through a snow trail to the creek that courses through the interior area, shattered the thin film of ice, and dipped her bucket brimful of water. In the open country beyond, a lone Indian boy ventured into the snowy fields with a gun.

As I approached an Indian with a blanket wrapped around his shoulders and over his head, he turned away and vanished into a dark doorway. In his aloofness and proud bearing I discerned those qualities of his people that have made it impossible for them ever to accept another man's government.

Indian Revolt Overwhelmed the Spanish

A Taos medicine man named Naranjo incited the bloody revolt of the Pueblos in 1680 that drove Spanish rule from New Mexico for 13 years. In 1847 the Taos Pueblo Indians joined with dissident Mexicans to resist a new invader, the Anglo. They shot U. S. Governor Charles Bent full of arrows and scalped him while he was still alive.

Near the pueblo, the village of Taos retains its Spanish character. Its approaches are lined with orchards, sheep and goat corrals, and cemeteries with an incredible profusion of wooden and iron crosses. Clustered around the central plaza are tiny shops of weavers and furniture and jewelry makers. In the network of narrow alleys beyond, men gather in Spanish restaurants to eat enchiladas, drink beer, and passionately argue their favorite subject—politics.

Here and there, however, the Anglo has left his imprint, as in a small park on the outskirts of Taos where a plain weathered

Veined with life-giving waters of the Rio Grande, lettuce fields flourish in the once-parched Mesilla Valley near Las Cruces. In a state with only 9 to 16 inches of rainfall a year, Indians once danced for its blessing; Spaniards prayed. Now, at last, modern irrigation helps assure bountiful crops.



WOODCHOPPING (ABOVE) AND EATING (RIGHT) © N.S.S.

A place for contemplation

“PLEASE don’t label us hippies or call us a commune,” requests a spokesman for the Lama Foundation. “If you must describe us, say we are a spiritual community, a retreat for those seeking self-discovery through philosophy, religion, and hard physical labor.”

For three years the foundation—which shares the name of a nearby hamlet—has functioned in a 9,000-foot-high pine forest north of Taos. Last winter 13 adults and 8 children dwelt here; the previous summer 30 adults and 12 children. Ages ranged from a 6-month-old (right) to an 81-year-old. Most adults have college degrees; some hold doctorates.

On 115 acres the community raises most of its fresh vegetables and fruit. Members rise at 5:30 a.m. and work at least seven hours daily on outdoor chores, such as gardening or chopping wood (above). Vegetarians, they also eschew coffee, black tea, drugs, alcohol, and tobacco.

Seated at a seven-sided table (opposite page) members clasp hands and meditate before each meal. Five nights a week they meet for more meditation and discussion.





tombstone marks the grave of Kit Carson. Taos was the closest thing to home Kentucky-born Kit ever knew. From the village he ranged on foot far into unknown territory. When John C. Frémont, the Pathfinder, was exploring the Far West, it was Kit Carson who guided him to Oregon and California. When General Kearny wanted to move his army to California, it was Carson who led him there by the blistering Gila River Trail.

Anglo explorers of another sort have also found Taos congenial. For more than half a century it has attracted writers, among them the late D. H. Lawrence, and many artists—and lately the hippies, who have moved in to mingle leisurely on the streets with blanketed Indians and Spanish-American ranchers.

Artist Teaches Polo to Cowboys

One of New Mexico's best-known artists, however, lives not in Taos but far to the south, at San Patricio. Late one afternoon I turned onto the dirt road that leads to artist Peter Hurd's Sentinel Ranch. Pole corrals, barbed-wire fences, and weathered barns surround the whitewashed adobe hacienda. I expected the enormous black Brangus bull—a cross between Brahman and Angus—in the pasture, but not the exotic peacocks that moved languidly out of my path.

The man who met me looked as lean as the land he portrays (page 332). His faded blue Levis, belted with a silver buckle, were stuffed into dusty cowboy boots.

"I just got back from a painting trip," he said. "Come into the studio."

The high-ceilinged room presented a fantastic disarray of paint pots, brushes, canvas, old guns, Spanish swords—and polo mallets.

"Polo is a hobby of mine," Mr. Hurd said. "When we started, the men around here rode cow ponies. They wouldn't have anything to do with a polo saddle, but after they got thumped a few times on the horn of a stock saddle, they saw the sense of it. Now they're even wearing white breeches and helmets."

I paused to admire a landscape painting of velvet mountains at dusk and, at their base, a lonely ranch house with warm light glowing

from a window. "Well," he said, "it's about that time of day now. Do you want to see it in the real?"

Climbing into his motorized studio, a van so equipped that the artist can live and paint in it on long trips, we crossed over rough dirt roads to a crest overlooking the next valley. We parked by a water hole fed by a windmill.

Inevitably the talk turned to Peter Hurd's controversial portrait of Lyndon B. Johnson, which had infuriated the then-President into rejecting it as "the ugliest thing I ever saw."

"At first," Peter told me, "I was just plain mad. But time healed that. The President was dreadfully tired. And, from an artist's point of view, he still has a great head to paint."

I asked him where the portrait was now. "In Washington, at the National Portrait Gallery," he said. "I was bombarded by people offering as much as \$50,000 for it. But after the Smithsonian Institution offered to buy it, let's say I preferred to give the painting to my country."

The sun had set behind the mountains, and they were clothed in somber shadow. The light had gone on in the ranch house. It was then I saw the full range of Peter Hurd's work. The scene before us was beautiful, but as portrayed on the canvas it had acquired a spiritual dimension.

Hurd Portrait Comes to Life

"I never tire of painting this country," Peter said quietly. "I've seen a lot of the world, but my heart is here. There isn't a day when the colors aren't showing you something new. This is the New Mexico I love—horses and cattle and mountains and sky, and the honest faces of real people."

Louie Nalda has such a face, as open as the dry rangeland that stretches out beyond his Diamond T Livestock ranch, near Pie Town in west-central New Mexico. Louie and his brothers, Michel and John, are great-grandsons of Lucien Maxwell, who once had the largest single land-grant holding in U. S. history—almost 2,000,000 acres.

We were riding in Louie's dusty pickup in the high rolling foothills of the Datil Mountains. He gestured at the sparse range.

Swishing through new powder, a skier streaks down the Rūbezahī Run at Taos Ski Valley, 9,200 feet high in the Sangre de Cristo Mountains. With more than 25 feet of snow each winter, the resort operates daily from November to April, and on weekends until mid-June. "Many Europeans have never seen anything like our combination of deep powder and brilliant sunshine," says Swiss-born owner and designer Ernie Blake.







PHOTOGRAPHS BY ADAM WOOLFITZ © W.A.S.

White Sands National Monument

SHIMMERING wavelike dunes, fresh as a wilderness snowfall, blanket a vast area in the Tularosa Valley. Ever growing, ever changing, the hills inch forward before the prevailing southwest winds.

The world's largest gypsum desert was created millenniums ago when the mineral was washed from the flanking San Andres Mountains, deposited in dry lake beds, and blown by winds into dunes—a process still going on. Established in 1933, White Sands National Monument preserves nearly 230 square miles of the starkly beautiful landscape.

For the thousands of visitors who come here each year, the Park Service devised sail-like picnic shelters (lower left). To keep a way open for cars, employees spend countless hours grading and scraping away the sugar-fine sand.

Surprisingly, the desert supports much plant life—yucca, squawbush, rabbitbrush, cottonwood. Many animals, including badger, skunk, fox, rabbit, coyote, gopher, and kangaroo rat, make excursions into it. A permanent inhabitant of the dunes is the bleached earless lizard, *Holbrookia maculata ruthveni* (left).



"I've heard tell of times when the wild grass was belly-high to a horse. But not any more. Some years I can go out and count the ribs on those black Angus. We run sheep, too, on our other ranch near here. They manage all right; sheep can live almost anywhere."

Ranchers like Louie Nalda, who raise cattle, sheep, and horses, produce nearly twice as much wealth for the state as do farmers, but the ranchers depend more on rainfall.

"Windmills and gas-driven pumps do the job for the crops in the beautiful country around Clovis," Louie went on. "We use a few windmills, too, for watering holes and raising some winter hay. But when you run livestock on big rangeland, it's the rainfall that makes all the difference."

wilderness survival. Then one thunderhead poked its way over the jagged range, and the air suddenly became ominous. The animals sensed it first. The rabbit scuttled into the sagebrush, and the hawk veered away toward Albuquerque as if pursued.

The thunderhead billowed into a black cloud that rolled in front of the sun and cast a strange blue light on the mountains. Then came a numbing display of lightning and thunder, and in an instant I was gasping for breath in an unbelievable torrent of rain. In the ravine below, a wall of water materialized out of nothing and went roaring downhill.

The drama closed as suddenly as it began. Far below, I could see that the instant river had sliced out an arroyo in the plain and then



BERNICE SHORTY © N.A.S.

Burden of beauty: Turquoise and silver jewelry fashioned by Navajo and Zuni artisans bedeck a dancer at the Gallup Ceremonial. Masters in the art of inlay, some 200 Zuni families derive most of their income from the rings, brooches, bracelets, and necklaces they make in their homes.

Happiness fills a hogan as Navajo women spin wool for rugs they will weave on home looms. Bernice Shorty, foreground, and her mother Mary live in the Two Grey Hills area of the Navajo Reservation, which sprawls across some 25,000 square miles. Boldly patterned Navajo rugs sell for as little as \$10 and as much as \$10,000.

"It sounds like a risky way of living," I said.

His dark eyes scanned the horizon, and then turned to mine. "Well," he said, "one of these years, we'll get good rains again."

It does not rain much in New Mexico—precipitation ranges from 9 to 16 inches a year, and it is the snow melt from the high mountains that feeds the five principal rivers, the Rio Grande, Pecos, Canadian, Gila, and San Juan (map, pages 307-308). But when it does rain, the storms are something to behold.

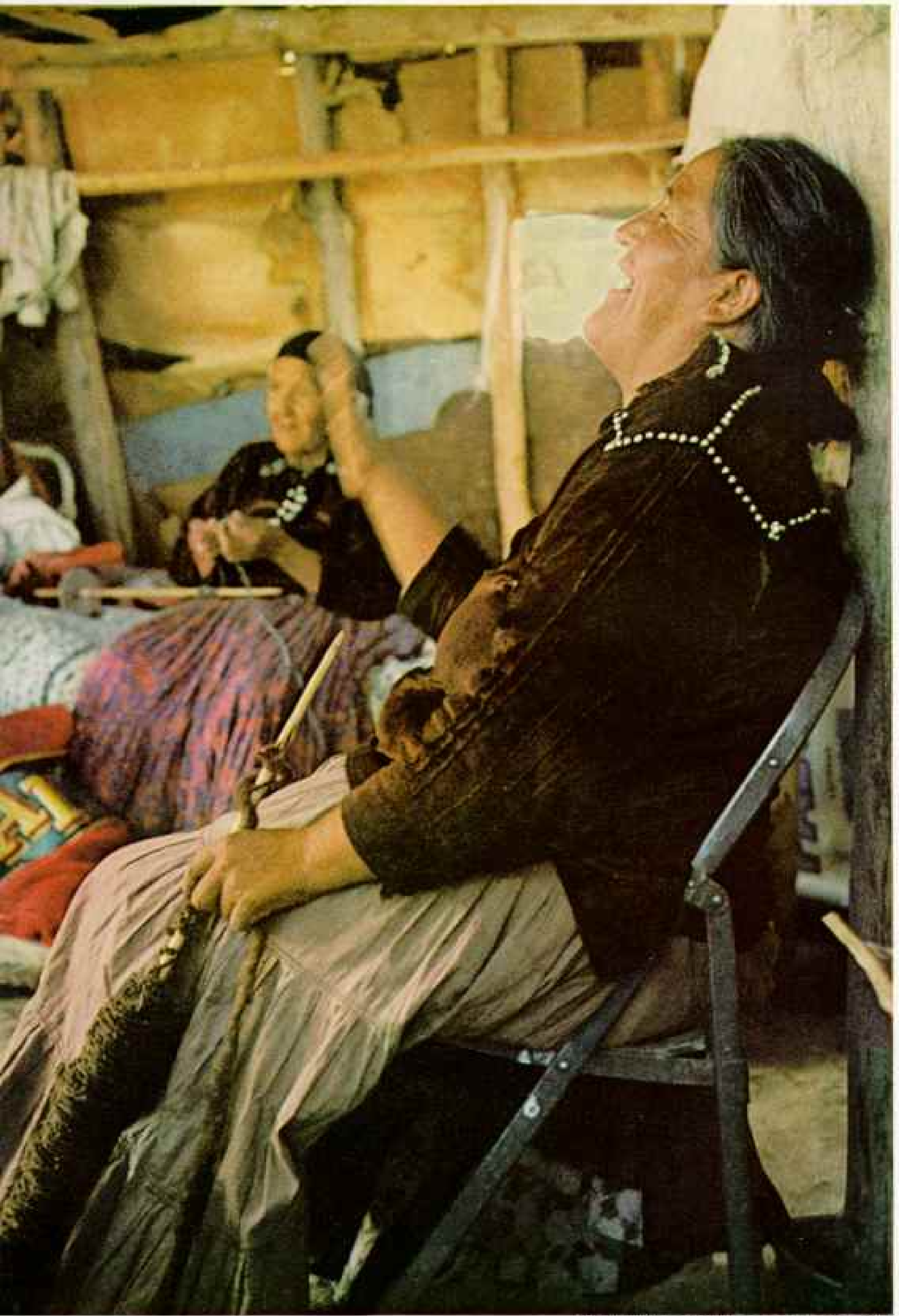
I made their acquaintance one day in the Sandia Mountains above Albuquerque. When I set out that morning on a hiking trip, the air was dry and the sky a dome of uninterrupted blue. I paused on a ridge spotted with piñon and juniper to watch a jack rabbit and circling hawk play the eternal game of

spent itself helplessly in tendrils that resembled artists' patterns in the sand.

Yet the very force squandered on the desert has worked the state's most memorable natural wonder—possibly the largest and most spectacular limestone cave system in the world. More than 670,000 visitors converged last year on Carlsbad Caverns National Park, making it the state's biggest drawing card.

"NATIONAL GEOGRAPHIC helped make the place famous when they published my photographs in 1924," Ray V. Davis told me. I had found Mr. Davis at his comfortable home in Carlsbad, overlooking the Pecos River. His tanned outdoor face and bright, inquisitive eyes belied his 75 years.

"You know the story, I'm sure. Jim White was a cowboy who had turned to mining



guano in Bat Cave near the entrance. He was the one who first explored the caverns, in the early 1900's. I went along with him on most of those explorations. I had to carry all that bulky old-fashioned photographic equipment on my back down a 190-foot rope ladder. I was scared stiff, but my sense of adventure overcame it. When I got back, I told people that someday millions of visitors would come here to see the unbelievable things I had seen. They laughed at me."

I was introduced to the caverns by Perry Denton, an enthusiastic amateur spelunker. Since Perry operates a funeral home, we rode out to the park in an old hearse.

The caverns are awesome.* The connecting corridors run for miles under the Guadalupe Mountains from one glistening fairyland to another (pages 309-10). I lingered behind my companion to feel some of the aloneness that Jim White must have felt. The silence grew, a silence emptied of sounds, of weather and machines and talk, the ringing silence of the tomb. Then one sound broke the spell. It was that of a single drop of water.

Zunis Recall Conquistadors

To me, that slow subterranean dripping which created Carlsbad's beauties over millions of years epitomizes the pace of time in New Mexico. Ruins of the settlement that Fray Marcos de Niza reported as full of gold, generally believed to be Hawikuh, are still there, 400 years later, and the Zunis now in the area still herd flocks and till the soil. But there is a difference—the Zunis today are a relatively prosperous people.

As I approached a Zuni village with John Kennedy, a trader from nearby Gallup, I noticed signs of this prosperity. A shepherd boy gave us a friendly wave; beyond him herds of sheep, cattle, and horses grazed peacefully on the rolling grasslands.

"Do the Zunis use all those horses?" I asked John.

"Hardly at all," John replied, "but they

*See "Carlsbad Caverns in Color," by Mason Sutherland, NATIONAL GEOGRAPHIC, October 1953.

absolutely refuse to part with any of them. Horses were a mark of wealth in earlier times, and in Zuni thinking, they still are."

New pickup trucks were parked along the dirt streets of the pueblo, a few in front of a new arts-and-crafts center.

Nathaniel Nasheboo, the head councilman of the reservation, joined us as we watched a Zuni woman placing inlays of shell in a silver mounting. She used a pair of tweezers and worked without benefit of a jeweler's glass, but her precision was absolute.

"Many people think that the silver and inlay work is a primitive Zuni craft," John said. "Actually, the Zunis learned to work silver from the Spanish. Later they developed the inlay work. What you are seeing is a legacy from the conquistadors. It's ironic. If they came back to Zuni Pueblo now, they really would find precious metal."

New Mexico May Still Claim Cibola

As we walked on through the village, there was more laughter from children doing mock ceremonial dances to the din of sticks beating against pots and pans.

"We are a happy people," Nathaniel Nasheboo said. "When we have a problem, we ask our old ones how they handled such a difficulty in times before. They tell us and we listen. When we have a wrongdoer, we talk to him and show him where he was wrong, and he promises to be a better man. This we have always done, even in those days when the white man called us uncivilized, and yet was hanging his own horse thieves without trial."

I talked with one of the old ones before my departure from Zuni, and from New Mexico. His name was Awashu, and he claimed to be 102 years old. His seamed face crinkled into a grin as he said, "I'm not old. I can still dance, so I'm not old."

As I was leaving this village with its laughter and optimism, I thought suddenly of Coronado's golden quest. And I wondered if today's New Mexicans—in a different but more meaningful way—had not discovered Cibola after all.

THE END

Arching rainbow signals the end of a summer storm at Ship Rock, towering more than 1,500 feet above surrounding flats. The Navajos, on whose reservation the eroded volcano rises, call it *tsé bit'a'i*, rock with wings, and consider it sacred. Long ago, according to one of many legends, Navajos besieged by enemies gathered atop this rock to pray. Suddenly the rock rose, formed wings, and sailed across the sky, carrying its passengers to safety here.





Diving Into the Blue Holes of the Bahamas

ARTICLE AND PHOTOGRAPHS BY
GEORGE J. BENJAMIN

IN THE DISTANCE a cat's paw seemed to ruffle the smooth surface of the sea. As our boat slowly approached the agitated patch of white water, we saw—dimly through the wavering sea—the irregular outline of a submarine pit, deep blue in the surrounding light green.

A swirling current poured out of the underwater opening, setting up breaking wavelets for fifty feet around the hole. The water boiled to the surface with such force that we had to secure the boat with two anchors, fore and aft.

"Dere she is," said the boatman, "water comin' out now, but wait for high tide, den current reverse and make whirlpool dat suck in anyt'ing afloat."

When the man saw us taking out our diving gear, he cried, "Mahn, you don't intend to dive down dere! Nobody go down dere; if so, he never seen again."

We were over one of the strange blue holes of Andros Island in the Bahama Islands;

At the door of an inky unknown, the author and his team descend with waterproof lights into a blue hole in the Great Bahama Bank. This is a view from below; seen from above, these openings that plunge more than two hundred feet appear dark blue against the pale shallows off Andros Island. Studying the pits and their mysterious currents—often counter to the tides—the team probes twisting galleries and subterranean vaults never before explored by man.

ENTACHROME BY BATES LITTLEHALES © N.G.S.

and we were waiting for slack water so we could enter and explore this curious underwater opening in the sea floor a few feet beneath our boat.

While we waited, the boatman worriedly eyed the depths. "You go down dere and lusca, him of de hahnds, sure to catch you," he warned.

The lusca, he said, was a terrible creature, like a monstrous octopus or cuttlefish. If you ventured too close to a blue hole, the lusca would shoot his tentacles into your boat, and "once de hahnds get hold of you, you dead, mahn!" The holes, the man said, were full of skeletons of the lusca's victims.

"I remind de time one stop a two-master dead in de water. He wrap' all round de rudder, and wid de free hahnds he feelin' on deck. Once de hahnd feel a mahn, dey was a flunder in de water, and bot' mahn and lusca gone."

Only a few weeks earlier, he said, he had lost a boat and a new outboard motor to a lusca. The boat had drifted from its mooring, floated too close to this very blue hole, and the lusca had shot out its "bahnds" and dragged it down.

Plunge Into an Undersea Unknown

When the water had nearly stopped flowing from the hole, Tom McCollum, my diving partner, and I slipped over the side with scuba gear and—with some trepidation, I must admit—swam against a slight current into the dark opening. Inside, an arched ceiling of rock curved abruptly downward to the mouth of a pitch-black pit. Belaying our safety line around a rock outcropping, we swam down. As it grew darker, our waterproof flashlights threw circles of pale yellow on the rocky walls. At 80 feet the submarine cavern widened into a natural rotunda, from which tunnels led into chambers of unknown size.

Near the surface, schools of pilchards like silver curtains had parted briefly to let us pass (page 353), and down here snappers were feeding in large numbers. In this weightless world of the undersea, some fish swam upside down, unconcernedly following the stony cave ceiling (page 354).

With our feeble lights we could not see far, but while searching one of the nearer chambers we found, to our utter astonishment, the lost boat, half buried in the sand. With some difficulty we detached the heavy outboard motor and fastened it to the safety line. Then we swam toward the dim blue circle of light overhead.



EDUCATION BY LOIS BERGER © R.S.S.

Bull's-eye on the ocean floor: Coral ring gives this blue hole the appearance of a doughnut. Pilot Bill Epstein, pointing, and the author scout by air over shoals three to nine feet in depth. Dr. Benjamin, an adventurous research chemist from Toronto, has spotted several hundred sites that may be blue holes and has penetrated 54.

A monster seized his boat, insisted an Andros Islander, here sailing with a young crewman near the demon's lair. Real culprit: the whirlpool of an inflowing current. The author found the boat in the blue hole's depths and recovered the outboard motor.

EDUCATION BY GEORGE J. BENJAMIN © R.S.S.





GREAT BAHAMA BANK
 — limestone more than 14,000 feet thick — stood above the sea after the Ice Age locked water in mammoth glaciers. Rain gnawed holes in the porous rock. Then came the great thaw, when the ocean rose and flooded the shafts, turning them into blue gems dotting the bank.

SODDEN WITH SWAMPS and severed by wide "bights," low-lying Andros, largest of the Bahama Islands, sprawls for a hundred miles beside a deep Atlantic channel that widens into the Tongue of the Ocean (pages 356-7). A sharp beak on the island's soggy western side broadens the lump of land to forty miles; 7,500 islanders live along the drier eastern edge. Reefs near the channel hold most of the blue holes, whose unusually strong currents set them apart from similar formations around the globe.



Andros Island

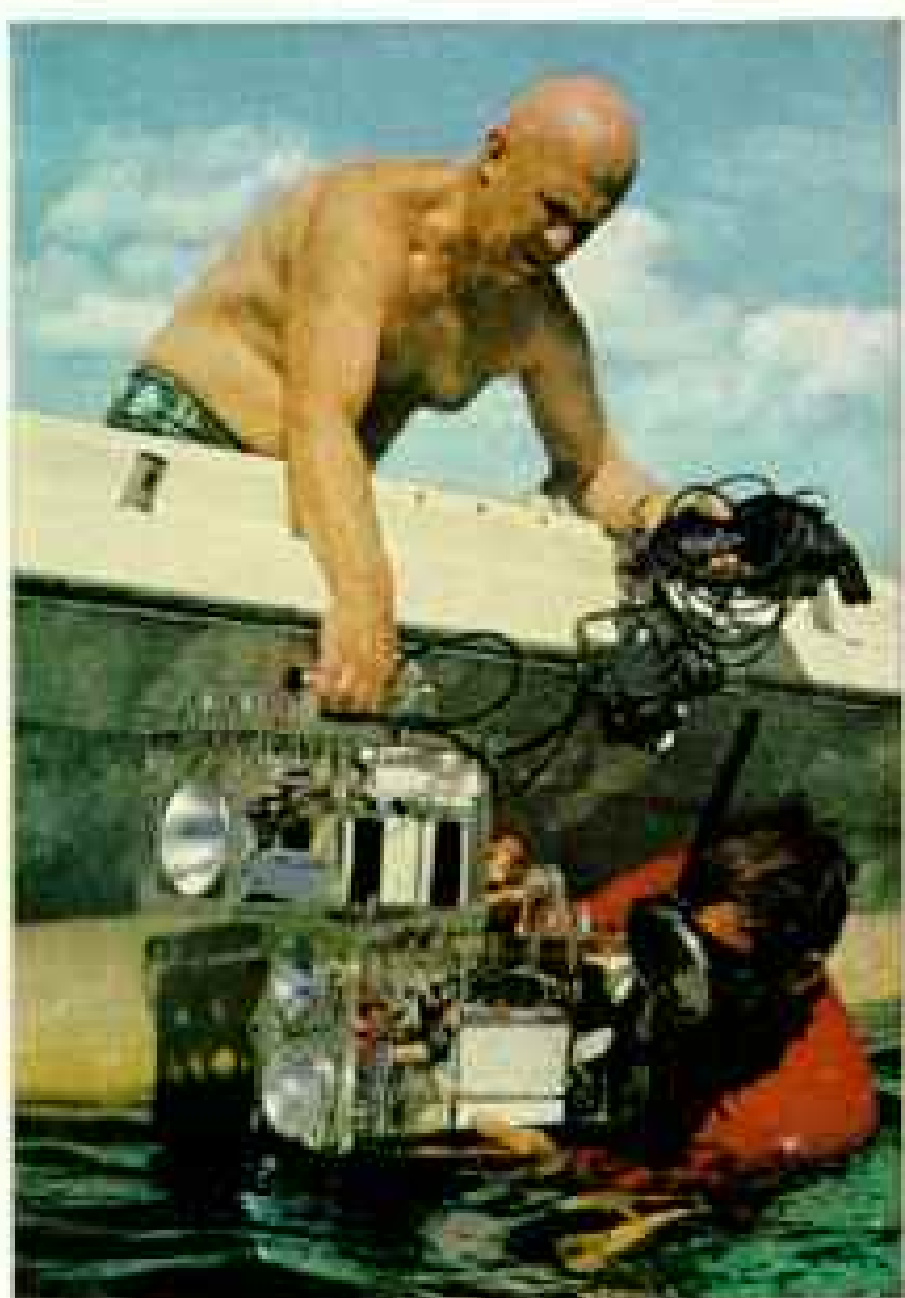
• Blue-hole areas pinpointed by author



DESIGN BY ALBERT FERRELL
 COMPOSED BY LEO J. BOBERGHEIMER
 GEOGRAPHIC ART DIRECTOR
 © NATIONAL GEOGRAPHIC SOCIETY



RODMOLOR (UPPER) BY GEORGE F. BENJAMIN; EPICHROME (RIGHT) AND XODACHROME BY BATES LITTLEHALES © R.G.Z.



To the cellars of the sea

THEIR BOAT double-anchored against currents from a hole off Rat Cay (above), the team dives during calm periods when the flow changes direction.

A spelunker on land before entering his first blue hole, the author (lowering lights, left) has spent more than a decade exploring these underwater labyrinths.

Diving with scuba gear (right), he rigs a line to guide explorers returning from passages clouded by silt. His son George Jr. handles lights powered by separate systems in case one fails. On the boat, diver Archie Forfar prepares to follow, as a partly submerged camera captures both realms.





When the boatman saw our heads break water, he stared in disbelief, but his expression was almost comical when we drew up his dripping motor. But no question: It was his motor and there we were, alive and well.

Watery Caves Were Once Dry

That was more than ten years ago, and it was my first dive into a blue hole off Andros. Since that time I have made hundreds more. I am by profession a research chemist, but underwater exploration and photography are my major avocations; whenever I can get away from my laboratory in Toronto, I go to Andros to dive. Through aerial surveys over the past decade, I have charted several hundred locations which might prove to be blue holes, and I have entered and explored 54 of them, some to depths of more than 200 feet.

Ever since my first encounter with these strange holes, I have felt irresistibly drawn toward their dark mouths. Everyone talked about the blue holes, but no one, apparently,

had mustered either the equipment or the curiosity to explore them.

Anyone who dives into the blue holes soon begins to wonder how they were formed. Geologists, from studies of marine limestone deposits, can tell us something about them.

The Bahamas are the above-water bits of a chain of limestone platforms, or banks, stretching in a 750-mile arc southeast of Florida (inset map, page 349).^{*} Andros, where we have found the largest number of blue holes, is the largest island of the chain, a hundred miles long and a maximum of forty wide. Andros lies on the edge of the Great Bahama Bank with its back to the shallows, its eastern face lapped by the Tongue of the Ocean (pages 356-7), a dark abyss dropping to 6,000-foot depths.

The Bahama platforms began to form at least 130,000,000 years ago. In the past million years or so, the colder periods of the Ice Age trapped water in enormously enlarged glaciers and icecaps, thus lowering the level of the sea hundreds of feet and exposing the platforms. In warmer periods water was gradually released as the ice melted, and the sea crept up again.

It was during times of low water that the blue holes were formed—most probably as ordinary dry-land caves or sinkholes. Heavy rains—rain is slightly acid—ate away the basic limestone, opening fissures and forming underground pockets. Flowing water followed the meandering crevices and enlarged them, turning the pockets into caverns. As the last glacial period ended, once again raising the level of the sea, the caverns flooded, forming the blue holes of today.

^{*}See "The Bahamas: More of Sea Than of Land," by Carleton Mitchell, *GEOGRAPHIC*, February 1967.

Tendrils of color float through the hole at Rat Cay as George Jr. releases fluorescein dye to study the currents. The author believes tidal pressure forces sea water beneath Andros's fresh-water table and raises it; at ebb tide, the table may act as a piston, flushing the holes in a torrent flowing at speeds as high as three knots.

Blizzard of fish, swirling pilchards screen a hole in Conch Bay. "As we passed," said the author, "they formed a tunnel that closed behind us." Three snappers eye the photographer. Groupers, jacks, lobsters, and crabs also seek sanctuary in the shadowy clefts.



RODACOLORS BY GEORGE J. BENAMIN © N.S.P.



In the belly of a blue hole, Mr. Fortfar inches through a narrow passage. For tight squeezes, team members sometimes push their air tanks ahead of them. Terror of entrapment in the depths discourages many divers. "We are too busy studying and taking pictures to get scared," says the author.

No up or down: In its dark world of weightlessness a snapper swims inverted, instinctively following a hard surface—a cave roof. Another fish, lower, swims right side up.



Submarine caves, or "ocean holes," as geologists term them in other parts of the world, have been known from antiquity; literature of the sea carries many accounts of them. But the Andros blue holes differ from others in their powerful reversing currents.

I have not found these reversing currents explained in any scientific paper, but I believe I have a plausible theory.

The pressure of the rising tide forces sea water in the blue holes to follow the available passages, cracks, and fissures into the spongy rock underlying Andros itself. It must flow shoreward—inland—to escape the pressure of the incoming tide.

The island's fresh-water table, tapped by wells, does indeed rise and fall several inches periodically, in cycles that roughly follow the tides. This layer of fresh water, being lighter, does not mix with the underlying salt water. Rather, it may act somewhat like a piston in a cylinder. I believe that as the falling tide relieves the pressure from the seaward end of the system, this fresh-water layer forces the salt water back through the porous rock, through the cracks, fissures, and passageways,

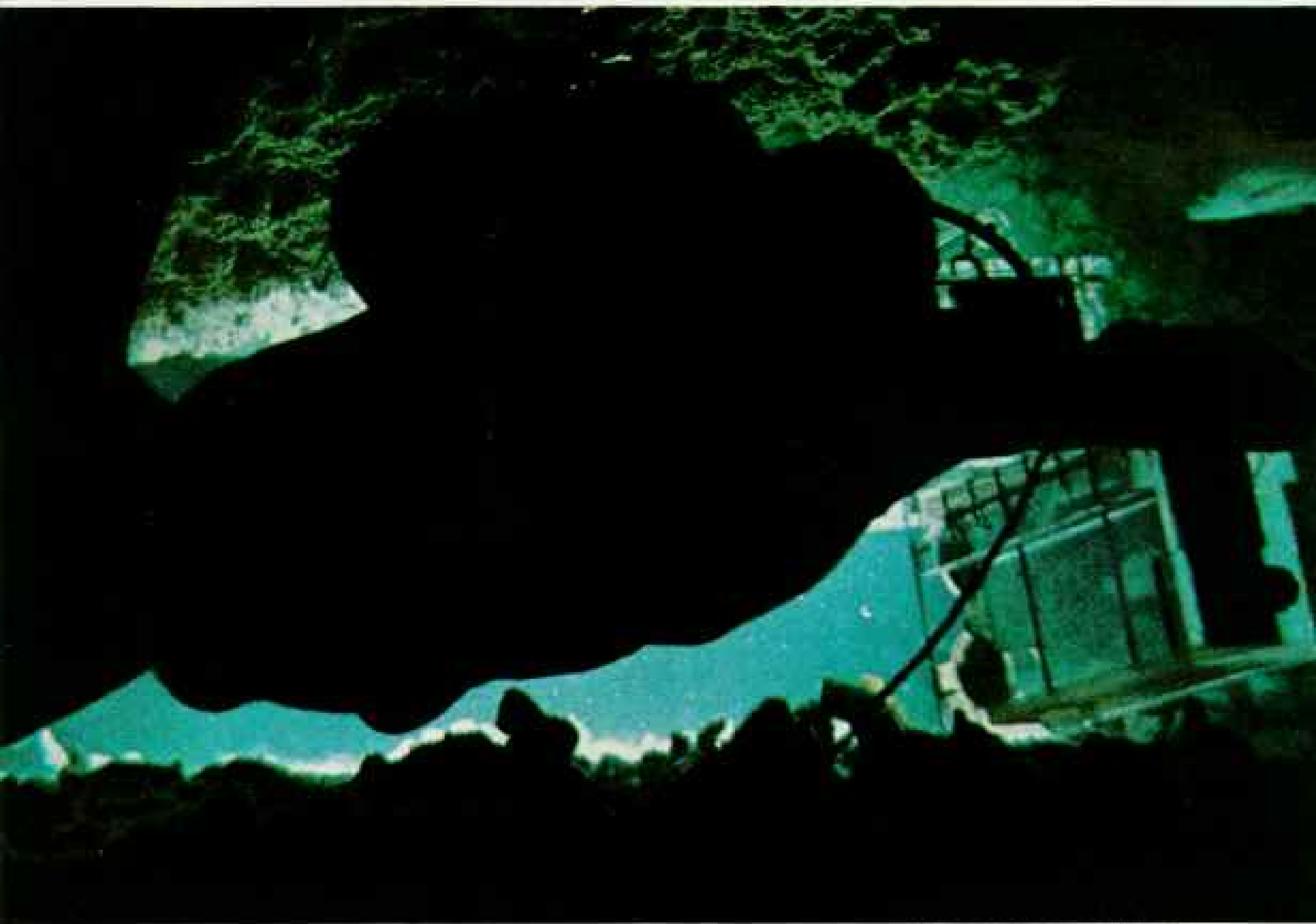
and finally out the mouths of the blue holes.

The currents in the blue holes do not reverse at exactly the same times as the tides. Thus when the tide reaches its low point and starts to rise, water continues to flow out of the Andros holes for two to three hours. Similarly, when the tide first starts to subside, water in the caves is still flowing inward.

I think the easiest way to understand this time lag is to think of a blue hole as one end of a tidal river, a salt-water river running underground. Then make a simple comparison: Atlantic Ocean tides raise and lower the Hudson River all the way from New York City to Troy—but high tide in Troy comes $9\frac{1}{2}$ hours later than in New York.

An expert on the hydrology of limestone platforms, Francis A. Kobout of the U. S. Geological Survey, believes that this lag in tidal effect may be the principal force driving the currents in and out of the blue holes, and not the action of the fresh-water table.

Curiously, by visual comparison it appears that more water may pour out of some blue holes than into them. This additional water could come from the depths of the Tongue



EXPLORERS BY GEORGE J. BENJAMIN © N.A.S.

of the Ocean. Cold sea water may be drawn in through cracks or tunnels in the face of the Wall and, by geothermal warming, be pushed upward and discharged through the blue holes.

In an endeavor to find such underwater intakes, we have explored the face of the Wall (as we divers term the escarpment dropping into the Tongue of the Ocean) in some 200 dives to as deep as 300 feet. So far, we have not found a single true tunnel entrance, although we have entered several dramatic "blind" caves that might well be the stopped-up mouths of old tunnels.

Dye Discloses Leaks Into the Holes

Since our first early dives we have, with improved lights and safety equipment, explored many side tunnels deep within the blue holes. Where rockfalls did not stop us, we came upon walls of sediment. We have released concentrations of fluorescein dye (page 352), and the streaming tendrils of color showed currents flowing in through fissures in the blocked tunnels. But until we can dive deeper on the Wall, or trace the

flow by more sophisticated means, our explanation of the blue-hole currents will contain an element of uncertainty.

As with most ventures in life, there is a degree of danger in our dives, but we try to minimize it by careful planning. We have developed special sealed-beam lamps so powerful that they can light entire undersea caverns, and we have worked out a safety pattern that takes most of the risk out of diving.

But I would strongly advise anyone who is curious to see the blue holes for himself never to venture into one alone, or without adequate training and equipment. Ideally, there should be at least three divers. One, the safety man, remains at the bottom of the main pit holding one end of a lifeline. The other two explore the side passages, staying together and taking the line with them.

Slack water—a period lasting about 20 minutes—is the only safe time to enter a blue hole. As a matter of fact, when the water is pouring out, it is physically impossible to swim or claw your way in against the current, and when the flow is swirling in on a rising

(Continued on page 360)



The Tongue of the Ocean

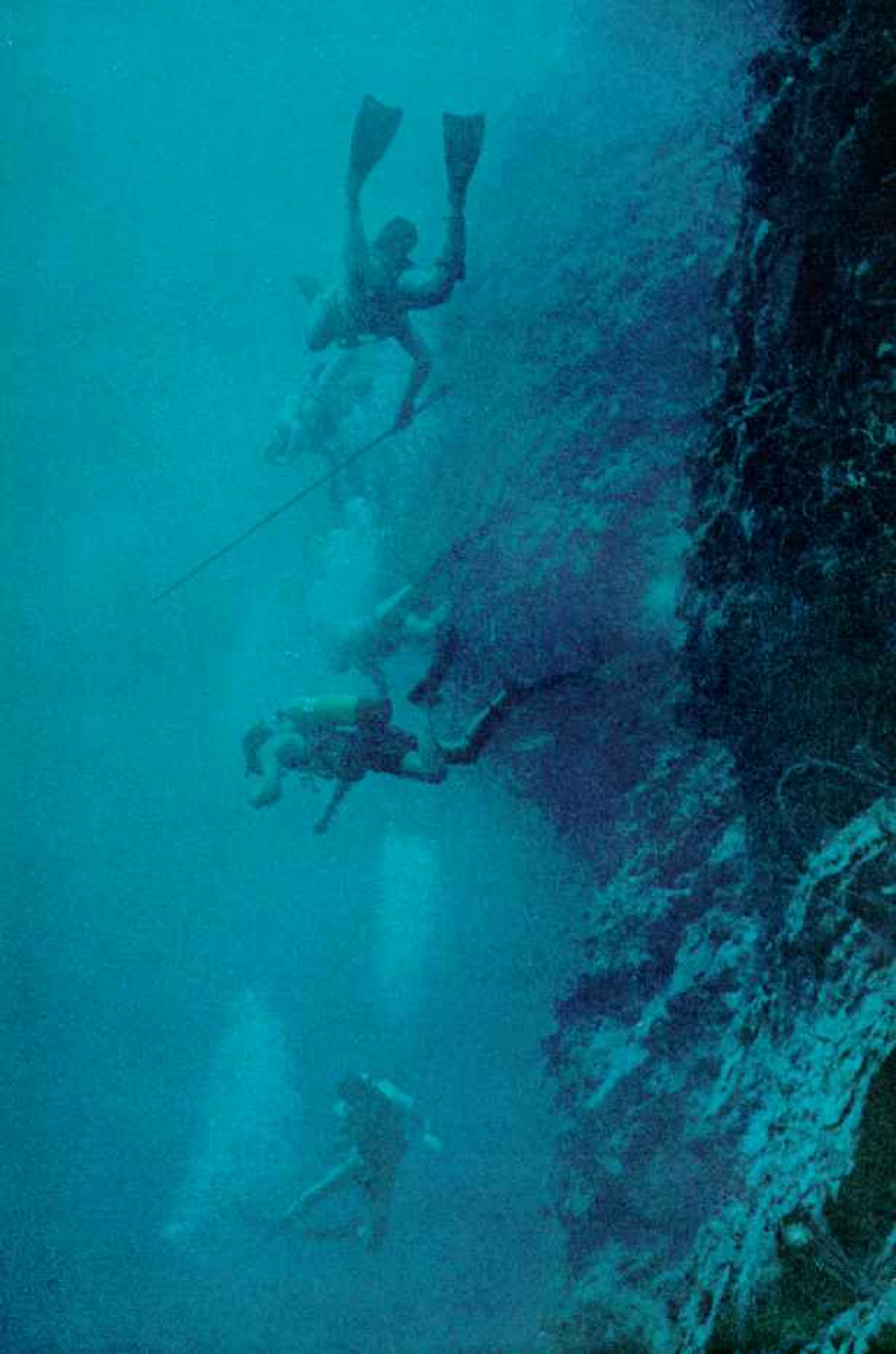
DEEP-BLUE BRANCH of the Atlantic basin cuts into the azure Bahama Bank, photographed from 105 miles above by Apollo 9 astronauts orbiting the earth. Near southern Andros at left, the Tongue of the Ocean, partly obscured by clouds,



ENTRANCE, NATIONAL GEOGRAPHIC AND SPACE ADMINISTRATION

curves into an oval tip 40 miles across. Scientists believe that turbulence on the ocean floor formed the Tongue by keeping it clean of the limestone particles that built the surrounding bank. Tidal currents receding from the shallows furrow the

rim. Seventy miles north, the Wall slopes steeply 6,000 feet to the channel floor (next page). Openings along the Wall may admit sea water later disgorged from blue holes, which could explain why the output of the holes appears to exceed intake.

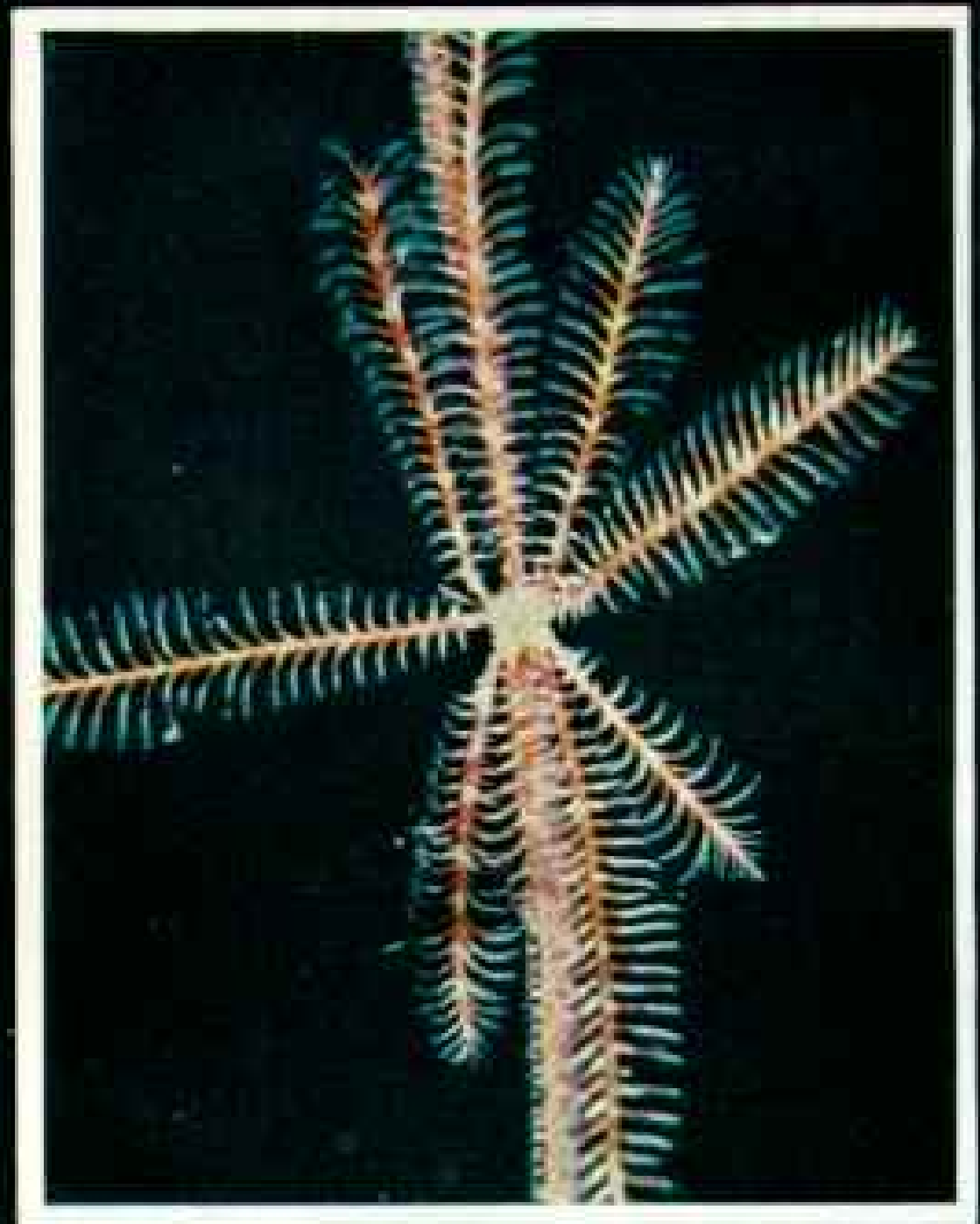


“Sea-lunkers” explore an ocean cliff

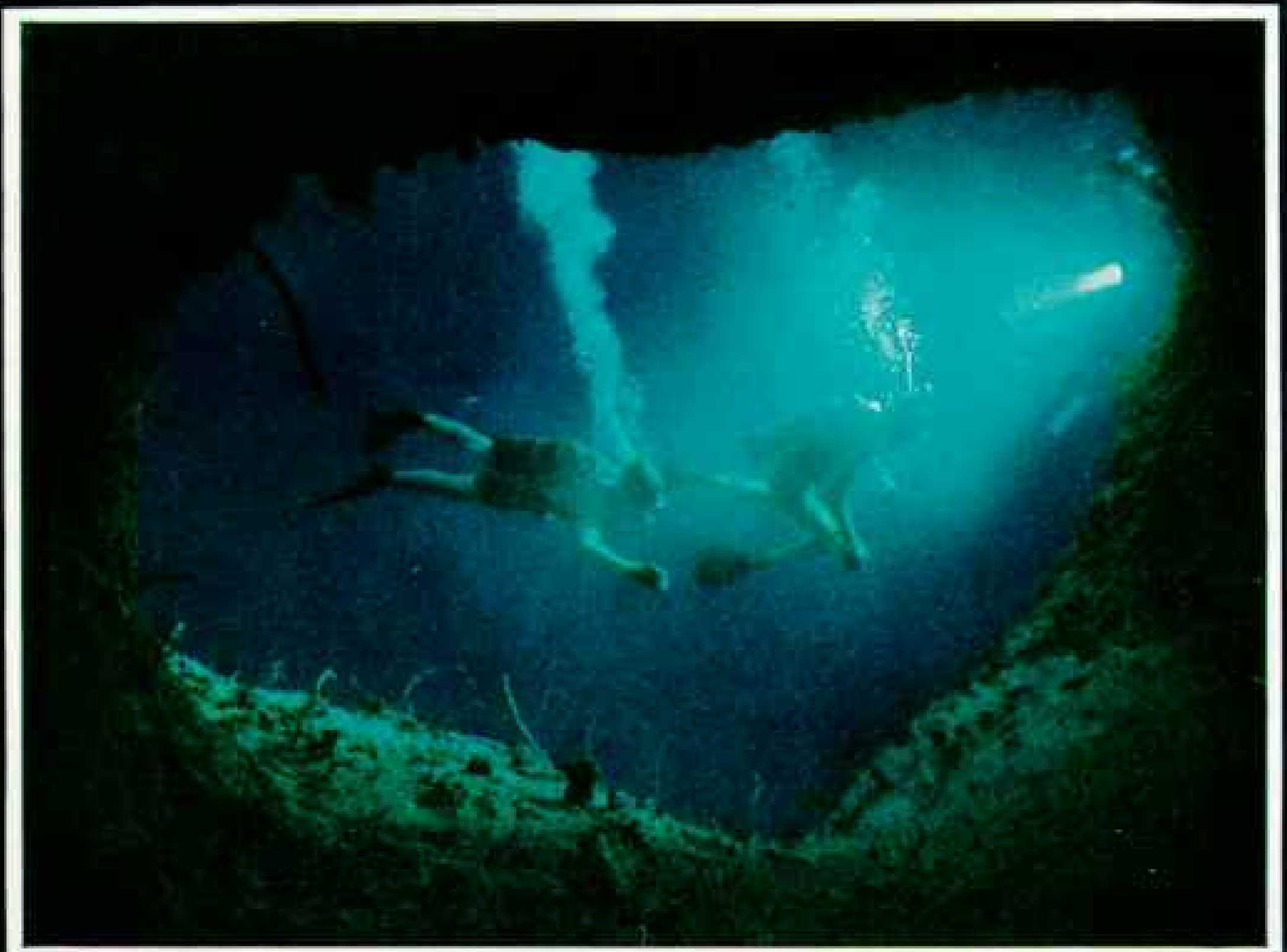
SHEER WALL of the Tongue of the Ocean, plunging to the Atlantic floor more than a mile below, lures members of a Toronto diving club down its face, bearded with marine growth (left).

Deep-sea denizens such as this feather star (right), a crinoid, inhabit caves in the Wall. Seeking blue-hole vents, the author has dived over the Wall some two hundred times. So far, all passages explored have ended in plugs of sediment.

From inside a cave, at a depth of 230 feet, the author photographs companions waiting at its mouth. They float over the Tongue's abyss.



KODACOLOR BY GEORGE J. BENJAMIN, JR. © N.G.S.



KODACOLORS BY GEORGE J. BENJAMIN © N.G.S.

tide, it would be suicidal to enter; the diver would be sucked in like a cork down a drain; one more victim, the Andros Islanders would insist, to "him of de hahnds."

Still, however careful we are, luck plays a part, and it can be good, bad, or mixed. I "remind," as my friends on Andros would say, of the day a crab led us to an important discovery. I was working that day with Archie Forfar, one of the best divers I know, and we had marked on a chart a small opening at the end of a line of blue holes.

Entering the hole, we saw at the far end of the passage leading from the surface a big red crab. When Archie reached toward it, the crab disappeared. It had scuttled into an opening in the floor that appeared, when we shone our lights down it, to be very deep.

Divers Probe a Realm of Blackness

We lowered our safety beacon, a small flashing electronic lamp, down the hole. Though the line was 200 feet long, the light did not reach bottom but winked below us like a dim green glowworm. With some difficulty we squeezed through the hole and swam down the line. At the 100-foot mark we paused. The pit was immense. The lamp, flashing below, seemed as remote as before.

We had almost reached the beacon when our floodlight filled with water and went out. We were in no danger, since we carried two auxiliary flashlights. I aimed my camera downward into the blackness and fired again and again, hoping that for some of the shots, at least, Archie would be aiming the electronic flash in the same direction.

Our strobe flashes have a short duration, only 1/1000 of a second, but persistence of vision makes the flash seem longer. In one such blinding flash I thought I saw the momentary image of a great vault flanked by massive columns resembling cave stalagmites. Was it real or an illusion? I could not be sure, but I hoped that some of the pictures in my camera had captured the same image.

As it turned out, both those pictures and later exploration have confirmed that this cave, found by a lucky accident and first entered with a faulty floodlight, is the deepest blue hole we have yet found—about 230 feet.

People often ask me what I expect to find in the blue holes, or why I take the risk of entering them. The hope of adding a bit to the world's sum of knowledge, the call of adventure, the indescribable sensation of putting one's foot, or flipper, where no man has





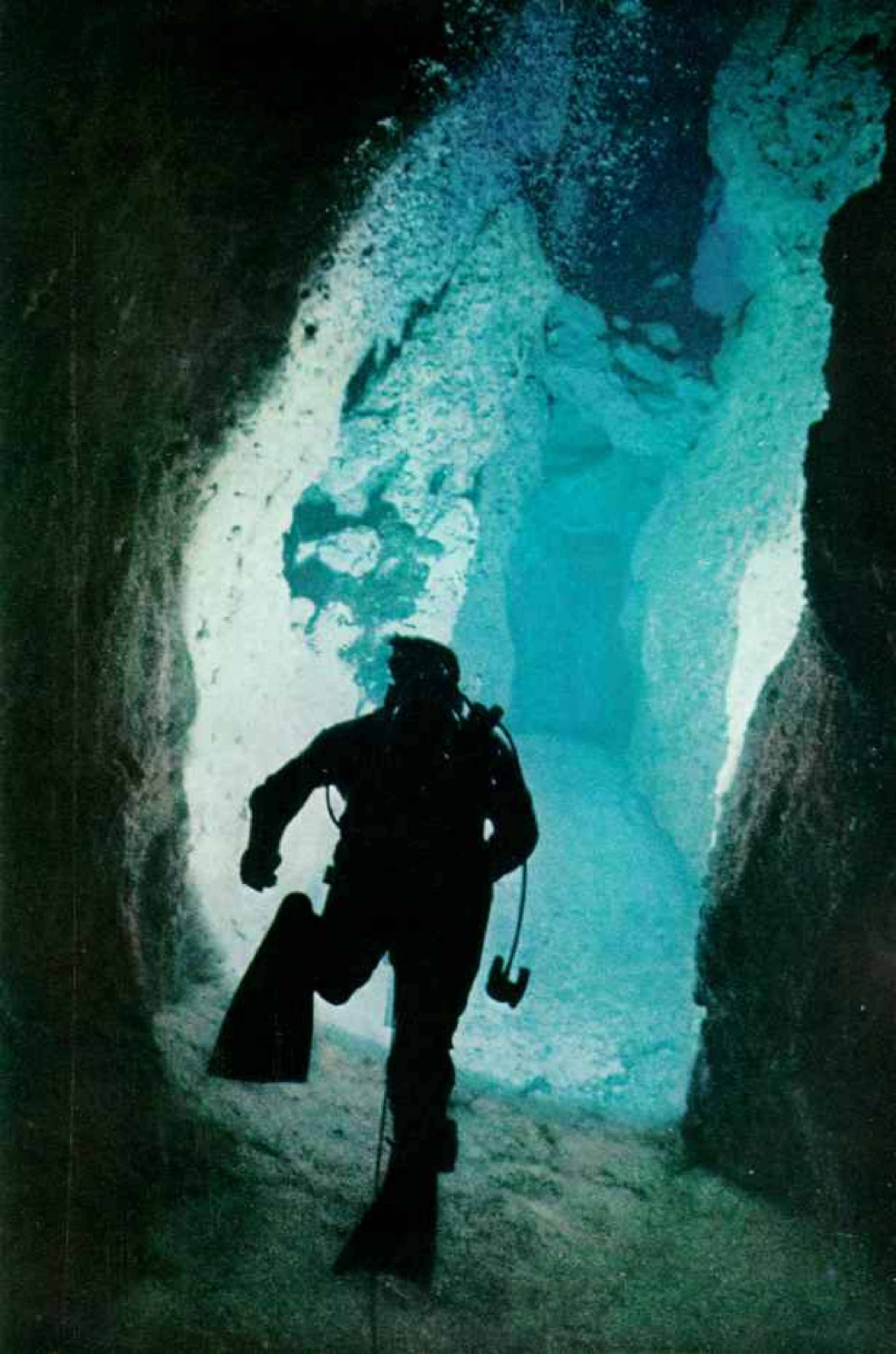
Neptune's gardens

BRILLIANT MAGENTA in deepwater gloom 270 feet down the Wall, a gorgonian (left) spreads polyp-lined branches. Many invertebrates that live in caves and along the Wall display such bright colors. Pleated tube sponge (below) carries a sky-blue fringe. Lavender tube sponges (bottom) stand in 12-inch pillars; yellow membranes expel water admitted through tiny holes along the tubes' sides.



PHOTOGRAPHS BY GEORGE J. BENJAMIN, JR., © N.C.S.





Like a closed gate, a rockfall 150 feet into a side tunnel at the bottom of a 200-foot-deep blue hole blocks exploration by diver Heinz Bolliger. "We believe this cave might go on for miles," says the author.

In a cave's blackness, a nurse shark swoops by, a hitchhiking remora riding its back. Although capable of a savage bite if aroused, this six-foot visitor did not harm the team.



PHOTOGRAPH BY GEORGE J. BENJAMIN (C) N.G.S.

gone before—all are part of the appeal to me of the blue holes.

On occasion we have literally run into that arch-enemy of divers, the shark.* The textbooks tell us that nurse sharks, the only species we have seen in the caves so far, are not dangerous unless provoked, and I can only say that I hope all of them know it. A drooping barbel beside each nostril makes these sharks look like huge catfish, six to ten feet long. We usually find them lying under a rock ledge or on a sandbank, and if we do not disturb them, they do not bother us.

Melee With Two Trapped Sharks

Once I took part in a two-shark circus in a blue hole in Conch Bay. Three divers were with me—Archie Forfar, Heinz Bolliger (a Swiss friend), and my son George. To photograph a vast chamber with three synchronized flashes, I assigned each man a lamp, all connected by cables to my camera. This sounds simple, but things do not usually work out that simply under water. Still, everything was working well when we entered the big room 80 feet down. The other divers were swimming some 20 feet ahead of me.

Suddenly two sharks appeared in the glow

*See "Sharks: Wolves of the Sea," by Nathaniel T. Kennedy, NATIONAL GEOGRAPHIC, February 1968.

of our floodlights. Both were about six feet long. They swam excitedly toward us, then turned sharply and darted back to the far end of the chamber. We could feel the swirls stirred by their powerful tails. They must have felt trapped between the advancing lights and the far end of the cave.

At last one got up its courage and made a dash past the first diver, but as soon as it saw me, the shark shot straight back toward my assistants. The next moment all I could see was a roil of brown silt from which lashed cables, arms, legs, and a shark's tail.

What a picture! I pressed the button, but nothing happened. The cables had tangled, and the connection to the flash lamps was broken. We did not wait to see if the sharks would reappear, but swam quickly to the surface. Fortunately, when I developed the film I found that Heinz had been so close with the floodlight (he was actually pushing the shark with it) that I got an acceptable photograph, even without the flash (above).

There may be other dangers. Perhaps in some dark corner of an unexplored hole lurks a lusca, waiting to shoot one of his "bahnds" at intruding divers. In all our dives into the blue holes of Andros Island, we have yet to meet a lusca. I, for one, should like to postpone that pleasure indefinitely. THE END



Our Life on a Border Kibbutz

By CAROL AND AL ABRAMS

Photographs by AL ABRAMS

“CHICKEN COOPS,” I groan, deciphering the unfamiliar Hebrew lettering on the daily kibbutz work list. Slowly my finger retraces the line from my name to tomorrow’s job assignment. There is no mistake.

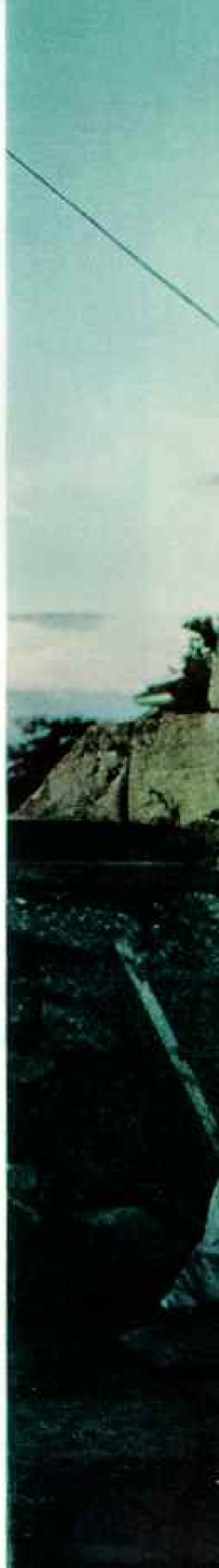
My wife Carol laughs. “Don’t forget your boots. You won’t be collecting eggs!”

We leave the clatter and conversation of the community dining room. Outside, the lights of the old town of Tiberias glitter across Lake Kinneret, the Biblical Sea of Galilee. “*Shalom, erev tov,*” sounds a familiar voice. We greet Giora with the same words: “Peace, good evening.”

Giora and his wife Mia, both 26, have taken us under their wings at Kibbutz Ha On; we have been good friends since our first visit to Israel. Tonight, he tells us, a guest

BARBED WIRE AND CONCRETE BUNKERS safeguard the inhabitants of Kibbutz Ha On, a communal farm settlement near Israel’s uneasy frontier with Jordan and Syria. The authors journeyed from Arizona to spend a year here—not to taste war but to share a way of life.

Ha On—pronounced hah OWN—means “strength,” a quality found in abundance among kibbutz dwellers like the two youngsters (right), emerging from their concrete shelter after a night of artillery bombardment.





speaker will lecture on East African nations. Regretfully, we decide to work on our Hebrew vocabulary. Having joined the *ulpan*—an intensive language course—three weeks late, we now must scratch to catch up.

Carol and I had first come to Ha On after the six-day war in June 1967, curious about kibbutz life.* We soon found ourselves caught up by the country's vitality, its dynamic people, and this idealistic communal life. After four months, we returned almost reluctantly to my photographic studio in Phoenix.

Home in Arizona, we grew increasingly apprehensive over the mounting military

*See "Eyewitness to War in the Holy Land," by Charles Harbutt, NATIONAL GEOGRAPHIC, December 1967.

activity in the Jordan Valley. Our hearts were still there. Finally, Carol voiced our thoughts, "If we're so concerned, we should be there." In January 1969, we went back.

A kibbutz—it means "group" in Hebrew—is a communal farm. Its men and women believe that through their shared labor they will enjoy a better way of life. The first kibbutz, Deganya—only a few miles from Ha On—was formed in 1909. Today, more than 235 kibbutzim, ranging in population from 60 to 2,000, dot Israel's landscape.

Like Carol and me, many visitors at first find it hard to understand the concept of working without pay. It soon becomes clear that the individual does indeed profit from



SMOKE BILLOWS from summer-parched fields near Ha On as fragments from enemy anti-aircraft fire set vegetation ablaze. Target of the Arab guns: a squadron of Israeli jets screaming



his labor, receiving food, shelter, clothing, security, and amenities.

Sabras, as native-born Israelis are called, comprise half of Ha On's 85 adult members; the rest come from a dozen countries on four continents. Average age: 26. Another half dozen men and women are serving a probationary year as candidates for membership. About eighty children enliven the kibbutz. And nearly thirty transient foreign volunteers like us, representing 18 countries, have come here to taste kibbutz life; some of us are Jewish, but most are not.

At Ha On, and some other kibbutzim, volunteer workers have the opportunity to learn Hebrew. Carol is quizzing me on verb endings

when someone knocks on the door of our tiny room in the tourist compound. Mau, the athletic young chief mechanic who also serves as liaison for the volunteers, has dropped in to chat (page 371).

As he leaves, he warns us calmly—almost as an afterthought, "We're expecting some activity again this evening. Don't waste any time getting to cover."

Soon the first artillery rounds wing in and explode in our fields. We spend several hours in the cramped underground shelter, trading jokes with other volunteers. The ground shakes as gunners in Jordan, less than five miles away, shower Ha On with Russian-made 122-mm shells. They crater our fields,

high above during a strike on Jordanian positions. Kibbutz workers take time out to watch the action. Spreading flames soon drove them from the area. Iron plating armors their tractor against terrorist-planted land mines. Maps (left) fix Ha On's position on the Sea of Galilee, called Lake Kinneret by the Israelis:

ILLUSTRATION BY AL HARARI © R.S.A.



On the doorstep of a war

OF HA ON'S adult members, about half are native-born Israelis, called sabras, the Hebrew name for a cactus fruit—tough and prickly on the outside, tender and sweet on the inside. Few sabras come any tougher—or more tender to newcomers—like the Abrams—than Giora Markevich (below), standing beside his tractor in an alfalfa field below the Golan Heights.

Prior to June 1967, Syrian gunners on these heights continually harassed farmers along the 45-mile frontier below. Panorama (right) looks down from one of their old emplacements, giving a gunner's-eye view of Ha On, Lake Kinneret, and the hills of Galilee.

One Syrian attack in early 1967 caught Giora working in this same alfalfa field. Barely escaping, he dashed for help. Israeli army defenders hauled out their guns and answered the Syrians in kind. Action escalated into a major air battle on April 7, which saw six Syrian MIG's blasted out of the skies. These episodes figured importantly in the chain of events that exploded two months later into the six-day war.

Now Israel occupies the Golan Heights, where new kibbutzim sprout amid the old Syrian gun bunkers.



PHOTOGRAPH BY N.S.C.

MICROCOSM OF ISRAELI AGRICULTURE, Ha On's 750 acres hug Lake Kinneret's southeastern shore, nearly 700 feet below sea level. Citrus orchards, left, rise not far from alfalfa, grapes, and bananas, center. At right, beyond the living compound, a date grove nestles by one of the fishponds.







PICKED GREEN FOR EXPORT, a hefty stem of bananas rides feather-light on the broad shoulder of Moshe, who survived Nazi Europe to become one of Ha On's founders in 1949. With smiles, songs, and sweat, he and fellow laborers transformed the kibbutz

but damage is slight; Ha On, I recall reassuringly, means "strength." It is 1 a.m. when we get the all clear and go to bed.

At 5:30, one of the night guards, submachine gun slung over his shoulder, wakes us for work. Half asleep, I stumble through the chilly predawn darkness to the dining room. Other men sit there, drinking coffee, talking, waking up. At 6, we shuffle out to the day's labors. As we leave, girls begin setting the tables for breakfast, still two hours away.

I fall in with Kish, the lean, energetic chief

of the chickens (opposite, upper), and Chaim. He and a few other soldiers will be helping out for the next few months as part of the three years' active duty all Israeli men must serve. (Women are called up for only 20 months.) Ha On raises thousands of chickens for eggs. This morning, Chaim and I will clean one of the coops.

Carol's job is to look after volunteers' clothing, laundry, and purchase requests. For a few months, as members of the language course, we will work only half the kibbutz's



FINE POINTS of a chickenhouse resident are discussed by a kibbutz preschooler and Kish, Ha On's poultry manager.



KIDDACHROME (LEFT) AND CRYSTALHOMES BY AL ABRAMS © N.A.A.

A WAY WITH MACHINES keeps bachelor Mau busy in one of Ha On's shops. He doesn't count the hours; he feels that by working for the kibbutz he also works for himself.

from a fledgling tent-and-orange-crate settlement to the thriving community of today.

eight-hour day. At 10:30, I shower and change, and we join our 20 fellow students.

We arrive a little early. I compare lesson notes with Clive, a physicist from South Africa. Carol talks with Gunvor, an auburn-haired Norwegian nurse. Steve, a balding, bearded New York advertising man, laughs with Katie, an English medical secretary; within a year they will marry. Woube, an Ethiopian, studies a farm manual. And then Dubba, our teacher, strides in and takes command of us all.

Dubba is a soldier—a 21-year-old girl serving part of her required tour of duty here as a member of Chaim's group. Her confidence, spirit, and enthusiasm typify the native Israeli. During class, she speaks only Hebrew, a difficult language, grammatically intricate. Slowly, with the aid of illustrations and patient repetition, form emerges from chaos. We begin to communicate.

We finish class at 2:30 and return to our room, locking horns with our homework. I have never been a good student; fortunately,

I have married one. A little after 4, we put aside our books to call on Mia and Giora.

Ha On nestles nearly 700 feet below sea level on Lake Kinneret's sloping southeast shore (map, page 366).^{*} To the east we see looming above us the steep escarpment of the Golan Heights. The village fronts on the lake; fields enfold it on three sides (pages 368-9). On the south spread grapefruit and lemon orchards; bananas, grapes, and alfalfa grow along the east; date groves and fishponds occupy the north.

The rectangular kibbutz stretches over 750 acres. But it takes Carol and me only a few minutes to stroll across the living area. The winding walk leads beneath tall cypress and eucalyptus trees and date palms nodding in the breeze. Trim, one-story, four-unit apartment buildings rest serenely on the greensward. No streets intrude here, no cars. Only walks and baby buggies.

"How lovely," says Carol, with a woman's eye for flowering shrubs and well-tended gardens. "It's like a park."

"Better," I reply. "We live in the middle of it."

But our quarters belie their pleasant appearance. They are made of rugged reinforced concrete to withstand rockets and shells. And trenches snake through our "park," leading to the shelters.

Children Live Apart From Parents . . .

The children have finished napping. We greet friends who are returning with their offspring from the houses where youngsters live together, quartered according to age.

This system of child care evolved both from the need to free women for a day's work and from the emphasis on the group rather than on the family. A new mother cares for her baby at home for the first six weeks. After that, as she gradually spends more time at work, the child sleeps in the infants'

^{*}See, in NATIONAL GEOGRAPHIC: "Where Jesus Walked," by Howard LaFay, December 1967; and "The Land of Galilee," by Kenneth MacLeish, December 1965.

house, watched over by an experienced nurse.

Later, the child joins toddlers of his own age; in groups of four or five, they take their first steps in communal living. Under the constant supervision of a nursemaid, they live together day and night and share everything, even common bedrooms and bath (opposite).

. . . But a Family Is Still a Family

Just ahead of us, Mira, a native of Morocco, pushes her infant daughter in a stroller. A nursemaid, she also serves as chairman of the education committee.

We join her, and Carol asks, "Do you think this system is good for children?"

A quiet, thoughtful young woman, Mira glances at her baby. "For our way of life, yes," she answers. "Our children grow up community-minded and free of apron strings. But they aren't alienated from their parents. They will never mistake the nurse for their mother." She points to the playground, where children and grownups are romping. "Throughout the day they are together often."

They see one another after breakfast, and the children might visit their *abba* (father) in the fields, or *imma* (mother) in the kitchen. Family and social affairs occupy the hours from 4 until bedtime. And there is always time for a story and a goodnight.

At a number of kibbutzim, however, children have always slept at home. Reflecting a trend toward a more family-oriented community, Ha On may soon consider a proposal to bring youngsters home at night, while retaining the daytime program.

Our friends Mia and Giora have not been expecting us, but neither are they surprised when we arrive. Invitations aren't necessary.

A sabra from a small town north of Tel Aviv, Giora Markevich is intelligent, open, and honest as sunshine (page 368). This born farmer revels in his work, his family, and life on the kibbutz. Raven-haired Mia was born and raised in Copenhagen. Trained as a horticulturist, she went to Israel for a

JUNIOR KIBBUTZNIKS clean up for the Friday evening meal. From infancy, they live, eat, and sleep among others of their own age. Children visit parents daily, forming warm family bonds, but "home" to them means the entire kibbutz, not just their parents' apartment or their own dormitory. At Ha On, sexes are commonly separated at 10 years of age. Young people of the same kibbutz rarely marry. As one resident remarked to the authors, "When you've brushed your teeth and washed your socks with someone since childhood, romance tends to drift elsewhere."



year of volunteer service, and met Giora. They were married in 1965, and have lived at Kibbutz Ha-On ever since.

"I wouldn't trade our life," declares Mia. "We're not concerned about appearances, status, or material things. To be a kibbutznik requires an intellectual decision. The individual must feel that he can realize himself best by submerging himself in the community."

As she speaks, her husband's eyes roam the Golan Heights' forbidding rim. "There's something else," Giora says. "On a border kibbutz like this, we're vital to Israel's defense. It gives us great satisfaction."

Nibbling sunflower seeds—an Israeli snack—we watch the sun slip behind the hills that come steeply down to the Sea of Galilee. At 7, Mia leaves to put her two-year-old son Lee-or

to bed. When she returns, we all walk to the dining room for supper.

Communal cooking in Israel, I am afraid, will never excite the gourmet. But the meals—wheeled to the tables on stainless steel trolleys—are balanced and filling.

A regular staff prepares the food; a semi-permanent crew sets and clears the tables and washes dishes. Evenings and weekends, everyone takes his turn at kitchen police. Even kibbutzniks elected to parliament may return home between sessions and find themselves scraping pots and pans.

The big midday dinner usually offers hot soup, salad, and cooked vegetables—with a main course that may consist of fish heads, chicken hearts, or turkey processed into schnitzel or cold cuts.



STROMBERG/REUTERS

LIGHTING OF CANDLES precedes the Sabbath dinner in Ha-On's dining hall. To suit kibbutz routine, the day of rest begins with the end of the work period on Friday instead of at sundown, as orthodox custom decrees. Orthodoxy, in fact, holds little sway at Ha-On. The Sabbath and holy days are observed as social and cultural rather than religious events. The kibbutz has no synagogue, resident rabbi, or formal services, and no hard-and-fast dietary restrictions.

ACCENT ON YOUTH: With an average age of 26 among the adults, evenings at Ha-On often pulse with lively rhythms. After supper, members push aside tables and chairs to make room for dancing (right), travel lectures, or—most popular of all—movies. Among these *kaverim* (friends), common ideals, shared toil, and ever-present dangers forge an intense oneness of spirit.



If I close my eyes, I am hard put to tell supper from breakfast. The morning's fried eggs have been replaced by soft- or hard-boiled eggs; otherwise, the menu features the usual raw vegetables, yogurt, soft cheese, salt herring, bread, jam, and tea. Special diets are provided for expectant mothers and our dozen or so vegetarians.

Much kibbutz activity centers in the dining room (below). During the week it may offer a lecturer, a flower-arranging demonstration, or dancing. Motion pictures, a passion with Israelis, attract capacity audiences at least once, and often twice, a week. One night as the film begins, Arab artillery whistles in. Everyone dashes for the shelters.

"No movie tonight," I remark self-assuredly to Carol as the hours pass. But I am wrong.

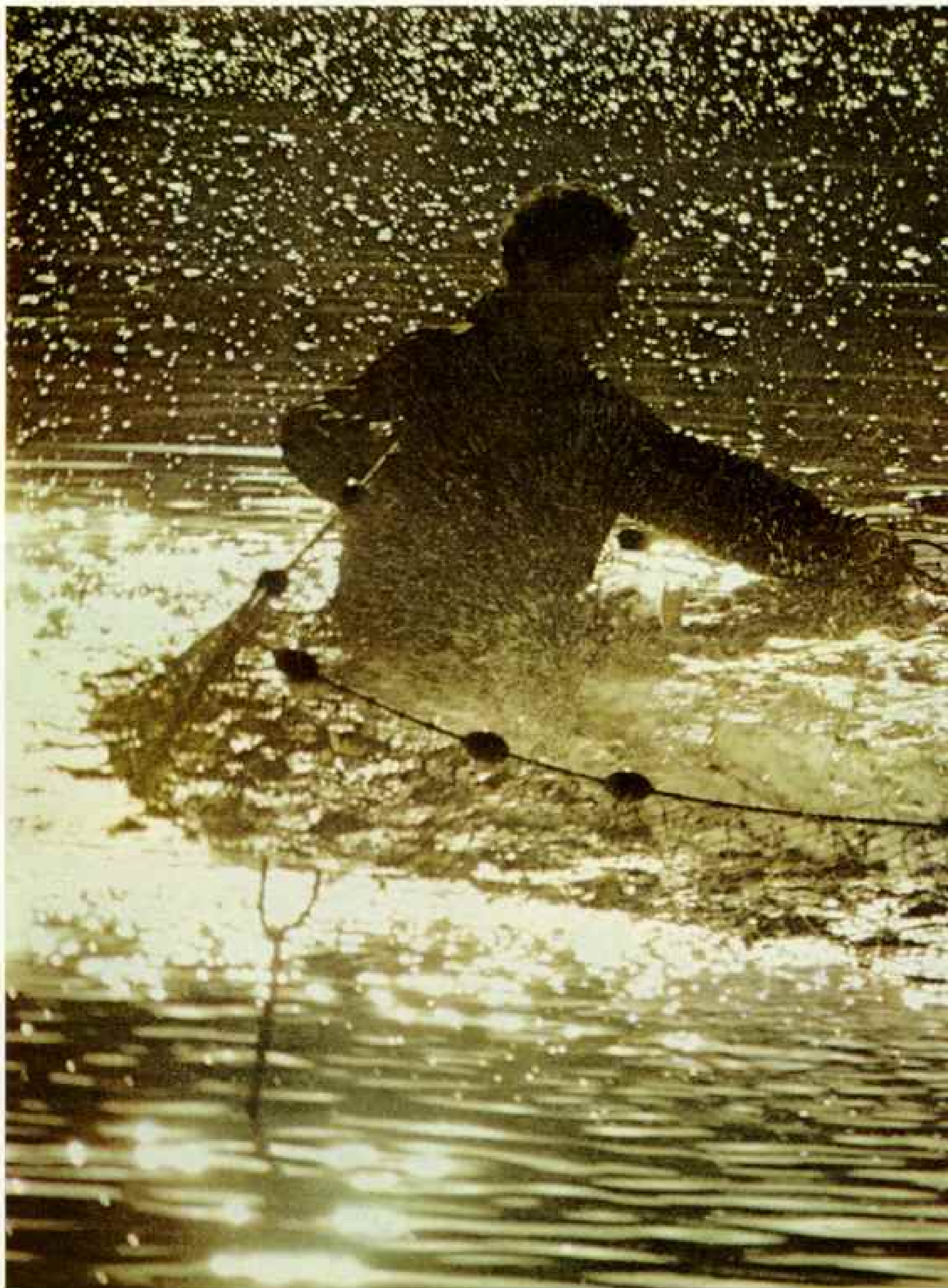
When the barrage finally ends, we trudge wearily to bed. Not the other kibbutzniks, though. Enthusiastically, they flock back to the dining hall, determined to see the film. It is nearly 2 a.m.

First Kibbutz Took Root in a Swamp

Over coffee one afternoon, we learn from Amosy, Ha On's secretary, the fascinating story of the kibbutzim.

"They grew," he says reflectively, "from the determination of men and women who fled Tsarist oppression in Russia after the turn of the century and came here looking for a new life. Although many disavowed God and ritual Judaism, these pioneers nonetheless remained deeply rooted in Jewish history and ideals. They were convinced that only by





SEQUINS OF MORNING SUNLIGHT spangle one of Ha On's fish-breeding ponds, where two workers net a frothing catch of carp and Galilean comb. Winches lift the bulging nets onto a tank truck for transfer of the fish to holding ponds and eventual sale in Tel Aviv and other Israeli markets. Water pumped from



STYLING BY AL ABRAMS © N.S.E.

Lake Kinneret replenishes the pond, which has been drained to waist level for the netting operation. During spring and fall, hundreds of migratory birds—storks, cormorants, kingfishers, and others—make stopovers to feed on Ha On's teeming ponds, transforming them into fascinating aviaries.



returning to the soil would they as Jews shed the accumulated grime of centuries as wanderers and then, through the purification of hard physical labor, rebuild themselves and the land."

He pauses to sip his coffee, a young historian at ease with a subject dear to him. Sixty years ago, he goes on, a dozen pioneering men and women were offered some malarial swampland, treeless, mosquito ridden. They could farm it any way they chose—if it could be farmed at all.

Amossy continues: "They decided to live

as a family, sharing work and responsibilities, pooling their earnings. The women would have full equality. No man would be master over another. All would live following the socialist ideal—"From each according to his ability, to each according to his needs." And they drained the swamps and cultivated the land. In time, they prospered. Others came to join them—some to stay, some to learn and leave, forming similar villages."

As we stand, preparing to go, Amossy says with satisfaction, "Kibbutzniks have never been more than a fraction of Israel's



ARTICHOKE (RIGHT) AND ARTICHOKE © W.E.E.

SABBATH MORNING rings with laughter and children's squeals as grandparents from another kibbutz visit one of Ha On's families. The simple but pleasant dwelling, made of reinforced concrete to resist artillery poundings, stands in a park of trees, grass, and shrubs, unmarked by roads.

DEEP PERSONAL PRIDE in performing her share of communal chores lightens dishwashing for co-author Carol Abrams. The pioneering spirit runs strong in her veins, for her family settled on America's frontiers in the 1600's.

population, but we've produced many of our country's leaders, artists, soldiers, and scientists. These settlements have been a vital force in Israel's rebirth and growth, just as those early visionaries foresaw."

Carol and I return to our room. Ha On, I reflect, is a relatively young kibbutz, only 20 years old, but it illustrates the tradition. Its settlers arrived here out of the nightmare horrors of Nazi Europe, British detention camps, and Israel's war of independence. They lived in tents, while with songs and sweat they made this thorny land bloom.

I look at my own sore hands. All week I have wrested stones from newly cultivated fields. Ha On is still building.

Richest Crop Requires Hardest Work

Most kibbutz members have steady jobs. Sheffy manages the citrus orchards, Rammy the fishponds, Mau and Amnon the garage. The work co-ordinator juggles the rest of the labor force daily, as needed. Every few months he gladly relinquishes his thankless position to another work-committee member.

I shuttle everywhere—irrigation ditch to cornfield to fishpond: hard work, without glamour. Still, the air is fresh, my hands are busy, and my mind is free. Only one job do I find entirely disagreeable.

After the harvest, banana groves must be cleared



of the year's debris, and the old useless stalks removed. New plants, already coming up, require access to sun and water.

We work with steel-handled pitchforks, using them as rakes. My hands ache and blister as the tines transmit each shock when they strike a hidden stone. A hot, dusty job, this, and the air hangs still and humid within the dense foliage. The task takes at least two months. Everyone roundly curses each banana plant—and there are more than 80,000 of them.

Yet one soon forgets. March eases into April, and before long the wild flowers reach their peak. Carol and I are accustomed to extravagant spring floral displays on the desert surrounding our home in Phoenix. But Galilee's spectacular show leaves us openmouthed. We have never seen anything to compare with the brilliant mosaic created by these myriad sunflowers, narcissi, cyclamens, anemones, irises, and others.*

We Make Our House a Home

April brings the festival of Passover, too, and, as part of the holiday week, nearby Kibbutz En Gev presents its annual spring music festival. Internationally known popular and symphonic groups perform, attracting thousands from all over Israel.

One night, returning from a concert, Giora asks Carol and me, "Would you like to move into a kibbutz apartment? It will be larger and more convenient than your room."

Soon we are enjoying the luxury of our own shower. Besides the bathroom, our new quarters contain a bedroom, living room, a sink and snack-preparation area, porch, and storage closets. Since we are only volunteers, our apartment is unfurnished. I scrounge a discarded bookcase, a cot for a sofa, a shell casing for a wastebasket, and gradually our new house begins to resemble a home.

*Paintings of Galilee's flowers by Bertha Spafford Vester, long-time resident of the Holy Land, were reproduced with her article, "Jerusalem, My Home," in NATIONAL GEOGRAPHIC, December 1964.

CRAMPED BUT SAFE, kibbutzniks wait out a shelling that interrupted the Friday evening meal. When the alarm sounded, they walked briskly but without panic to the underground shelters. Wall bunks can be pulled down for all-night sieges. Women somehow find the tedium of shelter living more bearable than men, who often stay topside—against the rules—to watch the fireworks.

Everyone eagerly anticipates May 14, the twenty-first anniversary of Israel's independence. The fireworks begin prematurely with daytime Arab artillery attacks.

Ignoring warnings, we volunteers stand on a shelter to watch. Shells are crashing on the top and sides of the Golan Heights, the closest perhaps 400 yards away. We are admiring the display when—suddenly—a near hit! Jagged shards of hot steel hail around us. We scramble into the shelters before the last piece hits the ground.

We are lucky. On the Golan Heights a soldier is killed, an officer seriously wounded.

Undaunted, Ha On resumes preparations for the celebration. Up go the flags, Israel's



blue-and-white ensigns, fluttering proudly on the warm breezes. Men pitch colorful tents on the grass for carnival games. Yoki Tellem and her culture committee spend days making decorations for the dining room.

At supper the festive room resounds with high spirits, and the meal ends with lively singing. Outside, everyone tries his skill at games, although no one gambles. Many kibbutzniks resemble Puritans; they neither wager nor, as a rule, take more than one drink of anything stronger than wine.

When night falls, the children step off in a torchlight parade, and then we all watch sky-rockets. After the youngsters go to bed, the members, guests, and volunteer workers feast

at a steak fry and dance until the stars dim.

Next day, contests fill the afternoon: a women's volleyball game, sack and wheelbarrow races, team stacking of baled hay. The crowd cheers the events lustily, all the while munching corn on the cob and quaffing the ubiquitous orange soda pop.

Stifling *Sharav* Ushers in Summer

The days have been growing steadily warmer, and now a glaring atmospheric haze settles in. It will hang on until fall. Late in May we experience our first *sharav*, a mass of oven-hot air that moves in from Saudi Arabia through Jordan. It lasts five miserable, brain-cooking days. When it finally dissipates,

BYRON HARRIS © NATIONAL GEOGRAPHIC SOCIETY



spring vanishes with it. The glorious blankets of wild flowers disappear, leaving a dreary expanse of sere, tinder-dry weeds and thorns. Summer is here.

Carol plans a birthday party for me, my thirty-third. But I am apprehensive. "Our guests will see this as just so much nonsense." To my surprise, friends greet me throughout the day with the Hebrew equivalent of "happy birthday," and we enjoy an evening of good-humored companionship.

Compared to Ha On's members, my wife and I are strongly religious. To most kibbutzniks, the Bible is pure history. Israelis consider it the written and recorded deed to the country. Though a number of successful orthodox kibbutzim exist, most are secular, and many atheistic, avoiding any manifestation of religion.

Sabbath With a Difference Marks Ha On

At Ha On, however, a number of trappings still cling. Abraham's covenant with God to circumcise all male children on the eighth day after birth is universal in Jewish life and survives intact. The bar mitzvah, though, at which boys are initiated into the adult religious community at 13, here includes girls, and bears little resemblance to the customary prayerful ceremony.

Perhaps the *Shabbat*—or Sabbath—dinner best exemplifies Ha On's approach to Jewish life. This special Friday evening meal, welcoming the Saturday Sabbath, appears almost orthodox at first glance. White cloths grace banquet tables set with sweet wine and *challa*, the traditional yellow egg bread.

The differences begin with the candle lighting just before the meal at 8 o'clock (page 374), instead of at sundown. Only a short blessing follows, and the meal offers both meat and milk products instead of one or the other.

These kibbutzniks contend that the Sabbath was made for man, not man for the Sabbath. Thus they spend the day in family fun and relaxation rather than in prayer and study (pages 378-9).

If religious practice sometimes confuses us, kibbutz structure and organization is an open book. Self-governing, stoutly democratic, the kibbutz sets its own course at the weekly general meeting (page 385).

Routine or not, when a matter of principle is involved, the debate may sound beyond the meeting room walls. One night Solomon, the solidly built director of the banana operation, argues for a television set to be installed in our new clubhouse.

Petite Ayala, mother of three, secretary of the school, drops her knitting. "No, no!" she protests vehemently. "It will dominate the room. How can we talk and enjoy one another's company?"

Others speak up. Discussion heats. Voices grow louder. Arms wave. At last it goes to the vote. On a show of hands, members keep the TV out of the clubhouse.

The principle involved here? TV is an individual affair. The group—togetherness—takes precedence.

(Continued on page 387)



THUNDER OF ARAB GUNS booms during this wedding at a neighboring kibbutz—one of three nuptial ceremonies held the same evening. Local kibbutzim often "save up" several



EXTRASHOW BY AL ABRAMS © N.Y.C.

weddings for a single grand occasion. Beneath a canopy symbolizing Heaven, these young people—immigrants from Argentina—listen to the reading of the marriage contract. Marriage by rabbi is obligatory, since there are no civil ceremonies in Israel. At the end of the brief rite, cheers and laughter drown out the sound of enemy artillery. With typical kibbutz informality, the wedding takes place on an outdoor basketball court.



HONING MILITARY SKILLS, kibbutzniks pause from workaday chores for a refresher course on light machine guns (below).

Dov, assigned to night guard duty (left), takes a coffee break, his Israeli-made UZI submachine gun ready for action; walkie-talkie connects him with other guards and nearby army units.

The way of life these men are willing to die for is shaped in the crucible of the general meeting (right), where members thrash out the issues, principles, and aspirations of kibbutz life.

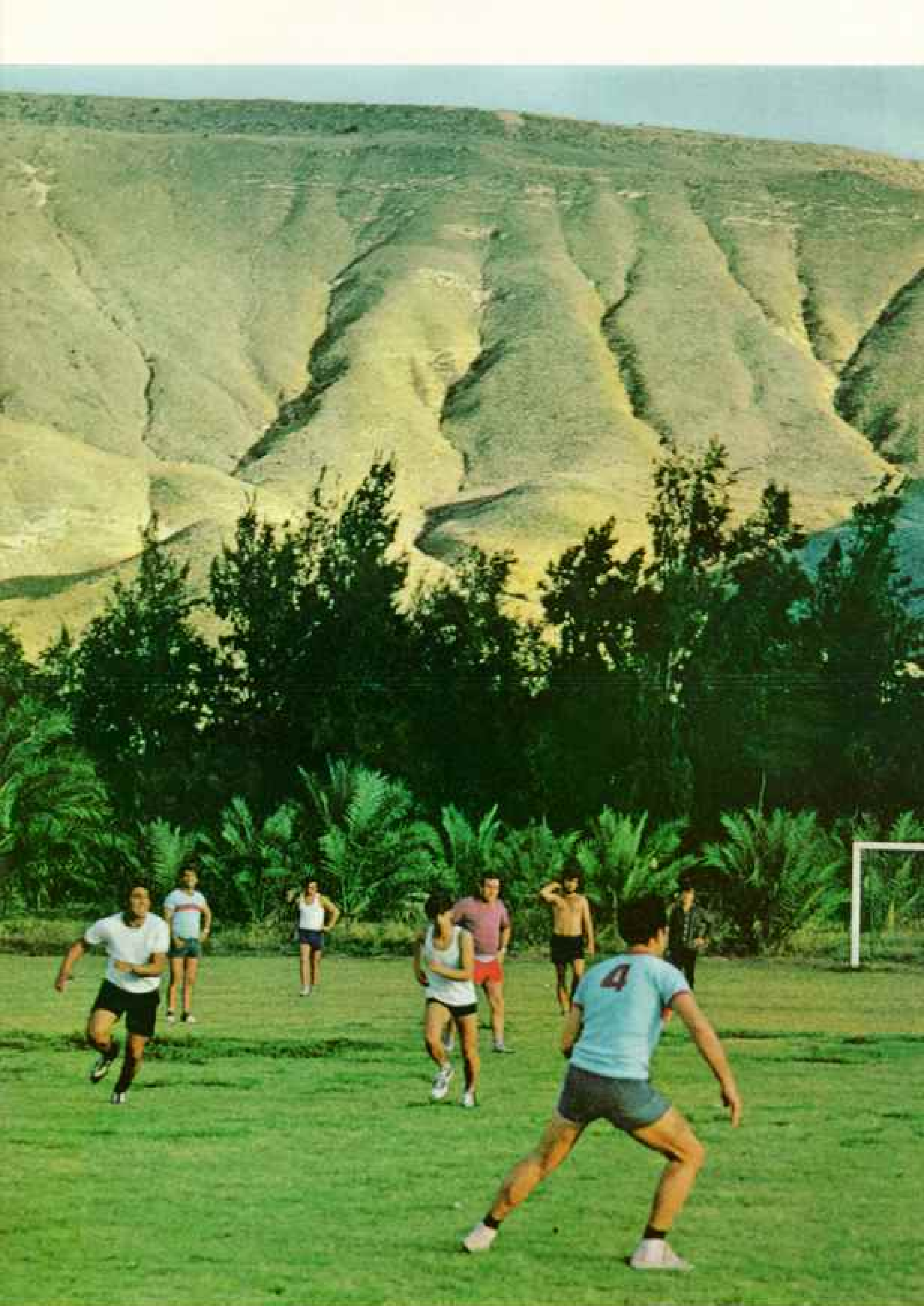
"... every one with one of his hands wrought in the work, and with the other hand held a weapon."
(NEHEMIAH 4:17)





KODACHROME (BELOW) AND ESTACHODROME (R) NATIONAL GEOGRAPHIC SOCIETY







REINHOLD © S.L.L.

A network of annually elected committees—housing, education, work, and others—carries out policy decisions. A full-time secretary, treasurer, and farm manager are elected for a single two- or three-year term. Since these offices are filled, in a sense, by amateurs, some inefficiency remains inherent. This is far preferable, the kibbutz members feel, to the creation of a “ruling class,” or nonparticipation by the members.

An elite, it occurs to me, couldn't function successfully here . . . not when everyone must arise at 3:30 a.m., as summer arrives, to make the most of the cooler morning hours. We stay in the fields straight through until breakfast at 8.

Grapes for Jerusalem and London

In early June, Putsy, Ha On's personable master of the grapes, determines that it is time to begin cutting. Everyone lends a hand—man, woman, and child—riding to the vineyards on tractor-pulled trailers. Volunteers receive instructions and clippers. Because these are table grapes, they must be handled with particular care. At Ha On, we take only those clusters at the peak of ripeness; if we're unsure, we taste one grape from the bottom of the bunch.

We harvest the fruit at its highest moisture content, early in the morning, and pack it at a shed in the field. Ha On's early-maturing grapes enjoy an excellent market, appearing on Jerusalem tables the same day they are cut, and in London the following morning.

The work is drudgery. Even at 3:30 a.m., the heat weighs on us. At 5, the brassy sun tops the Golan's rim, signaling us to tune our transistors to the Voice of America news in English. And almost every morning, just after the news, heavy machine guns clatter and mortars whoomp as Israeli border police shoot it out with terrorists across the Yarmuk River. The war really is only so much noise to us. But we know people may be dying.

The summer workday ends with the noon meal, and the members take naps. This year they are newly blessed with air conditioning,

STILL BRIMMING WITH ENERGY after a hard day's labor, Ha On's avid athletes spring into a lively game of soccer. Other spare-time pursuits: water-skiing, horseback riding, individual hobbies, and sleuthing for ancient artifacts in the history-rich area in and around the kibbutz.

a luxury in Israel. Volunteer quarters are not air conditioned, and, unaccustomed to the siesta, we lounge on the beach or go horse-back riding. At the five-o'clock snack, hot tea, cheese, and sardines are replaced by cold coffee, watermelon, and corn on the cob.

On Saturdays, Carol and I water-ski or sail on Lake Kinneret, forgetting the 100-degree-plus temperature. We remember it at night. Concrete walls have soaked up the heat all day; now they radiate it back. Our fan whirs continuously, but sleep comes slowly.

Kibbutz life has other rough spots. The different ways of doing things, the inefficiencies, the language barrier—these often infuriate and frustrate newcomers. Patience and understanding are not merely virtues for the immigrant; they are obligatory.

Ha On is eager for new members, and they do fit in comfortably. A French couple, Jeano and Freddie, complete their year's candidacy while we are here, and the members vote them in unanimously. They are young but mature, willing workers, good natured, and—most important—they understand and believe in this way of life.

Even the most dedicated member may not

find Utopia at the kibbutz. As in any small community, personal differences and lack of privacy can produce dissatisfaction.

For the men, working outdoors and sharing the camaraderie of the fields, things go a little easier than for the women. Ironing, sewing on buttons, cooking a hundred lunches day after day, a woman might grow weary. For some of them idealism pales and the city's bright lights, seen from the mud of the farm, glow irresistibly. Only three families, however, have quit Ha On for city life. And two have come back, convinced the kibbutz was still best for them.

Work Load Alters With the Season

In mid-August the community lies in the doldrums. Little field work needs doing, and everyone tires a little of looking at one another. Most of the foreign volunteers have gone, and we ourselves leave for a month's wandering about the country.

We return in September for Rosh Hashana (New Year's Day) and Yom Kippur (Day of Atonement), the year's most solemn holidays for religious Jews. The kibbutz celebrates the New Year with a kite contest. Yom Kippur goes unrecognized except for a few of us who observe the rigid fast.

The farm cycle turns another notch, to the heavily laden date palms. Clusters, some weighing more than a hundred pounds, yield to handsaws (right). We separate the sticky dates from the stems, tediously sorting them one by one.

I admire the cheerfully indefatigable Matty, who directs the harvest. He seems to be in six places at once, ignoring the heat and vicious flies. "Just look at these dates," he says proudly, popping one into his mouth. "Really



STRENGTH FOR PERFECTION—a hallmark of kibbutz life and work—starts early. This schoolgirl keeps records of the growth rate of chrysanthemums raised under differing conditions. Adults attend government-sponsored classes to learn the most up-to-date agricultural methods.

Improvement pays off in such high-quality products as Ha On's dates, carefully tended through the steaming summer months until harvested at the peak of sweetness in mid-October (right).

STRUGGLE FOR PERFECTION—a hallmark of kibbutz life and work—starts early. This schoolgirl keeps records of the growth rate of chrysanthemums raised under differing conditions. Adults attend government-sponsored classes to learn the most up-to-date agricultural methods.



OLD FRIENDS AND NEW gather in the Abrams' kibbutz apartment on the occasion of the couple's fifth wedding anniversary—a celebration made doubly memorable by the arrival from Phoenix of Rabbi Moshe Tutnauer, who married them in 1964. Carol Abrams sits between him and her husband Al, here giving her a piece of anniversary cake. Soon after, the Abrams left Ha On to return to the States, feeling, they say, as if they had left behind a part of themselves.

top quality. Arab merchants from Israeli-occupied towns in Jordan now buy them at our co-op for their own markets!"

As autumn ends, the dates and grapefruit are in, and the bananas gradually claim priority on our labor (pages 370-71). The work is heavy and hard, complicated by winter rains. But this is Ha On's most important crop, and so the banana harvest progresses in high spirits through the end of March.

War keeps its claim on our attention. The army has ordered kibbutzim in the Jordan Valley to strengthen their defenses for the coming summer. At Ha On, prefabricated guard towers rise in strategic locations, brilliant floodlights encircle us, excavations for new shelters are begun, and we erect a perimeter security fence.

When the northern area commander inspects the kibbutz, he focuses on the trees between the road and the fence: Infiltrators could use them for cover. Sheffy, our security chief, suggests that the trees be sacrificed.

"No," declares the colonel. "This is a community of homes and families. Keep your trees. Cut their lower branches. And build a double fence."

Women Accept Shelling Calmly

The shelling from Jordan intensifies. For more than a week now we have spent part of every night and day in the shelters (pages 380-81). I notice that women adjust better than men to underground life, serenely knitting, reading, talking, or sleeping. Men are more restless. Many remain outside much of the time, lingering near the command bunker.

Shells scream in and explode among our new date trees; others rush overhead with the sound of slow-moving skyrocket and burst in the lake. Detonating, they remind me of huge boards crashing on a concrete floor, or a door slammed very hard. Occasionally, tracer bullets pierce the night, and aerial



flares create a spectral landscape aglow in reddish, spastic light.

To the south, Kibbutz Tel Qazir loses some machinery and several cows in the dairy barn. Another kibbutz parts with an administration building. Farther down the valley, a children's house takes a direct hit. The youngsters are safe, asleep in the shelters.

A daytime alert finds me sitting with Shaul, the kibbutz philosopher. I wonder aloud how Ha On can live so calmly with such danger.

"It's just a question of perspective," Shaul, a paratrooper, replies. "Certainly we're concerned. You can see it each day when work stops for every newscast. Life has always been risky for our people. But now—after 2,000 years—we again have Jerusalem. Think of it, Al!"

I think of it as we watch children playing tag nearby. Shaul adds, "This is our home, and we will *not* live in fear."



ESTABLISHED BY AL ADAMS © NATIONAL GEOGRAPHIC SOCIETY

I have seen no fear, though soldiers are now positioned in our fields. I follow Israeli planes as they pound Arab gun emplacements in the hills of Gilead. I know that Ruthie, our nurse, stands ready in the medical shelter with operating table and surgical instruments. An English girl, Ruthie is a devout Christian; for her it is almost Christmas.

Trees Symbolize a Land's Rebirth

On a Shabbat morning in January, everyone climbs a hill overlooking Ha On. Already many of the flowers are blooming, and bright green grass is sprouting fast.

We gather on a steep slope—a slope barren for perhaps a millennium—and the children plant 20 pine seedlings, one for each of Ha On's years. The fragile little trees, part of a national reforestation program, symbolize the rebuilding of this once-lush land. When they are grown, Carol observes, this will be a lovely

spot from which to view the lake and hills of Galilee.

By February a year has passed, and we realize sadly that we must return home. The kibbutz throws a going-away party and presents us with a book on Israel. Amossy, a talented sculptor, gives us a candelabrum we had admired in his home.

It is our last Shabbat and we walk around Ha On, trying again to absorb the quality of the place that we sense but cannot define. In the fields, during the afternoon, we fly a model glider I have made. On this perfect spring day, even the plane in its flat, lazy turns, seems to delight in the crystalline air. As we watch it silently circle overhead, the familiar, historic landscape passes in review.

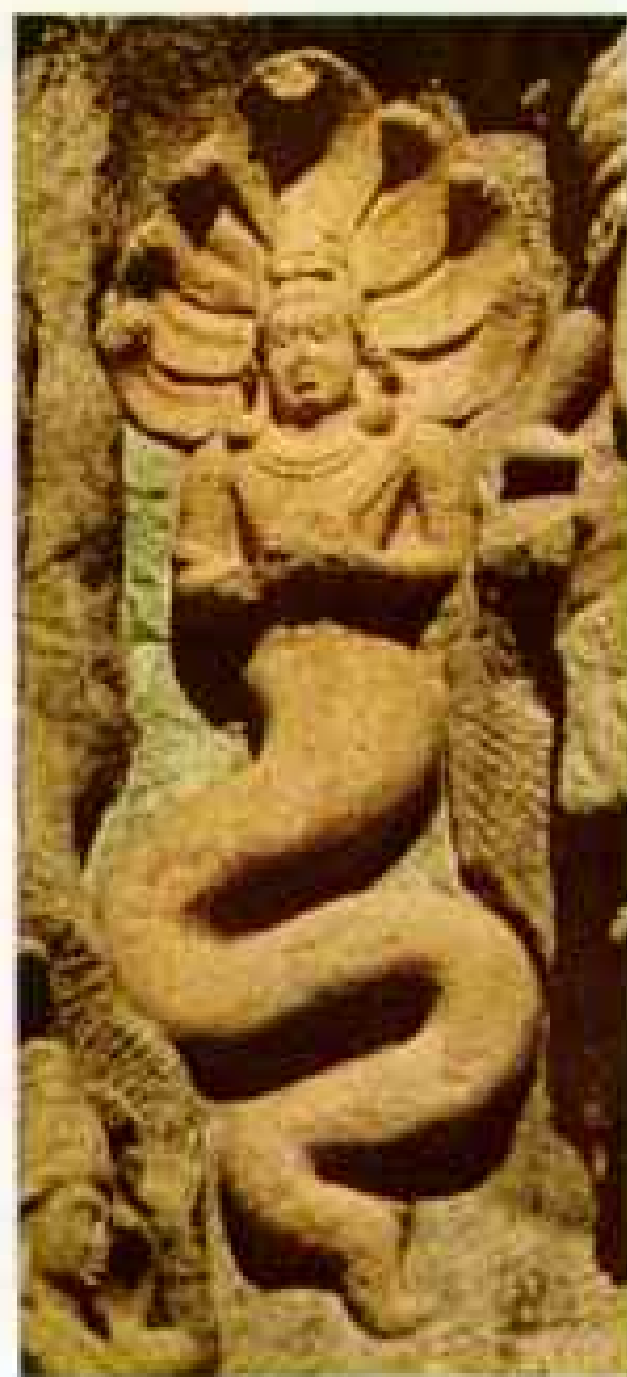
We leave for Tel Aviv early the next morning. That evening our jet has taken us almost to Istanbul before the kibbutz peels its last hard-boiled egg of the day. THE END



The Cobra, India's "Good Snake"

By HARRY MILLER

*Photographs by the author and
NARESH and RAJESH BEDI*



AS I WATCHED, FASCINATED, the writhing life within the egg bulged and buckled the parchmentlike covering. Presently a tiny razor-clean slit appeared at one end. Clear bubbles oozed through, and behind them I glimpsed a shining jet-black eye, then the lightning flicker of a minute forked tongue.

I made a slight, incautious movement and the eye and tongue vanished at once. I waited an hour, two hours, my finger growing stiff on the switch that would operate the camera and lights to record the birth of a cobra.

Suddenly the decision was made. Fast as a whiplash, a ten-inch serpent slid silkily out of the two-inch egg (following page), and there in the corner of my photographic stage, spreading its little hood, reared a fierce-eyed baby cobra, a perfect miniature of its five-foot parents, indignant at this intrusion into what should have been a very private event. Its tiny fangs were already charged with venom, and it was clearly determined to defend itself if necessary.

Two months before, when summer rains

had softened the rice-field banks near my home in southern India, the egg, with some thirty others, had been laid in the deep, cool recesses of a rat's burrow. The original occupant had probably made a meal for the expectant mother. Both parents had taken responsibility for guarding the clutch.

In their night-time excursions for food, the snakes had left faint tracks on the surrounding earth. The keen eyes of Irla tribal hunters, who catch cobras for me, spotted these markings, and soon their probing picks brought the eggs to light—and to me. Twenty-five snakes ultimately hatched, of which 15 survived and are being used for study and research.

That clutch of thirty-odd eggs, though large, does not compare with the 49 I found some years before. Cobras seldom lay more than 20 eggs, and the maximum previously recorded was 45. My find was perhaps a record, though it may have included eggs from more than one female. I managed to hatch 18 of the 49 in a box under my bed, being fortunate in having a wife who, from long experience, remains unperturbed by such

Not in fear but in faith, a woman of Madras makes an offering of rice and coconut to a large and deadly cobra which had been released on a termite mound. Indian devotion to the snake as a symbol of fertility found earlier expression in a serpent deity hooded by seven cobras (above). About ten feet tall, it was carved in rock at Mahabalipuram 13 centuries ago.

seemingly perilous eccentricities of mine.

Neither of us felt, however, that I was being reckless. Keenly interested in zoology, I have specialized for 25 years in photographing and writing about animals, and I have learned to calculate risks closely.* My interest in cobras sharpened 12 years ago when I built The Frogs, the house where I live with my wife, two small children, and hundreds of pretty little tree frogs, in the village of Tīrumullaivayal, near Madras (map, page 400).

Cobras are common there, and I soon found that they are beautiful, peaceful creatures, only too anxious to avoid contact with destructive man. If man corners them, they may strike, and with deadly effect, but whenever they can, they simply glide away. The cobra is not the vicious killer imagined by the uninformed. The gentle, handsome Tamil people among whom we live had named it well: *Nulla Pambu*—the "Good Snake."

When I first heard the name, I admit it struck me as odd. From earliest times the snake has been widely reviled: "thou art cursed above all cattle, and above every beast of the field; upon thy belly shalt thou go, and dust shalt thou eat," thunders God to the serpent in Eden (Genesis 3:14). Among the Hindus, however, this Biblical curse would seem heretical. For them the cobra has deep religious significance, primarily as a symbol of fertility.

But just as you can revere God and still dread his wrath, so the Good Snake is also feared as one of the most venomous reptiles.

*Mr. Miller's "Wild Elephant Roundup in India" appeared in the March 1969 *GEOGRAPHIC*.

I am convinced, however, that it is often wrongly blamed for fatalities, and that of some 10,000 Indian snakebite deaths a year, many attributed to cobras are caused by other species, particularly vipers. These do not move out of your way and are easily stepped on in the dark, whereas cobras sensibly slide away at the first footfall of man. Often the culprit is never seen and the cobra, since it is India's best-known snake, gets the blame.

Cobras Should Be Kept With Care

Of course, if you keep cobras near your house, as I do, you certainly increase the chances of being bitten by one. The Irlas recently brought me a large consignment of poisonous snakes—kraits, cobras, and Russell's vipers—destined for a research institute in Bombay. I placed six to eight snakes in each of several stout cloth bags—the approved way of transporting them—and locked the bags in an outbuilding for the night.

Later the same night, when my assistant Ramu and I went out to photograph the nocturnal activities of neighborhood serpents, we caught sight of a large snake moving rapidly across my front yard.

I dashed off for the long hooks we use to handle snakes, while Ramu tried to confine the snake by throwing sand at it. Five minutes later we had bagged a fine cobra.

We were surprised to find it wandering about, for cobras generally move away long before you are near enough to see them. A sudden ghastly thought struck both of us simultaneously. Could this be an escaper from our carefully stored bags?



Businesslike from birth, a 10-inch-long Indian cobra (*Naja naja*), already armed with venom, slips from its thin-shelled egg. The mother cobra usually lays from 10 to 20 eggs and, sharing sentry duty with her mate, guards them for the two months they take to hatch.

Clown's face grins from the back of a grown cobra's extended hood, spread by flaring the ribs of the upper body, thus flattening the neck. The serpents may turn their backs on enemies to intimidate them with the bold "eyes." Pigs and peafowl prey on the snakes; man kills many to turn their skins into purses and wallets. Surviving all dangers, a wild cobra may live as long as 20 years.

©DACHRONI © H. S. S.



Sick call! As a helper expertly holds a cobra behind the jaws, the author daubs its bruised nose with an antibiotic to prevent infection. Intensely interested in cobras, Mr. Miller keeps a colony of them penned in his backyard.

Drop of death trickles from a translucent fang, here twice life-size. To photograph the tooth, normally sheathed in a fold of mucus membrane, the author pressed back the tissue with a piece of blue cotton cloth until the fang stuck through. The cobra reacted by producing a stream of venom that harmlessly dripped onto Mr. Miller's hands and feet.



PHOTOGRAPHS BY SARU (ABOVE) AND THOMAS MILLER © P. 2.2.



When a fumble could be fatal: Herpetologist Rom Whitaker, an American studying Indian snakes, prepares to milk a struggling cobra.



A hurried visit confirmed our worst fears. One of the bags in which we had put eight cobras had a hole in the corner and was empty. Though normally tranquil creatures, eight big cobras, frightened, angry, and lost in unfamiliar territory without cover, were quite another matter—especially when a wife and two children were sleeping innocently nearby. And there were neighbors, too, who would not be pleased to hear the news.

We called a dozen Irias hurriedly from their village, lighted lamps by the score, and, after an exhausting search lasting all night, recovered six of the eight escapers, most of them hiding in drainpipes. As for the other two, perhaps they are still somewhere in the two-acre mango orchard around my house. If they are, they will have settled down and are welcome to stay as long as they like, for they are the Good Snakes, and, apart from religious factors, they are good for me, as for millions of Indian farmers, since they are diligent exterminators of rats.

Give me cobras any time rather than rats, which not only destroy badly needed human food but also spread disease, including bubonic plague. My children, Robin and Nisha, aged 9 and 7, play barefooted in my garden, though we know the Good Snakes are there. We are, in fact, much more frightened of stray dogs, of which there are millions in India, many of them rabid. In 10 years at Tirumulaivayal I have known 12 deaths from rabies, but never a snakebite fatality.

What happens, however, if you should be bitten by a cobra? The villagers have had their own magical methods for a thousand years or more. One cure requires secret

religious knowledge reputedly possessed by only two or three people in all India. If you are bitten, you send one of them the details, whereupon he recites secret *mantras* (prayers) and rends his garments by way of sacrifice.

Since nonvenomous snakes are responsible for many bites, the success claimed for this method is hardly surprising. Bitten people rarely recognize a nonpoisonous snake, so if confidence in the mantras helps them survive the shock and fear, the prayers are of value.

Potions Aid Notions as Antidotes

In addition to the mantras, the tribal people cherish certain herb and root remedies. I persuaded an Irla to give me a sample of one important root, which only a few old men of his tribe were allowed to keep. It proved to be *Rauwolfia tetraphylla*, a plant introduced into India from the New World.

The most famous species of *Rauwolfia* is *serpentina*, a native of Asia. Its root is the source of reserpine, isolated in 1952, and used to treat high blood pressure and as the active ingredient of some tranquilizers. Since ancient Hindu medical treatises mention the plant as a snakebite antidote, one might guess its name derives from reputed curative properties, but actually it was probably bestowed because the plant's roots resemble a snake. Reserpine has no known counter-effect on snake venom, but its tranquilizing action, like the mantras, might prevent deaths from shock and fear when there is little or no poisoning.

We Westerners prefer more scientific measures against snakebite, but whether they should be used is always a serious decision. My assistant, Ramu, was bitten in the finger two years ago when he unwisely tried to pick up one of my cobras, which he had no business doing. Cobras, like most venomous snakes, can be safely held a little behind the angle of the jaws, but it is a job that calls for skill (opposite), and a fraction of an inch too far forward or back can mean death. Ramu was too far back, and the snake, naturally resenting the hold, bit him hard.

Ramu was given no treatment whatsoever, for he developed no symptoms of cobra poisoning. The chances are that no venom was injected. The bite of a cobra is not inevitably fatal. As in Ramu's case (and sometimes when the snake is capturing its natural prey) it may not inject venom—which could be a purely voluntary action on the part of the snake.

When venom is injected, the snake may

lack a lethal dose, if it has recently used much of its supply on prey. Symptoms of poisoning arise in only about half the people bitten by poisonous snakes, and of these many recover with no treatment at all. Ramu and I keep antivenin close by, in case we are bitten badly while handling our cobras, but we hope we will not have to use it.

Our work has been concentrated on *Naja naja*, the only true cobra in India, as against five species in Africa. In its most characteristic guise, the Indian cobra is distinguished by spectacle-shaped black-and-white markings on the back of its expansible hood (page 395). India also has the king cobra which, despite such superficial resemblances to *Naja* as the spreading hood, belongs to a different genus. As its name indicates, *Ophiophagus hannah* is a snake-eating snake, while *Naja* feeds on rats, mice, toads, and frogs. The king cobra, also venomous, is much larger—adults commonly measure 15 feet or more.

The Indian cobra belongs to the Elapidae family, and though authorities do not agree on just what snake is the world's most poisonous, it will certainly be found among either the elapids or the related sea snakes, the *Hydrophiidae*. As a measure of the toxicity of the elapids, the Australian tiger snake (*Notechis scutatus*) can kill a man with little more than 1/10,000 ounce of venom. By contrast, most members of the viper family, which includes the rattlesnakes, have venom of lower toxicity. But since there is usually much more of it, it may prove just as lethal.

Venom Possesses Medicinal Value

In most cases, cobra poison attacks the nervous system and causes death from respiratory paralysis, rather like poliomyelitis. But it has been used in a limited way to help mankind.

Living near us in Madras is a young American herpetologist, Rom Whitaker, who trained at the Miami Serpentarium in Florida.

"Some doctors have prescribed cobra venom in the treatment of arthritis," Rom explained. "In a purified and diluted form, it has been used in certain cases because it relieves severe pain without producing the undesirable side effects of opiates."

Herpetologists and doctors are not, unhappily, the only people who seek out and capture cobras. Hunters all over India catch and skin the snakes for tanning, since the famous spectacle markings are decorative on handbags and wallets. In Madras one tannery alone

(Continued on page 402)



With a symmetry both graceful and grisly, entwined cobras rear and sway. Indian serpent lore abounds with stories of cobras shielding kings, tribal heroes, and even the Hindu god Krishna from the sun and rain by spreading umbrella-like hoods over their



EDDACHROME BY JAMES F. BLAIR © N.S.P.

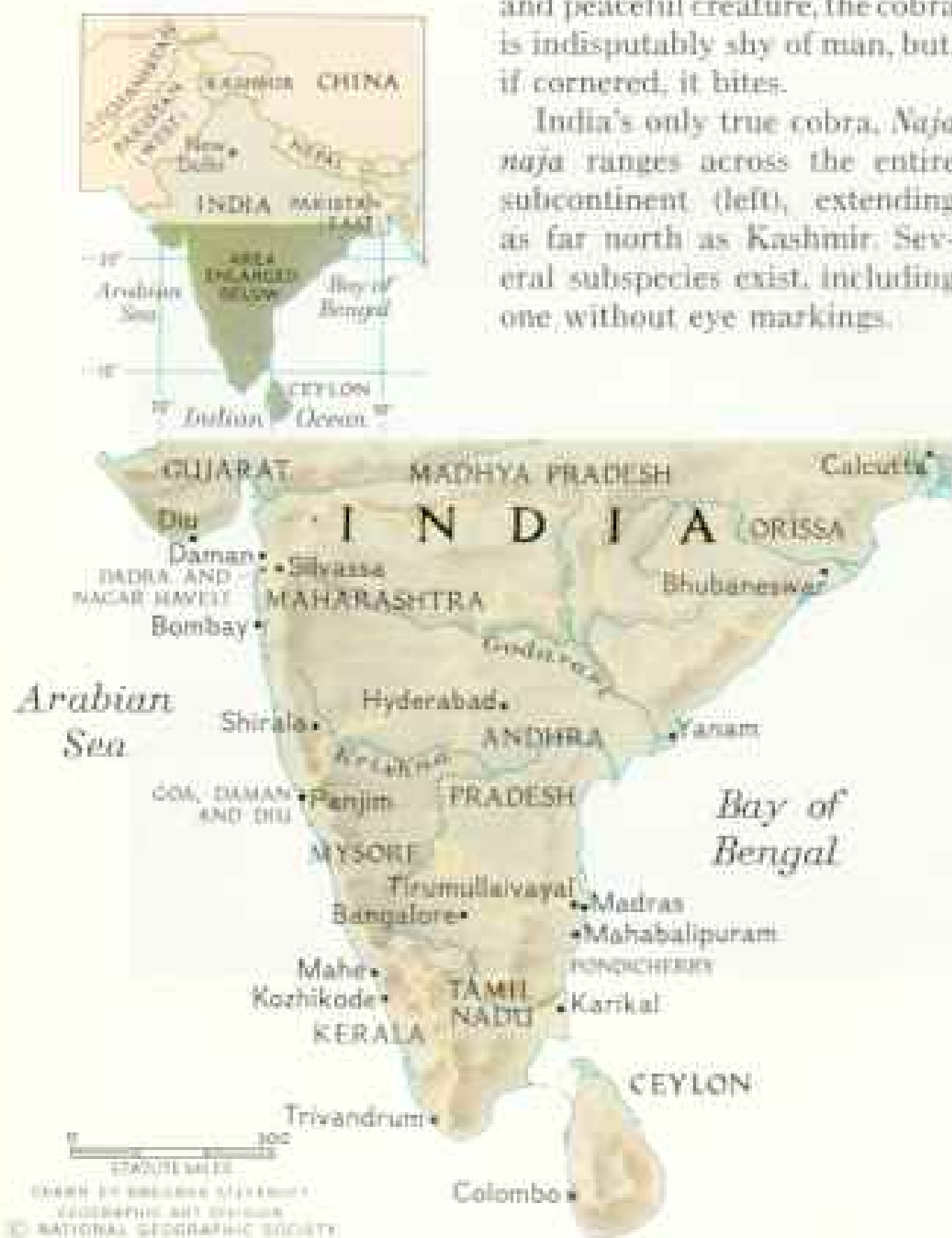
heads. Eyelike markings of three of these snakes show on the undersides of the hoods. To film this striking tangle, the photographer set up lights in a pen of cobras and then warily photographed his subjects through a small hole in one side of the enclosure.



Lured by a cobra festival, Indian women adorn themselves with silver and mirrors for the annual serpent ceremonial at Shirala (right). Millions of Hindus associate the cobra with the sacred lingam, symbol of Lord Shiva, one of the Hindu trinity, and worship it in the hope of fertility. The snake also wins plaudits as an exterminator of the rat, which destroys vast quantities of stored grain and spreads disease.

Extolled by many as a beautiful and peaceful creature, the cobra is indisputably shy of man, but, if cornered, it bites.

India's only true cobra, *Naja naja* ranges across the entire subcontinent (left), extending as far north as Kashmir. Several subspecies exist, including one without eye markings.



When reptiles reign! Brass-band music rends the July heat as paraders surge through the streets of Shirala to celebrate Naga



PHOTOGRAPHER BY HARRY MILLER (RIGHT) AND HARISH AND RAJESH REDDI © N.E.E.

Panchami, the serpent festival. Some brandish live monitor lizards smeared with vermilion and grotesquely pinioned to poles. Others bear earthen pots containing recently captured cobras. When the rites end, the participants will release both snakes and lizards unharmed.

processes an average of 500 cobra skins a day.

India's snake charmers also take a heavy toll of cobras. Of the hundreds Rom Whitaker, Ramu, and I have examined in the baskets of snake charmers, not one has been found with its fangs intact, and all of them were suffering from starvation, because the cobra, a most sensitive snake, refuses to take food except under ideal conditions. The snakes sicken and die after a month or two, either from starvation or from abscesses that develop where the fangs have been cut or knocked out, but that is no worry to their owners, for replacements come cheap.

Indian snake charmers have perpetuated

the myth of charming snakes with flute music. But snakes have no external ears and are practically deaf to sound coming through air, though they are sensitive to sound vibrations transmitted through the ground. Any docile cobra can be made to sit up and spread its hood, and will sway to and fro simply to follow the movements of the flute.

Another snake charmer sham is the cobra-mongoose fight. The charmer provokes an emaciated mongoose into attacking a feeble cobra, then usually knocks the mongoose away before it can do any damage to the snake.

In the wild, I believe, a mongoose would tackle only small, young cobras. Mongooses



"With fasting lips we pray, with fervent hearts we praise you, O bless our lowly offerings and hearken to our prayer," reads an Indian poem honoring serpents. At Shirala, four women kneel and bow low before a duly attentive cobra. Brass containers hold their strewn offerings: flowers, grain, milk, and

are highly intelligent animals, and it seems unlikely to me that they would try to get their dinner in such a difficult and dangerous way when frogs, toads, and lizards can be had with no risk at all. But mongooses are fond of eggs, and perhaps one sometimes has to deal with irate cobra parents-to-be.

Most hazards facing a cobra occur in the first year of its life, when it may be attacked by wild pigs, peafowl, civets, and ratels. The pigs, which not only kill but eat snakes, have a high tolerance to venom because their tough hides and layers of fat delay or block absorption of the poison.

After pigs, peafowl are among the most

avid enemies of snakes; they also often attack and eat young cobras. They kill them by a swift and powerful peck on the head and swallow them whole, like a string of spaghetti.

If a cobra survives these dangers of the wild and man's predation, it can look forward to a life span that may reach twenty years. In the safer environment of a zoo, one African cobra is known to have lived 29 years.

In addition to its poisonous bite, the Indian cobra has its hood and its spectacle markings, which possibly act as defensive mechanisms. The flattening of the hood (by pulling forward ribs at the side of the neck) may make it hard for the teeth of a predator to get a grip. The



REPRODUCED BY WARREN AND GAVLER BOOKS © N.Y.C.

burning camphor. Behind the rearing snake, another slithers from a pot carried from house to house for worship during Naga Panchami. To venerate their sacred reptile, the women prostrate themselves within striking range—the length of the raised part of the cobra's body—but are not attacked.





spectacles on the back of the hood may seem to a potential predator to be huge intimidating eyes (page 395), as might similar patterns on the wings of butterflies and moths. I have often seen cobras turn their backs on enemies, prominently displaying these "eyes."

Cobras with spectacle marks range over most of India and the island of Ceylon. A "one-eyed" variety and another subspecies with no hood markings at all occur in the northern parts of the subcontinent.

Spectacled or not, the Good Snake is worshiped throughout India. It is associated with the sacred lingam, emblem of Lord Shiva, one of the Hindu trinity. The lingam, symbolizing the creative principle of the universe, is sometimes depicted in stone sculptures as guarded by many-headed cobras.

Termite Mound Becomes a Temple

The relationship of a serpent and Shiva to a termite mound would not be readily apparent to a Westerner. In India, a mystic symbolism often associates all three. Some years ago I noticed that a termite mound on a roadside near my home had been crowned with a garland of marigolds. The people told me that a cobra had been seen entering it—for snakes often find secure lodgings in the deep holes the termites make—and that this endowed the mound with special religious significance. The shape of a termite mound also suggests the lingam of Shiva; a cobra living within indicates the god's special favor.

Soon the Tamil women raised a mud wall around the mound, and little groups of them attended there with flowers, burning camphor, and other appurtenances of Hindu ritual. A month later a priest appeared; gifts of money were offered, and through six or seven years a tiny temple grew up around the mound. Then, a short while ago, the police destroyed it all because it was obstructing highway development.

Termite mounds are often revered in this way, but I was never able to confirm that any really harbored a cobra. I wanted to see and photograph what would happen if a cobra appeared on a termite mound, and I decided to experiment.

Fervor undampened by a monsoon shower, spectators at Shirala wait for the serpent festival to begin. Each year the event attracts about 20,000 persons from all parts of India.

PHOTOGRAPH BY HARISH ANU RAJESH PETHI © N.C.C.



Recruiting for the festival, a Shirala cobra catcher probes a rice-field hole with a stick, hoping to find a snake. He will pamper captives in his home until they star in Naga Panchami.

Swaying rhythmically, cobras in the Naga Panchami festival follow pebble-filled pots rolled slowly back and forth before them. A worshiper, right, showers parched rice on one serpent. Handlers hold the snakes' tails and use bamboo sticks to control their movements.

I chose a mound close to my home, making sure that all the village women knew what I was up to. Then one afternoon, with the help of Ramu and Rom Whitaker, I released my largest cobra on the mound in front of the women.

There was no question of removing the snake's fangs. Rom goes a peculiar color at the mere idea of hurting a snake in any way. He stood out of camera range, ready to grab the snake if the women appeared to be in danger. They had arrived accompanied by a few men and many children, and were fully equipped with the paraphernalia of worship. We encouraged them to begin, and what happened then astounded us.

Cobra Calmly Accepts His Due

The natural reaction of any cobra surrounded by a noisy crowd is to slide off into the undergrowth. Instead, our cobra reared itself majestically before the women with hood spread and tongue flickering. It made no attempt either to move away or to strike the worshipers.

Ramu plucked my sleeve. "Sir, look at old Mootama, our sweeper woman. She's really worshipping it!"

And sure enough this good old lady, who has been with us for many years, was worshipping that lordly snake, her eyes rolling, her body swaying from side to side. Presently the other women began to be affected in the same way, and for a whole hour, until we tired of our picture taking, the big snake sat solemnly there within inches of them, for all the world as though it was receiving its natural and sacred due (page 392).

When we asked Mootama for an explanation she said: "But what did you expect? Of course we worshiped Nulla Pambu, and of course the Good Snake wouldn't bite us. To us Nulla Pambu



is a manifestation of Lord Shiva. The god himself was there, and naturally we worshiped without fear."

The behavior of the women was easier to understand than that of the snake. Perhaps the instincts to strike or to flee canceled each other, resulting in this strange immobility.

But there is much about the relationship between Indians and cobras that is mystifying. Once a year, many Hindus celebrate the great serpent festival called *Naga Panchami*, and nowhere more dramatically than in the little village of Shirala, in west-central India. The villagers there believe that Shiva offered one of their ancient sages a boon. The sage asked that his people be protected for all time against the cobras so common in their

fields. The boon was granted, and ever since then the people of Shirala have believed they have nothing to fear from the cobra, emblem of the god himself.

In July, as the festival of Naga Panchami nears, the villagers of Shirala spend days digging in the rich earth for miles around in search of the abundant cobras (opposite). They handle the snakes reverently, placing them in large earthenware pots. Until the morning of the festival, the sealed but fragile pots with their potentially deadly residents are kept inside the cool brick homes.

Rom Whitaker went with me on the long journey to this remote village, tucked away among gentle hills in the state of Maharashtra (map, page 400). Before dawn on festival day,



Crowning a cobra with a flower, a worshiper expresses the reverence Shirala's people feel for the snake. "O spread your hooded watch for the safety of our slumbers," goes an Indian poem, "And soothe the troubled longings that clamour in our breasts."

the villagers took ceremonial baths and then, as the sun appeared, formed noisy, cheerful processions bearing pots of cobras through the village to a tiny shrine half a mile beyond.

Small brass bands led the processions—young men in gaudy, ill-cut uniforms and caps, who rent the still air with blasts on battered trumpets and tubas. It was fortunate for the snakes, as Rom remarked, that they cannot hear.

Just behind the bands came curious little groups of boys. They carried big live monitor lizards tied to the tops of poles and liberally smeared with a ceremonial red powder (pages 400-401). The poles, with their cargo, were grotesquely reminiscent of crucifixes carried by cathedral choirboys.

Mr. Dattatraya Dhondi Pote, proprietor of the guesthouse where we stayed, gave this origin of the custom: "Knowing monitor lizards are very strong and have a tenacious grip, our great 17th-century king, Shivaji, tied a rope to one and had it tossed atop the wall of an enemy fort. The lizard held fast, enabling Shivaji's men to climb the line and subdue the defenders.

"By the way," he added, "don't think our treatment of lizards cruel. They are tied on very gently, and, if you watch, you will see the boys open their mouths to water them. Tomorrow, they and all the cobras will be released, unharmed."

The procession over, I followed a group of these weird acolytes to a small house, where they propped their living lizard poles in a big cupboard, like so many broomsticks.

Hundreds of Cobras, but Nobody Bitten

After the cobras reached the temple, they were allowed to emerge from their pots and then were ritually handled by their owners. Held by the tails, their graceful heads swaying upright, they were displayed before the deity one by one, while a dense crowd of worshipers crooned and prayed over them.

Toward noon, other rituals were performed in every house. Women and children scattered rice over the swaying snakes, burning camphor before them and murmuring blessings. In the late afternoon a cavalcade of carts pulled by gaily caparisoned bullocks formed down the main street, and cobras were displayed on small platforms in the carts. Night fell and the cobras were returned to the pots, awaiting release next morning, while the villagers danced, drank, and rejoiced.

Rom examined many of the snakes and found the poison fangs intact. Yet never, throughout the day, did we see any of these hundreds of cobras attempt to strike their handlers.

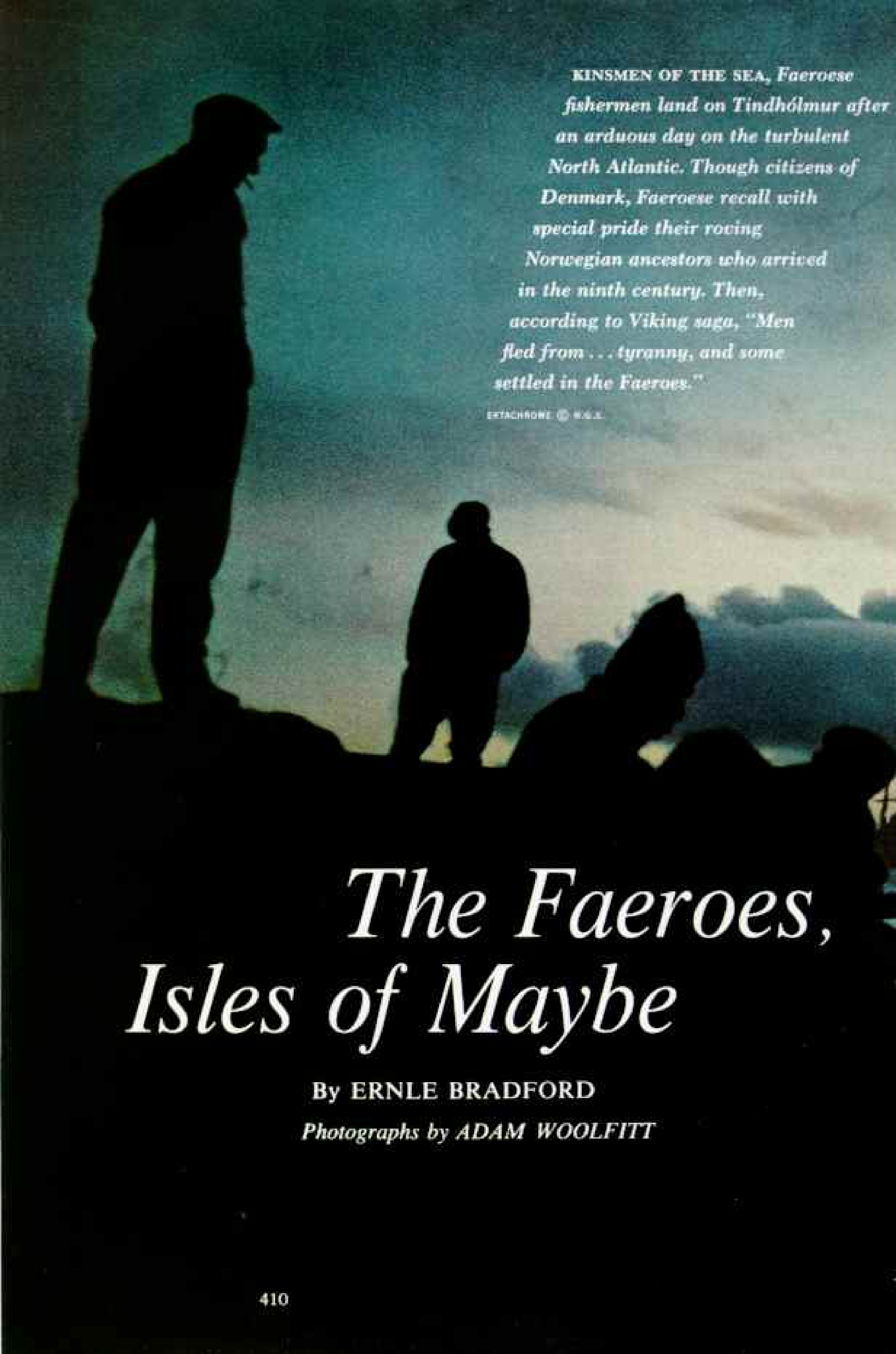
The children of Shirala are taught to handle snakes from the earliest age, beginning with the nonvenomous kinds. In the village streets we often saw little boys strolling around with sleek brown tree snakes hanging placidly around their necks. Later they would graduate to cobras, learning that with gentleness, confidence, and skill they would be in no danger.

All over India, it is true, the cobra is worshiped, but it is still feared. Only among the people of Shirala is the Good Snake good with no qualification whatsoever.

THE END







KINSMEN OF THE SEA, *Faeroese fishermen land on Tindhólmur after an arduous day on the turbulent North Atlantic. Though citizens of Denmark, Faeroese recall with special pride their roving Norwegian ancestors who arrived in the ninth century. Then, according to Viking saga, "Men fled from . . . tyranny, and some settled in the Faeroes."*

ETCHAERNE © W.S.L.

The Faeroes, Isles of Maybe

By **ERNLE BRADFORD**

Photographs by ADAM WOOLFITT



The Faeroes, Isles of Maybe

AHEAD of our plane, outlined against the sea in the long northern twilight, the Faeroes lay like a fleet of warships steaming northwest toward Iceland, some 300 miles away. My wife Marie-Blanche pointed out the window, clutched my arm and cried, half seriously, "Look, they really must be moving!"

The illusion was startling: The fast tidal currents flowing through the channels between the islands made it seem as if they were leaving a long wake astern.

Flying in from Norway, across 400 miles of the wintry North Atlantic, we were struck by the dramatic isolation of this austere beautiful archipelago. Anchored in bleak and turbulent waters, the 18 rugged islands seemed a world apart from the tidy low-lying Kingdom of Denmark, in which the Faeroes are a self-governing community (maps, page 416).

Gay Colors Dispel Wintry Gloom

It is a small community—some 38,000—with most of the population clustered on the six largest islands: Streymoy, Eysturoy, Vágar, Suduroy, Sandoy, and Borðoy.* One island has just one family and a farmhouse, and another is uninhabited.

On Vágar lies the Faeroes' only airport, little more than a landing strip carved out of a rocky plateau by the British Royal Engineers during World War II. The approach was breathtaking. As we flew down the long inlet of Sörvágsfjørður, we were well below the tops of the cliffs on either side.

We had chosen to come to the Faeroes in winter expressly to see them in all their bleak ruggedness. The bleakness was relieved, however, by the sight of scattered farmhouses, painted red, green, and blue, bright against the snow.

Marie-Blanche and I were soon aboard a taxi, assisted by smiling Faeroese, who quickly found out that we were bound for Tórshavn, capital and largest town of the Faeroes, situated on Streymoy, the largest island. They said the trip might take four hours.

"Four hours!" my wife gasped. Tórshavn was only 17 miles away, as the crow flies.

One of the islanders explained. "First of all you have the taxi across Vágar. Then you have to get the ferryboat to Streymoy. Then 25 miles by taxi across Streymoy to Tórshavn. Altogether, it's nearly 40 miles."

It proved a rough trip—rough island roads, with a rough sea passage between. It was a good way, though, to make our first acquaintance with the Faeroes. Everywhere the clean and colorful villages that huddled along the coast roads enchanted us. The brilliantly hued houses looked like gay Christmas-tree decorations against their forbidding backdrops: soaring snow-streaked cliffs of basalt, many of them wreathed in cloud.

Now we understood why the Vikings who came to the Faeroes from Norway about A.D. 800 had settled on the coastal strips, and why their descendants still occupy the same narrow lands. There is nowhere else to live.

In Tórshavn, named for the old Norse god Thor, we walked along the snow-packed quay to the British consulate. We marveled that, in spite of the frosty look of things, it was warmer here than in the wintry England we had left behind.

Gulf Stream Breeds Clouds and Fog

Axel Mortensen—a Faeroese businessman who also functions as the British consul—explained, "An arm of the Gulf Stream, the North Atlantic Current, passes west of Scotland and washes our shores. It's one reason the islands are habitable. It also gives us our cloudy weather; the warmer water, in contrast to the cold seas around it, produces moisture-laden clouds. Plenty of fog, too."

The Faeroes' skies are overcast more than 200 days a year, and since it rains, more or less, on each of those days, the annual rainfall mounts to about 60 inches. Perhaps it is the inclement weather that has lent a touch of caution to the Faeroese character. Because

(Continued on page 417)

*Faeroese pronounce *d* as a soft "th," and *ø* like the French "eu," or similar to "er" with the *r* almost mute. Thus Sörvágsfjørður becomes—approximately—Ser-*vahgsfyerthur*.

Bounty from the depths: Salted cod reaches port in the dark hold of a Faeroese trawler. Fishing the banks off Greenland, Hans Christian Anthoniussen and his shipmates haul thousands of hooks a day, then split and salt their catch on board. At the fisheries center of Klaksvik, factories prepare the *saltfiskur* for export to southern Europe and Brazil. Of a yearly fisheries catch of more than 150,000 tons, an increasing portion is filleted and frozen for United States markets. Modernized fishing has boosted the island economy.





Racing pony and rider pound down streets so narrow that contestants must run in pairs against the clock. The final victor gains acclaim at Ólavsøka—the Feast of St. Ólav on July 29. From all 17 inhabited islands, families converge on the capital, Tórshavn, for competitions, parades, feasting, concerts, and dances in honor of the 11th-century Norwegian King Ólav II, who helped to Christianize the Faeroese. The day also witnesses the opening of parliament; though Denmark handles foreign affairs and defense, the islanders generally govern themselves.

Wedding walk: Páll Patursson leads his bride past a turf-roofed farmhouse on the way from church to a reception at Kirkjubøur. Their dress is an elaborate version of the Faeroese national costume worn by some in the party—long gown with shawl and silver-buttoned suit. The groom adds a high-crowned wedding hat. After a honeymoon in Norway, the couple will return to settle in their beloved islands.





STYLING BY ANNE WOOLFE © T.A.S.

Holiday mood—and the prospect of dancing all night—brings a smile to Astrid Olsen, who wears her high-school graduation cap and a Viking-ship brooch. During Ólavspoka, young and old alike join in hours of chain dancing, a pastime surviving from medieval times.





"A strategic point of high importance," said Winston Churchill of the Faeroes when, in 1940, the British occupied the isles after Germany overran Denmark. Faeroese boats ferried fish to beleaguered Britain, supplying 75 percent of her demand in 1941. By war's end, a third of the doughty fleet and some 160 men had been lost. But the money earned enabled island fishermen to purchase modern vessels for postwar years.



Seldom silent when they can be singing, Faeroese students on holiday from Danish universities enliven a cruise. Many islanders speak English and Danish, as well as Faeroese, a derivative of old Norse.

plans often must be postponed till the weather clears, the islanders have a tendency to shun firm commitments.

"The 'Lands of Maybe,'" Axel Mortensen said. "That's what the British troops who were here during the war nicknamed the islands. You won't be here long before you learn one of the most popular words in the Faeroese language—*kanska*, maybe."

I heard it that very afternoon when our car broke down on a remote, icy road, some ten miles north of Tórshavn. Henning Thomsen, a fisherman turned taxi driver and guide, seemed baffled by the problem. I suggested we call Tórshavn on the two-way radio with which nearly all Faeroese taxis are fitted.

He looked doubtful. "Maybe we can get through," he said. "And then maybe the mountains behind us block off the radio waves."

Fortunately a passing truck driver got us started, and we were again on our way to Tjørnuvik, northernmost village on Streymoy.

Better to Walk Than Die of Fright

Winter driving in the Faeroes requires great skill and nerves of steel, for the uneven roads are glazed with ice. Often, I noticed with alarm, no parapet or rail intervened between the car and a drop of hundreds of feet into the cold waters of Sundini channel. Meeting other cars usually entailed one party or the other backing hundreds of yards to find a section of road wide enough for two to pass. At one point—and only masculine pride kept me from joining her—Marie-Blanche got out and walked, rather than sit petrified listening to the sound of spinning tires as the driver negotiated a sharp turn while struggling uphill on the edge of a precipice.

"They're improving the roads," said the imperturbable Mr. Thomsen at the wheel.

But the hazards of the journey were more than compensated for by the island's beauty. Streams of crystal water gushed down dark slabs of basalt; long-wooled sheep—brown, black, and grayish white—browsed off the thin pasturage beneath sheer cliffs hung with organ pipes of ice. The village of Saksun nestled between the bases of two towering snow-clad peaks, and in its outskirts two or three vivid old houses had the traditional turf roofs rather than the corrugated iron that is replacing them.

We had been traveling more than three hours, and the icy mountain air had given us

an appetite. Henning sensed our hunger.

"Don't worry," he said. "When we get to Tjørnuvik, my friends will welcome you."

The hamlet of Tjørnuvik lies at the foot of beetling cliffs, with the Atlantic heaving ominously a few yards away from a dozen small houses. On the beach, some open fishing boats awaited the next run.

Henning's friends, Gullak Hansen and his wife, met us at the door of their house with hearty handshakes. The comfort of their small home, standing on the edge of nowhere, greatly impressed us: wall-to-wall carpeting, central heating, modern Danish furniture and pictures, and a long table set with gracious glass and silver. The array of dishes set out for us could easily have fed a dozen shipwrecked sailors.

Mrs. Hansen poured tea and coffee as we sat down to a magnificent meal of homemade liver pâté, cheese, potatoes, rye bread, homemade white bread, and rhubarb conserve, with more to come. I asked Gullak Hansen whether the conserve—quite delicious, incidentally—was imported.

"No, rhubarb is one of the few vegetables we can grow here," he said. "And of course potatoes. Not much farming left these days."

At best, the islands never had more than 4 percent of their total area under cultivation. That was during the war when, as Mr. Hansen put it, "all of us farmers grew as much as we could. Now we import almost everything except the wool from our sheep—and we pay for everything with our fish."

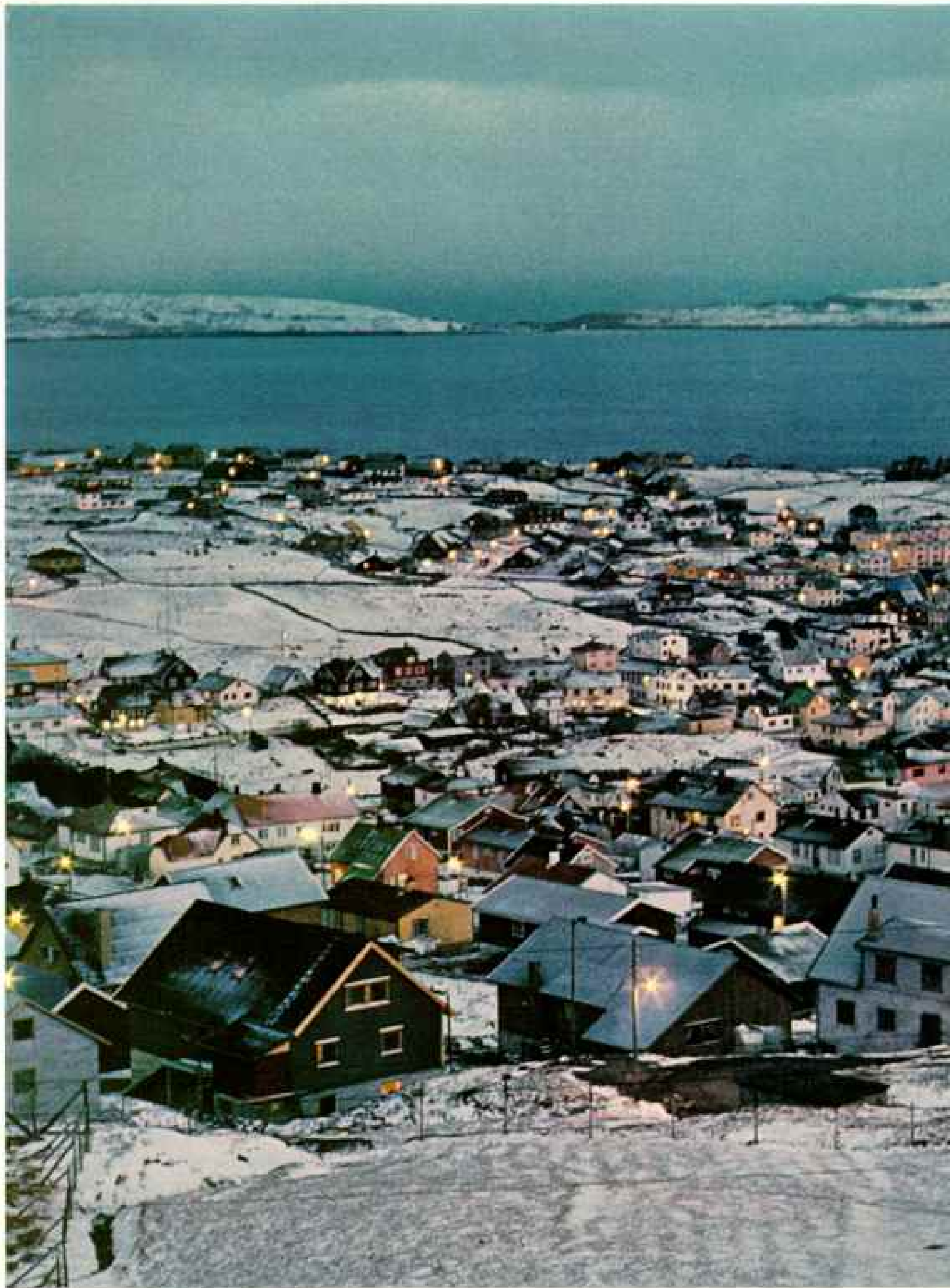
Wartime Exports—Fish and Brides

World War II gave fishing—long the islands' main industry—new importance. When the Germans invaded Denmark in 1940, the British occupied the Faeroes to prevent their falling into enemy hands. For more than four years, beleaguered Britain bought every pound of fish the Faeroese could catch, and as a consequence the industry expanded greatly.

The British built an airstrip, and introduced the English language (which almost everyone of Henning Thomsen's and Gullak Hansen's generation learned as children during the war). They took away Faeroese brides.

"So many girls from the Faeroes married British troops that we used to joke we would soon colonize *you!*" Henning told me.

While we were talking, Mr. Hansen had begun carving what looked like a piece of old



Snug in warming Gulf Stream waters, Tórshavn snoozes out the winter. Nights last up to 19 hours, but winter temperatures average a relatively mild 38°. Snow near the shore lingers so briefly that children rush out to play after every storm. Beyond



EXTREMES © NATIONAL GEOGRAPHIC SOCIETY

the harbor, snow-mantled Nólsoy shields the capital from the open sea. Fishing profits paid for houses that boast electricity, central heat, carpets, and roofs of corrugated iron—a striking contrast to the turf-and-stone shelters of past generations.

leather, shaped rather like a leg of lamb.

"*Skerpikjöt*," he said, "real Faeroese food. Would you like to try it?"

I would. Cut with a sharp knife into thin slivers, it had something of the consistency of the shoe leather it resembled, a pungent smell, and a taste of high, cheesy mutton. This delicacy is certainly an acquired taste, but I learned to enjoy it, and to appreciate what the Faeroese claim for it—that it contains more energy than any other food.

Skerpikjöt is, in fact, raw mutton that has been hung in a shed to dry for at least a year

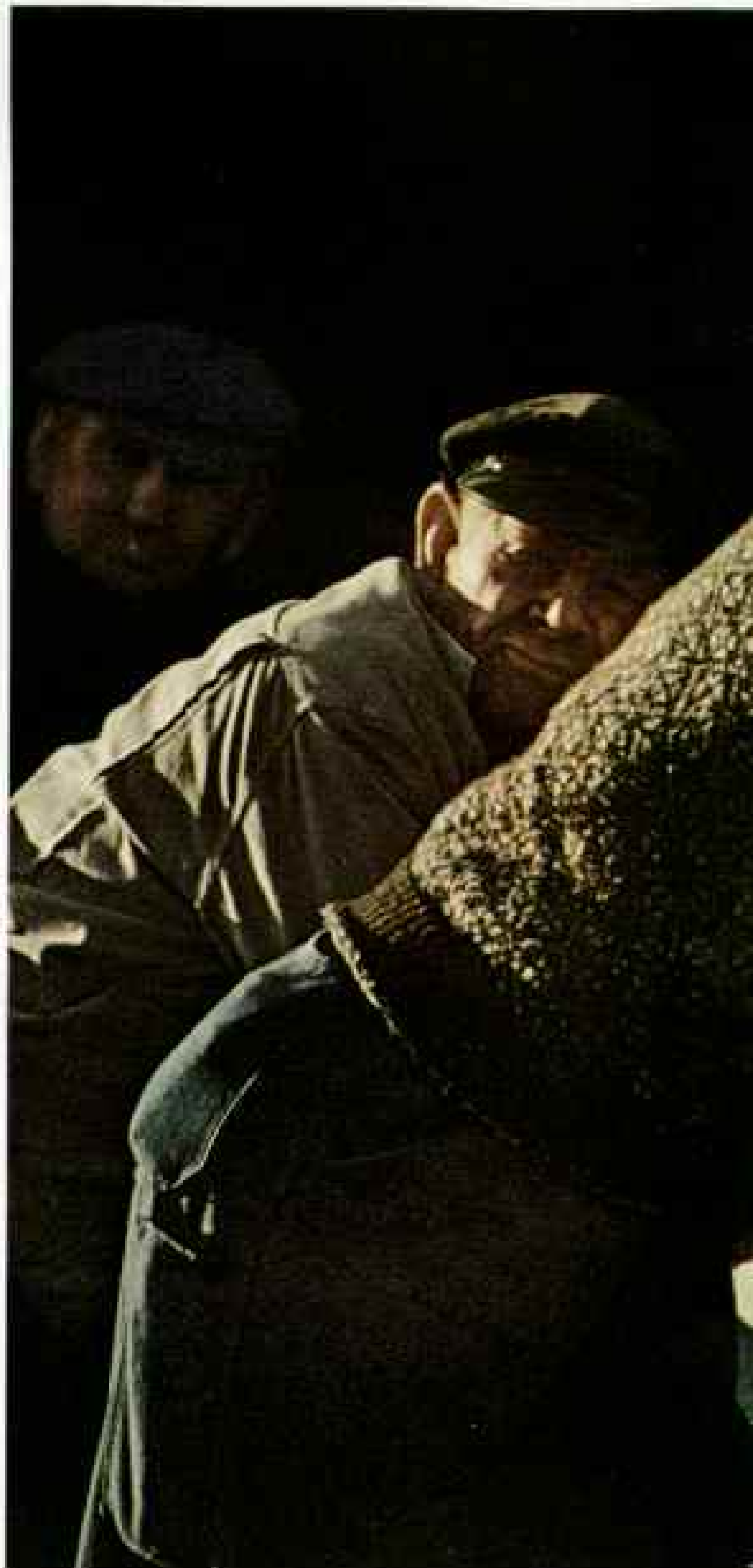
(pages 422-3). Wind-dried food, as well as salted fish, is a feature of the Faeroese diet—one that was essential in the past when the islanders were almost totally dependent on their fish and sheep to keep them alive through the winters.

After our meal, we three men walked round the village, and my host pointed to the cod and pollack hanging under the eaves of the houses. Small outbuildings, made of wooden slats spaced slightly apart, stood next to every home. These were the *hjallar*, where Faeroese wind-cure their mutton.



Looking forward with hope to a man's job, the son of a skipper grins at the big ones that didn't get away. Though only 7 years old, Sonni Kallsoy helped his father catch 600 pounds of cod from a boat off Eidi.

Looking backward with pride to challenges met on the high seas, men of Eidi reflect the strength and austerity of Viking sailors. The sturdy lapped-plank craft recalls dragon-headed Norse vessels.



Rhubarb plots stood sheltered from the sea wind by high stone walls. Behind the village, furrows in the peat soil that overlies much of the islands' rocky ground showed where the potatoes came from. "Lazy potatoes," the Faeroese call them, for all the farmer has to do is open a line of earth by removing the turf with his spade, lay in the seed potatoes, and then replace the turf, this time with the grass facing downward.

It was dark long before we got back to Tórshavn, for in winter the sun rises for only five hours a day (though in midsummer it

stays above the horizon nearly 20 hours). The sky was heavy with cloud and the fjord sinister below the mountain road.

Shortly after we crested the last rise and saw the lights of the town lying at our feet (pages 418-19), the taxi radio crackled. Henning Thomsen listened, laughed, and then translated for us, "The garage said my fiancée just phoned to say she had seen my lights, and not to forget I was having a meal at her home tonight."

Home entertaining and visits between families help to pass the long winter evenings.



In his well-stocked larder, Petur Jacobsen of Hoyvik carves mutton ribs for a winter supper. Air-drying the carcasses in the slat-sided shed for a year or more results in the highly prized *skerpikjöt*. The cheesy-tasting uncooked meat provides an ever-ready snack for a stream of friends.

Restaurants and cafes are few, as are other public places where people can meet. Tórshavn is the only trawlermen's town I have seen without a single bar. As far as public consumption of alcohol is concerned, the Faeroes are dry.

Inside their houses, the Faeroese may have spirits and wines, but these have to be ordered quarterly, mainly from Denmark. The islanders must be among the most conscientious taxpayers in the world; no one can get the permit for his liquor ration without producing a revenue certificate that shows his taxes have been paid to date.

Uncomfortable Seat for a Bishop

On a day of rain clouds and shifting searchlights of sunshine on the mountains, we drove out from Tórshavn to Kirkjubøur, Streymoy's southernmost village and the medieval heart of the islands. Here stand the ruins of a Gothic cathedral begun by Bishop Erlend in the 13th century. The resourceful islanders, lacking lime for mortar, used *skilp*—pulverized shells and bones—in its construction, giving a distinctive Faeroese touch to the structure.

Here too is located one of the oldest wooden buildings extant, the bishop's palace. We were shown about by caretaker Jóannes Patursson, who took us through rooms 900 years old. A particularly interesting room, the bishop's study, contains what is surely one of the most unusual chairs in the world—its seat is made of a whale vertebra.

Mr. Patursson pointed to a glass skylight in the roof. "When I was a boy, that was open to the sky, and a peat fire burned under it. That kind of medieval chimneyless hearth survived in homes here till the 1930's."

Jóannes Patursson was wearing the Faeroese national costume—homespun trousers, embroidered waistcoat, outer coat with silver buttons, a hat resembling a liberty cap, and silver-buckled shoes. I assumed that this was a concession to the tourist's desire for the picturesque. Sverri Dahl, curator of the National Museum of the Faeroe Islands in Tórshavn, dispelled my illusions.



"You'll surely have noticed that many Faeroese men wear the caps—red with a narrow black stripe on young men and dark blue or black on widowers or older citizens [above]. On Sunday you'll find that many wear the complete national dress. And of course on festive occasions both men and women don traditional costumes.

"We Faeroese are proud of our heritage, you know. Sometimes visitors ask whether we are Danes or Norwegians. We are neither;



STACHPHORE BY ALAN WOLFFITT © N.E.S.

we are Faeroese! We're not Danes, even though we were a Danish county until 1948 and are still a part of the Kingdom of Denmark. Of course Danish is taught as the second language in the schools, but Faeroese is a distinct language in itself. It's related to western Norwegian and Icelandic. The Vikings who colonized the Faeroes also settled in Iceland."*

When the Vikings arrived in the Faeroes in their *knarrs*—seagoing wooden vessels—they found that religious hermits from Ireland

had been living in the islands since about A.D. 725. History does not record whether the Vikings wiped out the hermits or absorbed them. Nor can we be certain whether the islands' group name was bestowed by the Celtic recluses or by the Viking immigrants. Some authorities think Faeroe is derived from a Celtic word akin to Gaelic *feor an*, meaning

*For an account of these far-ranging conquerors and colonizers, see "The Vikings," by Howard LaFay, in the April 1970 NATIONAL GEOGRAPHIC.

Summer scramble to stock up for winter sends families to the fields. Raking hay for fodder is Randi Djurhuus's contribution. Other members dig potatoes and turnips, net wild birds, and shear sheep. Here near Tygrøyri, walkie-talkies notify field hands of teatime at home.

Flight leads to capture for half-wild sheep hurtling down a mountainside—and straight into shearing pens. Men and dog could not prevent two shorn beasts from joining the mob. Much of the wool of these northern short-tails is loose enough in late summer to be pulled off by hand.

Livestock graze mountain pastures year round in common herds. Woolen mills on the islands spin a portion of the clip. On long winter nights wives knit sweaters, some for export. Wool, soaked in linseed oil, also caulks fishing boats.



the “Far Islands”; others believe the name comes from the Scandinavian *faar* (sheep) and *oy* (island)—therefore, the “Sheep Islands.”

For two centuries the Faeroes’ Viking settlers were independent; then in 1035 they came under the sway of Norway. After Norway and Denmark united in 1380, Danish was introduced as the written language of the islands. In 1814 the Norway-Denmark union was dissolved, and the Faeroes became a Danish county.

A Home Rule Act in 1948 granted the Faeroes their own flag and currency, and the Løgting (the Faeroese parliament) handles legislation dealing with local affairs. The islands have—since 1953—sent two members to the Danish parliament, which continues to manage foreign affairs and defense. Despite their six centuries of association with Denmark, the Faeroese are still predominantly the descendants of the Norwegian Vikings—a fact borne out by their ancient language as well as by their passion for the sea.

Steel ships and improved navigation aids have lessened the seafarer’s perils since Viking days, but not removed them. In a bad winter, that treacherous sea between the

Faeroes and Iceland—historically one of the world’s richest sources of cod, haddock, and herring—becomes a fearsome widow-maker.

Plenty of Fish—and Danger Too

On a mid-February morning, about 10 o’clock, as the light was just beginning to come into an oyster-colored sky, I stopped by a battered trawler at the Tórshavn docks. Her sides were buckled and rust stained. Above her stern the Faeroese flag, a blue-bordered red cross on a white background, streamed in the bitter wind. I asked a ruddy-faced fisherman standing on the deck where they had come from.

“Iceland,” he said. “Very bad weather. Plenty fish. But weather very bad. Heavy ice.”

“Heavy ice” was his term for freezing salt-water spray that settles on a ship’s superstructure and rigging and immediately turns to ice. Unless it is swiftly hacked away or dissolved by hoses emitting high-pressure steam, it will cause so much top weight that the vessel may turn turtle.

“We were lucky,” the sailor said. “Two British trawlers sank. Many drowned. Only one man saved.”





"On the far edge of an empty sea": Thus the photographer describes isolated villages such as Gjógv, which clings to Eysturoy Island at the head of a minuscule fjord. Finding no hotels or cafes in such small communities, Mr. Woolfitt lodged in hospitable



PHOTOGRAPH BY ADAM WOHLFITZ © NATIONAL GEOGRAPHIC SOCIETY

private homes. A focus of social life, the parish church at left preaches the Lutheran faith, the established religion of Denmark. Norsemen chose for their settlements the few level areas along the shores of the basaltic chain, 400 miles west of Norway.

It was the British that time, but there can hardly be a family in the Faeroes that has not lost one or more of its menfolk amid the Atlantic's storm-lashed breakers or the fast-running currents that slice between the islands. The Faeroese, nonetheless, cherish an old saying: "A boatless man is a man in chains." The sea is in their blood.

Two Faces of the Faeroes

Throughout our journeys round Streymoy, we had been constantly aware of the great brooding heights of Eysturoy, the Faeroes' second largest island, just northeast of us (map, page 416). We went over in a small boat across a channel only a hundred yards wide and about two fathoms deep. At certain tides the current rushes through this narrow gap at as much as 12 knots. A sailor myself, I was thankful we encountered comparatively slow-moving water—about four knots.

From the pretty little village of Oyri we had a close view of the great mountains of northern Eysturoy. True, the highest of them, Slættaratindur, is no more than 2,894 feet. But soaring above Sundini channel, wrapping the snow-laden clouds round its head, it makes a more impressive sight than many a famous peak. Nearby are stark cliffs that Faeroese poet Hans A. Djurhuus may well have had in mind when he wrote: "*Bergid stendur svart sum rúnarbundid*—The sea cliff stands black and still, as if spellbound."

The Wagnerian grandeur of northern Eysturoy has its contrast in the south, where the valleys are sheltered and the grazing rich. Gracious folding hillocks around the village of Sydrugøta were covered with brilliant green grass the sheep had munched so closely that they looked as if some giant had passed a lawn mower over them. That day we saw the two faces not only of Eysturoy but of the Faeroes—the one bleak and awesome, the other pastoral and domestic.

The time had come for us to end our winter visit to the islands, but I would come back

in summer. The night before we left, Axel Mortensen and his sister Elin invited us to their home for a farewell visit. While Axel and I chatted, I heard Elin urging my wife to try some Faeroese delicacy.

"Rather good," I heard her say, "a bit like anchovy."

Then it was my turn. Salted raw whale blubber! Grayish white, cut thin like smoked salmon, it had a leathery consistency, but a pleasant fishy flavor.

"We need it," Axel Mortensen explained. "Whale blubber is full of vitamins, especially vitamin A. Danish doctors recently carried out researches here and concluded that whale blubber is essential to our diet, and far better than any tablets."

Suitably fortified by the blubber, my wife and I next morning made the long trek by car and boat to the airport. The sky was the color



Landlubber pony balks at boarding the post boat *Súlan* for a trip from Mykines to Sørvágar. The men finally pushed hard enough to budge the animal from its stand on the landing's timber fenders. Tides, currents, and weather make the arrival of boats—the only transportation—a *kannka*, or "maybe," affair. In winter Mykines is sometimes cut off for as long as six weeks.

of old pewter, and snow was on the wind. We waited anxiously with our fellow passengers to see whether the aircraft would arrive before a blizzard developed.

"Do you think we'll get off today?" I asked an airport attendant.

"Kanska," he smiled.

"And kanska not!" said my wife with a sigh.

At that very moment we heard the drone of the engines. We got out just in time, for I heard later that after our departure all air traffic in and out of Vágar was stopped for several days. Kanska, indeed!

Summer Sun Brings Smoother Seas

Coming back alone in July, I found the islands strikingly green under a cloudless sky. It proved to be an exceptional summer—nearly six weeks without rain, something

almost unknown in the Faeroes. Prime Minister Kristian Djurhuus told me he could not recall another summer with so many consistently fair days in all his 75 years.

Traveling north from Tórshavn in the steamer *Pride* to the Faeroes' second largest town, Klaksvik, on Borðoy (map, page 416), I was dazzled by the hosts of birds soaring round the cliffs like blown confetti. In summer the islands are an ornithologist's paradise. Gannets, guillemots, herring gulls, and kittiwakes were wheeling and diving everywhere, and every now and then a group of "sea parrots," or puffins, would bob past.

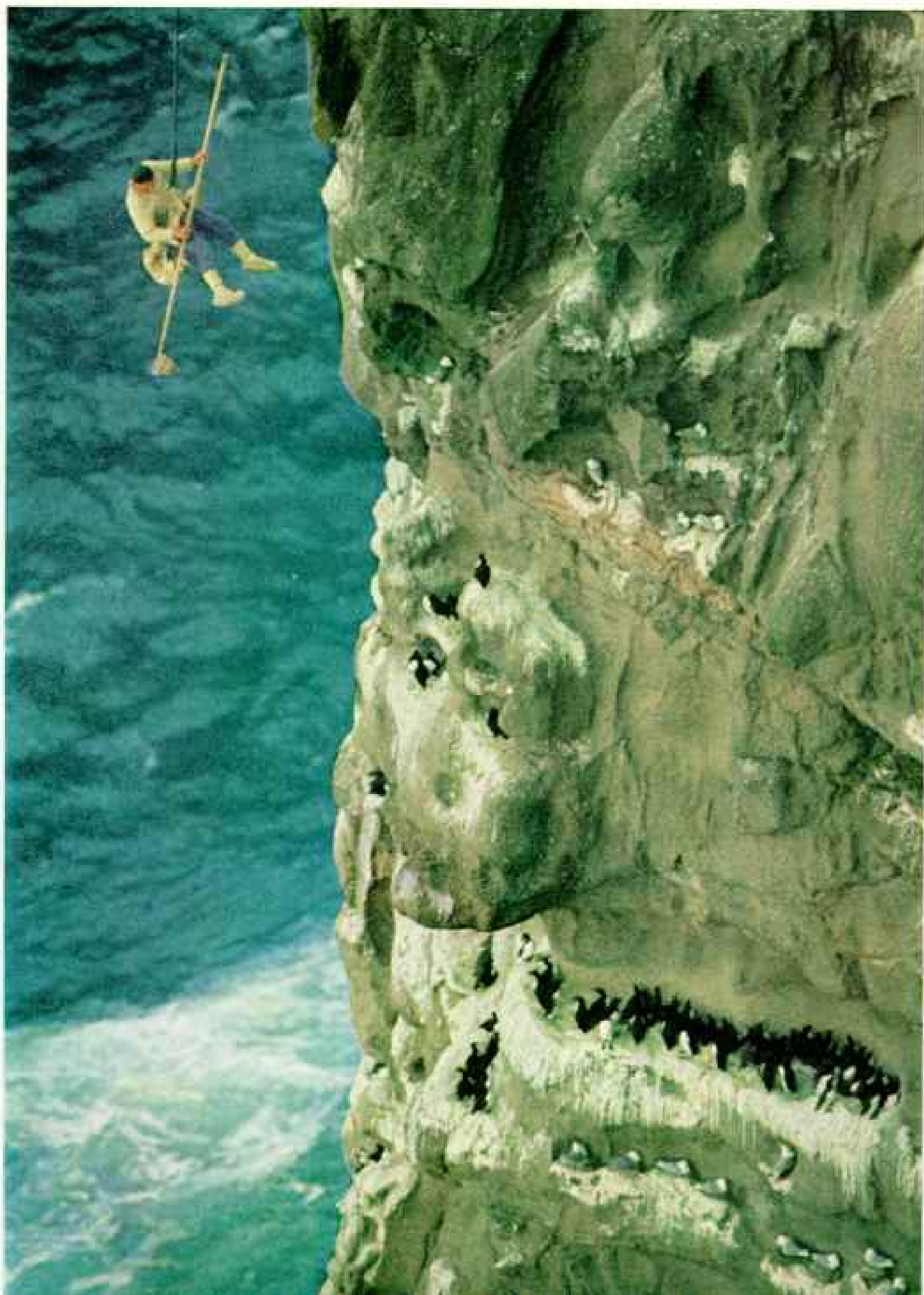
In contrast to the rough winter seas I remembered, the summer sea was glassy, and as we approached Klaksvik, the water reflected bright houses and the hulls and masts of trawlers. Little more than a hamlet 30 years ago, Klaksvik now has a population of some

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REINHOLD © NATIONAL GEOGRAPHIC SOCIETY



Dangling at the end of a rope, an islander gathers eggs



Falling rocks and whistling winds, surf crashing hundreds of feet below, even the knowledge that men still lose their lives in this risky business—no hazard stops Faeroese from collecting prized guillemot eggs on Skúvoy. Riding a dizzying sling on a 500-foot length of tarred rope, Poul Mikkelsen reaches a slippery ledge where he scoops up eggs in the sheepskin bag on his pole. Shouting above the wind, he signals “heave in,” and friends man the rope (below); children arrange his haul—100 to 150 eggs—with those already gathered, foreground. Preserved, the eggs appear as special treats on winter tables. At lunchtime the family of the aerialist brings tea and pancakes (left).

The nine-day egging season in early June allows each pair of birds time to produce another egg undisturbed, thus perpetuating the colony. For centuries, the isolated Faeroese have supplemented their diet by harvesting sea birds and their eggs.



BLACK-AND-WHITE (LEFT) AND COLOR (RIGHT) BY ADAM BOULTITT © 1983

4,300—half under 25 years old. Its natural harbor has become a center for deep-sea trawlers, and several firms have built modern canning and salting and freezing plants within easy reach of their boats.

Until the mid-19th century the cod caught off the Faeroes was all wind-dried, mostly for local consumption. Then salt-curing came in and with it one of the islands' biggest exports—salt cod to Italy, Spain, and Brazil. Today salted cod is giving way to frozen cod fillets.

“When even small stores have freezers, we must change our pattern,” Mr. Kjartan Lützen of the Kjølbro factories told me.

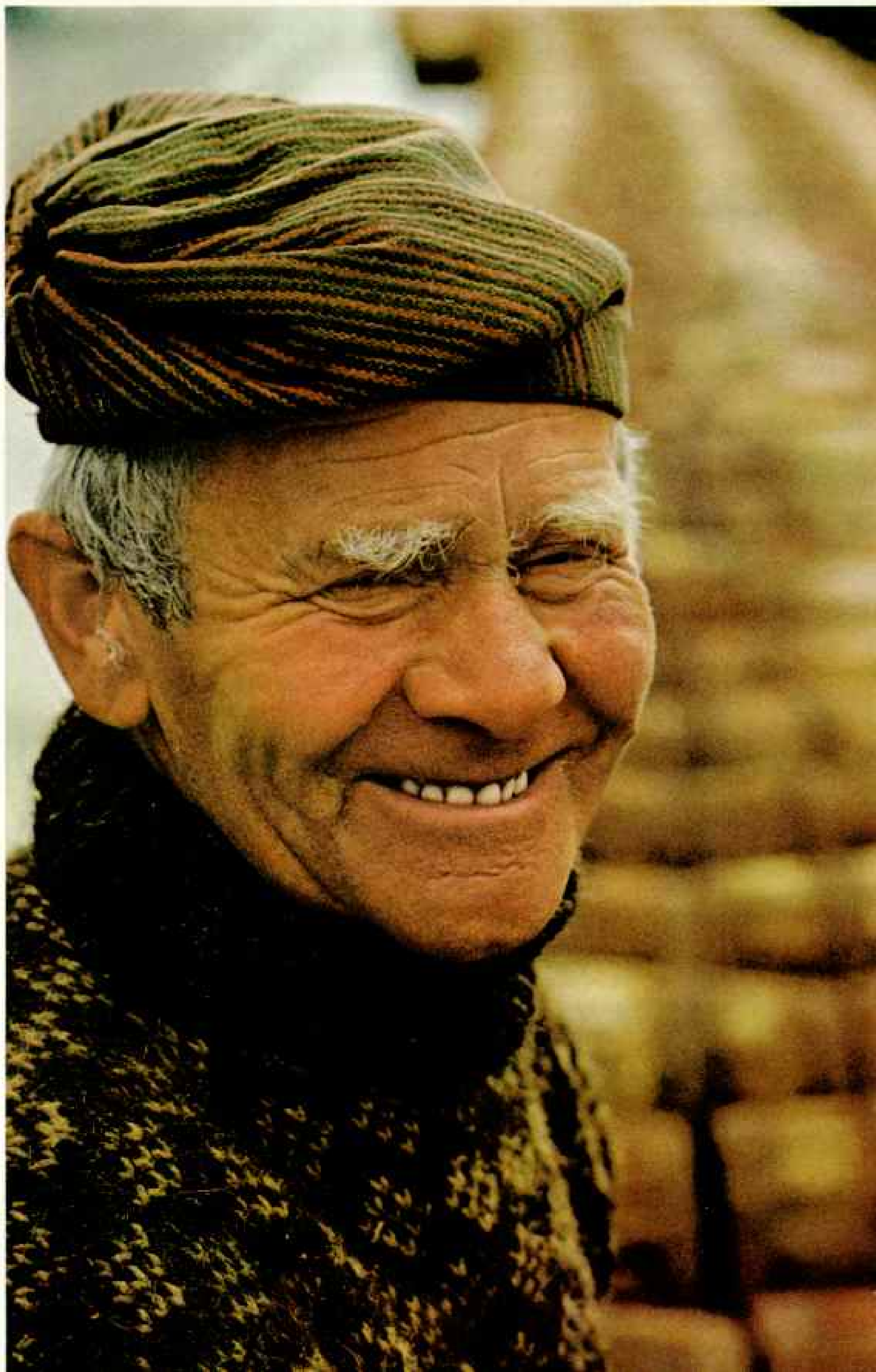
At the quay a trawler, just back from Icelandic seas, was unloading its catch in a silver ripple from nets to transporters. Nearby, aboard the small fishing boat *Royndin Frida*, I found Chris Joensen, trawler agent, wild-fowler, and keen fisherman, who would take me on a voyage round the northern islands.

We motored up Haraldssund: between Kunoy and Bordoy, and Chris called my attention to a green patch on Kunoy.

“That was a village,” he said. “Then one day in 1913 all seven able-bodied men went out fishing—and not one came back. A storm sprang up and overwhelmed their boat. The women and children tried to carry on with farming, but it was more than they could manage. So they had to move to another village farther down the coast. There’s one old man still alive who remembers that day. He was a boy of 14 when it happened.”

“What a lonely life it must have been in the old days,” I thought aloud.

“Yes,” said Chris. “Before modern communications, the villagers here were very isolated. If someone got sick, they would spread a white sheet on a green field as a distress signal. This would then be repeated chain-fashion all the way down to Klaksvik, and



from there a doctor would set out by boat. Smoke signals were also used between one island and another, to summon a doctor or a priest, or to spread word that a school of whales had been sighted."

We came out into the open sea and headed for the awe-inspiring cliffs of Enniberg, the northernmost point of Vidoy. Chris handed me his binoculars.

"Have a good look at the cliff face. Look at the top—see the rope? Now, follow it down."

A rope snaked over the sheer cliff, and I could see thousands of sea birds darting around it. Suddenly I saw the man. Suspended in a rope sling, he was pushing himself off the cliff with his feet. As I watched, he disappeared, only to emerge again on a narrow ledge some sixty feet below the cliff top. Beneath him—a drop of a thousand feet—the Atlantic roared on gap-toothed rocks.

This, Chris explained, was one of the famous Faeroese birdcatchers, who every year capture some 300,000 gannets, guillemots, fulmars, and puffins on the cliff faces. Though they follow one of the world's most hazardous occupations, young men eagerly volunteer to go birdcatching, regarding it as proof of manhood. As for the birds, their colonies are largely protected by the very nature of the Faeroese. Conservative catching practices are a long-time tradition.

Sea Birds Supplement Faeroese Diet

We were right under the cliffs now, and I could see the man as he emerged from the ledge, swung himself out, and was hauled up by friends at the top. The belt round his waist was heavy with the downy white of sea birds. Their flesh plays an important part in the diet of the Faeroese, and it is good to eat, too—especially guillemot's breast and puffin stuffed with a sweetish dough. The sea birds' eggs are also eaten (pages 430-31), and their feathers sold for down.

Chris explained that the birds were caught with a *fleygustong*—or *fleyg*—a local invention that looks like a large lacrosse racket. The *fleyg* has been in use in the Faeroes for as long as there are any records. It may even date back to Viking times. The hunter stands

with the *fleyg* in his hands, waiting until a bird passes within reach. With a quick jerk of his arms and wrists he traps it in the *fleyg*, removes it from the net, wrings its neck, and secures it to his belt—all the while clinging to a ledge no more than a few feet wide, slippery with bird droppings and hundreds of feet above the sea.

Puffins Fall Prey to Men and Rats

I very much wanted to observe the sea birds firsthand, and the best place for that was Mykines, westernmost of the Faeroes. It has the islands' largest puffin colony, possibly because it is so inaccessible. Heavy surf on the landing stage permits only small boats to reach it. The puffin colonies in the larger islands have been decimated, the Faeroese ornithologist Niels á Botni had told me, by the arrival of shipborne rats that prey on the birds in their underground nests.

From nearby Vágur a boatman landed me on Mykines early in the morning. He would come and collect me that night, *kanska*—weather permitting. As he departed, I made my way through the silent village of Mykines and struck out westward toward Lundaland, Land of the Puffins.

Long before I reached the main colony, I could make out where it lay by the thousands of puffins whirling over the cliffs below it. Others clustered in great groups on isolated rocks and basalt walls, looking like convivial gatherings of red-nosed clowns.

As I drew closer, I could hear the snoring sounds of innumerable birds, comfortably ensconced in the holes they had dug out of the turf to make their nests. The air was full of the whir of wings as puffins flew in from fishing, some carrying two or three fish in their beaks to feed their young.

Just below the breeding ground I caught sight of a *fleyg* man, his net whipping into view above a turf-clad cliff. I crept up silently so as not to disturb him and watched from some 20 feet above his head. He was balanced on a four-foot ledge, his eyes on the circling birds and his net motionless on its long pole. Occasionally, as he spotted a puffin on a course

(Continued on page 438)

Grinning jack of all trades, Eydin Gøthe practices many skills, as every Faeroe-man must. A farmer today in Gøta, he may be a shepherd, a herring salter, or a whaler tomorrow. Children learn at an early age to work as their parents do.



“Grindabod!— Whales in sight!”

THE CRY at seven on a summer morning sets off a community-wide whale hunt, a traditional food-gathering custom lost to other Atlantic islands. After a fisherman sights this school of *grind*, or pilot whales (*Globicephala melaena*) and lofts a makeshift flag, the news races through the island of Vágar. Classrooms empty, businesses close, and boats gather.

As in the whale hunt viewed by the author (pages 439 and 441), the growing fleet cautiously herds the 10- to 25-foot whales toward shore—here at Tindhólmur. They could escape at any time by sounding beneath the boats. When the whales reach shallow water (above), men begin the kill. At right, a long harpoon strikes home.





BRISCHING (REAR, LEFT) AND RODACHURIS (INCLUDING FOLLOWING PAGES) © N.E.S.

Grim epitaph to the whale hunt: a bay runs red (following pages). Nine hours after the sighting, the kill is over, but the day does not end. After securing the carcasses on lines, the men—exhausted but exhilarated—go home to sing and dance all night in age-old celebration of a successful hunt. In other times, the harvest often meant survival through the winter.

Officials measure and apportion the animals—the largest whale to the finding boat, a share to damaged vessels, the rest divided among all participants, who cook or air-dry the meat for the future.

Thousands of steaks: thousands of dinners. A flenser works at the jaw of a 72-foot fin whale, harpooned by a whaler of Streymoy. Great whales have been brought to the verge of extinction, and this last commercial outfit on the islands has recently closed.







As if in tribute to the toll of the sea, marsh marigolds wreath a rotting ship beached near Tórshavn.

"In great peace and harmony," wrote a Danish visitor in 1810, the Faeroese live with one another. Change comes slowly to these remote, sea-girt isles; here, as generations have done before her, a child of Skúvoy gathers marigolds while her pet lamb browses.



close to him, there was a quick flick, a swoop of the net, and the puffin was whipped out of the air like some colorful butterfly. The man caught six in the quarter hour I watched.

The kanska situation being favorable, my boatman returned for me that evening and deposited me back on Vágar. Two days later I embarked for Suðuroy, the southernmost island, where I visited Fámjin, one of the Faeroes' most attractive villages (map, page 416). It has a steep cliff behind it, on top of which is one of the finest trout-fishing lakes in an archipelago famed for trout.

Fámjin is also celebrated for a great coup against the French. Sometime in the 18th century, so the story goes, a French merchant

ship anchored off the shore, and two local fishermen rowed out to sell the sailors some fish. On board the ship were two women who, with Gallic dedication to quality in food, refused to buy without inspecting the catch, so they scrambled down into the boats. But no sooner were they on board than the fishermen rowed rapidly back to the village. (There was a dire shortage of marriageable females on the island at that time.)

A swell was beginning to rise in the bay, and the fishermen had rightly calculated that the furious Frenchmen would not be able to follow them. Within a few hours a storm blew up, compelling the merchantman to raise anchor and sail off. And so the French women



REARRANGED BY ADAM WOOLFITZ © NATIONAL GEOGRAPHIC SOCIETY

stayed behind and were married by the local pastor to the two fishermen.

"To this day," an elder of Fámjin told me, "the people of our village give their boys French names—names that are otherwise unknown in the islands."

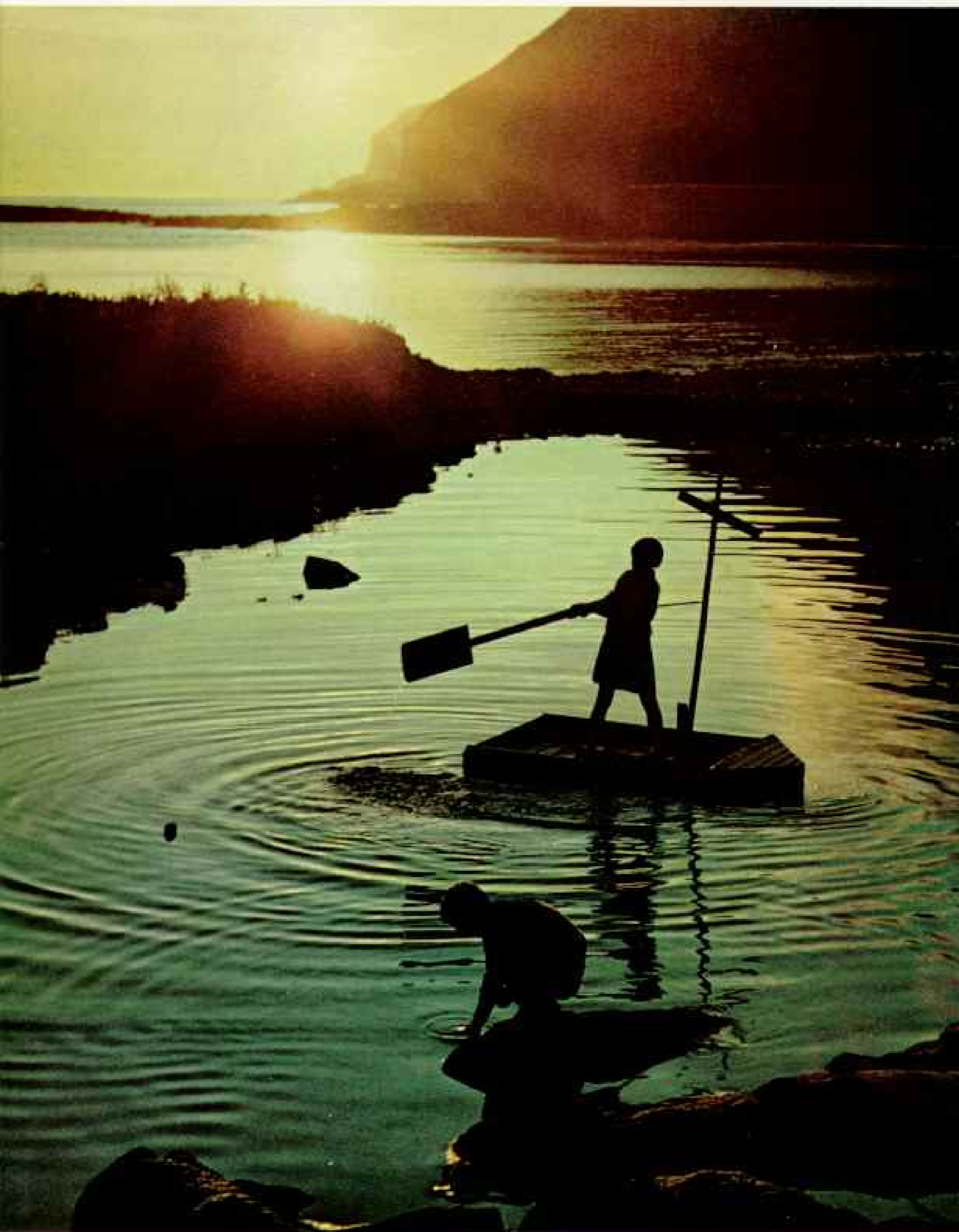
Indeed, I did notice that there were many more dark heads and olive skins in Fámjin than in other Faeroese villages, where people are predominantly blond and blue-eyed.

I was just climbing down the path from Fámjin's lake when my driver came running from his taxi. A school of pilot whales had been sighted off Sandoy, 20 miles north of us. Since it was growing late, the hunters would not herd them for the kill until the next day.

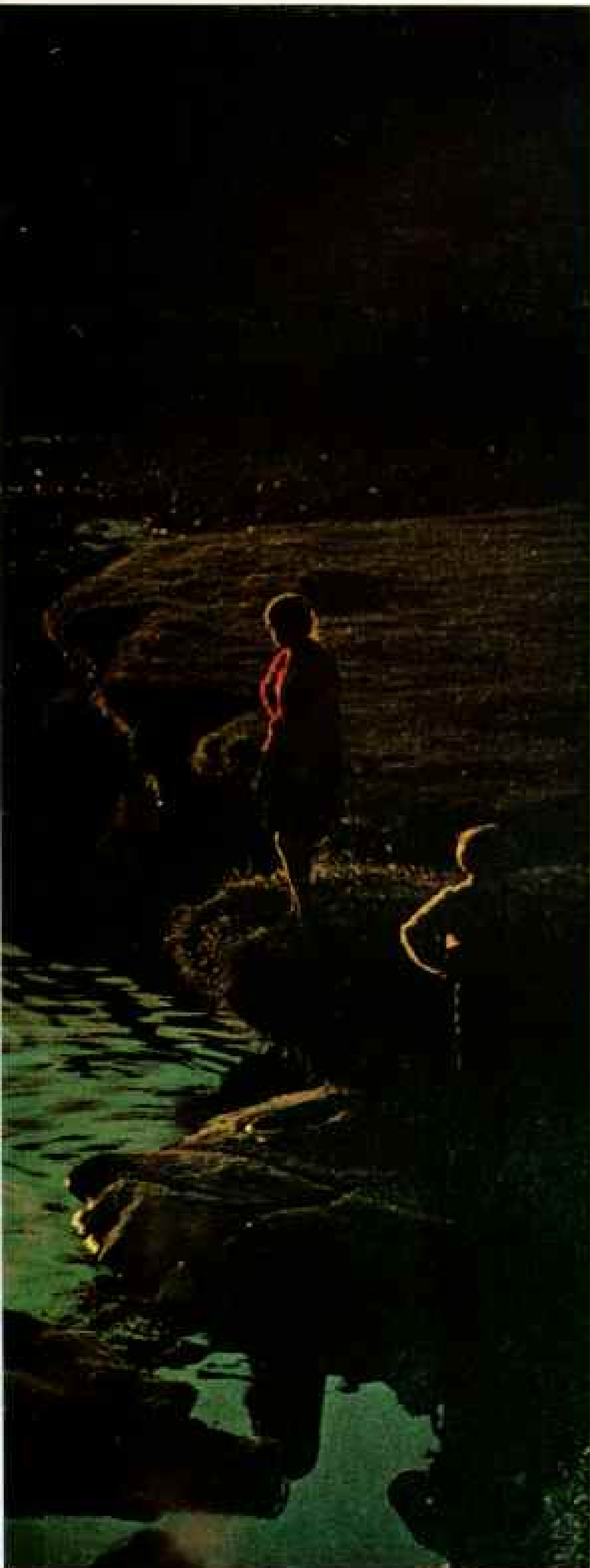
I just had time to charter a boat and get up to Sandoy overnight.

Next morning on Sandoy, gazing out from my viewpoint above the village of Sandur, I could barely make out a semicircle of boats on the horizon. Several hours passed uneventfully, while my neighbors kept handing round *skerpikjöt*, inviting me to "Eat! Eat! We shall need strength." Then, about noon, the boats drew closer and ahead of them I could make out the spouting fountains from the whales' blowholes. The semicircle of boats was herding the school toward the sand beach at the head of the bay—where the *grindadráp*, or whale killing, was destined to take place.

My neighbor, a man in his sixties, wearing



"The sun shone dazzlingly on fair shields, halberds and richly decked axes and spears," rings a verse of a Faeroese saga. Now Viking weapons give way to toys as youngsters find summer fun past 10 p.m.



ESTADHORN © 1942

on Suduroy. But in island tradition and memory, the spirit of the Norsemen lives on.

a dark-blue liberty cap, gave me a nudge as the men began to move down the beach. He unsheathed a large whaling knife, and I noticed that all the others had similar fearsome weapons or harpoons in their hands. This was clearly men's work, for the women and younger children stayed watching from the road above.

The Faeroese are among the most courteous, hospitable, and kindly people I have known—but I learned in the next few minutes that the Viking fury which once made their ancestors the terror of Europe is not wholly dead in them. As the boats closed the head of the bay where we stood, I could see men poised in the bows with their harpoons at the ready. Then, just as the whales began to feel the bottom coming close under their bellies, a great cry went up.

Ninety Whales in 15 Minutes

On every side men began hurling harpoons and lances from the boats. Some, with knives in their hands, leaped overboard into the maelstrom of whales and boats. Those on the shore ran into the water with knives and grapnels to seize the whales before they could turn and make for the open sea. I knew the whales were needed for food and that the pilot—a small whale, under 25 feet long—seems in no danger of extinction as a species. Yet it was difficult not to feel pity for their massive incompetence as they wallowed in the shallows to their death (pages 434-7).

It was over in 15 minutes, but it was nearly dark before the whales had been cut up and the meat distributed. All that was now left to show that a whale hunt had taken place were 90 skeletons on the beach.

I had taken no part in all the activity, yet I too felt something of the exhaustion shown by my neighbors as they reeled back up the paths to home—but not to sleep.

"Come on," said a young man I had been talking to. "Tonight we sing the whaling song, and tonight we drink and dance!"

Less than an hour afterward, just about every man and woman in Sandur had put on festive attire. From house after house deep male voices resounded in the chorus: "*Raske dreng, grind at draebe det er vor lyst—Strong men are we, and killing whales is our delight.*"

From house to house we all went, everyone sharing food, drink, and hospitality. All hands were still singing and dancing the medieval Faeroese chain dance when I left at two in

the morning, having managed to find an old boatman willing to take me across the channel to Streymoy.

The weather had changed and a summer thunderstorm was hurling wind and water down the dark fjord. The 20-foot boat beat her way through broken waves, and both of us were soaked to the skin within five minutes of leaving the jetty.

Viking Suitor Had to Fight or Swim

As we crossed, I could just make out the dark silhouettes of Hestur (the Horse) and Koltur (the Colt) on our port beam. A somber legend is told about these islands.

It seems that a young Viking from Koltur, named Magnus, loved a maiden on Hestur, and swam across the 1,400-yard channel at night to visit her secretly, because her father opposed the match. One night as he staggered ashore on Hestur, he found the father waiting for him with an ax in his hand.

"An honest visitor would come in daylight," said the old man, "but you come like a thief after dark. Swim back or face my ax!"

The young man chose to turn back into the sea. He was never seen again.

"But ever since then," I was told, "the current between the two islands has been fierce, and the waves worse than anywhere else in the Faeroes."

As we came under the lee of Streymoy, the weather improved. At Kirkjubøur, Henning Thomsen met me with his car.

"So you were at the grindadráp," he said a little enviously. "Ah, we'll soon make you a Faeroeman!"

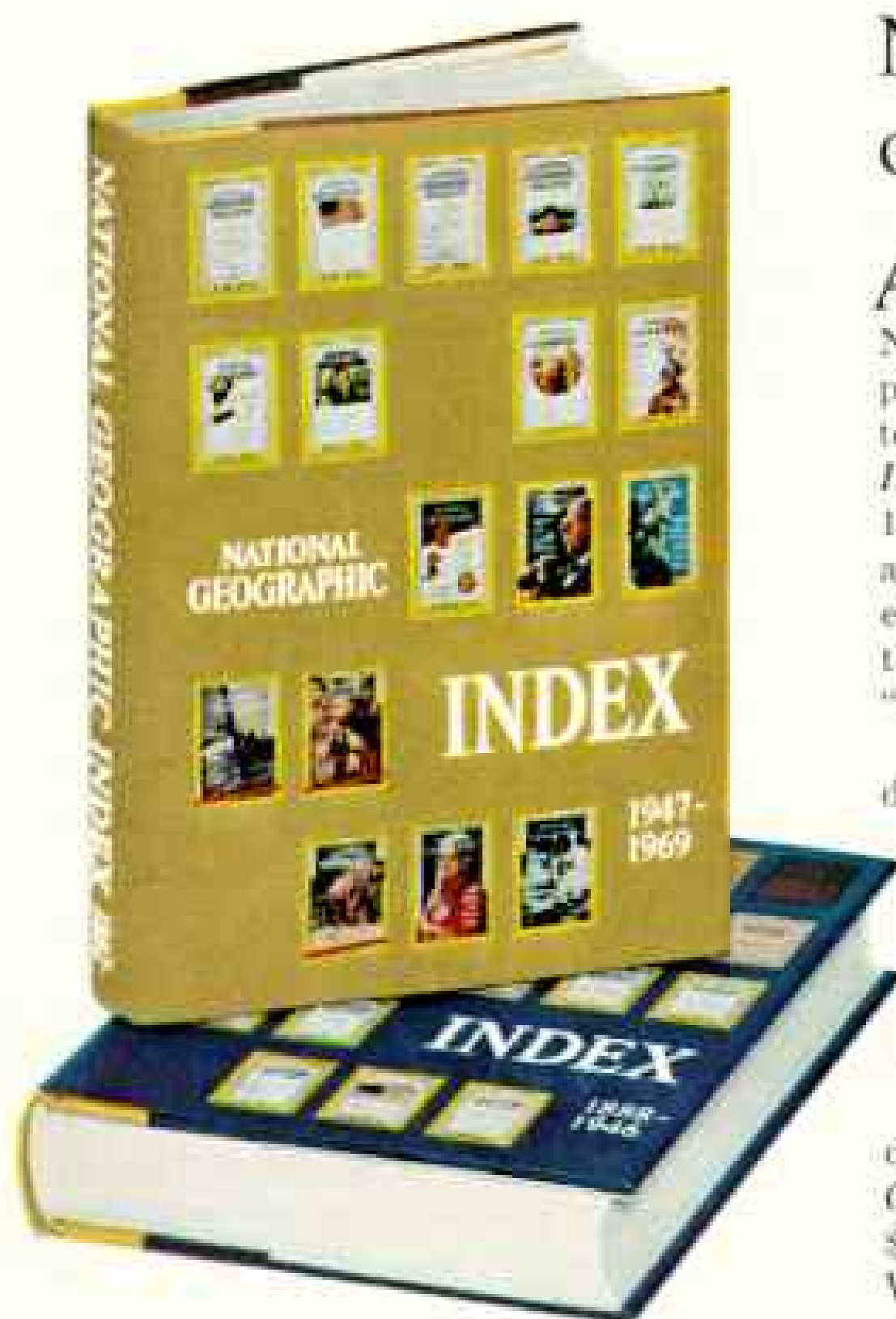
Faeroeman or not, I learned to become a kanska philosopher in the next few days. After the long journey to the Vágar airport, I was dismayed to find that everything was shut down under a blanket of white cloud.

"Maybe tomorrow," the ticket agent said.

For four days the clouds sat over Vágar; yet when I telephoned friends back in Tórshavn they always said, "But it's lovely here! The sun is shining!"

The sun was even shining on Vágar when, on the fifth day, we finally took off.

As the aircraft turned south toward England, I looked back. There they went, the Isles of Maybe, still steaming proudly through the ocean—a right and proper home for the children of the Vikings.



New index to 23 years of *National Geographic*

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National Geographic Index, 1947-1969 may be ordered from Society headquarters for \$7.50. *National Geographic Index, 1888-1946*, \$6.50. Both volumes \$13.00. Address National Geographic Society, Dept. 61, Washington, D. C. 20036.

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PHOTOGRAPHS BY CHARLES WALCOTT (LEFT) AND DOUGLAS SMITH (UPPER LEFT) © N.G.S.



PHOTOGRAPHS BY LEE SNYDER (ABOVE) AND DOUGLAS SMITH (UPPER LEFT) © N.G.S.

FOR CENTURIES man has pondered the mystery of animal migration. How do sea turtles find their way back to isolated beaches to lay their eggs? How do arctic terns navigate 5,000 miles from southern wintering areas to northern nesting grounds? Biologist Dr. Charles Walcott (left, standing) seeks new insight by studying pigeons bred for homing abilities; he releases young ones at Hanscom Field near Bedford, Massachusetts. The three-mile flight to their loft in Lincoln helps train them. He equips proven homers with tiny radio transmitters (left), frees them 50 to 120 miles from the loft, then follows them by airplane.

With National Geographic Society support, Dr. Walcott, of State University of New York in Stony Brook, hopes to cast light on the guidance secrets of all homing and migrating creatures.

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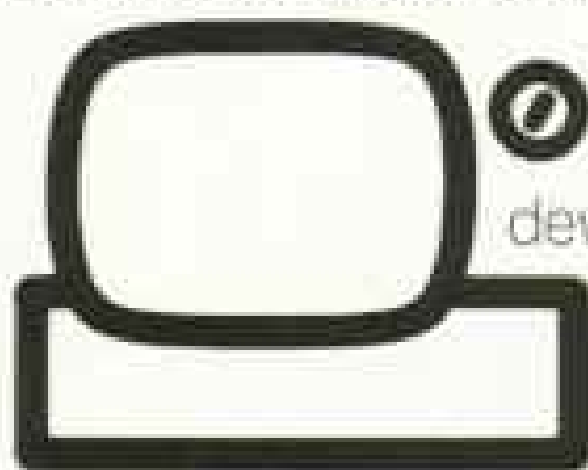
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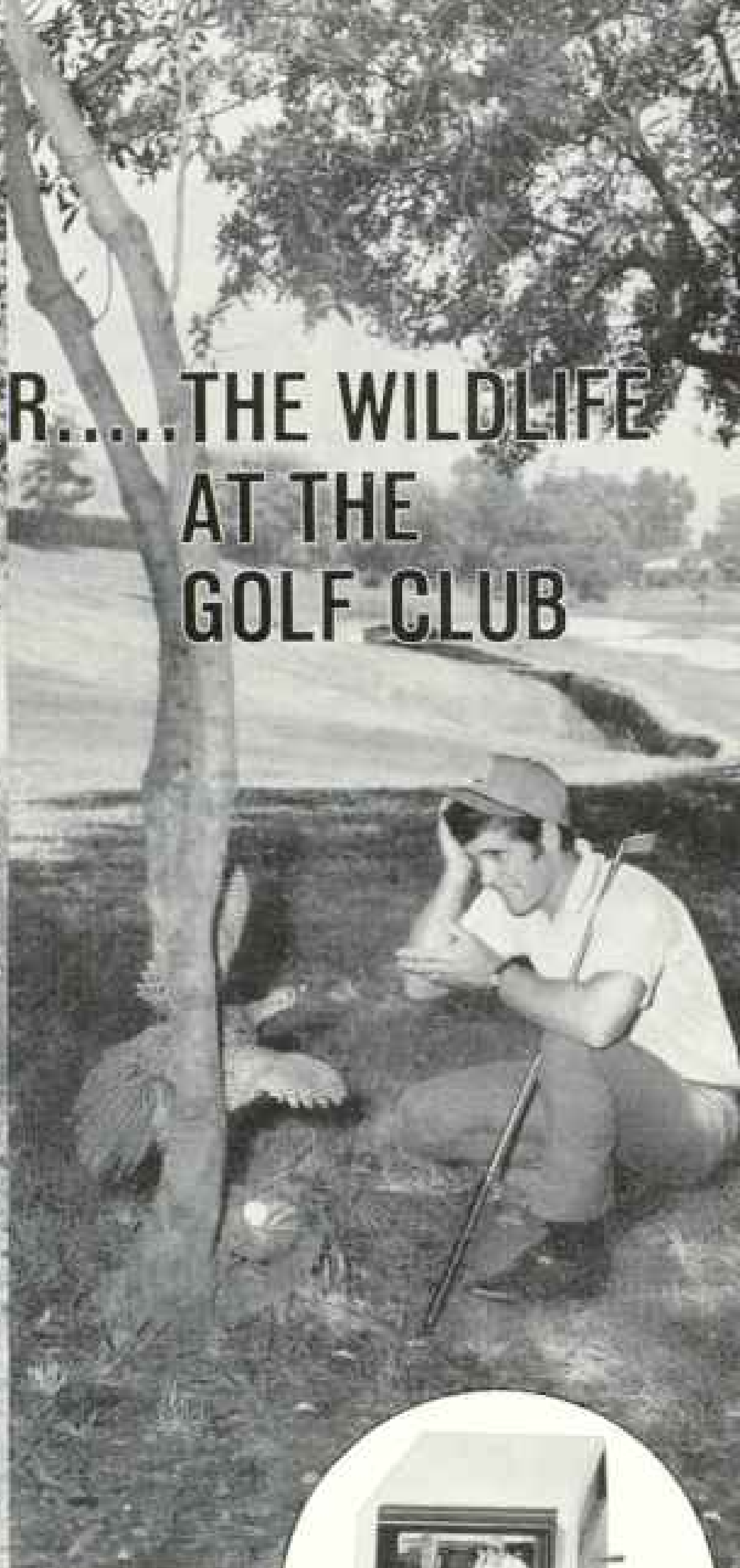


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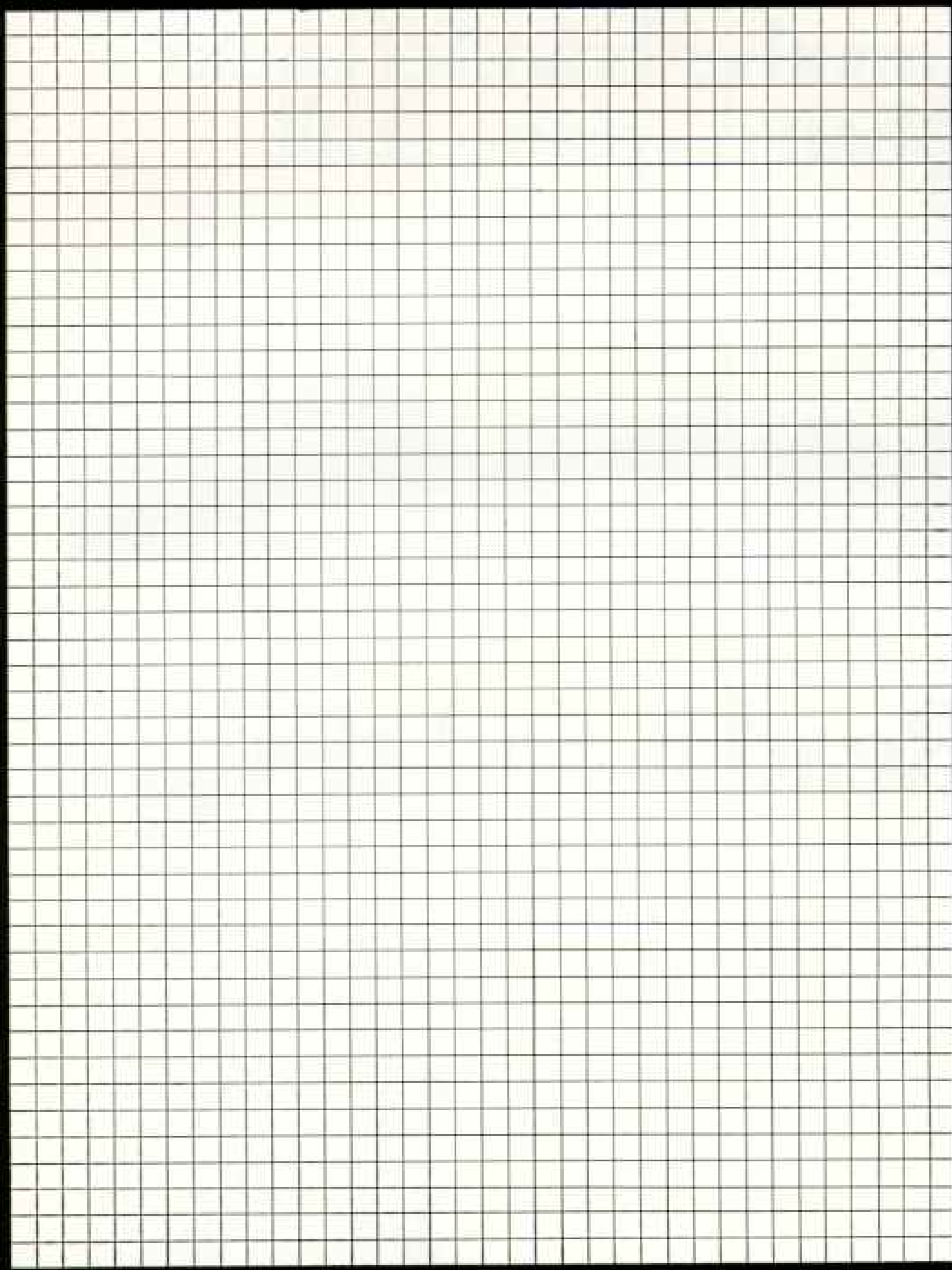
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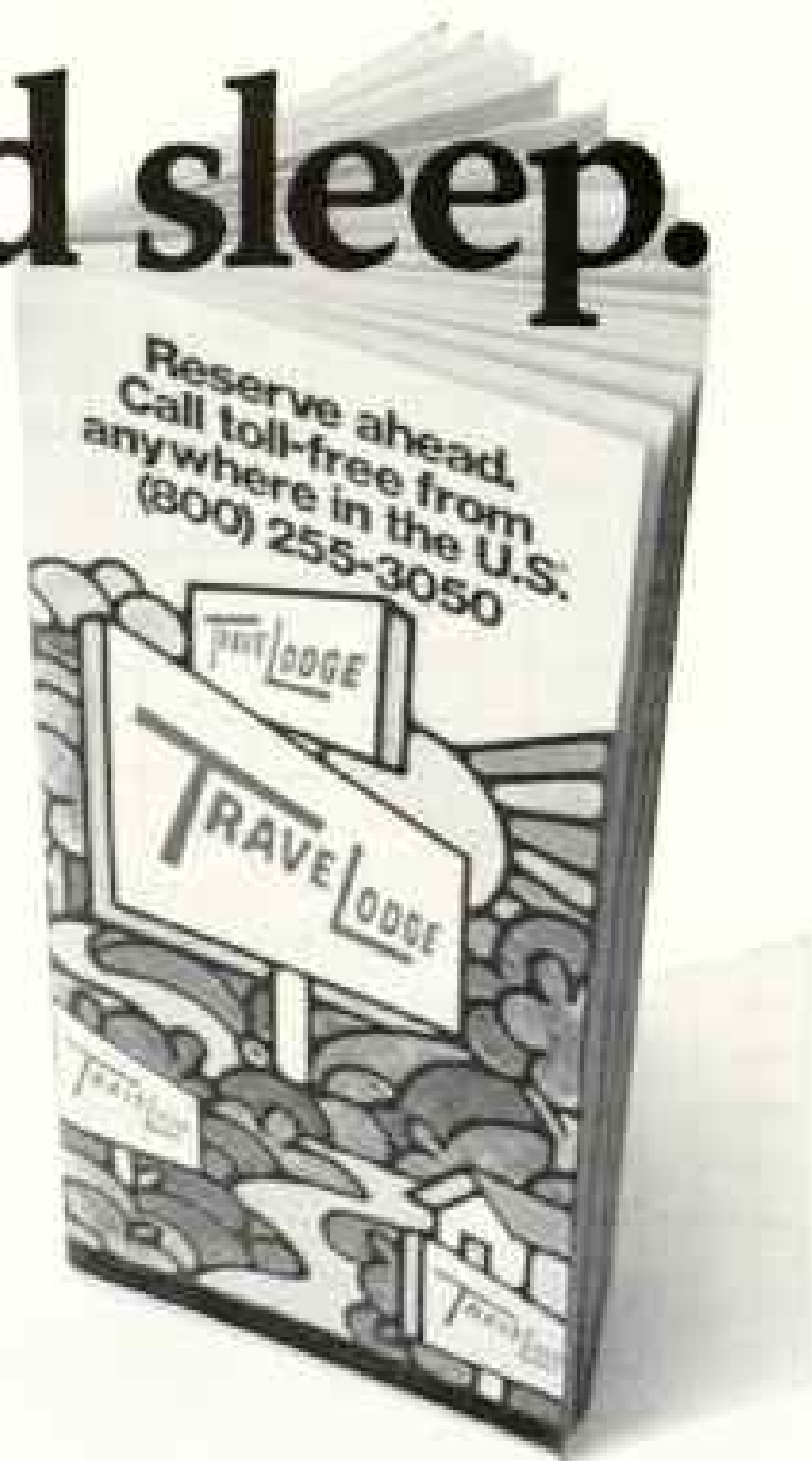
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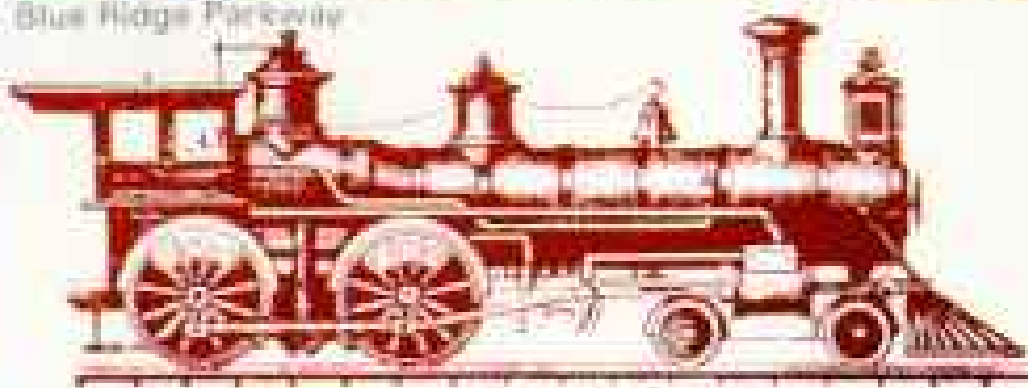


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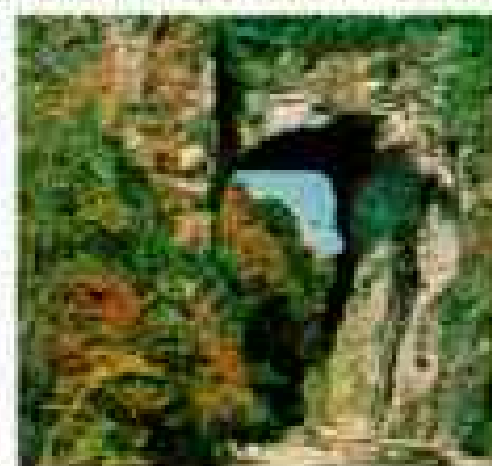
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This bird sanctuary

Imagine a tiny green hump of an island in a Louisiana swamp. Its total area is less than five square miles.

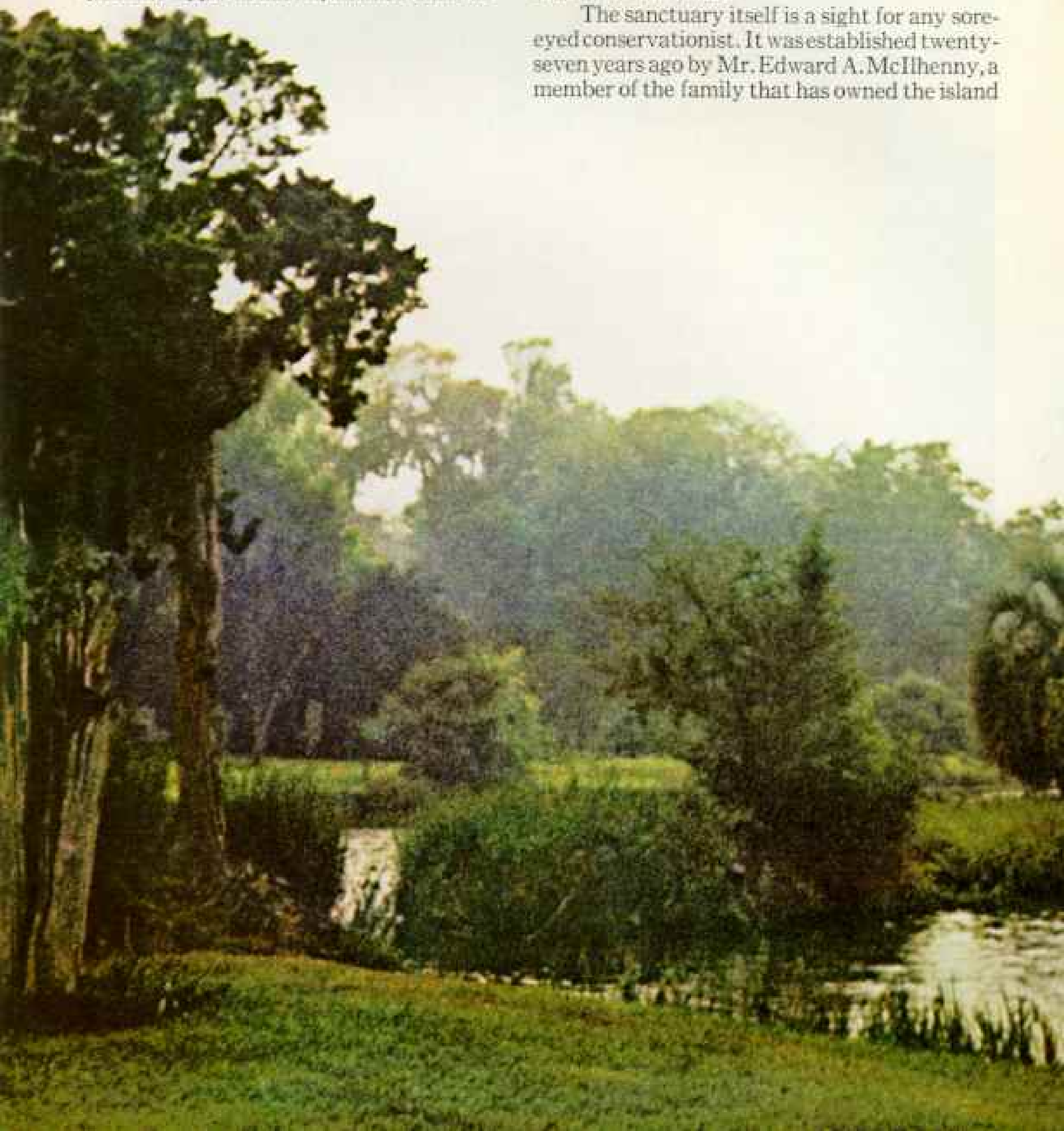
Put two hundred houses on it and seven hundred people. Add one of America's largest rock salt mines, the Tabasco® sauce factory and over a hundred oil wells. And what have you got? Overcrowding?

Quite the opposite. Avery Island seems al-

most undiscovered. A place for the painter and the poet.

Its bird sanctuary sits in a 200-acre garden. Here you find irises from Siberia. Grapefruits from Cochin. Evergreens from Tibet. Bamboo from China. Lotuses from the Nile. Soap trees from India. Daisies from Africa's Mountains of the Moon. And the world's most complete collection of camellias.

The sanctuary itself is a sight for any sore-eyed conservationist. It was established twenty-seven years ago by Mr. Edward A. McIlhenny, a member of the family that has owned the island



is an oil field.



for 153 years. It had one purpose. To save the snowy egret from extinction.

Known as Bird City, the sanctuary started with only seven egrets. Now, over 100,000 nest around its man-made lake every year. To see these alabaster birds sharing their Eden with herons, ducks, coots, swans, cormorants, turtles, deer and alligators is almost a primeval experience. It seems to put the clock back to the beginning.

And, wherever you wander on this peaceful island, you have to look hard to spot the oil wells. Many are hidden by grandfatherly oak trees bearded with Spanish moss. Others are

screened by banks of azalea and rhododendron. To Jersey's affiliate, Humble Oil & Refining Company, this respect for environment is only right and proper.

The oil industry provides Louisiana with one-third of its total revenue. But even this contribution would be a poor excuse for defiling beauty or disturbing wildlife.

Amen say the egrets.

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ROBERTS BIRDS



Swallows



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THE BEAUTY AND MYSTERY OF BIRDS have fascinated man for centuries. They have been worshipped as deities; accorded supernatural powers; their movements studied as omens. We have marveled at their variety and studied their powers of flight, made them symbols in art, politics and religion. Their brilliant plumage has been so treasured that feathers have been used as currency in some societies—and still are on the South Pacific island of Santa Cruz.

On every continent, the melodious voices and graceful flight of birds have been of great inspiration to artists in all fields of creative endeavor. Each, in his own way, has interpreted the wonder of birds for his fellow men, creating evocative works of art that have furthered man's search for beauty, for freedom and for his own eternal spirit.

To the earliest cave painter, birds represented mystery—to be depicted, envied, respected, but never solved. For Leonardo, they held the secret of man's liberation from terra firma. To Shelley and Schubert, birds suggested poetry and song. To Audubon, they were the essence of life itself.

Now, a great artist of our own time—Gilroy Roberts, the dean of America's medallist sculptors—has taken up the challenge of capturing the beauty, the grace, the majesty of birds in a medium of outstanding intrinsic value.

Roberts' medium is the fine art medal. He is famed throughout the world for his John F. Kennedy portrait which appears on the U.S. half dollar and for his extraordinary ability to create modern masterpieces with the finely-detailed quality of classical medallist art. He is only the ninth man in the history of the United States to have served as Chief Sculptor-Engraver of the U.S. Mint, and since 1964 he has been the guiding light at the world's foremost private mint, The Franklin Mint. It is probably fair to say that more people collect coins and medals designed by Gilroy Roberts than by any other sculptor who ever lived.

In his spacious and sunny studio at The Franklin Mint, about 12 miles southwest of Philadelphia, Roberts leisurely and thoroughly studies the anatomy of a bird before beginning his sculpturing. A high-intensity lamp highlights the silver of his flowing hair and shadows the fine network of lines on his strong-boned face. But his eyes are as piercingly clear, his fingers as nimble and talented as they have been throughout the 35

years of his career as a sculptor and engraver.

His career has been long and creatively satisfying, with his works exhibited widely in this country and abroad. But in the back of his mind was always a promise made to himself many years ago—the promise of some day producing a series of fine art medals that would sum up his lifelong devotion to art, the discipline he has perfected in the medallist art form, and the delicate, dimensional detail of life that can be captured so well by the skilled medallist engraver.

As Roberts painstakingly shapes a feather on his initial plaster model, a special kind of joy is evident in the quick strokes of his sculpturing knife. A sculptor and engraver of prodigious skill and sensitivity, Roberts is now living out a dream that all artists idealize: he is creating a series of individual works of art that will form a definitive collection, on a subject close to his heart—and he has the time and freedom now to do it exactly as it should be done. This is the most comprehensive series of art medals he has ever undertaken—the crowning achievement to his career.

Roberts started working on his birds nearly two years ago. Sometimes he puts one aside and begins working on another. Twenty-two are in various stages of completion, and the five illustrated here are now just about ready for striking in sterling silver. In many of these designs, two or three birds of a species are shown,

both in motion and at rest. Roberts has thus captured the very essence of each bird; the way we actually see it and experience it in nature.

"As subjects for sculpture," Roberts glowingly exclaims, "birds embody everything an artist could ask for. Vitality. Beautiful form. Variety. Symbolic power. And graceful movements that open up an endless range of design possibilities."

Design and composition are the keys to a sculptor's success in creating superb art medals. Roberts believes, "Good art, and especially good medallist art—where the artist must work in a very small space—is inevitably a blend of artistry and storytelling. You must create a composition that says what you want it to say and that is also interesting to the viewer's eye. In sculpturing these medals, I've discovered that birds lend themselves to just such interesting composition—that nature helps me enhance the quality of my art. The osprey, for example, is a soaring,



An opportunity to become a patron of the arts and to start collecting Roberts Birds from the very beginning . . .

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- One sterling silver specimen for The Franklin Mint archives, and
- One sterling silver specimen for each Patron whose order is placed before the strikings begin.

Thus, the total edition of each *Roberts Bird* will be completely "spoken for" before the first piece is struck. There will be no additional pieces struck for inventory or for future sale, and after each Patron receives the sterling silver specimen struck expressly for him, the dies for that design will be destroyed. Future collectors who want to acquire earlier designs will have to obtain them from Patrons who are willing to sell all or part of their collections, at prices determined by the laws of supply and demand. A complete collection, from the beginning, is likely to be highly desirable.

The first five *Roberts Birds* will be struck during the fourth quarter of 1970. Patrons for this group of *Roberts Birds* must place their orders by October 15, 1970. No orders received after that date can be accepted. The original issue price is \$20 per bird, or \$90 for the complete set of the first five birds.

Mr. Roberts expects to produce at least five groups of five birds each. Patrons are under no obligation to subscribe to future issues, but will be the first to be notified of the new designs available at approximately ninety day intervals.

ROBERTS BIRDS / Patron's Application and Order Form

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Franklin Center, Pa. 19063

Valid only if received with remittance
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Please enroll me as a Patron of *Roberts Birds* and enter my order for the following proof-quality specimens to be struck in solid sterling silver expressly for my personal collection:

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- No. 2—Chickadees \$20
- No. 3—Ringnecked Pheasants \$20
- No. 4—Swallows \$20
- No. 5—Ospreys \$20
- The Complete set of the first five \$90

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Roberts Birds will be produced only for Patrons whose orders are placed in advance. Each of these limited edition sterling silver art medals will be accompanied by a handsome Lucite easel stand. A variety of special albums, frames, plaques and other accessories designed to decoratively display *Roberts Birds*, individually and in groupings, will be made available in coming months.



powerful ruler of the air. By stressing its wing-spread and its characteristic motion in flight, you can visually convey the essence of this strength. By contrast, the chickadee is a small and beautiful bird—and by portraying a group of chickadees together, you can create a lovely, sentimental mood.”

For a medallist sculptor, this opportunity to depict character through composition is a wonderful and moving experience, Roberts declares. “Birds are free and exciting creatures. When you’re studying them as intently as I am now, you just naturally identify—and you tend to think and act more freely yourself. As a matter of fact, I find myself working to create a very special kind of sculpture—art medals that will say to their owners ‘this is what it means to be totally independent, totally free.’”

“I will be satisfied with my work only when I’m sure that each bird sculpture, viewed alone or in groups, suggests the message of harmony with nature. I want these medallist sculptures to be individually meaningful—works of art that reflect the uniqueness of each species and the authentic spirit of one of nature’s most pleasing gifts to mankind.”

Beauty.
Grace.
The delicacy of a feather.
Captured for eternity
in precious metal.

The first five *Roberts Birds* are dramatic evidence of Roberts’ skill in capturing the lithe grace and soaring spirit of these enchanting creatures. And, as he continues his work on this series, Gilroy Roberts—the artist—has reason for pride, and for a quiet joy. Exquisite art like this has been the basis of many great collections, a treasured legacy to hand down as heirlooms from generation to generation.

Roberts Birds will be struck exclusively for Patrons, whose orders must be placed prior to striking. These superb art medals will be struck only in solid sterling silver, with a brilliant proof-quality finish, under Roberts’ watchful eye at The Franklin Mint. The medals will measure a full 2 inches in diameter and contain at least 1000 grains of sterling silver. The reverse of each medal will be inscribed with Gilroy Roberts’ personal signature mark, the name of the bird and the year of issue.

In this day and age, it is indeed unusual to be able to acquire “living” art—original works, *as they are created*. In a very real sense, Patrons of *Roberts Birds* will be modern day patrons of the arts; participants in the creation of an exciting series of art treasures. They will know the same thrill of anticipation that Lorenzo di Medici and other art sponsors through the centuries must have felt as they waited for commissioned works from the great sculptors and painters of *their* day.

National Geographic Society members are invited to become Patrons of the first group of *Roberts Birds* by filling out the application attached to this page and mailing it in time to be received at The Franklin Mint by October 15, 1970. If the application form has been removed, write to The Franklin Mint, Franklin Center, Pa. 19063 for a replacement copy. **END**

Note: The Franklin Mint is an independent publicly-owned corporation and is not affiliated with the U.S. Mint or any other government agency. It operates the world's most extensive private minting facilities, producing coins for foreign countries, commemorative medals for the United Nations and many of the great institutions of this country, and art medals designed by many of the world's greatest medallist artists.

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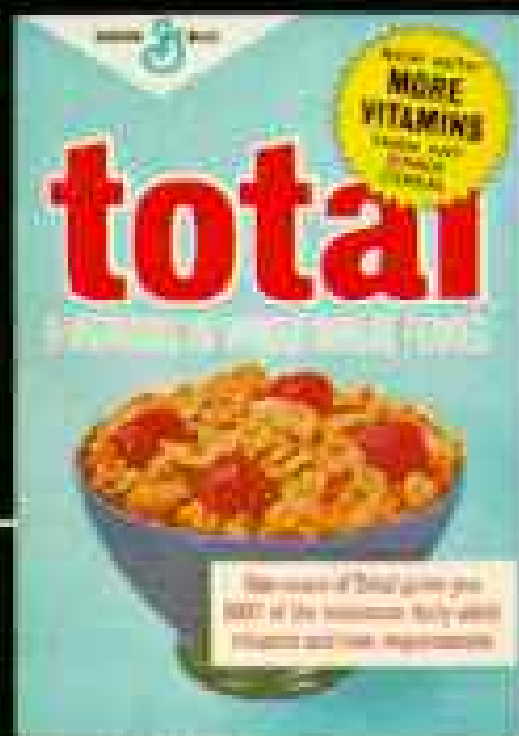




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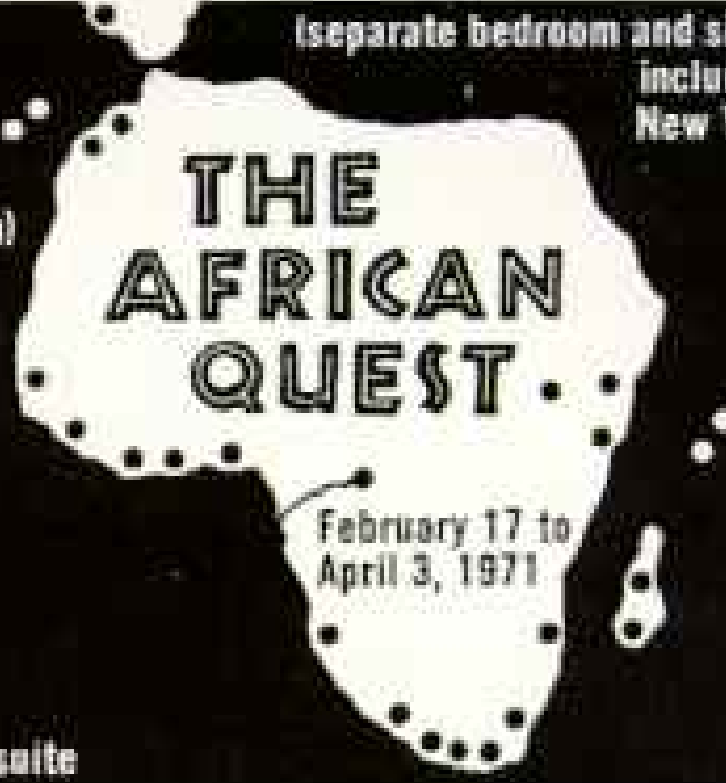
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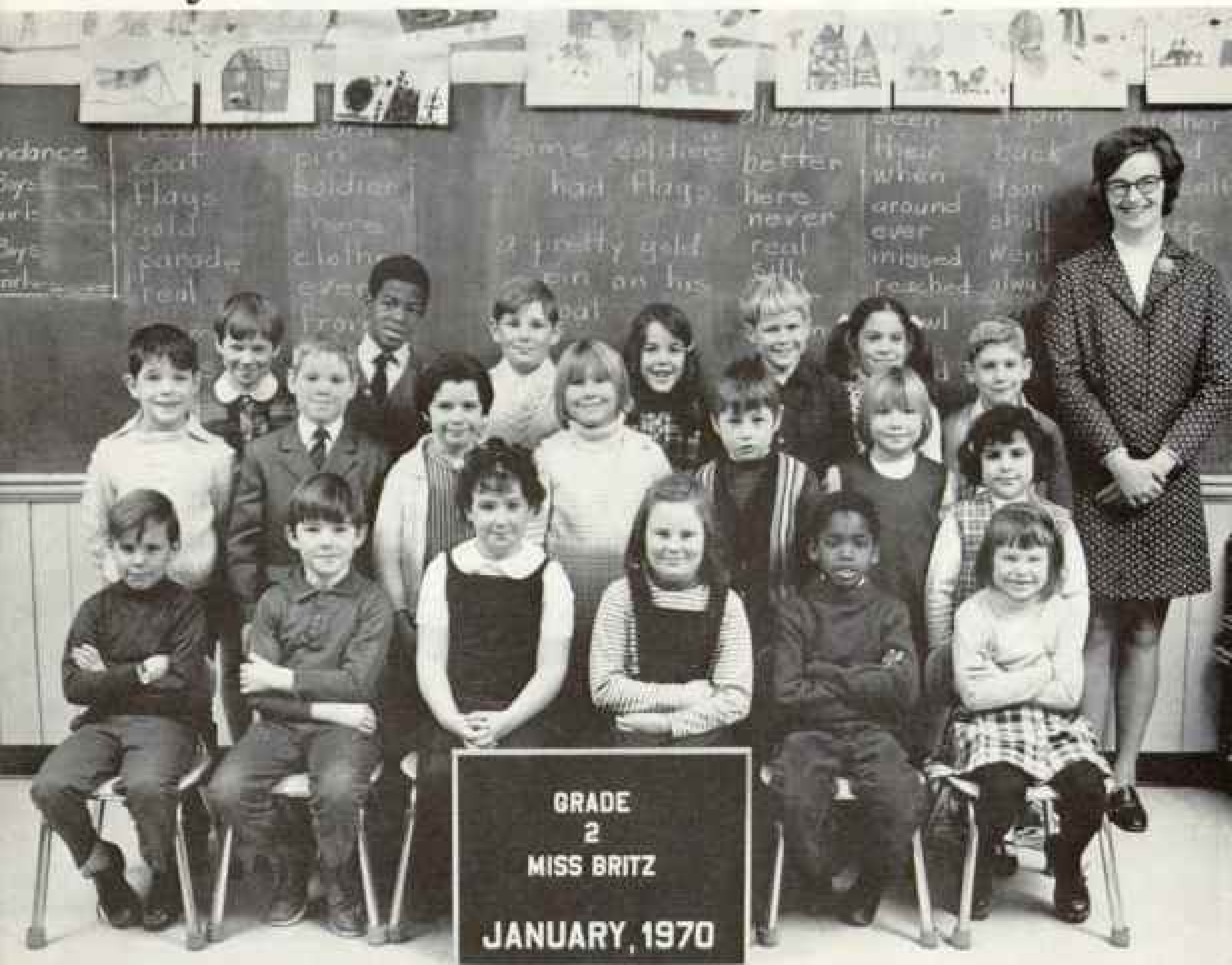
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