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Ten-Color Atlas Map, Greece and the Aegean

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THE NATIONAL GEOGRAPHIC MAGAZINE

Sailing in Grecian waters sprinkled with ancient landmarks, an American crew on holiday logs an island-hopping odyssey

THE AEGEAN ISLES:

Poseidon's Playground

By GILBERT M. GROSVENOR, National Geographic Magazine Staff

With Photographs by the Author

LIGHTNING split the darkened sky. The earth quivered with each thunderbolt as we scurried for cover at the Athens airport.

"Our flight will be delayed," said my Greek guide Denis Tateos, watching giant, dirty clouds collide. "The gods are warring again."

"Who's fighting with the almighty Zeus this time?" I grumbled. I was impatient to reach Rhodes, an hour and a half by air across the Aegean Sea (map, page 738).

"The Titans, perhaps," mused Denis. I knew this lean, mustachioed youth well enough to recognize an impending lecture. "They fought before, you know. The Titans threw huge rocks at the great 'Thunderer.' When the battle ended, they had piled up the mountains of Greece, trying to knock him from the sky. A lot of stray boulders splashed into the sea. And so," he concluded with an eloquent shrug, "we have the islands of Greece!" *

These islands I had come to see.

Two years earlier, three of us—Hovey Freeman, Mike Merle-Smith, and I—had discussed plans for a 52-foot yawl to be built in Hong Kong. Now my friends were sailing *Mak Jong* home, halfway round the world. Within 24 hours she was due at Rhodes, where Denis and I would join her for a two-month cruise of these storied Aegean waters.

The sky cleared. The gods had settled their dispute. Once aloft, I admired the rugged peaks of Zeus's battlefield. And I wondered if the Olympian deities were equally struck by the beauty below as they, too, raced across the heavens in silver-winged chariots.

Beyond mainland Greece the islands popped up as tiny brown bumps along the horizon. They did, indeed, resemble rocks carelessly tossed into a vast blue pool (see 10-color supplement map of Greece and the Aegean).

We circled Rhodes for a landing. I had expected something greener of the "island of roses." "It is July," Denis reminded me. "Very hot; no rain."

War Booty Built the Colossus

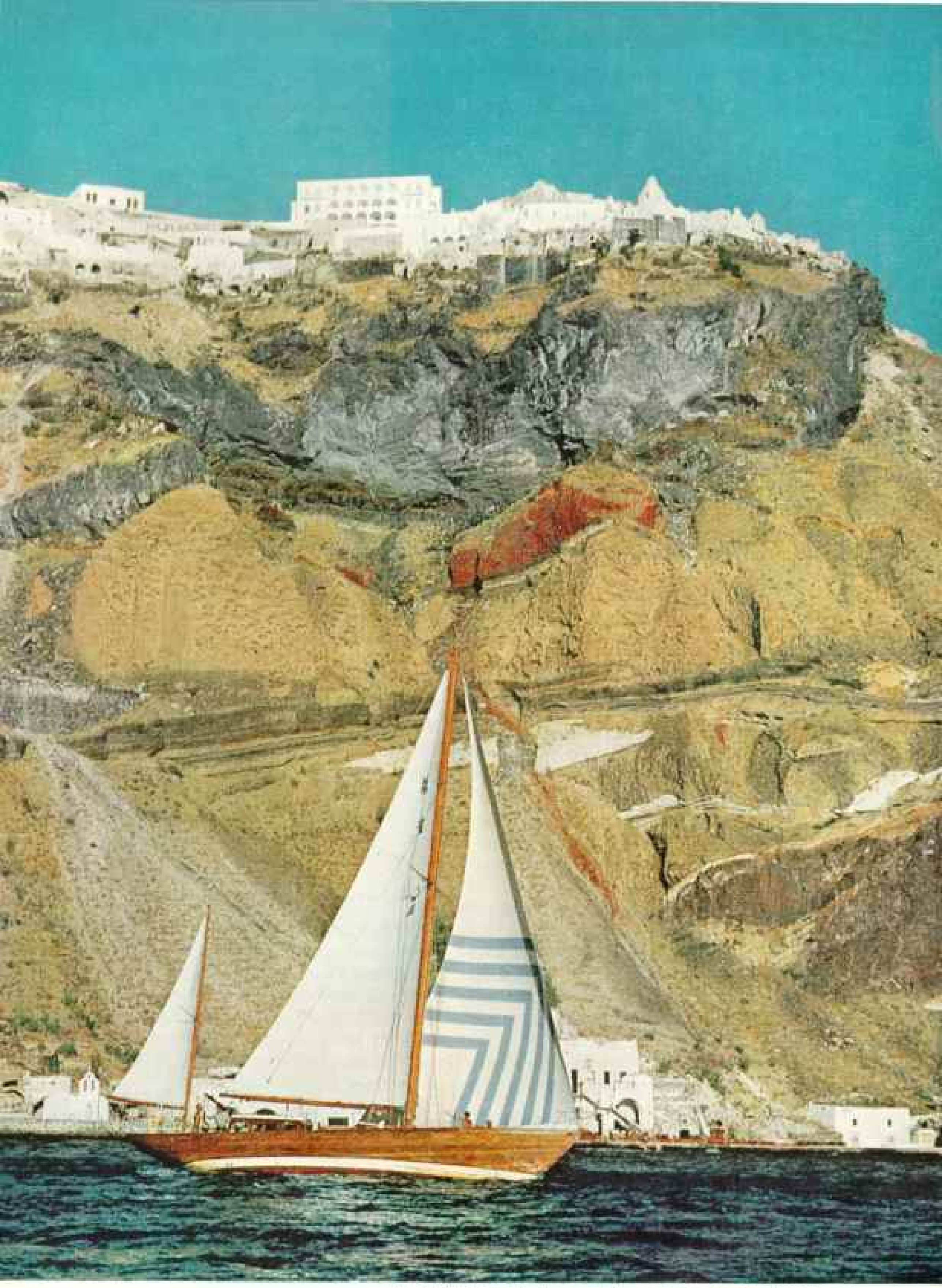
My disappointment dissolved inside the old walled city of Rhodes. I could see why it draws an increasing tide of tourists each year. Shops, nestled in its ancient walls, bulge with Swiss watches, Italian salami, and American detergents at bargain prices (page 741).

Modern architecture—a reminder of Mussolini's occupation—mingles with crenelated towers of the crusading Knights Hospitalers and arcaded streets of the Turks (page 740).

* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Isles of Greece," by Richard Stillwell, May, 1944; also "Rhodes, and Italy's Aegean Islands," by Dorothy Hosmer, April, 1941.

Mah Jong Circles a Volcanic Crater, Cliff-girt Harbor of Thira Island

"The isles of Greece, the isles of Greece! . . . Eternal summer gilds them yet," sang Byron. Scattered across the Aegean Sea, the islands stand like small worlds apart. On some, Greek gods



ALL COLOR PHOTOGRAPHS BY GILBERT M. GROSVENOR, NATIONAL GEOGRAPHIC STAFF © N. G. S.

made legend; on others, ancient peoples made history; everywhere invaders left customs and architecture as legacies. Some 3,000 years ago a volcano shaped the destiny of Thira. When an eruption shattered the mountaintop, the sea rushed into the void. Lava and pumice still streak the 950-foot crater wall (pages 758-9). The author's yawl beats across a 1,200-foot-deep basin.

Denis and I climbed the ramparts overlooking the city's three beautiful harbors to scan the horizon for *Mah Jong*'s arrival. From these heights, Denis told me, sentries first spied the armada of Demetrius, King of Macedonia, grouping for the siege of Rhodes in 305 B.C. Hundreds of ships carrying 40,000 soldiers launched the attack.

Demetrius the Besieger built giant battering rams, floated an ironclad boom into the harbor, even rolled a monstrous "Helepolis"—a kind of nine-story armored tank—against the walls of Rhodes without success.

He raised the siege and surrendered his strange war engines. These the Rhodians sold, and built their famed Colossus with the proceeds. Helios's 105-foot-high bronze statue stood for only 56 years before an earthquake toppled it. Nine centuries later a merchant hauled away the crumpled metal upon the backs of nine hundred camels.

Mah Jong—a Dream Come True

By now Denis had falsely sighted *Mah Jong* a dozen times. But a tiny dot on the horizon looked promising. Slowly it grew into a varnished hull, red and white sails, two spars (page 746). My dream became reality.

Mah Jong's crew showed me around the teak-hulled vessel with bursting pride. Mary Warner, a blue-eyed Milwaukeean, pointed out the hand-carved dragons guarding the cabinway and the pewter inlay work below. Mike, who took the galley as his special charge, poured me a cup of tea from a pot that rocked gently on the gimbaled stove. Hovey, a Yale classmate of mine and onetime navigator aboard a destroyer, outlined our course, already plotted on the chart table. His wife Joan showed me the foam-rubber bunk that was to be mine. Forward, I inspected the roomy shower—complete with tiled floor and even a big mirror.

Denis was anxious to show us the island, and dwelt at length on the beauty of a gorge called the valley of the butterflies.

He bargained long and dramatically for a rented car, and we set out. Beyond the white villas studding the city's hills, the terrain leveled into a fertile plain. Here metal windmills pump fresh water to fill concrete cisterns.

When we stopped at a lemon grove, the owner offered us a sprig of mint. "Greek custom," Denis whispered. "Push it through your buttonhole." The owner beamed. "You'll find all Greeks friendly to visitors," Denis said as we drove off. Tourism is now one of Greece's largest industries, and growing rapidly.

Near by, a slow stream meanders around mossy rocks through a long gorge: Denis's valley of the butterflies. Small dams surrounded by plane trees invite travelers weary of hot, dusty roads. Rustic benches and bridges contribute their charm. But no butterflies! I glanced accusingly at Denis.

"Hey!" he yelled, clapping his hands and dancing madly. From nowhere clouds of butterflies filled the air with noiseless, wavy orange curtains. Apparently any sudden noise stirred them to momentary activity. Shafts of light filtered through overhanging trees, spotlighting the color in narrow streaks. Within 30 seconds they had settled again on riverbanks, tree trunks, twigs, even leaves, blending with the background.

Ancient Lindos lured us back into the sweltering heat. Approached by road, the community was hidden until our car puffed over the last hill. Then the proud acropolis towered above the dazzling white town and almost landlocked harbor. "St. Paul visited this port," Denis announced.

"If St. Paul had visited every port that claims the distinction, he'd still be sailing the Aegean," Hovey muttered.

Lindos Streets Squeeze Out Cars

At Lindos, streets narrowed. We abandoned the car and strolled through beautiful courtyards floored with pebble mosaics (page 739). Scarlet hibiscus draped the whitewashed walls. Muleteers offered us mounts for the steep climb to the acropolis, but Denis balked at the 10-drachma (33 cents) price. "They think we are easy tourists," he huffed.

Plodding doggedly up the winding lanes, I quickly faded. At the top, Denis leaned against a magnificent Doric column.

"This temple is dedicated to Athena, goddess of wisdom," he began. "When Danaus,

Treasured Antiques in Lindos, Rhodes, Document a Family History

A bride-to-be embroidered the linen canopy in colorful wool. Wall plates of famed Rhodian china compose a family tree; each commemorates the birth of a child. Successive generations collected the chest and other furnishings in this centuries-old home. During the author's visit the aging spinner never stopped work.

Threading the Isles of Greece: *Mah Jong*'s Tour of the Blue Aegean

For two months during a transit between Hong Kong and New York, a crew of young Americans toured the ruins of ancient civilizations, sites of history-making battles, haunts of poets, and fabled homes of Greek gods. The area is featured in detail on The Society's 10-color Atlas Map of Greece and the Aegean, a supplement to this issue.

the ruler of Libya, fled that country with his 50 daughters, Athena helped them build the world's first two-prowed vessel. They landed here and built this temple in her honor."

"What happened to the 50 daughters?" I stalled, not yet ready to move.

"Three died here. Ancient Dorian cities were named after them: Lindus, Ialysus, and Camirus. For killing their husbands, all the others but one are in Hades, trying to fill a leaky jar with water they carry in sieves."

Back in the car, we headed for Rhodes. I couldn't wait to test *Mah Jong* under sail.

Inside the protected harbor, all was very calm. But beyond the breakwater a nor'-wester whistled down the funnel formed by the high peaks of the Turkish coast and Rhodes. *Mah Jong* bobbed like a cork in the choppy seas.

"I'm renaming this boat *Headwinds*," Hovey snorted. "They've plagued us since Hong Kong."

My stomach felt the rolling motion as I scrambled forward to help shorten sail. With every wave the bow dipped under green water. Then she'd climb up, up, up, teeter an instant, and crash down again. Water sloshed inside my new oilskins.

All thumbs, I ran into winches, stumbled over blocks, and stubbed my toes. It takes time to learn a boat's pitching manner. But I couldn't learn anything now. My stomach again! I made sure to lean well to leeward. Poseidon won this battle quickly.

That night the wind increased. According to the Book of Acts, St. Paul was blown south of Crete clear across to Malta by a similar tempestuous east wind. But *Mah Jong* weathered the blow and in the morning docked at Áyios Nikólaos, a port of Crete.*

A customs official jumped aboard. "You must visit the windmills," he declared. "My cousin has the best taxi in town. . . ."

This we heard all summer. Everyone is related and drums up business for friends. The "cousin" asked too much, but after haggling, we agreed upon a price and set out. Near Lasithi's valley of windmills his car sputtered and stopped. He deftly removed the carburetor and replaced it with a spare from the trunk. This dumfounded me: taxis carrying spare carburetors? The driver shrugged. "Today she not work. Yesterday, OK. Last week trunk one no work, today OK."

Barren mountains, once heavily forested, cover most of Crete, home of more than 460,000 persons. One acre in three is farmed.

In the Lasithi region I saw thousands of windmills spinning like circus pinwheels (page 751). Their action was hypnotizing as they pumped life-giving water to the crops. A sudden gust set the whole valley into frenzied motion. Farmers scurried to shorten sail, lest runaway "props" cause damage. I couldn't help comparing this white blur with the butterflies of Rhodes.

We talked to a friendly Cretan wheat farmer, whose baggy trousers and fezlike cap revealed the land's long-felt Turkish influence. His small plot had been handed down from father to son for generations. His plow, hand sickle, and threshing floor differed little from those of the ancients. A luxuriant mustache swished busily as he spoke. "In drought season we don't even hope for rain, but for the next best thing—wind."

A Cretan wants only enough to survive, and to be let alone. Occupation by Romans, Saracens, Venetians, Turks, and Germans has proved more disastrous than nature. But Crete bounced back quickly after World War II. We found Iráklion, the chief port, teeming with ships.

* See, in the National Geographic Magazine: "On the Winds of the Dodecanese," by Jean and Franc Shor, March, 1953; "Crete, Cradle of Western Civilization," by Maynard Owen Williams, November, 1953; and "Crete, Where Sea-Kings Reigned," by Agnes N. Stillwell, November, 1945.

Mosaics made from sea pebbles adorn thermal baths of Kalithiés, Rhodes. Greeks shipped identical stones to New York to pave a pool at United Nations headquarters.

J. R. Maniatakis

Battlemented Fortress High on Rhodes Evokes Memories of Crusaders

Driven from the Holy Land, the Knights Hospitalers of St. John occupied the island of Rhodes in 1309. Behind encircling walls and moats they built a palace for the Grand Master, a hospital, library, arsenal, and several "Houses of the Tongues" that sheltered Crusaders from different nations.

Rebuilt by Italians before World War II, the Palace of the Grand Master now serves as a museum. Here illuminated by night, it sits atop the city like a golden crown.

Small shops take shelter beneath the city's medieval walls.

A grocery (opposite) crowds into a space scarcely wider than its door. The proprietor hangs sausages from the ceiling and gives prominent display to an American detergent.


ΠΑΝΤΟΠΩΛΕΙΟΝ Ι. ΔΑΝΙΗΛΙΔΗΣ
Tide
Tide
PURE
HARDENED OIL
PURE
HARDENED OIL

Crowds watched us make our vessel shipshape for port inspection. Furling sails, coiling lines, swabbing down decks, stowing this, replacing that, adjusting spring lines—it all takes time. Our audience loved it. To Greeks, all Americans are touring millionaires. Here we were, slaving like ordinary seamen.

Ashore, we wandered through streets bustling with pushcarts and bicycles. Whole sides of beef and mutton swayed from butchers' doorways. Clucking chickens huddled on the curbs awaiting their doom. Plums, grapes, bananas, and fresh vegetables on display painted tempting splashes of color everywhere.

Around a corner a blacksmith rhythmically pounded a horseshoe. Next door an open machine shop captivated Greeks watching a lathe operator turn a metal rod. They "oh'd" and "ah'd" at the shower of sparks.

A restaurant caught my eye—and nose. A suckling pig sizzled over charcoal. The chef offered a sample; one taste convinced me.

"We must inspect the kitchen first," Denis instructed. "This is Greek custom—no menus. Pick out your food, and I'll order."

I sniffed the steaming pots of rice and eggplant; eyed stuffed tomatoes and sliced cucumbers; debated among roast liver, stewed lamb, and shish kebab. Yes, I ate too much.

American tourists are rare in Cretan restaurants, and crowds formed wherever we dined. Choice ringside seats filled quickly, and after a few bottles of *retsina*, a pungent resinated wine, we became friends. Dinner lasted for hours.

The first evening a beautiful little girl approached and pleaded, "Jasmine, only two drachma." I couldn't resist (to our Greek friends' amusement) and bought bouquets for Mary and Joan. Next evening the girl returned, with nine others—all selling jasmine!

Labyrinth Traps a Traveler

Ancient Greece lies only three miles from Iráklion, in the Palace of Minos at Knossós (Cnossus). Here, some 4,500 years ago, Minoans built several-storied structures, using modern engineering principles. Sir Arthur Evans, an English archeologist, reconstructed Knossós so that laymen can understand Minoan life (page 752).

Not heeding Denis's warning that I would lose my way, I wandered through the palace. Even without a guidebook I recognized the queen's suite, with blue dolphins swimming on its walls, and with a running-water bath. Women wore open bodices, swirling skirts, flowing coiffures, and what must have been lipstick. I could almost hear them rushing to the king's summons, swishing through corridors brightened by light wells that kept out summer sun and winter wind.

In other chambers grim shields hung from walls painted bold red, black, and white. Mammoth black pillars support overhead beams designed to sway with earthquakes. Frescoes depict ferocious bulls poised to gore Athenian maidens and athletes. The double ax, symbol of Minoan culture, is carved into the stones of the palace walls and painted on earthenware jugs.

Love Affair Hangs by a Thread

Minos lived comfortably. His underground storerooms, lit by oil torches, were well stocked with six-foot jars of Crete's best olive oil. Remnants of beans, barley, and other stores have been uncovered.

No fortifications mar Knossós. Minoan ships ruled the seas, and foreign navies gave Crete a wide berth. Minos concentrated on improving living conditions and craftsmanship. Gold-foil ornaments and colored glass, silver, ivory, and lapis lazuli jewelry survive as proof of Minoan artistry.

Suddenly I was lost.

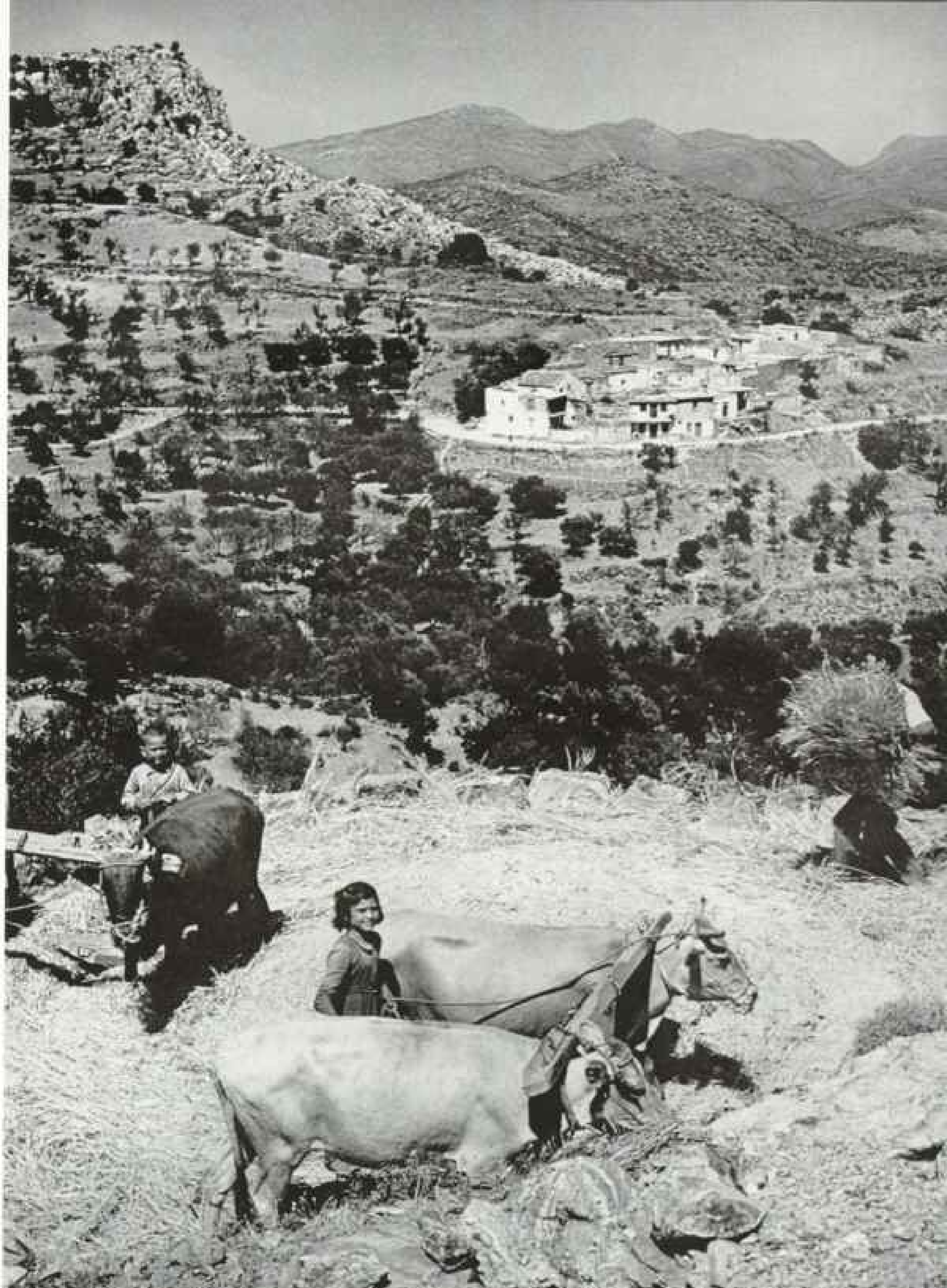
Silly, I thought. Retrace your steps. Let's see . . . turn left? No, that's not familiar. Turn right? Well, maybe. I walked several minutes through strange corridors until I returned to my starting point. Or was it? I yelled for Denis. "Gil . . . Gil . . . Gil . . ." echoed his answer off many walls. After repeated shouts back and forth, he led me out.

"You needed Ariadne's thread," Denis said, stroking his mustache thoughtfully.

I saw a lesson in mythology coming, and headed it off. "I know—Theseus and the Minotaur," I said. Denis listened disconsolately while I narrated the famous legend.

Minos regularly demanded Athenian youths and maidens to feed the Minotaur, fierce half-man, half-bull in the Knossós labyrinth. The maze was so complex that even its designer could not find his way out. Theseus, handsome son of Athenian King Aegeus, thought he could kill the monster and sailed to Crete.

Minos's daughter, Ariadne, fell in love with this youth. Secretly she gave him a ball of thread to unwind as he penetrated the labyrinth. After killing the Minotaur, he followed the thread and retraced his steps.



Boy and Girl on Ox-drawn Sledges Thresh Grain. Father Bundles Straw

The author discovered this happy roadside tableau while driving to Crete's valley of 10,000 windmills (page 751). Farmhouses overhang a valley dotted with olive trees.

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Haloed Saints and Angels Hover in the Church of the Evanghelismos

Built in 1925, the Rhodian structure copies the plan of medieval St. John of the Knights, where Grand Masters were buried. An explosion destroyed the original in 1856.

"Then Theseus and Ariadne sailed away from Crete. . . ." My recollection of mythology began to falter.

Denis exultantly finished the tale: "Theseus mysteriously abandoned Ariadne at Náxos and sailed for Athens. But he forgot to hoist his white sail to signal success. When Aegeus saw the black sail, he assumed his son had failed, and jumped off a high cliff into the sea. From that day we've called it the Aegean Sea!"

Worry Beads Soothe Nerves

We retreated from the sweltering sun above Knossós to a near-by tavern. Chatting with the proprietor's son, Kosta, I learned that his mountain village of Avdhoú planned to celebrate a traditional festival, the Panigýri of St. Marina. "Will you come?" he asked.

We needed no urging.

Hovey, the girls, Kosta, and I boarded a rickety bus in Iráklion. We picked our way through piles of baskets, chickens, wine jugs, and watermelons to find a seat.

A few miles outside the city our driver stopped and hammered the horn. An oncoming bus responded. The drivers exchanged greetings and ours accepted a string of bright-green beads. "*Eíharisto*"—Thanks—he shouted, and ground into gear again.

"Worry beads," Kosta explained. "They keep the nervous fingers busy."

The road narrowed and pavement yielded to gravel as we twisted through the mountains. I caught fleeting glimpses of worn-out, abandoned fields. Coasting downhill, we gathered speed and skidded around corners, with sheer cliffs dropping off into the valleys hundreds of feet below.

Clenching my fists, I reminded myself to buy some worry beads.

The bus careened through villages, scattering chickens, donkeys, and scrawny goats in clouds of dust. Each stop was utter pandemonium. Clamorous children swarmed over the roof; vendors hawked peeled cucumbers, sliced oranges, and grapes.

A man outside the bus engaged a woman passenger in earnest conversation. He smiled and handed her an envelope.

"He wants to send a letter to his mother in Avdhoú," Kosta said. "By mail it might take a week. Now she'll have it in an hour."

Avdhoú was bursting with excitement on our arrival. Villagers welcomed us into their earth-floored homes; the men proudly pointed out family portraits hanging from the clean white walls. We wandered along dirt lanes among whitewashed stone dwellings roofed with tile. Grape arbors clung to overhanging balconies.

Inside the stone-walled yards women cooked rice, tomatoes, and zucchini over open fires. Animals were tethered in a corner; children played among farm implements.

At dawn I joined a stream of villagers on the three-hour hike to the mountain chapel. On the rock-strewn path a tall youth, as handsome as the statues in Iráklion's museum (page 756), fell into step beside me.

"I had hoped to meet you Americans—you are the first to stay in our village," he said. "My name is John."

In faultless English he told me he had studied in Rome and Athens, and was working between school years on Avdhoú's agricultural problems. He was teaching farmers to sink deeper wells, dig canals, and build dams to relieve the chronic water shortage.

My legs ached from the climb, and I welcomed the "resting rock," where everyone takes a breather. John sifted dry pebbles through his fingers. "Our people must learn crop rotation and how to fight erosion," he said soberly. He pointed to motionless stone structures posted like giant sentries along a near-by ridge. "Then someday those gristmills will turn again in threshing season."

Panigýri Holds a Surprise

Chanting voices echoed down the mountain, reminding us to hurry.

On a plateau partly clothed in olive groves, the surprisingly new chapel bulged with villagers. Other latecomers and I squeezed inside. The priest in crimson robes intoned the Scriptures to an entranced congregation (page 749). Freshly scrubbed children in their finest clothes raised thin, beautiful voices in a moving liturgy.

After the services, musicians with mandolin, violin, and medieval-type guitar struck up a lively tune inside a dancing circle, worn and trampled in the earth from past panigýria. At first only the men danced, but gradually the dark-haired maidens' shyness melted.

Village women in colorful print dresses showered us with roast pork, beef, bread, and wine, which we reluctantly refused. "Go on, eat 'em—it's all part of the tradition!" a voice from behind urged. I wheeled to behold an unexpected sight. A plump man in natty

Mah Jong Churns the Blue Aegean

Chinese characters on the Hong Kong-built yacht spell its name. In the Aegean nothing seemed more appropriate, for, as in the game, smooth sailing in these waters depends largely on chance.

The sea's changing moods were known to Aeschylus: "The multitudinous laughter of the sea" he contrasted to "the puffing blast, the heat of boiling billows, the whirling gulf. . . ." Like the poet, *Mah Jong*'s crew found that no one could predict the mood of the sea god, Poseidon.

With sails trimmed flat, *Mah Jong* shoulders aside the sea off Mikonos (pages 776, 777, and 780).

Laundry flies from rigging as crew members relax. Thus they obey the poet Theognis's command: "Through the Isles . . . thou shalt wander . . . journeying for ever o'er the tireless, teeming wave."

Ship's barber, Joan Freeman, trims the hair of Mike Merle-Smith. Her husband, Hovey Freeman, held out for the Greek barbers ashore.

sport shirt and faded Panama hat slouched against an olive tree, chewing a cigar. He wore Hollywood-style sunglasses.

"Sure, I've been to the States," he laughed. "Used to sell the best hot dogs in Detroit. Then I made a little money canning chili con carne. Came back here about ten years ago to donate this chapel, and just settled down to retire."

He urged Mary and Joan to join the dancing. Awkward at first, they soon caught the rhythm and enjoyed themselves thoroughly.

Greek panigýria run on into darkness, but *Mah Jong* restlessly awaited her crew. We slipped away quietly in order not to disturb the festivities, returned to Iráklion, and shoved off for Thira (Santorin).*

Sailing Through a Crater Wall

At 4 a.m., I stumbled sleepily on deck for my trick at the wheel. We were hove to, and Mike instructed me to keep plenty of water between us and a beacon flashing to starboard. I plotted our position from the light: one 6-second flash, then 24 seconds of darkness. The Mediterranean navigational guide verified it as Thira's southwest tip. Right on course. These world-wide flashing lights are yachtsmen's road signs. Following them is as simple as traveling cross-country with a route map.

Peering eastward, I waited for dawn to lift night's black curtain and reveal a new port, a new world. This is a sailor's most cherished moment and what drives land-based yachtsmen back to sea.

Thira is still changing its geography through periodic eruptions. Long ago the island "blew its top" and became a huge sea-filled crater. The explosion possibly accompanied the earthquake that finally wiped out Minoan civilization. Later quakes split Thira's crater wall. Since then, volcanic activity has raised the Kaméni (Burned) Islands inside the crater. A year—almost to the day—before our arrival, one of the worst earthquakes of this century tumbled dwellings down the cliffs into the sea.

We sailed through the crater's western wall. Joan sang out depth-finder readings: "No bottom at 150 feet!" The device registered no deeper. As we entered the breach, she shouted, "Bottom at 60 feet!" Once inside, Joan again read no bottom. Some 3,000 years ago that passage was a towering cliff.

By now Apollo had poked his red fireball over the summit and lighted the western face. Through binoculars I spied tiny houses clinging to the crater walls. Above, a blanket of white pumice covered the rim.

The sun plays magically on Thira's cliffs. Blacks suddenly become reds, pinks, browns, even greens. The wind, too, plays tricks within the soaring walls of the basin. A swift gust caught us from leeward, backing the genoa jib. We drifted alarmingly close to a cliff (page 734). Mike switched on the engine, and *Mah Jong* slowly came around; her mast barely missed an overhanging ledge. We moored to a buoy, paying out 125 feet of heavy nylon line to swing clear of caïques that frequently secure there (page 738).

Late July is tomato time in Thira. Donkey trains wind down the zigzagging cobbled staircase from the town to the dockside canning factory below. The return trip goes begging unless the donkey driver finds tourists or caïques unloading food, fuel, or water.

We were besieged as each owner claimed the best-saddled, sturdiest, cleanest, cheapest, best-smelling jackass in all Thira. One extended his claim to all Greece. Donkeys smell alike to me; I hopped aboard a wooden saddle for the climb.

The more I kicked and my driver switched, the slower my beast ambled. "Take it easy, Gil," Joan warned. "That may be a relative. I've read that wayward humans are reincarnated as donkeys and serve their purgatory here!"

I recalled an elderly Aunt Minnie; somehow my mount's oversized ears and gaunt frame were uncomfortably familiar. I slid off at cliff-top, and rode no more on Thira.

People Cling to Perilous Rim

The proprietor of a neat white shop beckoned us inside with a smile. The place smelled of new mortar, and jagged cracks scored the walls. While the others examined colorful memento plates, I asked the owner, a Frenchman, about the recent earthquakes.

"Often we get the warnings," he said. "Last year in the early morning I feel the floor shiver, so." He fluttered his hand. "I saw my plates dancing upon the shelves. I knew. I waited under the archway there."

Then it came, he said—a big one followed by a series of minor tremors. Sixty per cent

(*Continued on page 757*)

* See "Santorin and Mýkonos, Aegean Gems," 8 illustrations in color, National Geographic Magazine, March, 1940.

Cretan Villagers of Avdhoú Start a Festival in Church

During the centuries that Greece lived under Moslem rule, parish priests kept alive the flame of nationalism. For Christians, life revolved around the church, which settled most civil disputes and made unwritten law.

Religious influences still prevail in Avdhoú. This priest, who farms for a living, holds his flock's attention as he reads from the Bible.

Sacred icons preserved under glass adorn the chapel. An Avdhoú native who worked in the United States for 20 years saved his money, returned home, and donated the building. The boy hopes to become a monk at Mount Áthos (pages *772-5*).

Breeze-driven Pinwheels Irrigate the Valley of 10,000 Windmills

Constant winds work the pumps that water Crete's mountain-rimmed Plateau of Lasithi. This green-and-golden checkerboard produces olives, grapes, and grain. Family in foreground threshes wheat.

Some ancients believed that Zeus was born in a grotto on Mount Dhikti (background); others held that Mount Idhi (Ida), 40 miles west, was the god's birthplace.

An abundant crop brings a smile to the face of a Cretan grape grower. His island fits Homer's description of Ithaca: "Indeed it is but rugged . . . yet not too poor . . . for its harvests are past all telling, and well its vineyards yield."

The sun converts grapes to raisins. Vine products rank first in Crete's economy. Next comes olive oil.

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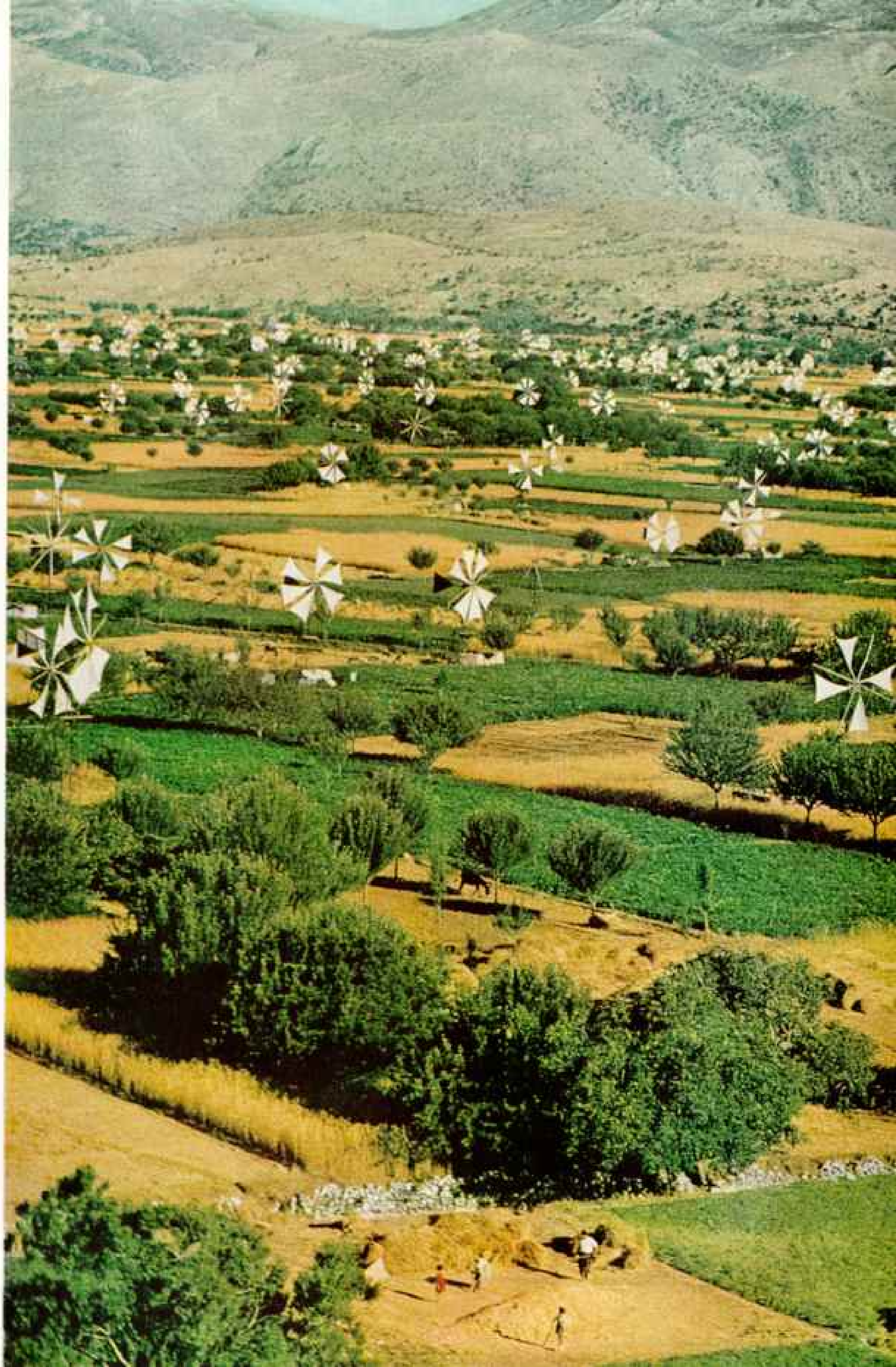

Palace of King Minos: the Labyrinth Where Theseus Slew the Cretan Minotaur

Crete's Minoan Empire lasted about 2,500 years, but lived only in legend by the time of Homer, who sang of "a dancing place, bright-gleaming," at Knossós. Here, said the Greeks, the mighty sea king Minos sacrificed Athenian youths and maidens to a man-eating bull kept in a maze.

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Then the hostage Theseus killed the beast and escaped from the labyrinth by following a thread given him by Ariadne, the king's daughter. But nothing in folk memory compared with the truth as uncovered in the early 1900's by British archeologist Sir Arthur Evans. Minoans kept written records, paid in coin, painted true to life, and had running water for baths and sanitary plumbing. Here, partly reconstructed, the palace shows a vast network of state apartments, bedrooms, storerooms, and courtyards. Broad stairs in center lent drama to royal processions.

Snake Goddess Awed Minoans with Her Writhing Symbols

Minoan women married as equals, drove chariots, and dressed with flair: Witness the flounced skirt, narrow waist, and daring décolletage. This aspect of the Mother Goddess symbolizes fecundity, regeneration, and immortality, because the snake sheds its skin. A spotted leopard decorates the headdress of the 11-inch ceramic figurine in the Archeological Museum of Iráklion, Crete.

A bull charges across a palace wall. In life, intrepid athletes turned handsprings over his back.

Griffin graces fresco reproductions behind a stone throne.

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Greek Gods and Goddesses Hold Mute Council in Iráklion's Archeological Museum

of Thira's homes were destroyed, and more than 40 islanders died.

I asked what keeps people on this perilous crater rim.

"Everyone asks," the shopkeeper replied, smiling again. "Myself, I came as a tourist many years ago, and never left. Watch the sunset this evening. You'll understand!"

I bade my friend *bon jour* and walked along the quake-tilted paths toward the cliff dwellings. Thira's wounds healed quickly, but scars showed everywhere. Buildings leaned awkwardly, often propped to prevent collapse. Grotesque shells were once proud homes.

To compound its misery, Thira gets little tourist trade. Its economy depends on tomatoes and vineyards.

Houses are dug into volcanic rock. Often only the chimney juts above ground level. Some prosperous owners have added a second story, barrel-vaulted to withstand rockslides. As families grow, residents dig deeper into the cliff, coat the rock walls with pumice mortar, and whitewash their new wing.

Thira Turns on Charm

When the sun dipped beneath Thira's western rim, long black shadows crept across the crater's blue water. White pumice floating on the surface turned to golden lace as a breeze pushed it out to sea. Soon it melted from sight as shadows climbed the eastern crater rim.

How peaceful Thira had become. Only a braying donkey disturbed the quiet. A clear moon gilded the white buildings. I understood Thira's charm.

Once again we set balloomer, main, and mizzen to catch the faintest breath of air, and steered for Idhra (Hydra).

Formed of dark limestone, the island of Idhra rises majestically to make a perfect amphitheater (page 764). *Mah Jong* moored as if taking her place on a translucent blue stage. Brightly painted caïques and pleasure craft ringed the quay. Colorful three-story buildings and glimpses of rich paneling and lace draperies hinted at the island's prosperous past.

The original islanders were Albanians who fled the 15th-century Turkish invasion of their native Epirus. They soon tired of tilling barren land and turned hopefully to the sea for a living.

Idhra's first ships were crude, but her

The Code of ancient Gortyn in Crete proclaims the law of 500 B.C. One of the oldest documents in Greek, the 12 tables rule on such matters as an heiress's marrying outside the tribe. (She couldn't.) The ox-plow script on marble reads like a furrow, left to right on one line, right to left on the next.

A Scarf of White Pumice Drapes Thira's Precipitous Shore

As its people slept one summer morning in 1956, the island began to shake. Houses in cliff-top Thira, the chief town, tumbled into the sea. Debris blocked the zigzag stairs that serve as the community's only way to its harbor. A tidal wave swamped the fishing fleet and docks. The earthquake left more than 40 dead and thousands homeless.

Here, a year later, the "black pearl of the Aegean" stands largely restored. Ripening tomatoes on the quayside await canning. Fishing boats, shielded by a breakwater, moor in a cove. In waters too deep to anchor, *Mah Jong* (center) ties up to the government buoy. Subterranean fires still heat the sea in places.

Rowing across floating pumice, the author's shipmates prepare to land at a fishermen's chapel.

sailors quickly learned to navigate and became highly respected seamen throughout the Mediterranean. Trade in silks, rare woods, spices, and tapestries made Idhra rich.

When corsairs harassed their fleet, the undaunted traders built vessels longer, sleeker, and far better armed than their earlier craft. Though carrying three times as much cargo as before, Idhra's trim, double-ended ships easily outran the privateers.

Today this sleepy island boasts fewer than 3,000 people, mostly poor fishermen, or divers who work the fast-diminishing sponge beds in Aegean waters. The islander is reticent and reserved. No one greeted *Mah Jong* or bade us farewell, as in Crete and Thira.

Poseidon Brews Aegean Storms

From Idhra, navigator Hovey inched us past the hazardous shoals between Póros Island and the Greek mainland. Once through the channel, *Mah Jong* piled on canvas and fairly flew to Piraiévs, port of Athens.

It's only a short run along Attica's southern shores to Poseidon's Cape Soúnion sanctuary. Perhaps the most dramatic temple in Greece for sailors, it raises gleaming marble columns skyward from a lofty promontory (opposite). In ancient times, man-of-war galleys anchored in the bay below to await favorable weather. Many less-prudent skippers lost their vessels off this tricky land's end.

When angry, Poseidon unleashes powerful white stallions with brazen hoofs and golden manes. From his underwater palace he thrashes the calm waters. Sea monsters increase the tempest when Poseidon sounds his conch-shell trumpet. The winds howl from Soúnion, and the frothy sea and stinging spray lash the Aegean. These winds are the feared *meltémia*. Everywhere fishermen warned us, "Beware the meltémia—they sweep clean the Aegean!"

But Poseidon had favored *Mah Jong* with manageable winds and seas. Perhaps he has mellowed in the 24 centuries since Athenians under Pericles built the Sunium temple to pacify him. Or maybe the sea god found our impudent attitude to his liking. Odysseus reverently sacrificed thighs of bulls, sides of lamb, or goats to him. We offered only an occasional pot of beans that went begging. How shocked Odysseus would have been if he had sailed into Soúnion Bay and found *Mah Jong*'s crew merrily water skiing right under Poseidon's nose!

En route to Skíathos, calm waters and historic settings lured us into the gulf between the Greek coast and the island of Évvoia.

Beyond Attica's rugged headlands, I took the watch. I checked our charts and tacked close under the town of Lávrion. Steering with my toes, I propped open the *Greek Historians*. Indirectly, Greece owes her greatest glory to this lethargic mining town. About 490 B.C., Athenian slaves digging mediocre ore unexpectedly struck a river of nearly pure silver. By Athenian law, all citizens shared equally in mining profits, but the orator-admiral, Themistocles, urged converting the funds into ships. The great armada and Athens's naval supremacy under Themistocles ushered in Greece's Golden Age.

His boatbuilding venture was to remain the country's most memorable until last July, when another Greek, Stavros Niarchos, completed near Salamis the largest shipyard in Greece's long maritime history.

Chill Wind Blows No Good

"Hey, Gil. You're cutting that shoal too close!" Hovey warned, looking up from his midday snooze. I had become too absorbed in Themistocles's 200 new galleys.

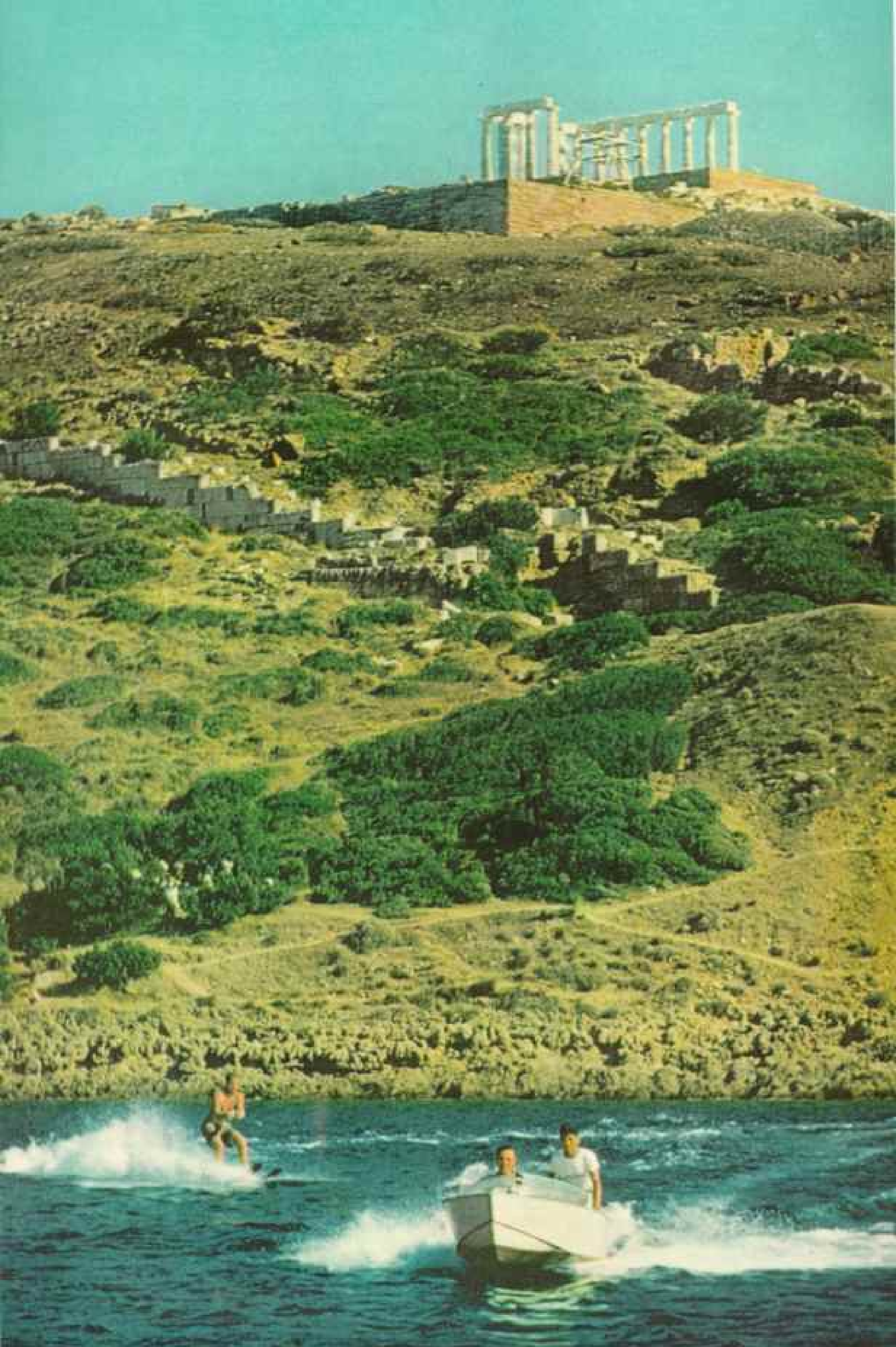
That evening a moon smiled down, and the stars twinkled in a clear sky. *Mah Jong* stepped along at seven, eight, sometimes nine knots. All hands lingered topside well into the night, savoring a perfect moonlight sail in one of the world's most romantic seas.

But Poseidon was teasing. Soon clouds obscured the moon; a chill wind blew. The rail dipped, and the bow dived beneath the choppy seas. Time to change sails. Carefully I worked forward in the darkness. No longer was *Mah Jong* a stranger. I could now ride

Poseidon's Temple in the "Winter of Its Glory" Broods over the Aegean

Shelley's phrase captures the mood of this sanctuary erected in the days of Pericles on Soúnion, the cape southeast of Athens. Below the temple passed the grain ships bound for Greece's imperial city, while worshipers watched aquatic festivals in the bay where water skiers now play. Like Shelley, Byron found desolation had replaced splendor. "Place me on Sunium's marbled steep," he cried, "where nothing, save the waves and I, may hear our mutual murmurs sweep."

A scaffold amid the columns shows repairs under way.



her rhythmic motions. Unlike that first night off Rhodes, I knew by touch each stanchion, shackle, and block. It was cold, wet work to douse the genoa and set the No. 1 jib. I welcomed dry clothes and a warm bunk.

When I came on the 4 a.m. watch, we carried only main, mizzen, and forestaysail. The lights to leeward marked Thermopylae Pass, where, according to Herodotus, Leonidas held off Xerxes' "five million" Persians with 300 rugged soldiers, until betrayed and cut down from behind. Even today Leonidas is Sparta's national hero.

"We're in for it," Hovey announced in the chart room. "Once round the point of Thermopylae, the northerly will whistle down that gulf. I wonder if we should ride this one out in port."

Greece's naval forces faced a similar decision at the Battle of Thermopylae, when Poseidon unleashed a devastating gale called Hellespontias. The Greeks wisely rode it out in the narrow, sheltered strait at Chalcis. On the other hand, Xerxes' fleet lay anchored eight deep off the exposed coast near Skiathos. That single storm wrecked more than 400 Persian ships and damaged other hundreds, while the 324 Greek galleys lay safe in protected waters. Upon receiving news of the Persian disaster, the joyous Greeks proclaimed Poseidon "the savior."

Plums Turn Green Isles Purple

After deliberating, we continued on course. Unlike Xerxes, we had accurate charts. The northerly didn't look that mean. Besides, we wanted to reach Skiathos the next day.

We battled heavy weather for several hours before the wind abated. With the coming of Homer's "rosy-fingered dawn," Poseidon recalled the restless seas. Such is his nature: Often he rewards the bold while punishing the cautious.

Even from afar, Skiathos and Skópelos substantiate their fame as the "greenest Aegean isles." Thick pine forests and groves of olive and fruit trees creep up their slopes.

During August purple carpets of plums dehydrate under the scorching sun. Farmers carefully turn the fruit to ensure even drying before placing it in an oven for final dehydration. The prunes are then exported.

Mah Jong put in at Skópelos, and her crew fanned out to replenish the ship's stores. Hovey, however, picked up more than groceries. From the grocer he learned of an underwater city near by, and asked the Greek to pin-point its position on our Northern Sporades chart.

We set sail and readied our equipment: swim fins, masks, and snorkels. Excited laughter and talk of gold coins and priceless relics coursed through the boat. "We'll have trouble hoisting our Venus de *Mah Jong* aboard," Joan said. In our enthusiasm we even planned to present the best of our hoped-for treasure to Queen Frederika of Greece.

Diving to a Drowned City

A dead calm settled. Denis interpreted it favorably: "Poseidon is afraid we'll sail to his hidden treasures." The god of the sea had locked even his feeblest zephyrs in underwater caves to stop us. But the Mercedes-Benz diesel pushed us on at five knots.

When sightings on an island crossed the X on our chart, I slipped overboard and was towed behind. Some 20 feet down, a shimmering panorama of tumbled rocks and marine growth slid slowly by. Then I became aware of a symmetry, a pattern, in the stones. Walls, perhaps? Heart thumping, I kicked my flippers and dived. A large fragment of red pottery lay wedged between two rocks. I pried it loose and surfaced, gasping and triumphant.

It was part of a vase. Denis examined its shape and assured us it was very old, certainly pre-Christian. All hands donned masks and fins. In an hour *Mah Jong*'s stern was piled high with barnacle-encrusted shards. We found no gold, no Venus, and nothing to present Queen Frederika on the occasion of her visit to my home town of Washington, D. C., in October, 1958.

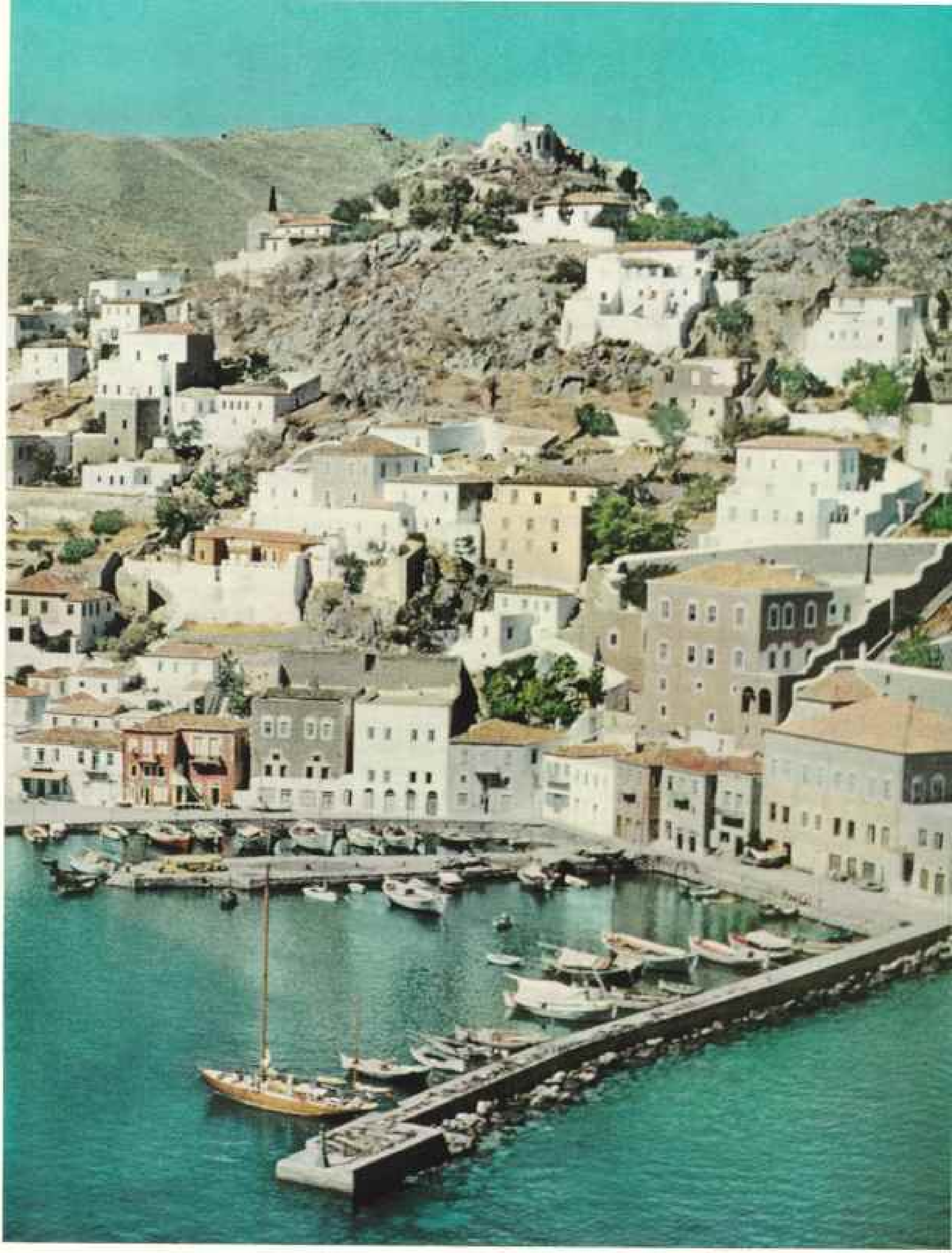
What else lies concealed among these sunken ruins? What ancient people lived here? When did their city die? No doubt one of the Aegean's earthquakes slid it beneath the crystal-clear sea. Too far off the beaten path to be devastated by Darius, Xerxes, or Alexander the Great, these islanders probably enjoyed a leisurely life, tending flocks or fishing the shoal banks near by. Over a freshly speared fish dinner, and far into the night, we speculated.

The girls, normally chipper, fell silent as we headed for Mount Áthos, the Holy

As a Cross Swell Breaks Against the Beam, *Mah Jong* Makes Ready for a Blow

Idhra Harbor Lies Like a Deep Well Within Its Wall of Shops and Homes

In the 18th century ships from the island of Idhra ranged the Mediterranean, eluding pirates and the British fleet besieging Napoleonic France. Fortunes amassed by blockade-runners poured back to the island. Palatial homes furnished with



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every luxury rose on Idhra city's rocky slope; they sheltered some of the richest men in the Aegean. When Greece revolted against Turkey in the early 1800's, the island's fleet rallied to the cause, and the war siphoned off wealth. With the coming of the steamship, its seamen and their sailing craft could no longer compete. Today the people make a meager living from sponge fishing and visiting artists, who cherish Idhra's finely wrought houses.

Mountain of Greece. We understood when Joan finally complained: "I don't see why we can't visit the monasteries, too!"

I couldn't blame her, for a fascinating world lies on this 30-mile-long peninsula. Twenty monasteries and their *sketes*—religious settlements clustered around a church—dot its shores and wooded hills; some were founded nearly a thousand years ago. Behind their walls, time slips back 13 days, still reckoned by the old Julian calendar.

The grave, bearded monks of Athos govern themselves in an ecclesiastical quasi republic. But not even female livestock may tread this ground. The Greek Government and the Patriarch of Istanbul had consented to our landing—if the women stayed aboard.

Michigan Monk in Russian Monastery

We cruised along the coast to the Russian Monastery of St. Panteleimon (Ayiou Pandeleimonos). Domes like golden turnips rose above its walls (page 772).

A young monk in flowing black robes trotted down the hillside to the wharf. "Ah, Americans!" he greeted us. "I saw your flag. It is good to speak English again!"

This was Brother Theodoro. Originally from Michigan, he had become interested in the Orthodox Church, attended a monastery in New York, and finally took the habit on Mount Athos.

"At first they thought me a spy," Brother Theodoro chuckled. "They feared I wanted to steal the monastery's treasures. Now I'm accepted, and treated like any other brother. Come, I'll show you around."

We had arrived in time for church services on one of the infrequent visitors' days. The normally quiet monastery buzzed with activity. Brother Theodoro led us to the Church of St. Panteleimon. Inside, golden chandeliers dimly lit the frescoed walls. Daily the monks pray at faded icons.

When the elderly bearded abbot appeared, laymen and monks made the sign of the cross. His red robes, laced with golden crosses and sash, proclaimed his title.

"I must get a picture of him," I whispered.

"Impossible," Brother Theodoro answered. "Some people poke fun at us. However, I remember The National Geographic . . . perhaps I can persuade him. There's a chance."

When service ended, Brother Theodoro drew the abbot aside. As soon as he nodded his approval, I snapped a picture (page 773). Other monks, obviously dismayed, closed the vestry doors to prevent a second shot.

"Today is feast day," Brother Theodoro reminded me. "We must dash to the refectory before everything is eaten."

The huge refectory is the most famous on the Holy Mountain. During the glorious days of Athos, a thousand monks ate in the spacious hall. Now, perhaps 40 were left.

This is the sad fate of Athos. Each year the beards grow grayer, and only a few novices join the dwindling monastic ranks. Much fertile soil grows rank with weeds, and buildings decay for lack of labor.

We sat at a long table with wooden benches (page 774). For the feast day, stewed fish supplemented the zucchini, hard white bread, and wine. As a special treat, the monks had prepared a sweetened wheat for dessert.

Brother Theodoro apologized for not taking us into the cells where the older monks were sleeping. "They haven't slept for two days, preparing for the feast," he explained. "For me it's easy; I'm young."

But even for the youthful, life on Mount Athos impressed us with its rigors. From midnight to dawn monks stand, chanting through solemn church services. At short-handed monasteries they toil throughout the day, many getting less than four hours sleep.

Eerie Chamber Holds Monks' Skulls

"I've something else to show you," Brother Theodoro said. We wound along a rocky path through chestnut and fruit trees. Before a small stone building he fished an immense rusty key from his pocket and opened the vaulted door. We stepped inside.

Mike and I stiffened at the sight. Row upon row of skulls gleamed in a flickering light. A name and date were inscribed across each forehead. Placed on racks eight deep, these somber remains represented decades of monks who had forsaken the world for St. Panteleimon's austerity and spiritual rewards.

"The brothers rest here," the young monk said quietly. "We keep the candle under the icon burning for them."

It was a thoughtful walk back to the wharf. Brother Theodoro pressed religious figurines into our hands "to guide you safely home over the seas" and bade us Godspeed.

Sailing by night and seeing a different island each day, we followed generally St. Paul's route as charted in the Book of Acts: " . . . and came to Mytilene. And we sailed thence, and

Lésvos Island Fishermen Haul In a Catch from the Gulf of Yéras

came the next day over against Chios, and the next day we arrived at Samos. . . ." *

Lésvos, St. Paul's Mytilene, produces leather, textiles, and—of all things—spaghetti, which she exports to Italy! We stocked up and ate spaghetti for days thereafter.

The attraction most extolled by Greeks is Lésvos's petrified forest. No one had mentioned the five-hour auto trip and additional hike over two mountains to get there. The term "forest" struck us as overenthusiastic, but the few stumps and trunks we saw well rewarded our journey (following page).

As we left Lésvos at dark, the port official voiced great concern: "Our boats are fishing between here and the Turkish coast. The noise of your engine will drive away the fish!" Under sail we crept silently along the shore.

Fishing boats' kerosene lanterns flickered on and off with each wave and trough. They made navigation difficult. I had trouble picking out the Lésvos shoal-warning beacon. It was like driving up to an intersection and finding four Route 1 signs pointed in different directions.

We drifted amid the fishing fleet. Working in coveys of six rowboats painted the same color as the mother ship, they form a large

* See "Jerusalem to Rome in the Path of St. Paul," by David S. Boyer, National Geographic Magazine, December, 1956.

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Veined beauty of a petrified tree on Lésvos has drawn the curious through the ages. Sappho, the island's famed poet who lived about 600 B.C., must have seen it when she wrote: "No hill was there, nor holy place, nor water-brook, whither we did not go. . . ."

Lines from a 10th-century manuscript appear like jewels set in gold. A monastery on Pátmos treasures the copy. On this island St. John composed The Revelation after hearing "a great voice, as of a trumpet, Saying . . . What thou seest, write. . . ."

circle, perhaps a mile wide. The small boats' lights attract schools of fish. Slowly they row toward the center, dimming their lamps as the gaps close. When the rowboats converge, a large net encircles the fish.

This time, however, a rain squall lashed the surface, scattering the fish at the last moment. It takes hours to attract the schools; so only one attempt is made.

Khíos (Chios) cultivates four million mastic trees for their gum. The sweet, sticky substance forms the base for many paints and varnishes and provides the islanders with a limitless supply of chewing gum. We found it palatable, but no threat to Mr. Wrigley.

Lord Byron long since has sung the praises of Sámos's vineyards. *Mah Jong* paused there long enough to "fill high the bowl with Samian wine!"

Delightful days and entrancing islands—Pátmos, Náxos, Páros—sped by. Finally we beat toward Míkonos at night, during the meltémia. We debated waiting until dawn to make the risky harbor entry. "But I know Míkonos like my own backyard," Denis insisted. He sketched a harbor diagram that tallied closely with the *Mediterranean Pilot*. The prospect of being tossed about all night with calm water only a mile away decided us.

Mah Jong rounded up into the wind, lowered sails, and powered. In the inky blackness waves rolling down from the tip of Évvoia crashed against the breakwaters that guard the port like giant concrete jaws. A following sea pushed us at frightening speed past the red and green lights flanking the entrance, and we moored for the night.

Pleasantly Lost in Míkonos

At dawn I poked my head through the forward hatch. The first glimpse of Míkonos overpowered me.

Framed below by the green-blue harbor lined with colorful caïques and above by windmills and clear dark-blue sky, the town's whiteness was dazzling. I slung a camera over my shoulder and explored alone.

I wandered through back streets away from the waterfront. Clean whitewashed buildings, built of island stone, sparkled like cubes of sugar. Steep white staircases marched up the outside walls to a second floor on nearly every house. Brown wooden balconies overhung the streets (page 776).

I became pleasantly lost. A handsome, middle-aged Greek observed my predicament. "Míkonos has fooled you!" he grinned. "Look—it is easy. When you are lost, notice the wind. The meltémia always blow from the north. Walk into them, and you come to the quay. It never fails."

My new-found guide, Takis Samarinas, strolled along with me. I commented on the number of churches and chapels we passed.

"We have 365 of them, and only 2,500 people," he said. Before tourists flocked to Míkonos, he explained, the islanders fished for a living. Often, when imperiled by the fierce meltémia, sailors swore to build a chapel to their *ayios*—patron saint—if delivered from the storm. The churches are survivors' promises fulfilled. The most famous, and smallest, is the Church of the Cat. "Just around the corner here," Takis indicated. "Míkonos is very small—everything is just around the corner!"

Sailor Keeps Rash Pledge

Nailed to a roof, the little church might have been a dollhouse; it stood scarcely two feet high. No cross crowned it, unlike the others.

"This sailor pledged rashly," Takis said. "He was washed ashore, but had no money to build a church. Then he remembered he had promised nothing about *size*, and erected this. The first day a cat moved in, defiling it; so the sailor tore off the cross."

By now Míkonos had begun to stir. Buxom housewives hung out their gaily colored wash. Visitors strolled the narrow streets in shorts, sandals, and decorative Míkonos shirts. A rhythmic *thump . . . whump . . . thump . . . whump* echoed from weavers' looms as they labored to fill tourist demands.

A stooped old Greek leading his mobile grocery store—a heavily laden donkey—reminded me of breakfast. We faced the wind and walked to the quay. Denis sat at a cafe sipping Turkish coffee. Takis and I joined him for a cup of the thick, black brew and some of Míkonos's famous pastry.

A deep-throated whistle startled me out of my chair.

"The tourist boat from Athens," Denis laughed. "Vacationers will scramble ashore, rummage through town buying everything, then leave tonight."

Caïques motored out to ferry passengers ashore. The harbor is too shallow to permit docking. "Visitors complain about it," Takis said, "but actually they love the excitement."

Gray Slate Roofs Framed in White Tile Pave a Hillside on Skópelos Island

Tradition says that the first inhabitant was one of the *Argo* heroes who sailed with Jason to win the Golden Fleece. Today the island lures visitors with a treasure for the eyes. Two- and three-story houses in the town of Skópelos show Greek mainland style; many twist to fit a narrow vertical site; all blend in a harmony of delicate colors.

A rooftop accommodates a railed terrace (left) from which the family can gaze on the harbor. Below them church domes, looking like inverted saucers, wedge into the residential mosaic.

Knitting and spinning, two grandmothers face life with patient dignity. They play but one of the many parts taken by Greek women throughout history.

Helen of Troy was so beautiful that Christopher Marlowe said her face "launch'd a thousand ships." Sappho was so talented that Plato wrote: "Some say there are nine Muses. How careless they are! Behold, Sappho of Lesbos is the tenth!"

In 1803 the women of Souli, in the mainland district of Epirus, revived heroic tradition. To escape enslavement under Ali Pasha, they performed a solemn dance on a cliff and leaped to death.

A fisherman mends his net in a cobblestone courtyard.

Cupolas and Crosses Mark the Russian Monastery on Mount Athos

A thousand years ago the first hermit arrived at Mount Athos and took refuge in a cave. Eventually 20 monasteries with satellite communities studded the peninsula. Supported by various peoples, they served as a spiritual center of the Orthodox Church. Before the Bolshevik revolution dried up the stream of novices, St. Panteleimon (above) was largest on Athos, with 1,500 monks. Today its abbot guides but a few aged men.

Bearded abbot, robed in red and gold, blesses his brothers.

The conversation turned to the neighboring island of Delos (Dhilos). Takis offered to arrange for a caique to take us there. We agreed to meet at the quay in an hour, but first I wanted to photograph a windmill I had admired from *Mah Jong*.

Denis and I trudged up the hill to find the mill's owner adjusting his sails. He wrapped half the gray canvas around its wooden frame to keep the giant mill under control (page 780).

The whole house vibrated when the huge concrete wheels began grinding. Flour filled the air, powdered our clothes, clung to our eyelashes and hair. Had I been popped into an oven, I should have emerged with a crust.

Like everyone on Mikonos the miller tolerates tourists. "They make my pocketbook grow fatter," he shouted jovially over the rumbling of the wheels. Before we left, he insisted we meet his wife and daughter. "A good excuse to drink a little *ouzo*, eh?" he suggested.

By now I had developed a taste for ouzo, but hardly at 8 o'clock in the morning. However, I knew that one observes local customs seriously. Denis beamed when I gulped down

(*Continued on page 781*)

DAVID ALEXANDER © NATIONAL GEOGRAPHIC SOCIETY

Monks and pilgrims feast on St. Panteleimon's Day amid frescoed saints and heavenly visions. Women, in obedience to a traditional command from the Virgin Mary, may not visit Athos.

A black-robed brother reads from the Scriptures (opposite) during dinner in St. Panteleimon's vaulted refectory. Monastery rules decree that the monks abstain from meat the year round.

Mikonos houses shade needle's-eye streets. Simple, boxlike homes relieve the island's barren granite landscape. Dazzling whitewash splashes walls, paving stones, and even flower cans (left).

Sinking sun spotlights Mikonos's white crescent and signals the end of work for a fisherman.

This island is one of the Cyclades, which Antipater of Thessalonica so aptly described as "fragments of earth, that with his thunder the wild Aegean girdles."

"Mikonos is like a sponge," a Greek friend told the author. "A boat can arrive with 400 tourists, and within an hour the quay stands deserted. The little streets just soak them up."

Harborside table draws friends for coffee.

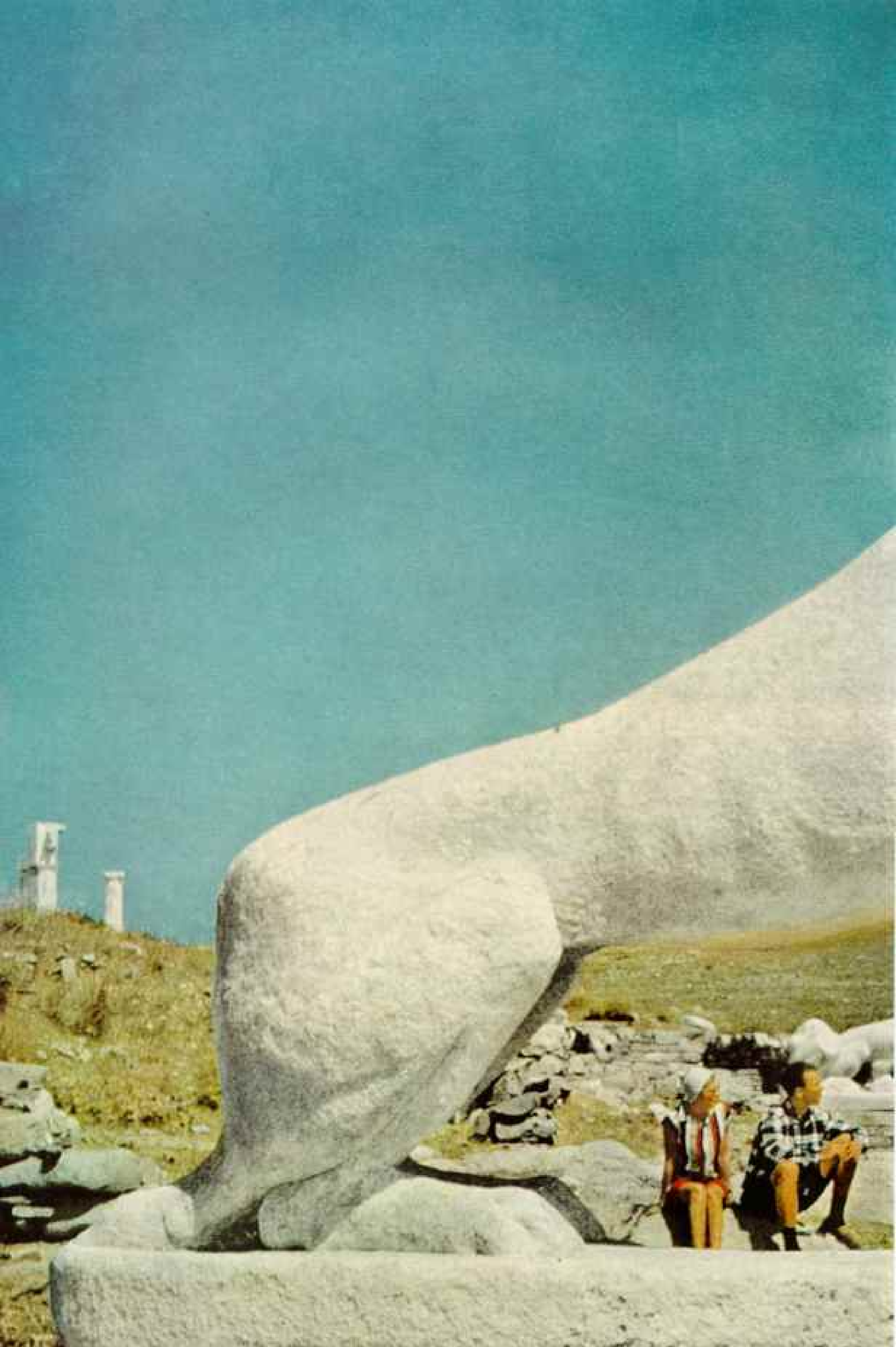
PHOTOGRAPHS BY GILBERT M. GROSVENOR, NATIONAL GEOGRAPHIC STAFF

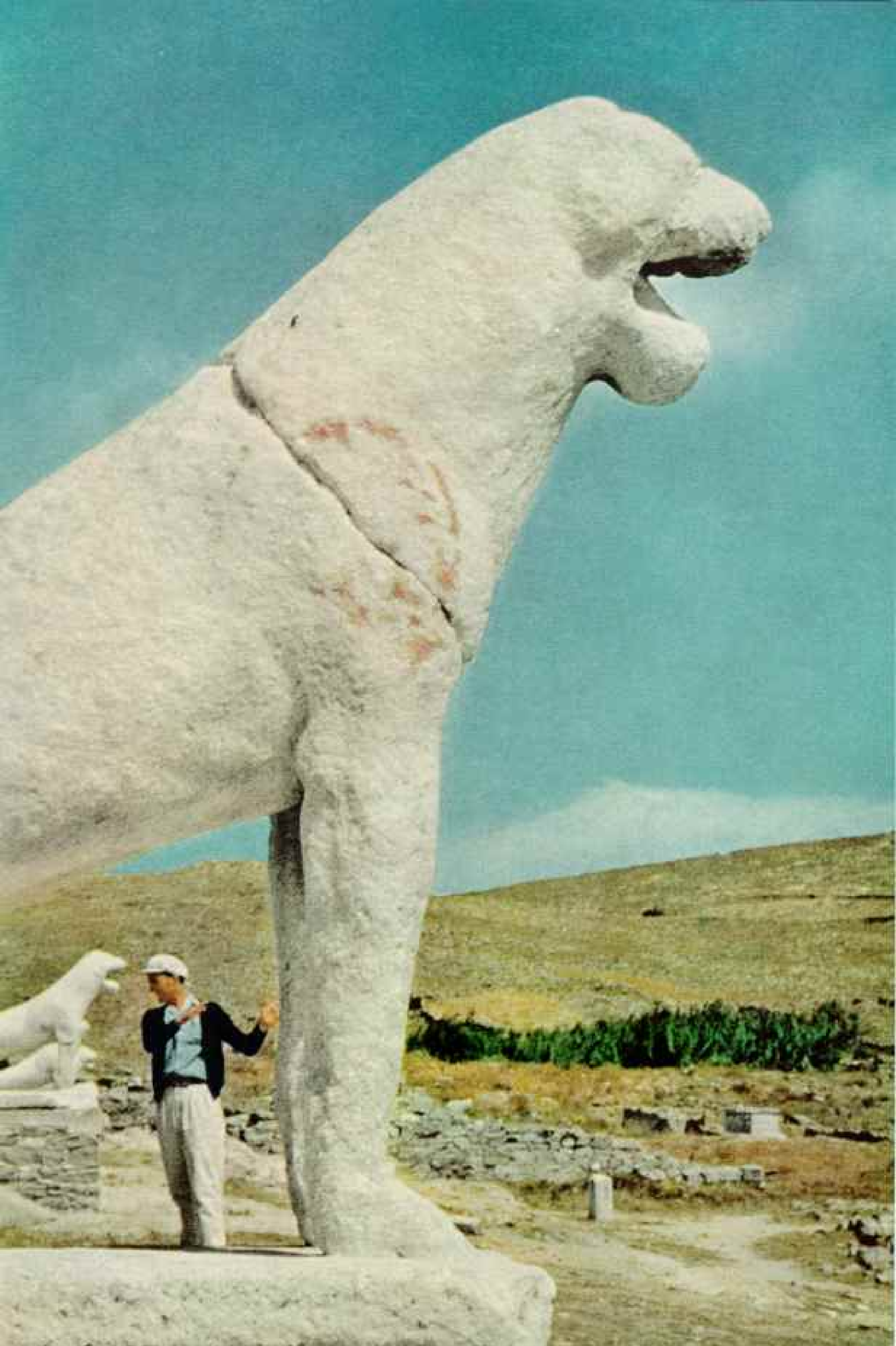
Marble Lions Guard Lonely Delos, Once a Treasure Island

(Pages 778-9)

Legendary birthplace of Apollo, ancient Delos drew throngs of gift-bearing pilgrims; Náxos Island sent these greyhound-lean sentinels to adorn the Sacred Way to the god's temple. The stream of riches swelled when the island became the treasury for the Delian League of Athens against the Persians.

Under Roman rule, Delos thrived as a free port. Then plunderers struck from Asia Minor. Palaces and temples lay in ruin when Antipater mourned: "Delos, once the dazzling . . . first to suffer this doom of solitude."





the strong, clear apéritif without a wince. I was improving!

The caïque for Delos waited, and we thanked our host for his hospitality.

"Once the island floated aimlessly about the sea," Denis told me of mythical Delos. "Then Poseidon struck out with his trident and anchored it to this spot. Apollo, the god of light, was born here."

Now Delos stands deserted, except for a caretaker's family, and, of course, visitors. But her history, still traceable in the tumbled stones, reveals a flourishing past.

We surveyed remnants of the temple neighboring islanders had erected to Apollo. A giant hand, spanning 16 inches, had been found lying in the rocky ground; once it had belonged to a magnificent statue of Náxos marble. I was struck by the gaunt, weather-beaten beauty of five sculptured Naxian lions, the island's favorite attraction (page 778). The splendid beasts crouch on perpetual guard as they did 2,600 years ago.

Delos Had Big Slave Trade

"The central location of Delos let much of the world shape her history," explained a friendly archeologist who was working in the Cyclades. "You see evidence of Syrian influence in the Terrace of the Alien Gods. And the Egyptians built beautiful temples in the early 2d century B.C."

After Rome made Delos a free port in 166 B.C. and razed Carthage and Corinth 20 years later, the island served as middleman for cargoes from Greece to Africa and from Asia to Italy. Great bazaars sprang up.

"Thousands of victims of slave raids were brought here by pirates to be auctioned on these blocks," the archeologist pointed out. "And in these stalls grain, textiles and ivory, papyrus, parchment, perfumes, glass, and arms changed hands many times."

The Delos market seemed to me not unlike Istanbul's sprawling bazaar, the Flea Market of Paris, or London's old Petticoat Lane, in a ghostly, ancient setting.

"Why did Delos fall?" I asked.

The archeologist grew reflective. "One evil has plagued Greece and her islands throughout their entire history," he replied. "War."

In war-torn ancient Greece, the sacred isle of Delos offered a safe port. But as Roman law and order spread, she lost her commercial importance to better harbors closer to the sources of trade. Finally sacked in 88 B.C. by invaders from Asia Minor, she never recovered. War, which had made her rich, left her the ruin one sees today.

Troubled Islands Find Peace at Last

Sailing back to Mikonos, I thought over the archeologist's remark about war. From the Trojan War, about 1200 B.C., and the Dorian invasions to the Persian Wars, Greece was constantly in turmoil, even during her Golden Age. Then came Alexander the Great, Roman occupation, Slavic attacks, Crusaders, Venetians, Turks, and finally Nazis.

Today Greeks seldom speak of war. Unlike Delos, most Aegean Isles have sprung back from invasion and destruction. Wounds have now healed from Turkish and Italian rule in the Dodecanese, the occupation of Crete by Nazi paratroopers, and the bombing of Thira and Mikonos.

A few nights later *Mah Jong* skimmed a moonlit path toward Corinth, where I would leave the ship for the return flight home. Snug in my bunk, I reread Lord Byron's *Isles of Greece* with a warm, new understanding. How Byron would love his islands today!

> The Scian and the Teian muse,
> The hero's harp, the lover's lute. . . .

These surely sing of Rhodes today.

Crete would unveil her fabulous Minoan past, which lay concealed in Byron's time. In tiny Avdhoú he would delight in watching "our virgins dance beneath the shade." And Thira's cliffs, with their subtly shifting colors —"Eternal summer gilds them yet."

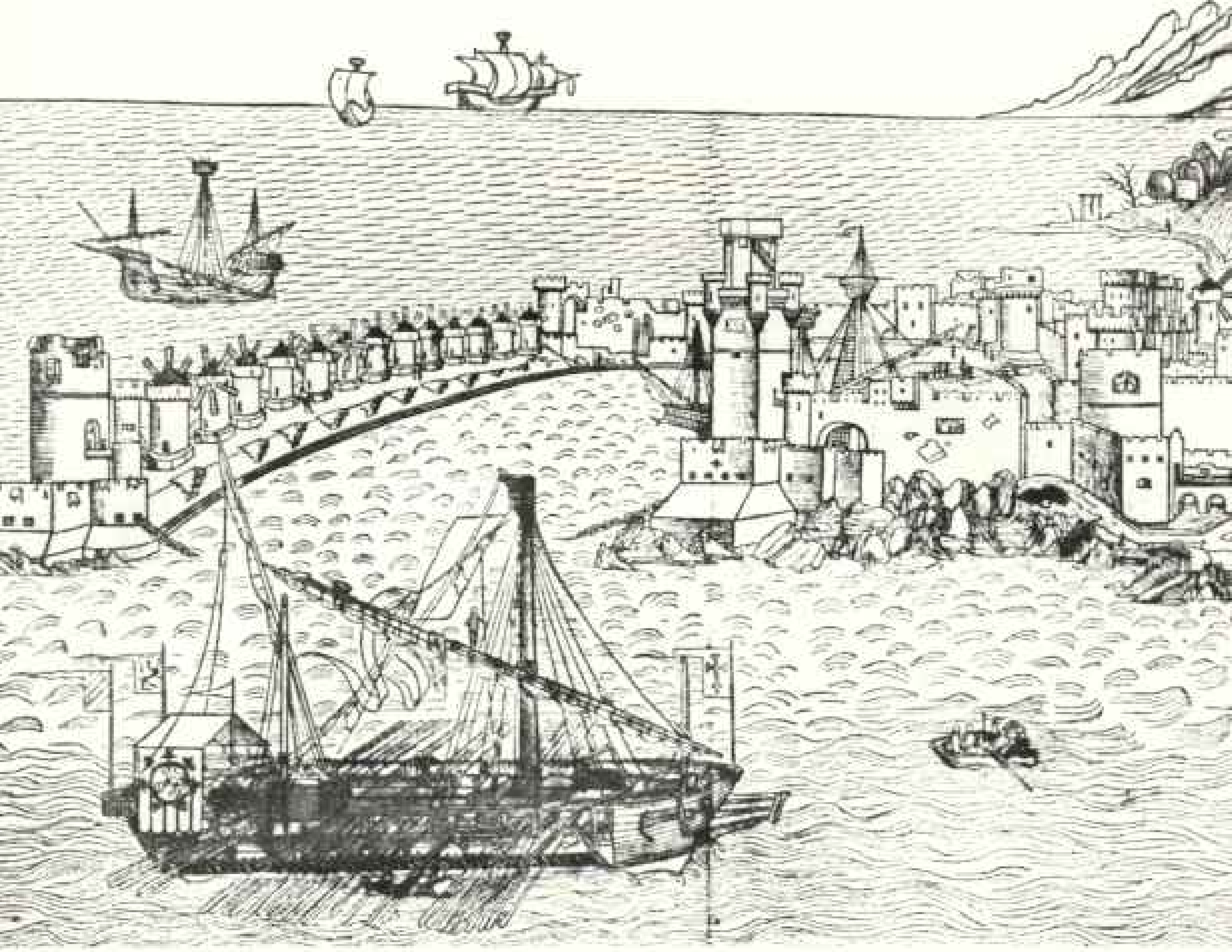
But the brilliant, troubled poet who so ardently espoused the cause of Greek liberty can rest content. No longer need he cry of Soúnion's temple:

> There, swan-like, let me sing and die:
> A land of slaves shall ne'er be mine. . . .

For his bright, beloved Aegean Isles and Poseidon's wondrous playground are at peace —and finally free.

Mikonos Grain Mill Reefs Its Sails in the Teeth of a High Wind

Small sails work best during the *meltémia*, the northern winds. Wrapped around the booms, remaining canvas waits in reserve for calmer days. "My son in Illinois complains of electric bills," the miller told the author, "but here God pays for power." When visitors leave, residents say, the windmills semaphore, "Come back, come back!"



New Atlas Map Portrays Greece

A MAP as old as Homer's Troy yet as new as the Greek atomic research center near Athens reaches the two and a quarter million members of the National Geographic Society as a 10-color supplement to their December Magazine.

Greece and the Aegean, newest in the Atlas Series, brings to seven the number of these uniform-size maps issued in 1958 to enable members to begin building an atlas of the world. The others have shown the Southeastern United States, Southern South America, U. S. National Parks, British Isles, Poland and Czechoslovakia, and the North Central United States.

From Greece have come some of man's most precious possessions—free speech, free thought, the very word "democracy."

"A tyrant," wrote Herodotus, "disturbs ancient laws, violates women, kills men without trial. But a people ruling—first, the very name of it is so beautiful; and secondly, a people does none of these things."

As Edith Hamilton said in the Geographic:

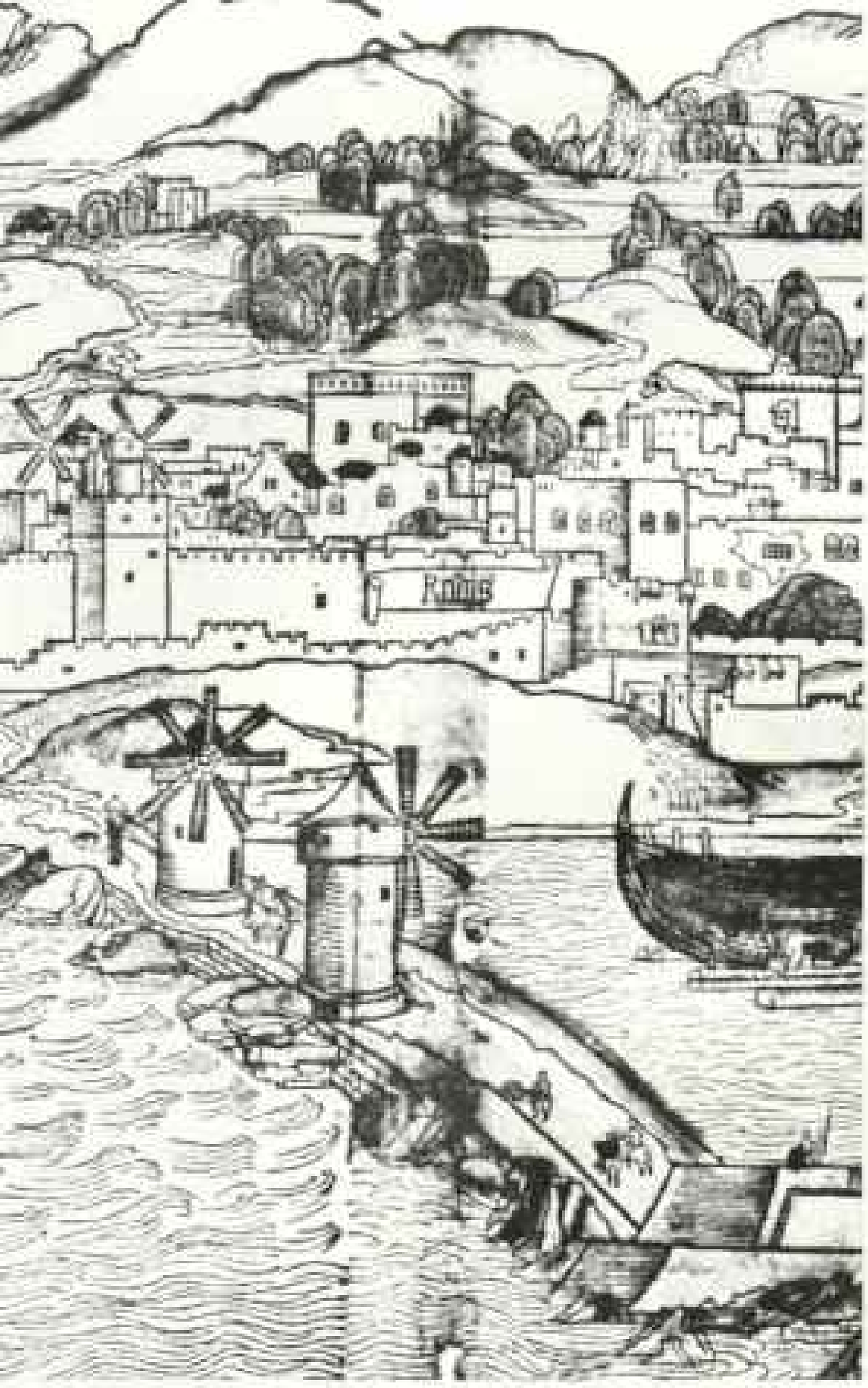
"In the ancient world ruled by the irrational, by dreadful unknown powers, where a man was utterly at the mercy of what he must not try to understand, the Greeks arose and the rule of reason began. The fundamental fact about the Greek was that he had to use his mind. . . . The Greeks had free scope for their scientific genius and they laid the foundations of our science today." *

Our word "atom" comes from the Greek *atomos*, meaning "not cut," or indivisible, and atomic theory was expounded 400 B. C. by the Greek physical philosopher Democritus.

Now the name of Democritus goes on the map as the site of the Greek Government's first atomic reactor, on the northeast fringe of Athens (see large-scale Athens inset).

In contrast, the three-dot symbol for ruins marks such storied sites as Troy, near the

* See "The Greek Way," by Edith Hamilton, NATIONAL GEOGRAPHIC MAGAZINE, March, 1944; also the National Geographic Society's color-illustrated 356-page book *Everyday Life in Ancient Times* ($6).



FROM THE HAND-PRINTED SET BY E. G. R. TAYLOR

and the Aegean

entrance to the Dardanelles in Turkey. Crossed swords locate some of the world's most decisive battles, such as Marathon, north of Athens, and Thermopylae, to the northwest.

But the versatile map also shows oil fields and pipelines, places with scheduled air service, and the networks of roads and rails that annually bear thousands of tourists about this fascinating part of the world.

Here Europe meets Asia, across the Aegean, and here Greece, Turkey, and Italy of the North Atlantic Treaty Organization face Communist Albania, Yugoslavia, and Bulgaria.

Planes of NATO fly from bases here, including important ones on Crete, where Icarus of Greek mythology took short-lived flight on feathered wings held together with wax.

Barely more than two square miles in area, Saseno, off the Albanian port of Valona, has been called "a Soviet Gibraltar in the Adriatic." Though this term may flatter the facilities, Saseno's caves could store supplies for Communist submarines.

Winds of the Aegean have puffed the sails and turned the mills of islanders for centuries. This woodcut of Rhodes harbor was made by a Dutch artist in 1483. Oars provide auxiliary power for the sailing vessel in foreground, even as they did for Egyptian craft 45 centuries earlier.

Not until this year was the near-by strait between Albania and Corfu finally swept free of World War II mines by Greek-Albanian cooperation, saving ships many miles.

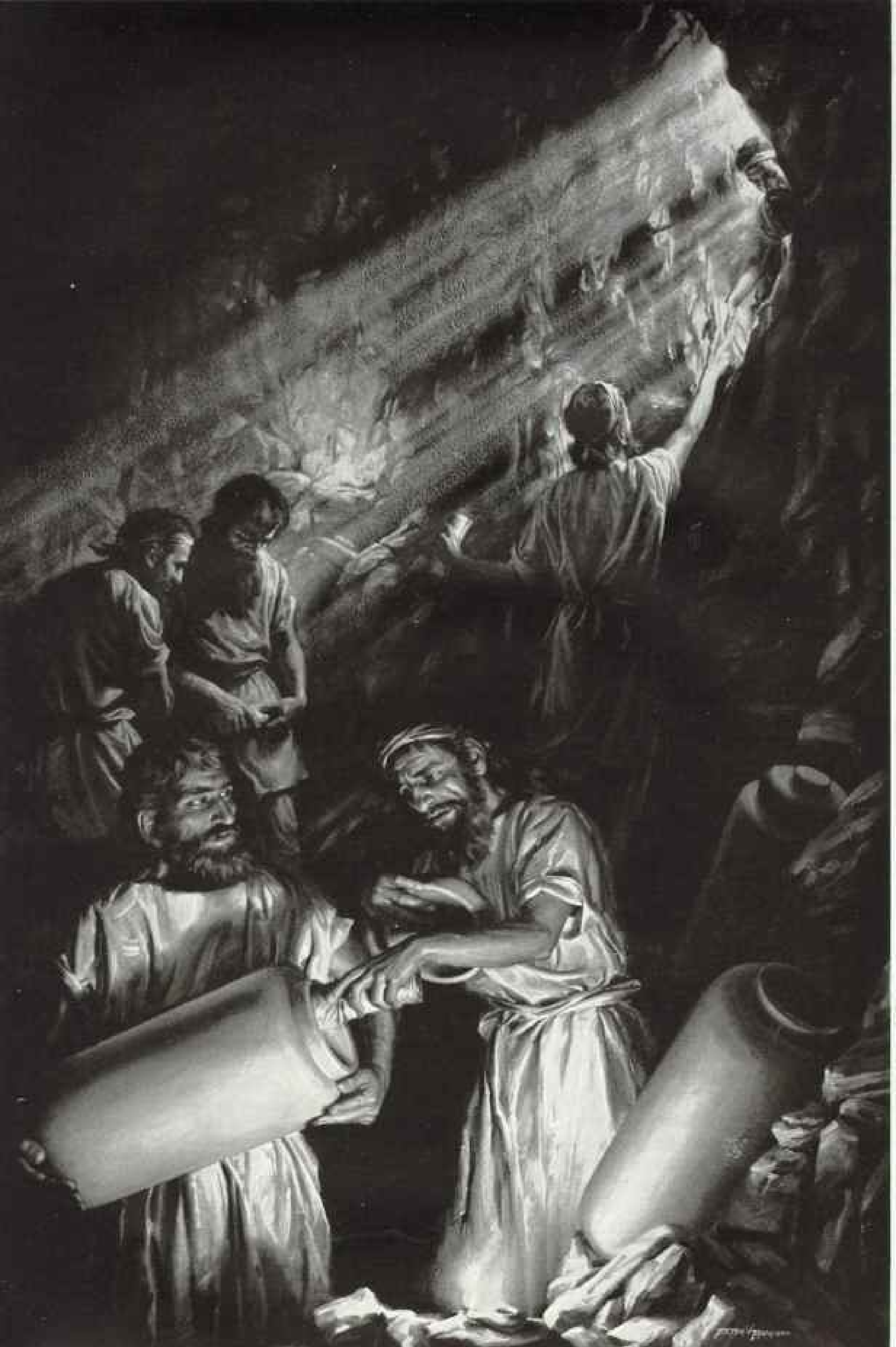
Another passage, the Corinth Canal, further reduces sea mileage. Dynamite charges set off by retreating Nazis closed this short cut during the war. At great effort the Greeks cleared the passage—only to see their work undone by earthquakes in 1953 and 1956. Now open again, the canal saves ships 150 miles of travel around the foot of Greece.

Corinth is one of five places on this map whose names are immortalized in books of the Bible—Epistles of St. Paul. The great missionary, who traveled widely in this area, wrote two Epistles to the Corinthians and two to his followers in Thessaloniki (Salonica). Both are flourishing cities today, but Philippi, near the northern shore of the Aegean, and Ephesus, on the Turkish side, now survive only as ruins. Colossae, farther east in Anatolia, is known today as Honaz.

Two of the map's large-scale insets show details of the Turkish Straits—the Dardanelles and the Bosporus—controlling entrance to the Black Sea. Across the Bosporus, which mirrors Istanbul's beauty, the Turks are planning to build one of the world's longest suspension bridges. Farther west a new Évros River bridge will link the Greek and Turkish road systems near Ipsala.

Maritime history is turning full circle in these waters. Crossed swords on the Athens inset mark the spot where Athenians defeated Xerxes' fleet in the battle of Salamis in 480 B.C., and only about five miles away, at Skaramangá, the Greek shipbuilding industry is coming home in triumph after more than 2,000 years. New yards there will add to the fleets of Greek shipowners, who already control more than 1,400 ships, including about half the world's tramp cargo vessels.

Members may obtain a packet of the first seven Atlas Maps, folded once to fit the handsome Atlas Folio, for $3 by writing to the National Geographic Society, Dept. 88, Washington 6, D. C. Individual Atlas Maps, 50¢ each; the Folio, $4.55. All prices postpaid and payable in U. S. funds. The Greece and Aegean area is also included in two 10-color wall maps with historical notes: Lands of the Bible Today and Classical Lands of the Mediterranean. For prices of wall maps and other National Geographic publications, write for free catalogue.



Ancient manuscripts found in Judaean caves open a new world to Biblical scholarship

The Men Who Hid the Dead Sea Scrolls

By A. DOUGLAS TUSHINGHAM

Head of the Division of Art and Archaeology, Royal Ontario Museum

Paintings by Peter V. Bianchi

IN a secluded room of the Palestine Archaeological Museum in the Arab sector of Jerusalem, a handful of scholars works quietly at a monumental task. With infinite patience they fit together tens of thousands of leather and papyrus fragments—some smaller than a fingernail, others black and wizened with age, still others so fragile that the mere touch of a camel's-hair brush will cause them to crumble into dust.

These fragments of 2,000-year-old scrolls represent the library of an apocalyptic Jewish group—most probably the Essenes—which flourished near the Dead Sea before the birth of Christ. The material contained in the scrolls is profoundly affecting scholarly understanding of Biblical texts, as well as affording new insight into the history of Judaism and early Christianity.

The Dead Sea Scrolls, as they are popularly known, owe their discovery to sheerest accident. In 1947 Muhammad Adh-Dhib, a boy of the Ta'āmirah tribe of Bedouin, was searching for a strayed goat in the arid, desolate waste of the Wilderness of Judaea. Clambering among the stark cliffs bordering the northwest coast of the Dead Sea, he idly cast a stone into a small opening and heard the shattering of pottery. Frightened away, he later returned with a companion, entered, and found several large earthen jars. In one or more of them he also found some aged scrolls wrapped in foul-smelling linen.

Eventually the original documents, joined by others clandestinely excavated in the same cave, reached Jerusalem, 13 miles to the west. There the Syrian Orthodox Archbishop, Mar Athanasius Yeshue Samuel, purchased four of the scrolls directly from the Bedouin; Prof. Elazar L. Sukenik of the Hebrew University later bought three from a middleman in Bethlehem.

A succession of experts who examined the archbishop's manuscripts unhesitatingly pronounced them worthless. Finally, however, the archbishop sent them to the American School of Oriental Research in Jerusalem. The archaic forms of the Hebrew letters led Drs. John C. Trever and William Brownlee to suspect the sensational nature of the documents. They dispatched photographs of sections of one scroll—a copy of the Book of Isaiah—to Dr. William F. Albright of Johns Hopkins University. Albright, an outstanding

"The fount of understanding was hidden." Echoing across 2,000 years, these words from the Dead Sea Scrolls evoke a vivid image of the last days of an ascetic Jewish sect, probably the Essenes. About 100 B.C. this group took refuge in a religious center recently excavated at Wādī Qumrān in the Judaean wilderness. There they awaited the Messianic age. Concrete evidence of their existence came to light a decade ago when a Bedouin boy stumbled across a cave containing ancient scrolls that scholars regard as the century's greatest manuscript discovery.

Abandoning Qumrān in the year 68 as Romans battled a Jewish revolt, the Essenes concealed their library in caves to await their return. But there was no return, and the "Doers of the Law" receded into the mists of antiquity.

"Thou hast set me as in a strong tower upon a lofty wall. . . ." In bringing the Essenes to life in this series of paintings for the National Geographic, the artist, Peter V. Bianchi, has been guided by the latest findings of archeology, by the author and other leading authorities, and by the rules of the order translated from the scrolls. The monastery overlooks the Dead Sea (following pages). Two men roll the clay roof after a rain. Essene herdsmen in their order's white garments drive flocks to sparse pastures. Visitors in dark clothing approach the entrance.

Quotations at the headings of these descriptions have been taken from the scrolls.

authority on Hebrew paleography, promptly dated it about 100 B.C. and labeled the scrolls "an absolutely incredible find."

Since then, every test of modern science, including carbon-14 dating, has indicated that the Dead Sea Scrolls are at least 1,900 years old.* Except for a few previously discovered fragments, the Biblical works antedate the oldest known Hebrew manuscripts of the Old Testament by 1,000 years!

The documents in the original find, which have already produced a tremendous impact upon Old Testament studies, were: two scrolls of the Book of Isaiah; a commentary on the Book of Habakkuk; the *Manual of Discipline*, or the Essenes' rule of the community; a free rendering in Aramaic of portions of the Book of Genesis; a book of Thanksgiving Psalms; and a work entitled *The War Between the Children of Light and the Children of Darkness*, an order of battle for the final apocalyptic clash between the forces of good and the forces of evil.

Archbishop Samuel's scrolls, ultimately sold for $250,000, went to Israel's Hebrew University. All will be displayed in a magnificent Shrine of the Book to be constructed in the Israeli sector of Jerusalem.

Ancient Debris Yields Scroll Fragments

Armed hostility between Arabs and Jews, climaxed by all-out war in the spring of 1948, frustrated the efforts of archeologists to seek out the site of the spectacular find. However, an expedition led by Père Roland de Vaux of Jerusalem's École Biblique et Archéologique Française and Gerald Lankester Harding, then head of the Jordan Department of Antiquities and Acting Curator of the Palestine Archaeological Museum, made its way to the cave early in 1949 (page 854). The two scientists found the interior well rifled, but a meticulous sifting of the debris produced fragments belonging to some 70 scrolls.

A ruin less than a mile to the south of the cave aroused their interest (map, page 790). Known as Khirbat (Ruins of) Qumrān, it stood solitary and desolate on a terrace overlooking the Dead Sea. The surrounding terrain was barren, rock strewn, cruelly scourged by the sun. But Khirbat Qumrān seemed an obvious place to look for answers to the principal problems posed by the scrolls: Who had carefully concealed them so long ago? For what reason?

Harding and De Vaux, therefore, made a preliminary sounding at the ruin. Finding nothing of significance, the archeologists concluded that further digging was unwarranted. With the contents of the cave now exhausted, and with no apparent link between the ruin and the scrolls, Muhammad's discovery stood as a freakish, inexplicable windfall.

Bedouin Explore for New Finds

And so it might have remained, save for the impoverished Ta'āmirah Bedouin. Their brief brush with the eager scholars of Jerusalem had alerted them to a new source of income. Busily they began to explore the thousands of cracks and fissures which honeycomb the Wilderness of Judnea.

In 1952, hundreds of weary days and hundreds of weary caves later, they once again struck fragments of leather in the vicinity of Qumrān. And again the leather was more valuable than gold. When evidence of the newest Bedouin find trickled into Jerusalem, an archeological task force drawn from the American School of Oriental Research, the École Biblique, and the Palestine Museum hastened to the area. An exhaustive and exhausting combing of the cliffs located still another cache. Along with the scraps of leather were two rolls of copper so oxidized that the scientists could neither open nor decipher them (page 802).

* See "How Old Is It?" by Lyman J. Briggs and Kenneth F. Weaver, National Geographic Magazine, August, 1958.

"That He May . . . Sanctify Himself with Water of Cleanness"

Ritual purity assumed enormous importance in the lives of the Essenes. Of the many cisterns and basins in Qumrān, at least two probably were dedicated to bathing. Upon admission to the community, new members were ritually cleansed with water in a kind of baptism. Unlike the Christian sacrament, usually administered only once, this ceremony appears to have been repeated periodically at Qumrān. According to the Jewish historian, Flavius Josephus, the Essenes bathed daily to purify themselves.

Here a turbaned priest supervises the ceremonial cleansing of a newcomer. An assistant reads a benediction from a scroll, and onlookers offer prayers. Man at top of the steps holds the initiate's white mantle.

Six months later the tireless Bedouin uncovered Cave 4. There, buried in age-old rubbish, were the remains of the sect's main library, tens of thousands of fragments belonging to almost 400 separate scrolls.

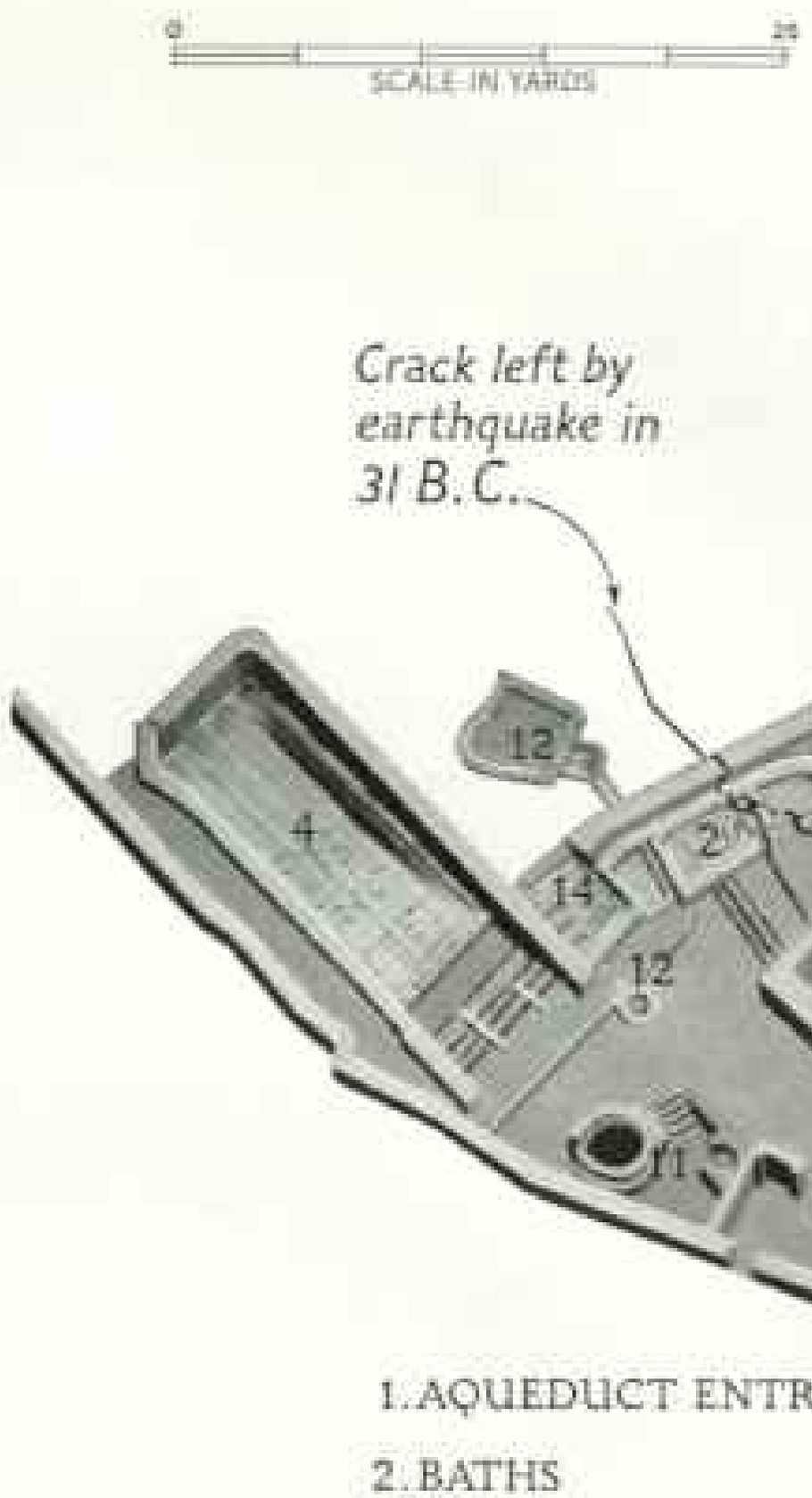
Since then discoveries have proceeded apace, with honors equally divided between archeologists and Bedouin. The most recent find, Cave 11, fell to the Ta'āmirah in 1956 and contained a number of virtually intact leather scrolls—the first to be found since Muhammad Adh-Dhīb threw his fateful stone.

Earlier Père de Vaux had decided to reinvestigate the ruins at Wādī Qumrān. In 1951 he commenced a major excavation. The results to date have been astonishing.

Today, Khirbat Qumrān lies cleared of the debris of centuries. The skeletal remains of an ancient monastic settlement brood above the Dead Sea. Even in decay the buildings are aloof, starkly ascetic. And hidden in their ruins were clay jars identical with those found in the near-by caves.

Khirbat Qumrān has unlocked the mystery of the scrolls. For, together with the monastery's elaborate ground plan (diagram at right), the excavations have revealed the history of the pious men who built it, inhabited it for almost two centuries, and saw it fall to conquering Roman legionaries. The evidence of archeology, of the scrolls themselves, and—

(Continued on page 795)



Plan of Khirbat Qumrān,

Essene Community Center, 31 B.C.

The Essenes erected their religious center about 100 B.C. upon the ruins of an Israelite settlement dating from the 8th century B.C. Consisting of a building complex 128 yards long by 80 yards wide, the center was the focus of the sect's communal life. Scientists believe, however, that the members lived in tents and near-by caves rather than in the Qumrān buildings. For the archeological history of Khirbat Qumrān, the world is indebted to the series of campaigns directed by Père Roland de Vaux of the École Biblique in Jerusalem. Diagram by National Geographic cartographer Gilbert H. Emerson.

Less than 16 miles from both Jerusalem and Bethlehem lie the ruins of Qumrān, the Essenes' "house of exile," and near by are the caves in which the Dead Sea Scrolls have been found. The Dead Sea is 25 percent salt. But the spring of 'Ayn Fashkhah provides fresher water, and there the community built an agricultural outpost. Scientists and Bedouin have uncovered 11 caves containing Essene material. In addition, other manuscripts have been unearthed at Khirbat al Mird, the ruin of a Byzantine monastery.

"The fruit of holiness shall be on my tongue. . . ." Only full members, those admitted to the Purity of the Many, could participate in the daily communal meals at Qumrān. The Essenes, wrote Josephus, "repair to the refectory as to some sacred shrine." And the scrolls describe how "the priest shall stretch out his hand first to pronounce a blessing with the first portion of the bread and the wine."

Befitting the sect's asceticism, Essene fare was simple: Josephus reports the serving of only one dish at a meal. Archeologists at Qumrān have unearthed jars containing bones of sheep, lambs, goats, cows, and calves. These appear to be the leftovers of ceremonial feasts. Sunlight streams in on just such a scene. As the Many take their Spartan repast on the floor of the refectory, a priest stands on the dais interpreting the scroll held by his assistant in the foreground.

indirectly—of early writers indicates that they were members of the Essene sect, or of one closely akin to it. Abandoning the world and all its follies, this "righteous remnant" of Israel had retired to the austerity of Qumrān to study the law and await the "end of days."

When first I visited the excavation with Père de Vaux, I was immediately impressed by the bleak grandeur of the setting. From the scorched plain that skirts the sea we approached the monastery by a road which twists its way up a steep slope. While readily navigable by pedestrians—or donkeys—the road's turns are terrifyingly abrupt for a motorcar. I have stalled on it several times, but Père de Vaux careened the École Biblique's vintage station wagon up it with careless ease.

Qumrān Fort Fell to Romans

When we emerged on the terrace, the first structure that caught my eye was a fortress-like tower. Archeologists have found that its walls were rebuilt after a disastrous earthquake in 31 B.C. This fort apparently sufficed to repel unorganized attacks of local tribes or brigands, but it could not and did not stem the final Roman assault.

As one wanders among the ruins, under the same searing sun that beat down upon the Essenes 2,000 years ago, with the same burning wind sweeping in from the Dead Sea, their story seems to spring into vivid life.

The founder of the sect was a priest whom his followers called "the Teacher of Righteousness, to whom God made known all the mysteries of the words of His servants the prophets." According to the founder, the time of judgment was at hand, when God would come to punish the wicked and reward the just.

Certain historical allusions in the scrolls indicate that the sect had its origins late in the second century B.C. while the Hasmonaean dynasty reigned over Israel. As priests, the Hasmonaeans could not show descent from the legitimate high-priestly stock of Zadok; as princes their Machiavellian in-

In brooding solitude, Khirbat Qumrān sprawls amid the lunar emptiness of the Judaean wilderness. Ravines lead into Wādī Qumrān (foreground). Multiple openings of Caves 4 and 5 crown the spur at left. Suggesting a plowed and terraced field, an area at right is the main Essene burial ground containing some 1,000 graves. The Dead Sea lies still farther to the right.

trigues, both internal and external, were, in the estimation of many pious Jews, threatening the very foundation of Judaism.

The references in the Habakkuk Commentary to the "Man of Deceit," the "Lying Prophet," the "Wicked Priest"—always coupled with threats of God's punishment for his persecution of the "Doers of the Law"—probably refer to some member of the Hasmonaean house from John Hyrcanus (ca. 134-104 B.C.) on. Some scholars, however, maintain that the Wicked Priest of the scrolls was either Jonathan (160-142 B.C.) or Simon (142-134 B.C.), both Maccabean rulers and usurpers of the high-priestly function.

The crass secularity of Jerusalem finally drove the teacher and his followers to seek a haven in the desert. The evidence from Qumrān shows that the Essenes erected their establishment near the Dead Sea at the very end of the second century before Christ. According to the sect's *Manual of Discipline*, this migration fulfilled the prophecy of Isaiah (40:3): "Prepare ye the way of the Lord, make straight in the desert a highway for our God."

Confident that they were ushering in the Messianic age, the men of God's "New Covenant" chose an elevation beside Wādī Qumrān, less than a mile from the northwest shore of the Dead Sea, as the site of their refuge. It was even then a secluded spot, well off the main highways passing through the Jordan Valley, but with water available in the richly green oasis of 'Ayn Fashkhah two miles to the south. Later the Essenes built an aqueduct to channel additional water from the western highlands.

To me, this intricate system of water channels was the most arresting feature of the ruin. They cross the area in every direction, leading to cisterns or baths; to the unpracticed eye there is little to distinguish one from the other. Large or small, flights of steps lead down into each of them. However, Père de Vaux has definitely identified two as baths.

"How do you tell which are cisterns and which are baths?" I asked De Vaux.

"The finest," he answered with a twinkle, "are for bathing."

Community Stressed Cleanliness

One begins to think that the Essenes were preoccupied with water. And so they were.

Among the chief practices of their rule was the ritual ablution. This formal cleansing symbolized the sinlessness of the devotee and his membership in the community of the New Covenant, the true Israel. It was a form of baptism, but a baptism which was enacted repeatedly, perhaps several times a day (page 789).

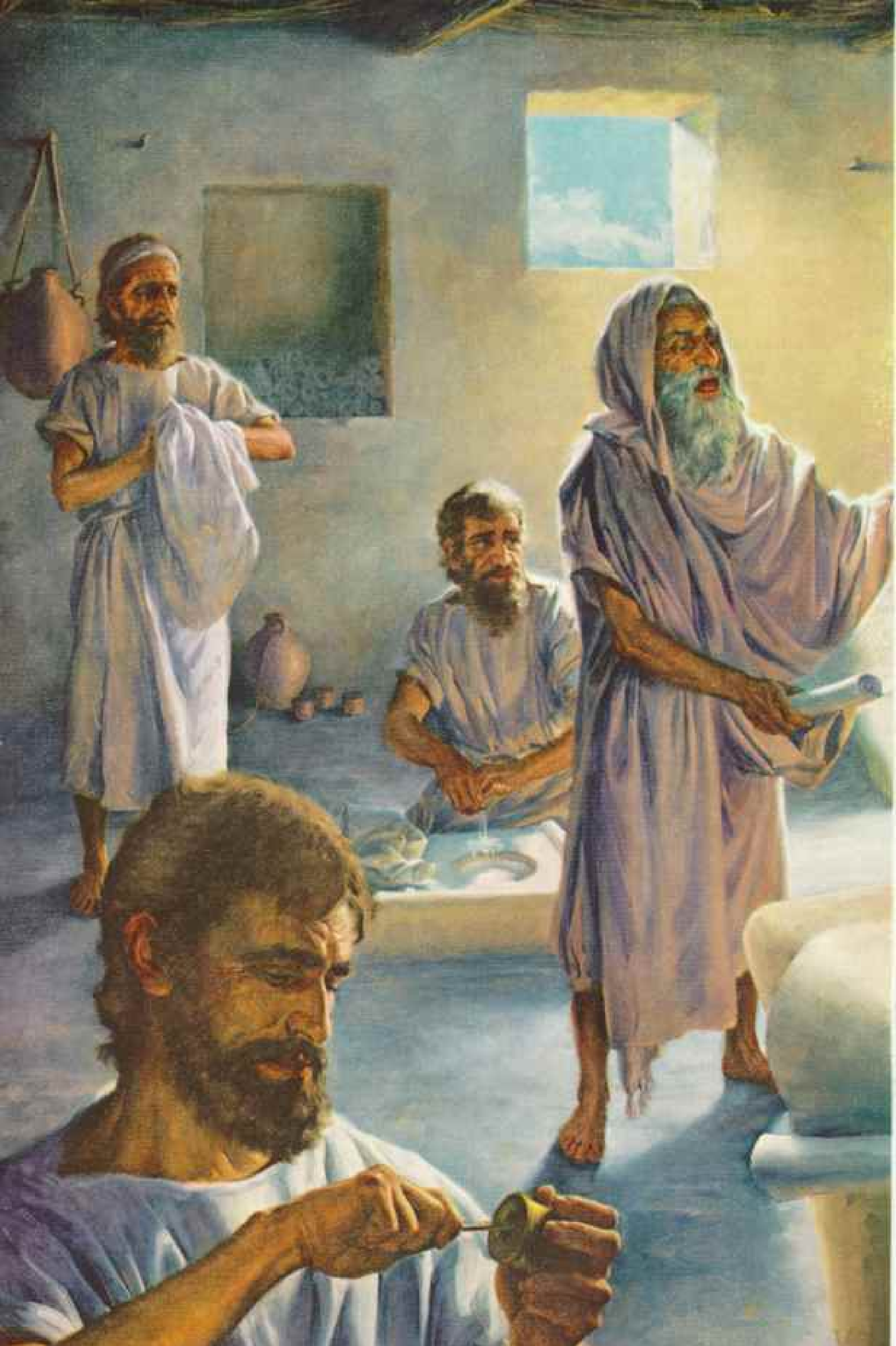
The Essenes also used water to cleanse and sanctify their buildings. Père de Vaux pointed out the evidence of this in the main assembly hall. 'This is a long, narrow chamber with an adjoining pantry (in which De Vaux found hundreds of dishes, neatly stacked) where members of the sect ate their meals in common and presumably worshiped together. At one end, let into the plastered floor, is a round stone dais. While only slightly raised above floor level, this is obviously a sort of pulpit from which the leader or a member of the group preached or read to the assembled company (page 793).

"With a thing formed of clay thou hast done powerfully." Some relatively intact scrolls owe their preservation to the earthen jars in which Essenes placed them for safekeeping. Storage of documents in jars apparently was common practice in Old Testament times, being mentioned both in Jeremiah (32:14) and in the noncanonical Assumption of Moses (1:17). Qumrān had its own kilns (see plan, page 790).

Here a man puddles wet clay before passing it to a companion, who kneads it for the potter. Having shaped a jar, the potter lets it dry in the shade lest moisture in the clay turn to steam and explode during firing. Youth carries fuel to the kiln.

"Opening the Fount of Knowledge to All That Have Understanding . . ."

Archeologists have now explored 11 scroll-bearing caves near the Qumrān ruins. Manuscripts and fragments examined to date comprise some 600 different works, including every Old Testament book save Esther. Scrolls originated in the monastery's scriptorium, where scribes tirelessly copied and recopied treasured works. As the reader in the center dictates to two writers, a third cleans his inkwell. Those in the background copy scrolls propped open with sticks. Others ceremonially wash their hands before starting work. Niches in the wall hold scrolls from the library.



JOHN W. ALLEGRO

Visitors Look Down from Cave 4, Where the Sect's Main Library Was Found

The Essenes took the Scriptural precept "This book of the law shall not depart out of thy mouth" (Joshua 1:8) quite literally. Their rule proclaims: "There shall not cease to be a man who expounds the Torah [Law] day and night continually, orally, each to his fellow."

The floor of the main assembly hall and refectory slopes down slightly from both ends to a low point at the door leading out near one corner. At the corner diagonally opposite is the opening of a small water channel. This permitted easy cleaning of the room, perhaps in preparation for a religious service, or perhaps after meals. The Essenes had only to open the channel and allow the water to run in, flow over the floor, and run out again.

The tight-knit community had all the facilities necessary to sustain its existence. Père de Vaux and I toured the kitchens and the bakery. We examined the pottery, complete with basins for cleaning and mixing clay (page 796). I gazed into a stone-lined depression. This had once contained a large kick wheel which the potter turned with his foot while fashioning a vessel on a smaller wheel at the top. Identical installations have survived in Hebron to this very day.

Here, too, were the kilns, with wood ashes and the iron poker in place! Storage bins, workshops, and even a smithy testify to the industry, enterprise, and independence of the ancient Covenanters at Qumrān.

The sect's capital came from the members themselves. Whoever joined the order con-

tributed all his worldly possessions to the community. A special official, called the Custodian of Property of the Many, handled these financial matters. One thinks immediately of the similar practice existing among the early Christians as related in the Book of Acts (2:44-45 and 4:32-35).

Another room is of particular significance. In it the archeologists found the jumbled remains of a second story which had collapsed when the monastery fell to the Romans. Among the contents of this second floor were broken but recognizable remains of the plastered tables and benches at which scribes had produced some of the very manuscripts later hidden in caves. Here were their inkpots and the basins in which they presumably washed their hands carefully before—and perhaps after—writing the holy name of God.

These two rooms—the refectory-meeting room and the scriptorium—must have been the centers around which the life of the community revolved.

In the refectory, in the words of the rule, the Qumrān Essenes would "eat communally, and bless communally, and take counsel communally." Within those hallowed walls the bonds of their common life and hope were strengthened while they confidently awaited the coming of the new dispensation.

But such a spiritual force, thus kindled and fanned, found its practical focus in the work of the scriptorium. Here dedicated scribes copied the ancient religious lore of Judaism, newer interpretations of Scripture for the day of crisis, and apocalypses describing the cataclysmic events about to take place. Here the Essenes transcribed their rule and wrote down their liturgical literature. Here they strove to the glory of God, confident that their labors would bear fruit in preparing them for Messianic deliverance (page 798).

Water Piped into Council Chamber

The best intentioned and best organized communities, however, require leadership. While the Essenes were relatively democratic—all full members in the assembly could speak in their proper turn—a smaller, select group doubtless guided their endeavors. As a matter of fact, the rule of the community describes a council of 15 men—12 laymen and three priests—perhaps presided over by the supervisor of the community.

Père de Vaux believes he has found the scene of their deliberations. The Council Chamber, as he calls it, is not a large room, but several features seem to bear out his theory. First, a bench runs all around the walls, obviously designed to seat a group much smaller than the whole community. Further, no matter how devoted the Essene elders might have been, their meetings—in the hot, dry climate of Qumrān—would have required a plentiful supply of drinking water. At the same time the discussions were presumably confidential; no outsider or lesser member would be allowed to intrude, not even with a refreshing jug.

Père de Vaux's Council Chamber neatly solves this dilemma. Set into one wall is a small plastered basin, clearly designed to hold water. A small "pipe" cut through the stout wall permits the basin to be filled from outside. Thirst could therefore be quenched and secrecy maintained at the same time. A cupboard in a corner of the same room may have contained a small reference library or vessels of some kind.

Women's Graves Found in Cemetery

Another striking feature of Khirbat Qumrān is the community's main cemetery, stretching out to the east of the buildings and containing about 1,000 burials. Here again the Essene sense of orderliness is apparent, for most of the graves have been laid out with mathematical precision.

The tombs that have been excavated show certain peculiarities. In all parts of the ancient Mediterranean world, pagans, Jews, and Christians alike normally deposited various articles with the dead—jewelry, tools, weapons, pots, lamps—to be used, if only symbolically, in the next world. The Essenes interred their deceased members without any of this paraphernalia. We can only conclude that, in death as in life, the men of the New Covenant scorned private property.

Père de Vaux has located two other cemeteries—one to the north and one to the south of the large main burial ground. There were the remains of several women in these smaller plots; in some cases De Vaux even found earrings and beads buried with the female skeletons. The women of Qumrān were clearly far less ascetic than the men.

According to Josephus, not all Essenes were celibate. "There is another order of Essenes," he wrote, "who agree with the rest as to their way of living, and customs, and laws, but differ from them in the point of marriage, as

thinking that by not marrying they cut off the principal part of human life, which is the prospect of succession; nay rather, that if all men should be of the same opinion, the whole race of mankind would fail."

The archeological evidence from the cemeteries proves that wives, and even children, were present at Qumrān, but scholars doubt that women had access to the inner precincts of the religious center.

Curiously enough, the members of the community did not live in the buildings. They seem to have inhabited neighboring caves as well as huts and tents pitched in the immediate vicinity. They foregathered at the monastery only for their communal meals and to discharge their religious duties.

In Père de Vaux's 1958 campaign he excavated a large building complex with storage rooms at 'Ayn Fashkhah, the oasis two miles below Khirbat Qumrān. This building has the same history as the ruins of the monastery: built at the same time, abandoned at the same time. It seems, in fact, to have been an agricultural branch, or farm, of the Qumrān community. Near the building is a large enclosure, perhaps for cattle, and a shed supported by stone piers. The Essenes used this shed as a barn, or perhaps as a place for drying dates. On the other side of the building is a courtyard with several basins and vats connected by narrow channels. Clearly these had an industrial use; possibly they are the remains of an ancient tannery.

The Essene religious center flourished down to the time of Herod the Great. Then the evidence of the coins found both in the Qumrān ruins and at 'Ayn Fashkhah indicates a complete break in occupation for a generation.

Mysterious Gap in Qumrān History

Whether the Covenanters abandoned their Dead Sea retreat because of political or religious pressure from Jerusalem, we cannot be sure. Nor can we tell whether the great earthquake in 31 B.C. drove them away, or whether this earthquake did its damage soon after they left. In any case their history for the next generation, roughly the reign of Herod the Great (37–4 B.C.), is uncertain. One piece of evidence may throw some light on the period, but its meaning is by no means clear. This is the so-called Zadokite Document.

Some 60 years ago, men cleaning out the storeroom of a synagogue in Cairo stumbled across a collection of old manuscripts. Among them was the Zadokite, or Damascus, Document, incomplete, and written more than a thousand years after the era of the Essenes. For years scholars puzzled over its obscure references and pondered its significance. They now know that the Zadokite Document is a late copy of an Essene book, for the Qumrān caves have produced fragments of the same work.

The Cairo manuscript describes how, under the leadership of a man called the "Star," the community of the New Covenant "went out from the land of Judah and sojourned in the land of Damascus." It is a logical deduction that this Essene migration occurred at the time of Herod the Great when, as we know, their large community on the Dead Sea was abandoned for a time.

Copper rolls, corroded and brittle, remained unread four years as scientists sought a safe method to unroll them. When opened, the documents revealed enigmatic clues to hidden treasure.

WILLIAM A. REES

However, some scholars have recently disputed this theory on the basis of a Dead Sea copy of the Zadokite Document that seems to date from before 37 B.C. They maintain that the "Land of Damascus" was actually the Essenes' symbolic term for the place of their exile from the rest of Israel, namely the Wilderness of Judaea. If this is true, the nature of their temporary departure remains a mystery.

In any case, immediately after Herod's death we find the Essenes back in their old establishment, repairing and refurbishing and carrying on their labors in continued expectation of the imminent coming of "a Prophet and the Messiahs of Aaron and Israel."

But once again disaster came to Qumrān and once again the Covenanters scattered, this time apparently forever. The political situation in Judaea, which furnished a stormy background to Christ's ministry, grew more and more turbulent. Finally, A.D. 66, the Jews rose in bloody revolt against their Roman overlords. No corner of the land, not even the Wilderness of Judaea, offered a haven of peace.

The men of Qumrān took careful note of the situation and prepared for the worst. Their precious scrolls, containing Scriptural prophecies from ages past, their hopes for a better world, their liturgies, rule, and interpretative works, they hid in caves. Perhaps their hearts quickened at the thought that the violence sweeping the land heralded the age of final judgment.

The Essenes carefully rolled some of the scrolls in linen and placed them in large cylindrical storage jars which they capped with bowl-like tops (page 784). At the last minute they apparently piled others in the caves without protection; in most such cases the ravages of time, of rats, of insects, and worms have left us only fragments.

The Essenes also abandoned the two rolls of copper discovered in Cave 3. Originally these were joined in a single strip some eight feet long by a foot wide. To the despair of scholars, oxidation had made the metal too dangerously brittle to handle, much less unroll (opposite page). The problem of opening the rolls to decipher the Hebrew inscription seemed insoluble.

Johns Hopkins University made the first attempt at a solution. Scientists there analyzed a fragment of the original copper to determine its exact alloy. They then made up a new sheet of copper of the same alloy and rolled it. This they subjected to artificial oxidation, transforming it to the state of the

JOHN H. ALEXIS

Ingenuity triumphs as H. Wright Baker of the University of Manchester, England, slices open the copper rolls with a specially adapted saw used to slit pen nibs. To prevent shattering, Professor Baker coated the surfaces with a plastic.

ancient scrolls. After countless experiments on the dummy roll, the Johns Hopkins chemists developed a process to restore the copper to its original condition. But, in the meantime, the College of Technology of England's University of Manchester had succeeded in cutting the scrolls open.

For this incredibly delicate operation, Prof. H. Wright Baker employed a device used to cut slits in pen nibs, a machine with a disk fine enough to saw incisions only six one-thousandths of an inch in thickness. Baker sawed the metal rolls into thin, troughlike slices (page 803). So carefully did he work that not a single letter was lost!

After all this trouble, what was inscribed on the copper sheets? A message to inflame any treasure hunter's (and any archeologist's) imagination. For here were 60 clues to separate hoards of gold and silver in the area of western Jordan—from Hebron to Nablus.

"In the cistern which is below the rampart, on the east side, in a place hollowed out of rock: 600 bars of silver.

"Close by, below the southern corner of the portico, at Zadok's tomb, underneath the pilaster in the exedra [meeting room], a vessel of incense in pine wood, and a vessel of incense in cassia wood.

"In the pit near by, toward the north in a hole opening toward the north near the graves, there is a copy of this document with explanations, measurements, and all details."

Is this really a catalogue of treasure, or is it another strange Essene document whose meaning we cannot yet grasp? Most scholars

JOHN L. TRAVER

The Great Isaiah Scroll from Cave 1: Best Preserved of the Ancient Documents

This copy on leather contains the full 66 chapters of the Book of Isaiah. Style of the Hebrew letters indicates they were written about 100 B.C. Handwriting of the editor, who inserted corrections and additions, differs from that of the scribe. Isaiah, rich in Messianic prophecy, was a favorite of the Essenes.

incline toward the latter view. One thing, however, is sure. If buried treasure exists anywhere in Jordan, the indefatigable Bedouin will seek it out.

The final fate of the Essenes is unknown. Vespasian's forces captured their Dead Sea monastery A.D. 68. Perhaps the men of Qumrān died defending it; perhaps the vengeful Romans hunted down and exterminated these most zealous of Jews; perhaps they simply fled out of Judaea and out of the pages of history. Subsequent to its capture, a Roman guard garrisoned the religious center for a while. Then the Romans, too, abandoned Khirbat Qumrān.

Later, during the second Jewish revolt A.D. 132-35, the Jewish rebels of Bar Kokhba set up an outpost in the crumbling buildings. Since then the site has been a desolate ruin.

The Essenes, however, are far from forgotten. The scraps of leather that flow into the Palestine Archaeological Museum are at last restoring them to their rightful place in the chronicles of religious development.

With the discovery of Cave 4 and its vast store of tattered manuscripts, an international team of specialists assembled in Jerusalem to edit and publish the Qumrān documents. This group—drawn from France, Poland, Germany, Great Britain, and the United States—works under the supervision of Jordan's Department of Antiquities, now headed by Said Bey Durra. The scholars have developed an uncanny ability to piece together the ravaged fragments, and even recognize the handwriting of the various scribes who penned the scrolls.

Fitting the Fragments Together

In the course of a visit to the "scrollery," the team's workroom in the Palestine Museum, I was conversing with one of the English members, John Strugnell, beside a litter of unsorted material. Idly he picked up a discolored piece of leather smaller than a postage stamp. After a single glance at the illegible script, he said, "Excuse me a moment; this goes down there." I watched open-mouthed as he carried it to the other end of the scrollery and casually placed it in its proper niche among the hundreds of partially reconstructed documents (page 806). Just as casually, he resumed the conversation.

Thanks to the skilled negotiating of De Vaux as well as Joseph Saad, and other officials of the Palestine Museum, new finds from Qumrān come to Jerusalem through standard, though technically illegal, channels.

A Bethlehem cobbler named Kando acts as the sole middleman. To him the Bedouin bring their loot, and he in turn brings it to the scholars. The over-all price is then set (about $18 per square inch with a bonus for larger pieces), and the museum makes a down payment. Kando returns to Bethlehem and

passes on the down payment to the Bedouin. They do not receive the balance until their next delivery.

As a result, the Bedouin must market future finds through Kando in order to receive full payment for past consignments. Kando must rush new scrolls to the scholars if he is to get the money to pay off the Bedouin, who are notoriously impatient creditors and whose knives are long.

Such trafficking has permitted the Palestine Museum in Jerusalem to acquire a tremendous volume of material at the most favorable prices. The system functioned originally because Kando lay under the threat of police action on one side and Ta'āmirah action on the other. Now it works well primarily because it is in the interests of all concerned to *make* it work well.

In spite of all precautions, however, manuscript material sometimes goes astray. Fragments have even been bought and smuggled out of the country—perhaps quite innocently—by casual tourists. Conversely, many Jordanians try to shoulder their way in as middlemen. Invariably, they are trying to sell something which either does not exist or which is in someone else's possession. They operate on the theory that if they can find a buyer, they can produce the goods.

In Jerusalem a man once approached me in a most devious manner, saying he knew someone who had a whole scroll for sale. The "someone"—when I finally made contact—turned out to be a Member of Jordan's Parliament, living in 'Ammān. Since rumor then had it that a complete scroll from Cave 1 was circulating clandestinely, Père de Vaux felt constrained to follow through. He therefore made a special trip to 'Ammān, only to find a comparatively modern scroll of the Torah from a synagogue destroyed during the 1948 fighting. But the rumors, the offers, the shadowy claims still flit through the shops

Scholars in the Jerusalem Scrollery Piece Together the Essene Library

A team from five nations labors in the Palestine Archaeological Museum over what Prof. Frank M. Cross, Jr., an American member, terms "the ultimate in jigsaw puzzles." Glass covers fragments grouped according to language, handwriting, and subject.

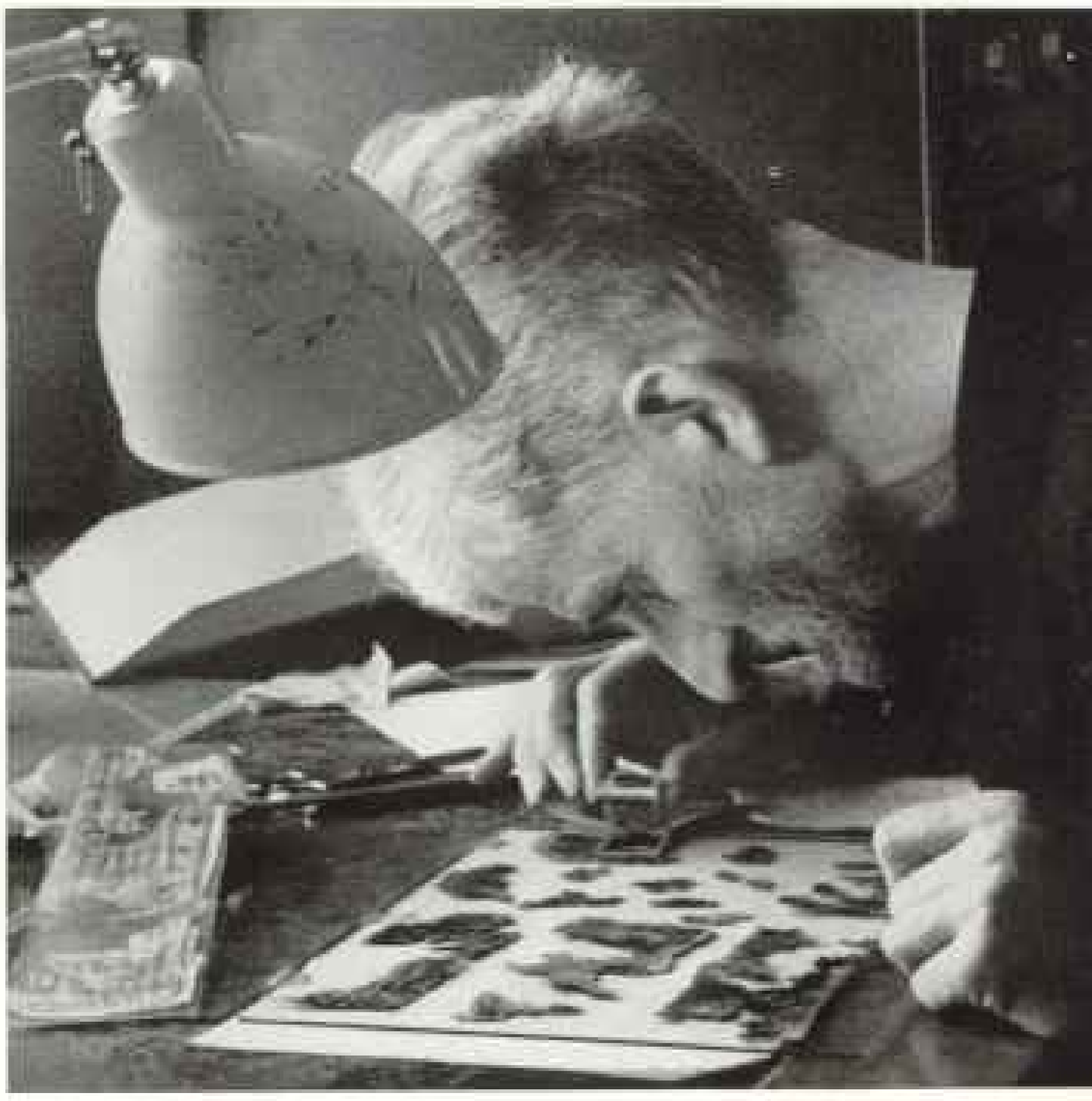
NATIONAL GEOGRAPHIC PHOTOGRAPHER J. BAYLOR ROBERTS (AND OPPOSITE)

and coffeehouses of the Old City. Each must be traced down, even though in most cases each leads only to disappointment.

Of the most recent discoveries from Cave 11, the museum has already acquired well-preserved scrolls of Leviticus and of the Book of Psalms; as well as a Targum (Aramaic translation) of the Book of Job and a Description of the New Jerusalem in fragmentary form. However, an estimated $250,000 worth of Cave 11 material is still in the hands of the Bedouin.

Through the years, the Government of Jordan and the Palestine Museum have expended large sums for scrolls, but now both have come to the end of their resources. As a result, the museum must depend wholly upon contributions from abroad to finance scroll purchases and, incredibly enough, donors have been hard to find. And with no means of purchase in sight, the scholars are in an agony of apprehension over the fate of the outstanding fragments.

In their poverty, the Ta'amirah might sell them to any comer; the involved politics of the Holy Land could explode at any moment, making further acquisitions impossible. And everyone remembers with horror the Bethlehem antiquities dealer who buried a bushel basket of Cave 1 fragments for safekeeping. When he finally dug them out of the damp earth, they were a gluey, indecipherable mass. No one will ever know what those precious manuscripts contained.



In rapt concentration, Father Jean Starcky deciphers fragments of newly discovered apocryphal works. The French priest is an expert in Aramaic, one of the everyday tongues of ancient Judaea, and the language of Jesus.

Decades Needed to Assess Scrolls

Meanwhile, with quiet intensity, the scholars labor in the scrollery over the Qumrān texts already bought.* As the new information is published, specialists throughout the world pore over it to evaluate and interpret it.

Decades, even generations, may pass before the full import of the scrolls can be assessed. But already they have filled important gaps in our knowledge of the Bible. For example, we are now certain that the Hebrew text of the Old Testament as it stands today represents a tradition going back to the time before Christ. But we also know that it was not the only text; others with slight variations also existed. These latter disappeared—except in so far as they were represented in early translations and quotations—in the period between the two Jewish revolts.

For the Biblical scholar, these variant traditions are tremendously important. In some cases they preserve texts more faithful to the original versions of the Old Testament books than those preserved by the ancient rabbis. However, such texts have little bearing on theology; they pose no threat to any element of Jewish or Christian religious doctrine.

On the other hand, certain striking parallels exist between the beliefs and practices of the Essenes and those of the early Christians. Both groups believed that the end of the present world was imminent. In preparation for the event, both groups practiced a life aimed at salvation from sin, and a state of purity symbolized by baptism and ceremonial cleansing.

Both joined in a sacred repast, utilizing bread and wine. Both owned all things in

* See "Hashemite Jordan, Arab Heartland," by John Scofield, National Geographic Magazine, December, 1952.

NATIONAL GEOGRAPHIC PHOTOGRAPHER J. BAYLER ROBERTS

Bedouin Herder and His Flock Drift Across Timeless Terrain

As tribesmen traverse the wilderness, they search for more caves, more scrolls. Scholars believe some portions of the Qumrān library turned up long before 1947. Origen, a 3d-century Christian theologian, reported discovery of a Hebrew book "in a jar near Jericho." And a letter written about A.D. 800 by Timotheus I, Patriarch of Seleucia, refers to "books . . . found ten years ago in a rock dwelling near Jericho."

common. Both worshiped as a community, praying together, singing psalms, listening to the reading and exposition of Scripture. Both preserved the memory of their founders and diligently composed new literature which embodied their beliefs. Both considered themselves the "true Israel," the community of the New Covenant. Both were persecuted minorities. Both looked upon celibacy as preferable to marriage.

Scholars of all faiths recognize these parallels. They are facts. But, contrary to certain exaggerated interpretations, they do not suggest that Christianity is only a latter-day "successful" Essenism.

The reasons for the parallels are self-evident. The early Christian community then thought of itself as a group within, not outside, Judaism. It therefore shared in the whole Jewish heritage, using the Hebrew Bible of the day and interpreting the role of Jesus in terms inherited from the past. In the same way, the organization of the early Christian community followed patterns already known in first-century Judaea.

In short, few theologians have ever considered Christianity to be unique in the sense that it had no precursors, no connections with the past, no affinities to Judaean thought patterns or modes of life. Jesus did not break with the past; he pointedly declared that he had not "come to destroy the law . . . but to fulfil."

The Dead Sea Scrolls give us a new understanding of the religious climate into which Jesus was born. They provide us with new insight into the particular elements of Judaism that influenced Christian development. And, for the first time, the hitherto mysterious Essenes stand revealed to us. The story of their spiritual struggle swells out of the past like a mighty hymn.

Khirbat Qumrān, high on its blighted terrace, is now a dead ruin in a dead world. Nothing grows in the bitter marl; nothing stirs among the ancient stones. The sky yawns emptily over the counterfeit blue of the Dead Sea, and a lonely wind sighs through the rubble. But at Khirbat Qumrān, a long time ago, men strove to find God.

The largest U. S. Indian tribe shapes a new life with schools and hospitals, irrigated farms, steady jobs, oil, and uranium

BETTER DAYS FOR

The Navajos

By JACK BREED

With Photographs by Charles W. Herbert

SHE WAS SITTING, as usual, on a sheepskin mat beside her hogan door, sheltered from the Monument Valley sun by a rickety screen of dried cottonwood branches. A two-year-old, conveniently pantless, played in the shade of a near-by juniper. A baby, strapped tightly with leather thongs to a cradleboard, lay propped upright against the doorframe.

"*Yatahay, Biclaji-ay Yazzi!*" she called out as I drove up. "Hello, Little Pants!"

"*Yataay, Happy! Nizhoni-hay,*" I replied in my best Yankee-Navajo, stammering a little over the tongue-twisting phrases. "Hello to you, Happy! I'm fine, and everything looks well with you!" Or words to that effect.

Life Governed by Needs of Sheep

A handsome woman with ruddy cheeks, Happy Cly seemed to me to have aged a bit since I had last visited the reservation. Her gleaming black hair was now streaked with gray. But neither her smile nor her friendly manner had changed. Because her greeting was always so warm, I invariably made an early stop at her hogan, a typical mud-covered log hut, on my trips to the Navajo country (map, page 814).

Sometimes, however, it took some doing to find Happy and her husband Willie. Tied to the needs of their sheep, they wandered widely about the floor of the valley, drawn from one patch of sparse vegetation to the next. A series of mile-high plateaus flanked by sandstone buttes and mesas, Monument Valley is thirsty country, beautiful as burnished copper and in bad years about as arable (page 828).*

Looking up from her rude blanket loom, Happy greeted each of my companions with the same mixture of cordiality and genial mockery. She had dubbed me "Little Pants" after the tennis shorts I favor in this hot land. My six-foot college roommate, John Burnham, who wore spectacles, became "Tall Glasses." And Harry Goulding, a towering ex-sheepherder acting as my guide, she called "Long Sheep." Even my Pontiac station wagon received a name: "Little Feet," since its tires seemed to Happy so small compared to her wagon's wheels.

On Happy's loom was stretched a fine ceremonial blanket with four *Yei*, or holy people, dancing up and down in the center. It had already taken her many weeks, and more would pass before she finished. Then she would take it to the nearest trading post and swap it for coffee, sugar, flour, canned fruit, a bolt of cotton cloth, dark glasses for Willie, candy for the kids, perhaps soda pop for the whole family.

It would be a big day. But her net return on her labors would come to about 10 cents an hour.

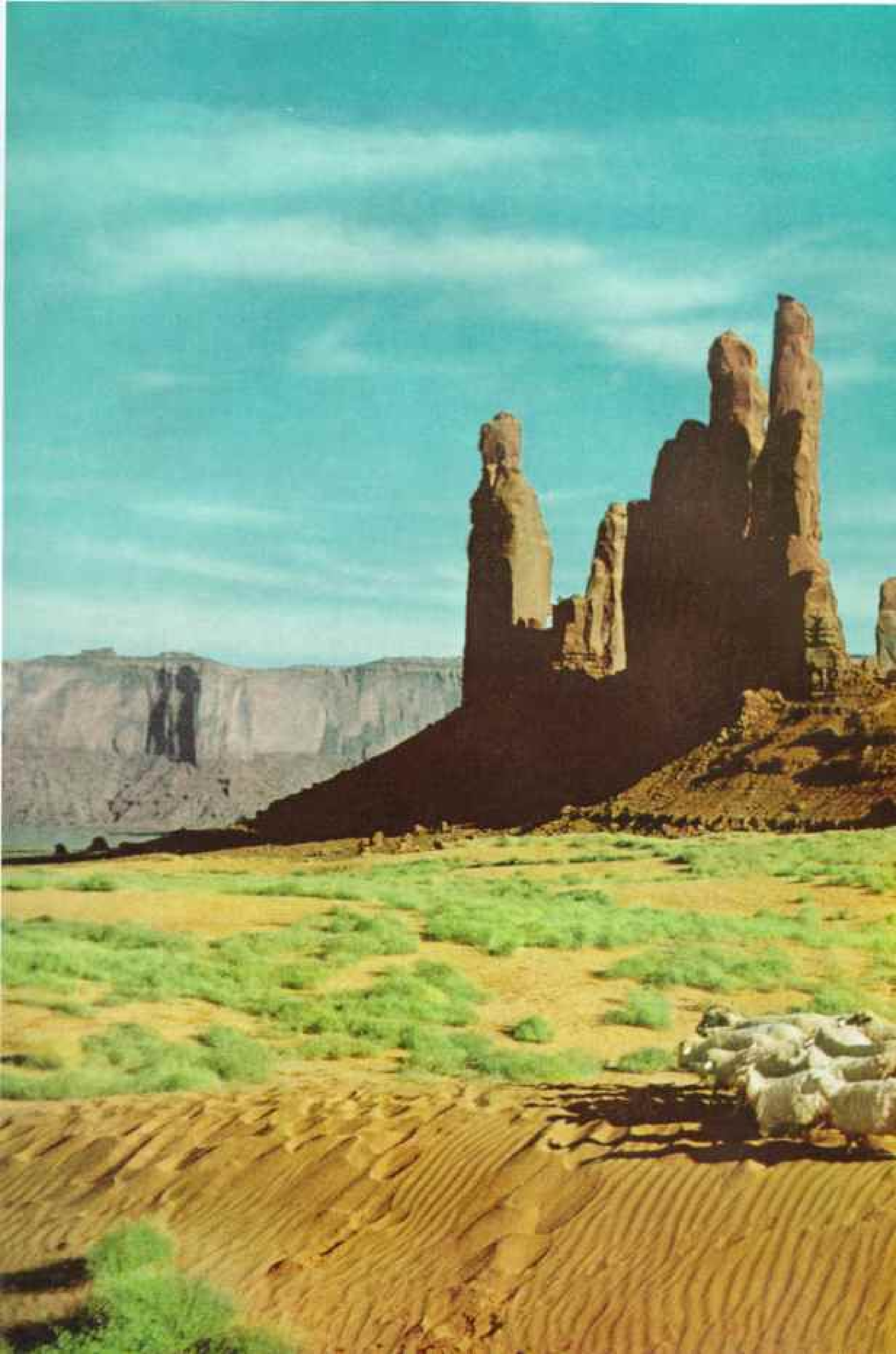
In-laws Don't See Eye to Eye

From inside the hogan floated the sweet smell of burning juniper logs. Peering into the dim one-room interior, I could see Happy's aged mother stirring the coffee pot on a pile of embers in the center of the floor. I wasn't surprised not to find Willie there; when a Navajo marries, he moves in with his wife's family, but he scrupulously practices the "avoidance relationship." It is taboo for his mother-in-law and him to speak to each other, or even for their eyes to meet.

I looked at the baby wrapped as snugly as a mummy on the cradleboard. Her black eyes flickered alertly from her bundle of blankets and rags; flies crawled over her chin, but she

* See "Flaming Cliffs of Monument Valley," by Jack Breed, NATIONAL GEOGRAPHIC MAGAZINE, October, 1945.

Needle Spires of the Yei Bichei Formation Guide Navajo Herders in Monument Valley



never flinched. Her only sign of restlessness was one tiny foot wiggling through a hole in the bottom blanket.

"Where's the rest of the family?" I asked Happy.

"Some are tending the flocks," she said, waving her hand toward another section of the valley about five miles away. "The others are gathering wood and water."

Willing hands enough, but Happy needed them all. Usually even the two-year-old would be out on the range, learning the job of sheepherding from his veteran older brothers and sisters.

Navajos Call Themselves "the People"

To visitors, the Navajo country may seem so starkly dramatic, with such a stimulating climate, that they are tempted to think: "What a heavenly place to live!"

The Navajos—or "the People," as they call themselves—love it, too; away from it, relocated in strange cities, they look back on it with deep homesickness. But they know these nearly 25,000 square miles of Arizona, Utah, and New Mexico as a hard land, more frightening than heavenly, a tough opponent from which to wrest, somehow, a meager living. With an average rainfall of only eight inches a year on much of the reservation, what grass there is has an uphill fight to survive, and crops can hardly be grown without irrigation.

How did the Navajos ever come to settle in such an inhospitable terrain? They came a long route. Most scholars think that their remote ancestors straggled over the Bering Sea bridge from Asia, hunted for generations along the Yukon Valley with other Indians of the Athapascan linguistic family, and then gradually drifted into the Southwest.*

When the Spanish conquistadors first entered this land in the 16th century, the People were growing patches of corn and beans, no longer wholly dependent upon hunting and seed-gathering. They lived in primitive forked-stick hogans and were yet to become weavers and silversmiths. They had never seen a horse.†

The things the Spanish brought with them changed all that. Don Juan de Oñate and his armored cavalry rode from Zacatecas in Mexico in 1598, driving before them 1,000 head of cattle, 4,000 sheep, 1,000 goats, 150 colts, and 150 mares. Then other sorties of colonists penetrated the Pueblo country, where the Navajos roamed among the more settled Pueblo tribes. The Spaniards had not come to share their flocks and herds with the Indians; far from it. But they had about as much chance of keeping their chattels to themselves as a cookie-passer in a kindergarten.

The Pueblo Indians, subjugated by the Spaniards, were taught to tend the long-legged *churro* sheep, to weave wool, to work a little with metals. Though they were not allowed to own horses, they acquired a lively appreciation of them.

In 1680 the Pueblos revolted, cheerfully abetted by Apache raiders. But the Navajos, safe in their outlying canyons, took no part in the rebellion; they merely collected the profits. They may at first have been envious as the Pueblos waxed proud with loot and horses from the plundered ranches. But when the Spaniards counterattacked with equal ferocity, the Pueblos reeled back in disorder, with little option but to sue for shelter among the Navajos.

The Navajos were willing enough to take their neighbors' women, their new skills, and their loot. In a short time, the People doubled and even tripled in numbers. They picked up bands of sheep, experimented with weaving, used their new horses to harry the Pawnees and other tribes, traded their captives to the Spaniards for more horses and goods, and generally flexed their muscles.

Rough-riding Navajos Turned to Raiding

By the time the United States occupied New Mexico in 1846, the Navajos had settled into a role as raiders that seemed to them sanctified by tradition. For up-and-coming young braves, the road to riches and advancement obviously lay in forays against the People's enemies; and, since the Utes and Apaches and Mexicans were not averse to pillaging the Navajos on occasion, there were always plenty of scores to repay.

The incoming Americans demanded treaties and promises to be good. But agreements, owing to cultural differences between white men and red, were difficult to keep.

* See, in the National Geographic Magazine: "Ice Age Man, the First American," by Thomas R. Henry, December, 1955; and "Exploring Frozen Fragments of American History," by Henry B. Collins, Jr., May, 1939.

† See "Indian Tribes of Pueblo Land," by Matthew W. Stirling, National Geographic Magazine, November, 1940.

Silver and turquoise adorn two Navajo girls near Gallup, New Mexico. Alice Hawthorne (left) wears modern earrings and tailored blouse. Nellie Chee displays silver *concha* (shell) belt and squash-blossom necklace (page 825).

KODACHROME BY CHARLES W. HERBERT, WESTERN WAYS

Yucca-root shampoo restores luster to hair. The girl uses stalks of the same plant as a brush. A coral necklace soaks in the basin. Some water-poor Navajos seldom see a tub; they cleanse themselves with sweat baths.

KODACHROME (BELOW) BY JACK BOZEK © N. G. S.

The Navajo raids went on. To check them, the United States erected Fort Defiance in Arizona. In 1860, 2,000 braves attacked the fort with bows and arrows, but retreated when its cannon opened fire. Then the Civil War sent the troops marching east. In their place came 700 volunteers led by Kit Carson, trapper and scout, with orders to round up the Navajos and take them away.

The Indians hid in canyons. But when soldiers killed their sheep, burned their crops, and cut down their fruit trees, they surrendered in small groups. Carson made the biggest roundup in Canyon de Chelly, today a national monument.

Three-hundred-mile Trek into Exile

In 1864 the Navajos and their surviving sheep took the "Long Walk," a 300-mile march to Fort Sumner, New Mexico. The late Hoskinini Begay, son of one of the last true chiefs of the Navajos, told me of that ordeal:

"Many die. Always hungry, always thirsty. Women carry children. Men tied. Always we walked. We were very tired, very thirsty. Always we walked."

For four unhappy years the Navajos squatted along the Pecos River, making a few drought-plagued efforts at agriculture and nearly starving. Then, upon signing another treaty renouncing war, they were escorted "home" again: to a 3,500,000-acre reservation carved out of their former domain in Arizona and New Mexico.

To replace their lost flocks, the Government initially distributed 14,000 sheep and 1,000 goats to the Navajos—then numbering about 9,000. Barboncito, an honored leader, advised: "Take care of your sheep as you would your children. Never kill them for food."

The Navajos did not eliminate mutton from their diet by a long shot, but they did cherish their flocks and saw them multiply. And so it was with their horses. To the Navajo, a horse has always been more than a conveyance; it has been "what men live by." A man was rich or poor, important or negligible, according to how many horses he owned. Chiefs acquired *remudas* seven and eight hundred strong, with many ponies they never even bothered to break.

A day of reckoning was inevitable. It came during the 1930's. The People had grown to 45,000 and their livestock to more than a million. True, their area had expanded to 15 million acres, which included the Hopi Reser-

Navajoland: Nation Within a Nation

Largest of Indian reservations, the Navajo territory lies in Four Corners country, where Utah, Colorado, Arizona, and New Mexico meet. It rivals West Virginia in area and includes parts of three of the States.

Enlarged five times the size of the original sanctuary set aside by Congress in 1868, the tract contains an enclave, the 3,900-square-mile Hopi Reservation. The Hopis inhabit only their territory's southern part, known as the Hopi Agency.

Construction of the Navajo Dam and Reservoir on the San Juan River will lead to the irrigation of some 110 thousand acres.

vation, but vast parts of it could scarcely support a jack rabbit. Sheep were eating the sparse grass down to the roots, and each horse ate five times as much as a sheep.

As the land's protective cover disappeared, rains opened gaping gullies. Silt choked the rivers. It even threatened distant Lake Mead, the reservoir backed up by Hoover Dam on the Colorado River.

Recognizing a national danger, the Secretary of the Interior in 1935 authorized livestock reduction to control grazing on the reservation. Government agents sternly cut Navajo flocks and herds to half, reducing big owners to a maximum of 350 head.

To the Navajo, whose livestock determined his status and livelihood, this program spelled personal catastrophe. Whenever white men appeared to outline glowing plans for the tribe's future, some glum brave was sure to ask, "Yes, but what about our sheep?"

Yet the Draconian measures worked, at least for a while. The range came back into balance; fewer sheep ranged, fewer starved and the grass made a partial recovery.

Today the Navajos themselves have organized local grazing committees, and with Federal assistance have revised the regulations for protecting the range. But 8,000 permit holders with more than half a million sheep exceed the land's grazing capacity. Drought, as well as overuse, is causing the grass in large areas to disappear rapidly.

Education Strengthens the Tribe

The big change, perhaps, is that the Navajos no longer passively acquiesce in disaster, but instead take their fate increasingly into their own hands. Unquestionably this new attitude has come about with the spread of education among the tribe.

When the Navajos returned from exile at Fort Sumner to their windy reservation, Gen. William T. Sherman had promised them, "Your children shall learn paper."

It was easier said than done. How were schools to be brought to kids living in isolated hogans at the back of beyond, often miles from a road, following the sheep? How could you teach a child you couldn't even find?

Day schools seemed out of the question. For a long while the Government simply let the whole project drop. The People for their part appeared in no hurry to acquire book learning. But as pressure mounted among friends of the Indian to "do something,"

Navajos in Monument Valley Inspect a Prehistoric Art Gallery

Archeologists believe the glyphs to be the 8th-century work of early Pueblo Indians, who merged with the late Basket Makers. Navajos, familiar

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with the empty caves of these peoples, call them the Anasazi (the Ancient Ones). One figure, recurring several times, suggests a seated musician playing a flute. Figures at upper left show the double-bun coiffure still seen among modern Hopi maidens.

Twins Readily Accept the Newfangled Bottle

Navajos trace family descent through the woman. Children belong to the mother's rather than the father's family. These twins live in a log house at Naschitti, New Mexico. Mother uses machine-made blankets, softer and lighter than the rugs she weaves on the loom at right.

A Chief's Daughter Sits in Tribal Council

Mrs. Annie Wauneka, an heir of Chee Dodge, first chairman of the Navajo Tribal Council, directs her people's health program. Here, at tribal headquarters in Window Rock, Arizona (page 842), she meets with the 73 other council members.

Mural depicts the Navajos' "Long Walk" of 1864, a 300-mile trek into exile ordered by the U. S. Government to curb rebellion.

resort was had to boarding schools. Children were scooped up by Government agents, almost kidnaped, and concentrated in barracklike schools.

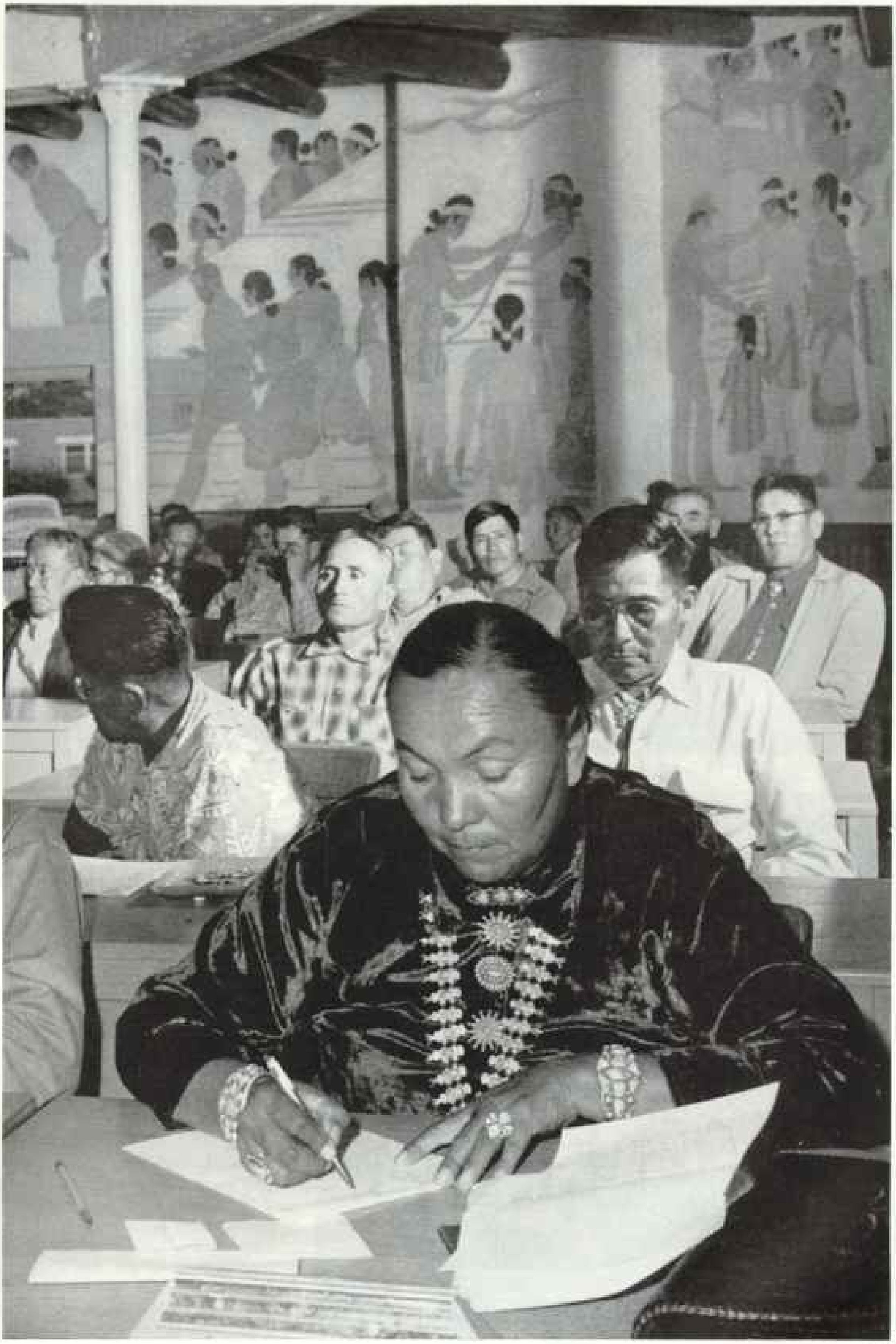
From these terrifyingly strange places many youngsters escaped when they could. Those who endured the new indoctrination returned to their people quite suspect, bearers of "foreign" ideas. It took World War II to change all that.

Many Navajo boys who reported to induction stations were turned down for illiteracy, but 3,600 were accepted. Some of them became "code talkers" in the Marines—using the Navajo language to broadcast and receive orders over the radio, to the bafflement of the listening Japanese. Another 15,000 Navajos entered war work of one kind or another. When they returned, they told the People what the world was like. After the war the Navajo Tribal Council insisted that the Government live up to General Sherman's pledge.

When the Navajo-Hopi Rehabilitation Act was passed in 1950, authorizing an appropriation of $88,570,000, the Government set out to do just what that name implied. A check showed that only about 11,000 Navajo children were getting schooling; another 13,000 were not. But by 1957 the enrollment had swelled to 27,000, with fewer than 3,000 still evading the three R's.

All sorts of schools were built and enlarged —central boarding schools, community boarding schools, Federal day schools, public schools on and off the reservation, and mission schools (pages 840-1). Finally came the trailer schools, with the idea that "if they can't come to you, you'd better go to them."

Into remote corners of the desert move 23 of these units, each with quonset-type schoolroom and bathroom for pupils, teacher's living quarters, and sometimes room for the cook.



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Willing Helpers Join a Husking Bee

Like the neighboring Pueblo Indians, the Navajos venerate corn, which was known in the Southwest as early as 4000 B.C., at least 5,000 years before they arrived.

Tribal legends say the first Navajos were created from ears of corn. These children in Mystery Valley help mother strip a multicolored harvest.

Shucked ears in varied hues suggest an artist's disordered palette. Colors of Navajo corn correspond to those of the sacred mountains that hem the tribal domain: white for east, blue for south, yellow for west, and black for north.

At first so many children appeared in rags that both the Government and private charities had to contribute clothing to keep them warm enough to study. Now the tribal budget allocates $550,000 a year to give every youngster an adequate wardrobe.

What's more, the tribe now takes pride in underwriting the children's academic future. In 1957 the People set aside $5,000,000 to accrue interest for scholarships; today 274 young Navajos are studying at 40-odd institutions of higher learning across the Nation.

The same heartening progress is apparent in the field of health. Navajos have been plagued by tuberculosis since the coming of white men. The hogan may seem a picturesque dwelling to outsiders, and to the Indians it stands for warmth and comfort. But to a doctor it's just a poorly ventilated, crowded room where the healthy are cooped up with the sick.

Even today the TB rate of the Navajos is 10 times that of the rest of the United States population. But new hospitals are rising to care for those stricken and to spread the gospel of preventive medicine (page 836).

Red Men Take White Men's Medicine

I saw new hospitals for Indians in Tuba City, Shiprock, and Winslow. I also learned of health centers under construction in Chinle, Kayenta, and Tohatchi, and heard about plans for a 200-bed hospital costing $3,758,000 to be erected in Gallup. And a tablet, isoniazid, is revolutionizing treatment. Says one of the specialists sent to the reservation by the New York Hospital–Cornell Medical College, Dr. Avrum B. Organick:

"The Navajos are beginning to understand that this disease is caused by germs, not by accidental injury or natural phenomena. Their medicine men are cooperating; if they suspect a case, they recommend hospital treatment. I guess tuberculosis on the reservation has been reduced to 1,200 active cases."

For other ailments, too, the People have begun to trust, and even demand, the white man's medicine. But they don't give approval lightly to a particular practitioner. As Mrs. Dorothy Eubanks, a clerk at the million-dollar Government hospital at Tuba City, Arizona, told a visitor:

"When a new doctor starts duty, our clinic overflows. Dozens of Navajos come in to judge him. This curiosity lasts a month or so, until the grapevine spreads the word. The world's best reputation doesn't mean a thing to the Navajo. He doesn't put his confidence in a doctor until he knows him personally."

Part of the tribe's rise in morale can be traced to industries that have penetrated the reservation and left jobs and royalties in their wake. The mill of the Texas-Zinc Minerals Corporation at Mexican Hat, Utah, cost more than $7,000,000 and employs 60 Navajos. Another 60 work at the Rare Metals plant in Tuba City. Income from uranium and vanadium mines brought the People more than a million dollars in the year ending last June 30 (pages 834-5).

Navajos Build Motels, Too

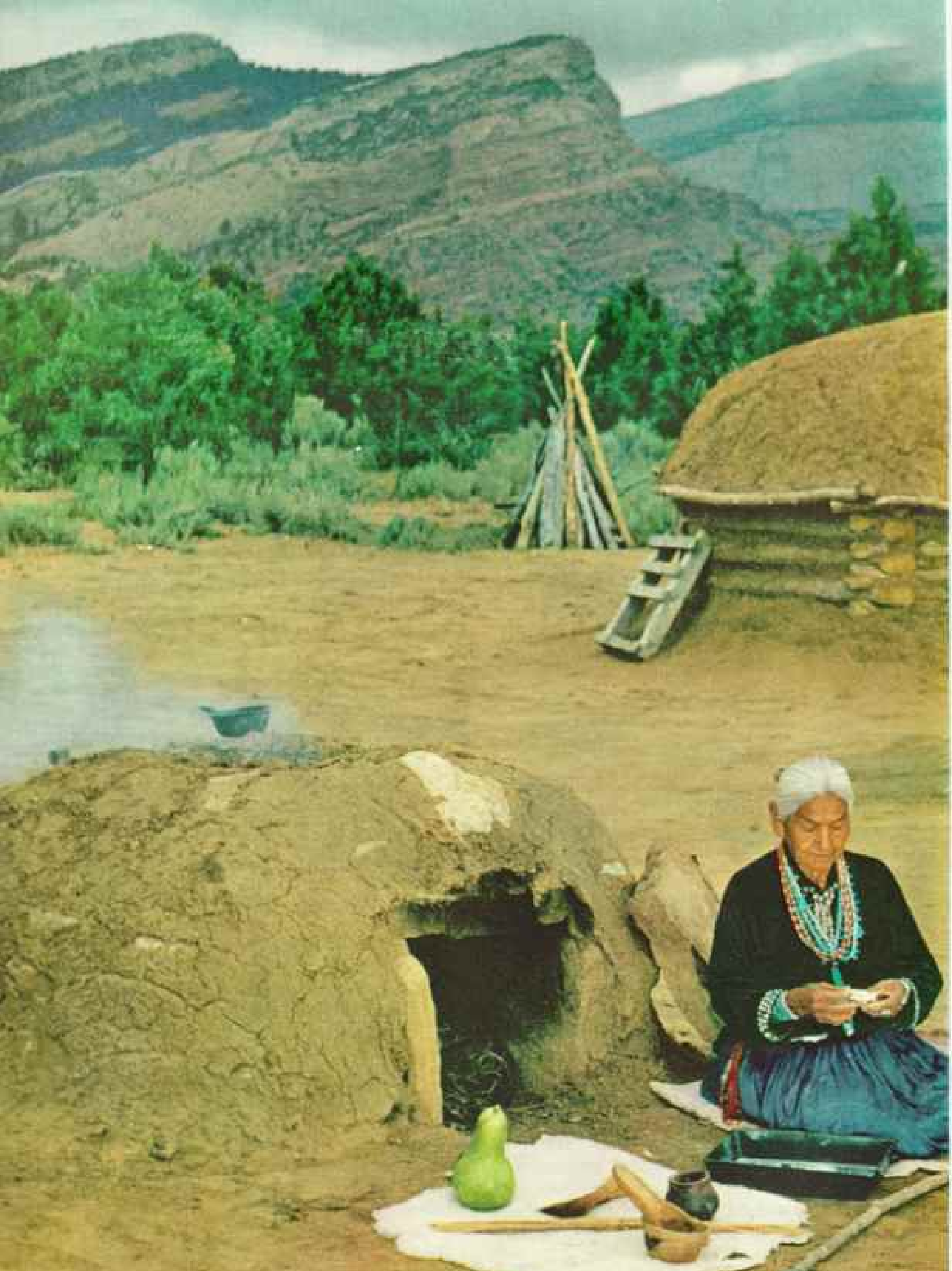
That was peanuts compared to the tribal take from oil and natural gas. In just the 12 months ending with June, 1958, the Navajos reaped the fat sum of $30,453,525 in lease bonuses, royalties, and annual rentals. Wisely, they have kept this in a common fund, saving much of it and allocating the rest to projects of benefit to all.

Forestry brings work for some 250 tribesmen. The reservation has a splendid stand of more than two billion board feet of ponderosa pine, worth a good $30,000,000. A new sawmill will raise the annual cut to 50 million board feet for the next decade.

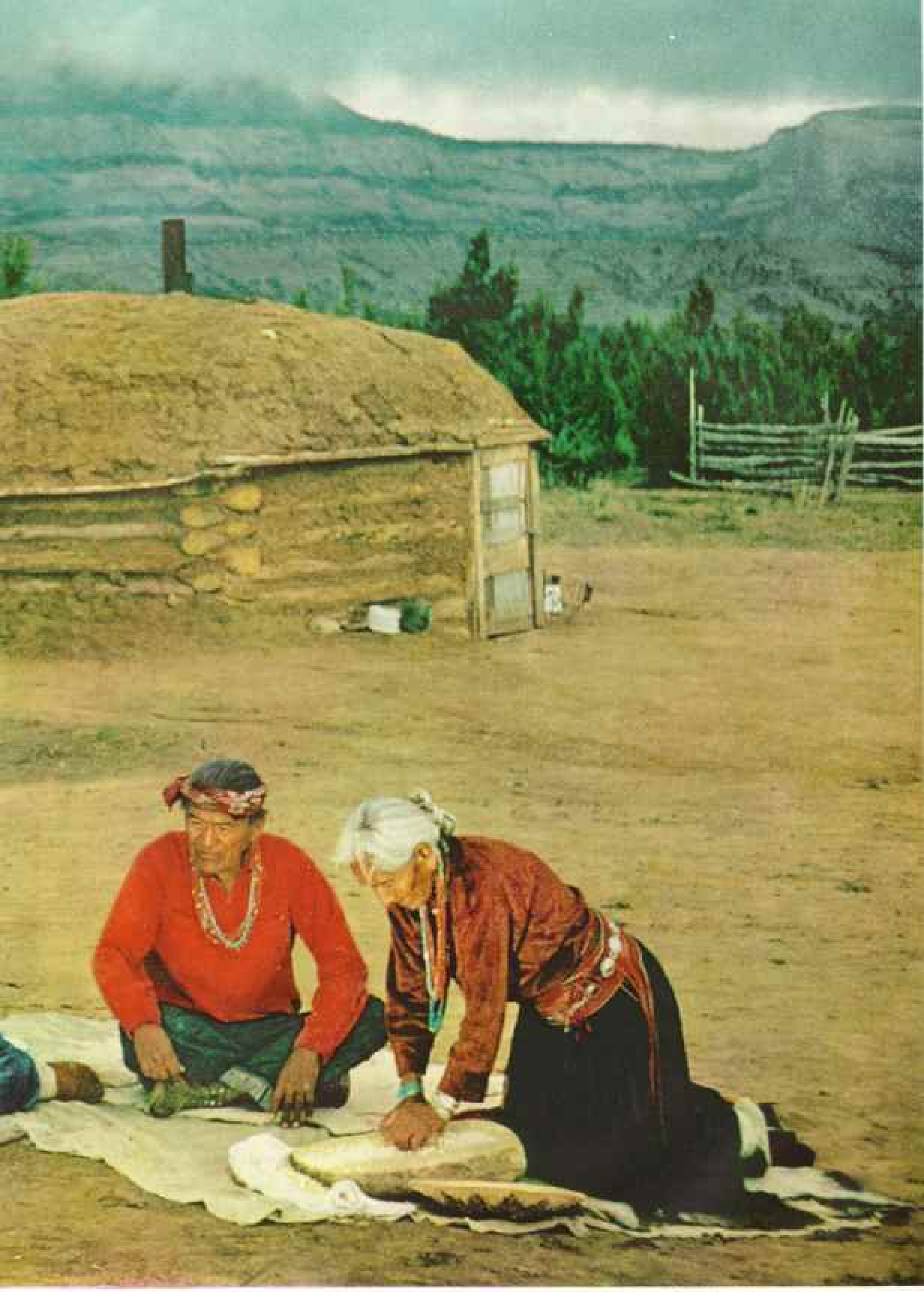
The Navajos have built motels at Shiprock, New Mexico, and Window Rock, Arizona—good ones, too. They operate a coal mine, maintain a high-grade ram herd, run a low-cost housing project, and manage a flourishing Arts and Crafts Guild (page 825). Two years ago they set up a training farm near Shiprock for Navajos who want to tackle land opened by new irrigation projects.

Biggest scheme is the $135,000,000 Navajo Indian Irrigation Project, which would use the San Juan River to irrigate 110,000 acres and provide homesteads for about 1,200 families. Construction of the $42,000,000 Navajo Dam and Reservoir has begun. The Tribal Council has put up $25,000 to publicize the entire development.

But stimulating and constructive as such projects may be, they shouldn't obscure the stubborn fact that the area at its best cannot support more than about 45,000 of the 75,000 Navajos without major industrial expansion. The tribe is increasing by nearly 2,000 a year, and so more and more of the People will have to move out into the mainstream of American life.



Breadmakers in Ceremonial Silver and Velvet Grind Corn Beside an Adobe Oven;



Their Log Hogan, Trademark of the Navajos, Faces East by Age-old Tradition

To help them make the shift, the Indian Bureau has set up a program of Relocation Services. An official at Window Rock explains it this way:

"Our program is voluntary—no arm twisting. We tell the Navajos they will have to sweat and pay their bills, but we also lay out the advantages: A better standard of living, easier education for the children, with a chance to grow up like the average American."

The applicant should be literate; factories prefer a man who can read safety signs and understand orders. Provided he qualifies, the Navajo and his family get money for transportation, food, and lodging. Arriving at a distant city, they go to a Government office, which helps them find quarters and a job.

Nostalgia Gnaws at Immigrant Indians

Often it's a bewildering adventure. Paying rent—that's a novelty. Saying no to a salesman—that can be hard. And it's difficult for a Navajo to work with people in this consumer-minded civilization who give and demand an easy grin. The Navajo can make friends, but slowly, not cheaply; strangers must be painstakingly assessed.

Conversely, many an Indian immigrant finds himself very lonely in the city, cut off from the warm, dependable family ties of the reservation. Sometimes he also meets with puzzling cultural differences—puzzling since he might well ask: Who is the stranger here? Who came to America first? Homesickness gnaws away at his material satisfactions and sometimes drives him to throw up his job suddenly and backtrack.

The relocation officer anticipates some of the relocatee's troubles; others take him off guard. One Navajo, saddled with the People's age-old fear of anything associated with death, was innocently asked by his factory foreman to take the graveyard shift. Terrified, he quit without a word and went home.

But three out of four Navajos who enter the white man's world stick with it, and the proportion may rise as education in the tribe is improved. Probably only a sharp recession would reverse the flow now. Sizable numbers of Navajos are moving to Los Angeles, San Jose, San Francisco, Chicago, and Denver, and a smaller group is pioneering in friendly St. Louis.

Meanwhile change is coming to the reservation itself. The Navajo may never lose his fondness for horses, but he has transferred some of his affection to jalopies and pickup trucks. Sometimes I drove for half a day without running into one of the old Navajo covered wagons, but I was apt to pass a dozen little trucks bouncing over the range, piled in back with sheep, firewood, wool, kids, or barrels of water. It used to take three or four hours to haul water for the hogan in a wagon; now it can be fetched in 30 minutes.

The traditional hogan hasn't disappeared, but conventional cement-block and frame houses pop up like mushrooms around the towns. Even the lonely hogan now resounds with rock-n-roll and Navajo-language programs spilled from a battery radio. The floor may still be dirt, but on it will sit a kerosene stove, a kerosene refrigerator, even a washing machine. Television will be next.

Women Bargain for Social Hour

Increased mobility is giving the Navajos a taste for the varied glories of the chain store. But many old trading posts still hold their own, and the process of bargaining is just as long drawn out and genial as ever—a ritual of grunts, groans, long pauses, much thought by the Indian, and much patience by the trader. The Navajo is still no slave of time, and a high-pressure trader would go out of business in a month.

Both trader and weaver, for instance, may know that a certain rug is worth $100. But the woman who has spent a year of her spare time weaving it hates to settle for the first big price. She wants a social hour. So she asks $150, and the trader offers $75. He treats her to canned peaches and the children

(Continued on page 833)

Navajo Rug Bears a Chief's Ransom in Gleaming Silver and Turquoise

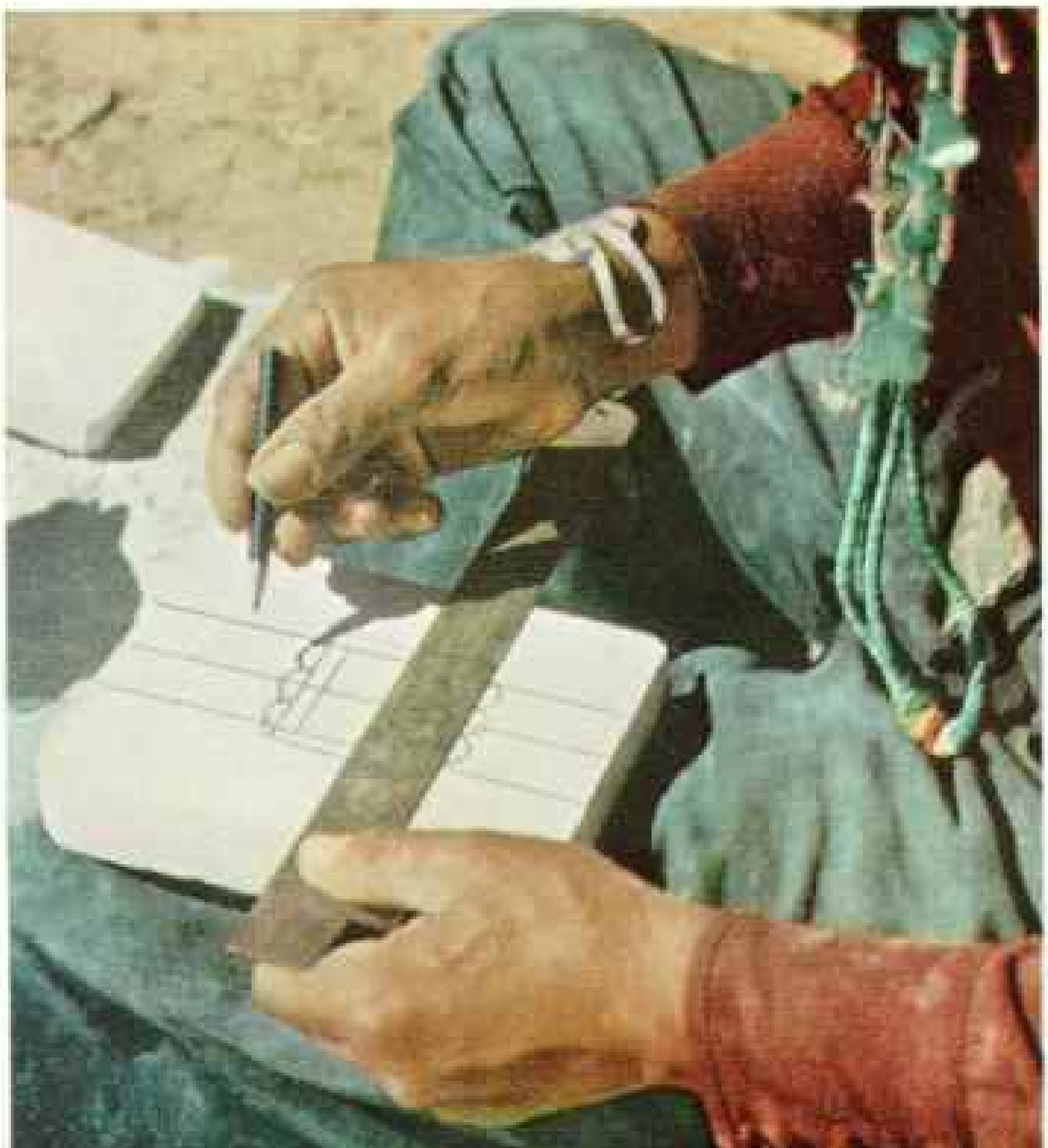
Joe Gay examines a turquoise-studded cluster bracelet at the Navajo Arts and Crafts Guild, Window Rock. He wears a necklace of turquoise and coral. Concha belts at left and right may cost as much as $500. Silver squash-blossom necklace above Gay's head supports a horseshoe-shaped *naja*, a pendant. Originally the squash-blossom design was a silver pomegranate flower worn on clothing of 17th-century Spanish settlers. The Indian, who had never seen a pomegranate, incorporated it into his jewelry, and old-timers mistakenly identified it as the native squash blossom.

Indian Silversmith Casts a Buckle for the Author

Sawing a mold, the late Tom Burnsides of Pine Springs begins a belt fastener. He cuts two thin slabs of tuff, a chalky volcanic ash, and rubs them together until they fit.

Tracing the design (lower left), Burnsides pencils the buckle from his imagination; he leaves the other block blank in order to make the underside flat. Next, gouging with a file handle, he incises the design into the mold. Then he cuts a lead-in canal to receive the cast and punches small passages to allow air to escape. Now the tuff is brushed with charcoal to leave a residue of soot, and the two blocks are bound with a buckskin thong and set upright. Scrap silver is melted in a crucible and poured into the gate of the mold.

Hardened cast (below) is re-



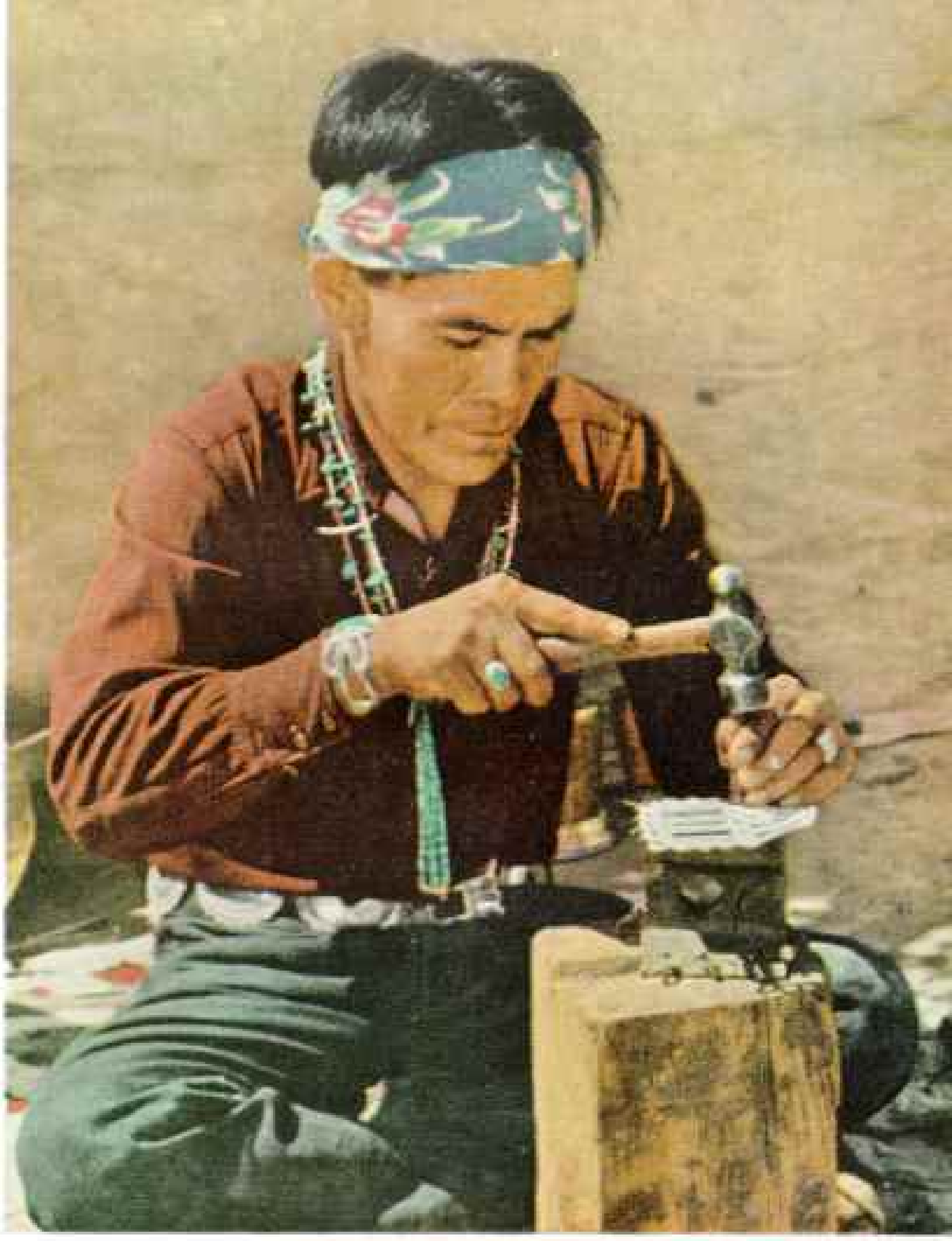
moved with pliers and briefly quenched in water. At this stage Burnsides passed his work to the author, who instinctively dropped the object in fear of being burned, only to blush in realization that the silver had cooled.

Cleaning the cast (right), the smith cuts away waste metal with hammer and chisel.

Burnsides wears one of his creations, a three-quarters bracelet set with turquoise.

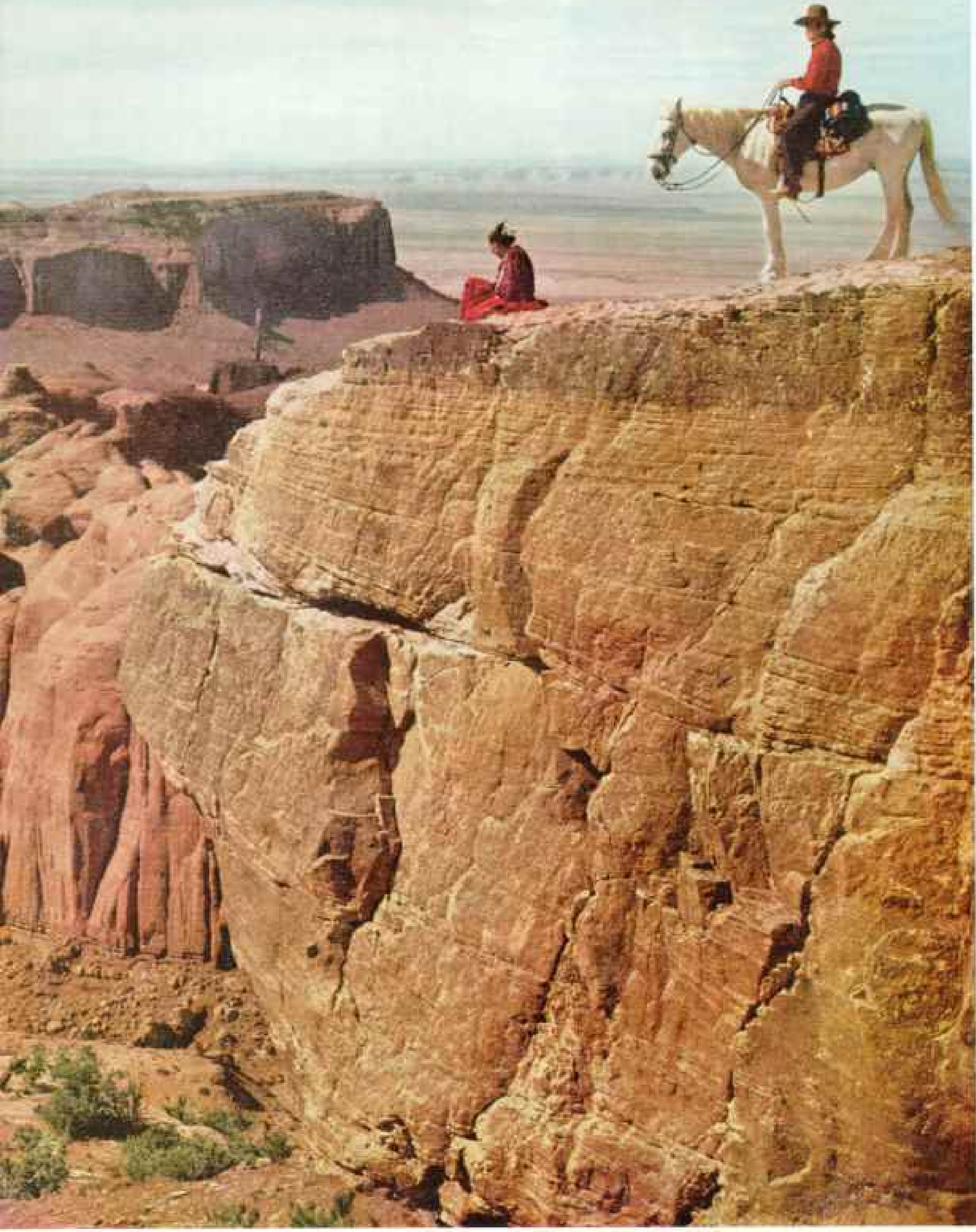
Trimming the buckle (below), Burnsides files rough edges.

Finished product shows the centerpost and tongue soldered on. The rough cast above it reveals the metal that must be cut away. This excess includes the guidelines that admitted liquid silver into the mold. Slender needles radiating from the edges indicate channels where air leaked out.



Sandstone Buttes of Monument Valley Suggest the Mausoleums of Giants

Wind and rain carved this mile-high plateau. Hard formations, some rising a thousand feet above the valley floor, withstood the leveling process. Pros-



DRAWING BY RAY MANLEY © NATIONAL GEOGRAPHIC SOCIETY

pectors and traders identified the "monuments" by their shapes. The horizon reveals (left to right) Sentinel Mesa, Hen-on-a-nest, Big Chief, and Brighams Tomb. Totem Pole (next page) appears as a slender shaft in valley at right center. Happy and Willie Cly enjoy the view.

Nature's 500-foot Obelisk, the Totem Pole, Rivals Man-made Counterparts

Most famous of Monument Valley's stone spires, the Totem Pole soars almost as high as the Washington Monument. Mountain climbers considered the shaft all but impregnable until 1957, when a party of four made the perilous assault by driving steel pins into rock and hauling themselves up.

Like spiders on a cobweb, two members of the party (left) ascend to the summit, where their partners wait. At times high winds whipped them away from the rock wall, capriciously spun them into space, or wrapped them around corners.

Climbers atop the spire (above) found the wind too strong to stand in. Describing the grueling ascent, one member reported that "reaching the peak is exhilarating, but, more than that, it's a relief." This self-timed exposure shows Mark Powell, Jerry Gallwas, Bill Feuerer, and Don Wilson. Wind erosion formed the basinlike hollow in the sandstone.

Scaling the butte, the party passes a fissure encircling the shaft and seemingly cutting it in two.

to popcorn. Finally they settle for $100 and a sack of flour—better than $125 with no argument.

One day while I was in Cozy McSparron's Trading Post at Chinle, in the Canyon de Chelly sector of Arizona, Charlie Many Mules's wife walked in. She was carrying a fine blanket she had woven.

Mrs. Many Mules Mulls It Over

Cozy weighed the rug, studied the design and the tightness of the weave, and named a sensible price. The woman mulled over the proposition for a spell and then turned her attention to what she might want in return.

"Groceries?" suggested Cozy. "Sure. Or what about some cloth for a skirt?"

That would run into money, for a pleated Navajo skirt takes yards of material. And underneath the women often wear six or more full petticoats, winter and summer! Navajo women tend to be shy; they don't mind seeing a white man in "little pants," but a white female in shorts still has shocking effect.

Coffee, sugar, safety pins (for decoration, primarily), high-button shoes for mama, white saddle oxfords for a teen-age daughter—Mrs. Many Mules rambled through McSparron's stock, ticking off the items she might like.

"You've been telling me what you want," Cozy said. "Well, I'd like a little boy like this." He tickled the cheek of two-year-old Tommy Many Mules. "I've got two nice daughters, but no boys to work around the store. Little boys like him grow on trees up the canyon. Why don't you leave this one here with me?"

"Live on trees, do they?" replied Mrs. Many Mules. "Why don't you transplant one, then?"

It was the first time I ever saw Cozy without a rejoinder.

Recovering, he turned around and announced: "Lolly-pops and sody-pop on the house!" A happy turmoil quickly ensued.

The Navajos themselves rarely use their famous rugs, except as saddle blankets. They make them largely for trade—and often swap them for the brightly colored factory-made Pendleton blankets that have become a major item in the attire of a well-dressed woman, along with the velveteen blouse, the multiple petticoats, and the silver jewelry.

The typical Navajo blanket is actually a fairly recent invention (page 844). Around 1890 traders introduced wool yarn already spun and colored, and persuaded the women to turn out floor rugs.

Then came packets of aniline dyes, and the entire spectrum of the rainbow opened to the weavers. They went berserk. Rugs with Old Glory, railroad trains, and pictures copied from tin-can labels blossomed from the loom.

It took a wily trader to get the weavers in line. J. B. Moore of Crystal, New Mexico, sensed that eastern customers wanted rugs patterned after the Orientals with which they were familiar. So he produced designs chock-full of geometric figures: zigzags, forks, hooks, swastikas, crosses—the works.

It wasn't easy to convert the weavers. But as the rugs began to sell—the way they've been selling ever since—the women agreed that you couldn't argue with success.

Silversmithing Learned from Mexicans

In silverwork, too, the Navajos have been brilliant adapters rather than innovators. "Most people," a trader told me, "think that silverwork is something the Navajos originated themselves. Actually, they learned the art of making ornaments from the Mexicans in the 1850's, some of them starting with iron and then graduating to silver.

"First they melted down Uncle Sam's coins, then Mexican pesos. Now they get sheets of sterling from the trader or the Arts and Crafts Guild, and the U. S. Treasury can't complain about its money disappearing!"

I lived for a week with the late Tom Burnsides, one of the tribe's finest smiths, at the little home he had built near Pine Springs

Stripped and Anointed, an Ailing Tribesman Seeks a Ceremonial Cure

Navajos, respectful of modern medicine and wonder drugs, still turn to ritual for such ills as headaches, worries, and encounters with bad omens. This man, his hair dressed with an eagle's feather and his body smeared with mutton tallow and ashes of herbs, takes the role of chief patient in the Tail-feather Dance, a healing ceremony. Other patients stand motionless as the medicine man (white hat) conducts the chant. Man at right and girl with prayer stick assist the shaman.

Indians and privileged visitors in Monument Valley stage an impromptu dance.

Drilling Crew and Portable Rig Probe the Earth for Uranium

Uranium and vanadium brought the tribe more than $1,000,000 in the year ending last June 30. Oil leases, the chief source of income, have earned $89,000,000 since the discovery of the Rattlesnake Field in the 1920's. To measure radioactivity, these technicians lower an electronic counter into a test bore near the San Francisco Peaks.

Trading Post. Tom, then in his late thirties, had worked at silversmithing for 18 years. He spoke no English, but we got along well through sign language, with occasional interpreting by trader Malin Cousins.

Before I realized that Tom was going blind with trachoma, an eye disease that afflicts many Indians, I asked him to make me a silver buckle for my wife. I stressed that it should be in his spare time; Tom took on odd jobs for the Santa Fe railroad. He agreed, and said he would cast it, pouring the molten silver directly into a rocky mold.

It sounded simple. It wasn't.

To get the proper substance for the mold, we drove some 30 miles south of Tom's home over a sandy trail to an outcropping of chalk-like material. It turned out to be volcanic tuff, or hardened ash, finely compacted and unlayered, easy to work with small tools. Tom axed out several large hunks.

Back at his home, Tom settled down to the task, while I photographed successive stages shown in the pictures on pages 826-7.

Altogether, Tom devoted most of a week to making the buckle. But when he finished, there lay in the palm of his hand a thing of delicate beauty that Tiffany's would have been proud to display.

In his home Tom showed me many superb casts he had produced as time and his eyes permitted: bracelets, earrings, buckles, *ketohs*, or wrist guards, rings, pins. From such labors he earned about $1,000 a year.

Tom's was the modern method of smithing practiced on the reservation today. Though the results are handsome, they are by no means in such demand as the rugged antiques known as "old pawn." These collectors' items are family heirlooms passed down among Navajo families for generations; they wind up sometimes in the hands of traders as security for a cash loan.

They tend to remain in the display cases of the post long after the loan falls due, for most traders realize that the Indian really wants to hang onto the piece but hasn't been able to dig up the cash to redeem it. Museum and private collectors may water at the mouth, yet the old pawn generally stays put.

Helmeted, long-haired Navajo repairs his jackhammer in a Monument Valley uranium mine.

Maze of valves regulates the flow of a helium-bearing natural gas well. These Navajos check wellhead pressure below Ship Rock, a butte in New Mexico.

Medicine Man and Physician Comfort a Patient in Fort Defiance Hospital

Though he finds it hard to believe in germs, the medicine man is not a charlatan but a devoted servant of his tribe. Wherever suggestion has power to work, the Navajo "doctor" achieves seeming miracles, but he accepts the white man's science. Healer Scott Preston, vice chairman of the Tribal Council, examines X rays held by Chief Surgeon Benjamin Lewis, showing a fractured leg. Nurse Lolita Ami takes notes.

Hosteen Tso, holding a ceremonial rattle (opposite), ranked as the most powerful medicine man in Monument Valley until his death last year. A favorite of motion picture directors, he offered to conjure fair weather for camera crews on location. His son, Hosteen Tso Begay (page 839), succeeded him as medicine man.

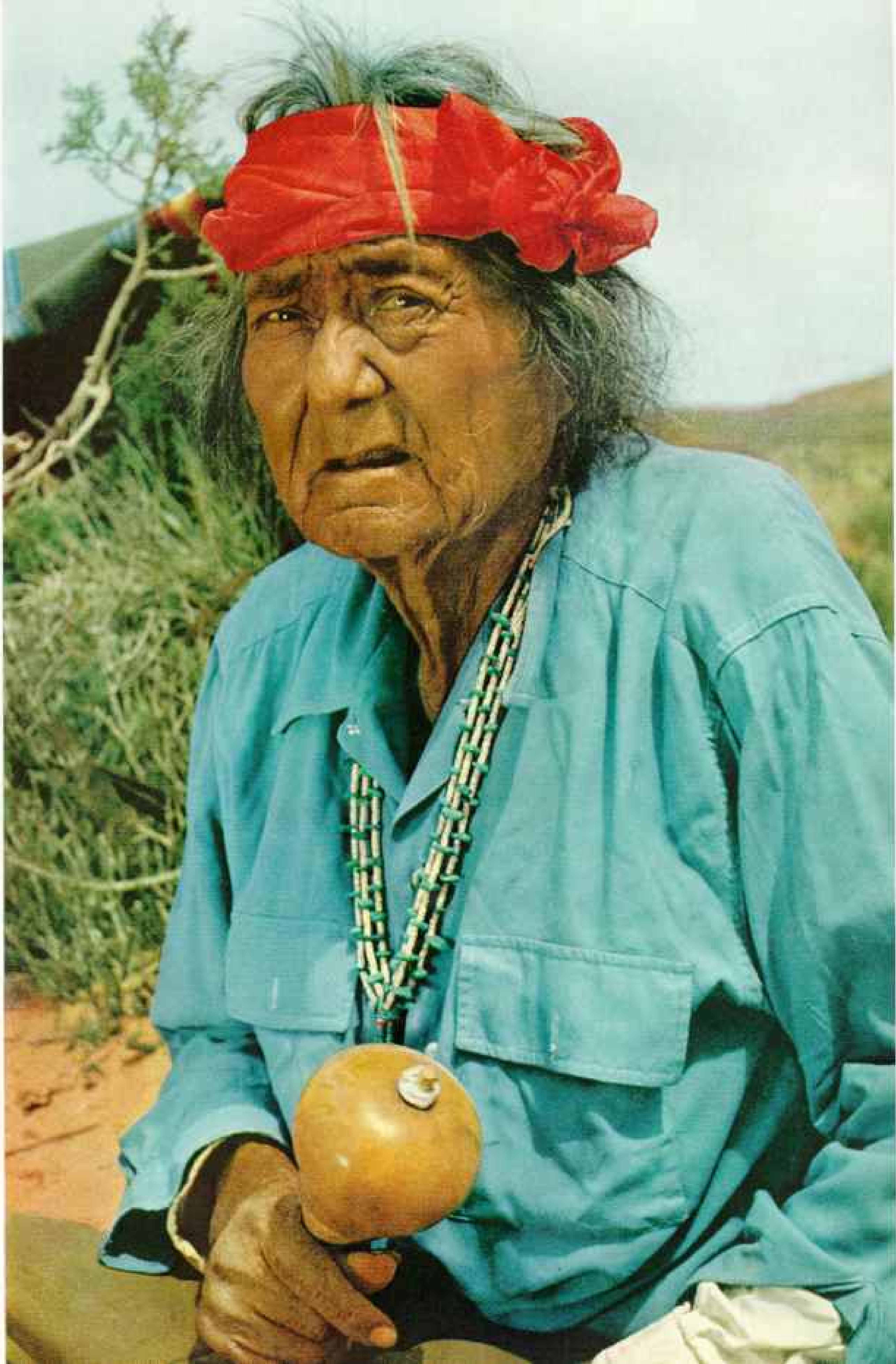
For years I had wanted to photograph a Navajo sand-painting ceremony. I had to proceed cautiously, however, because this involved the Indian's religion; the Navajo feels that when you capture his likeness on film, you also capture a portion of his spirit.

One day Harry Goulding and Ray Hunt, formerly the trader at Chilchinbito, said that they might at last be able to get me permission. A herder named Harv Black had a very sick youngster, and old Ada-Ki-Yazzi, a medicine man of the Monument Valley area, had agreed to come as singer, or shaman.

At sunup Ray started to put the case for me to Ada-Ki-Yazzi. At noon the discussion was still going strong, punctuated by grunts, gestures, pauses, and grumbles. It was time, I felt, for me to step in. Taking my Polaroid Land camera, I made a couple of quick portraits of the shaman, developed each in a minute, and handed him the prints.

The old man was fascinated. What's more, he was convinced that I didn't intend to capture his spirit after all, for here I was handing it right back to him. Promptly he permitted me to take both movie and still pictures of the sing. He even agreed to have the

(Continued on page 845)



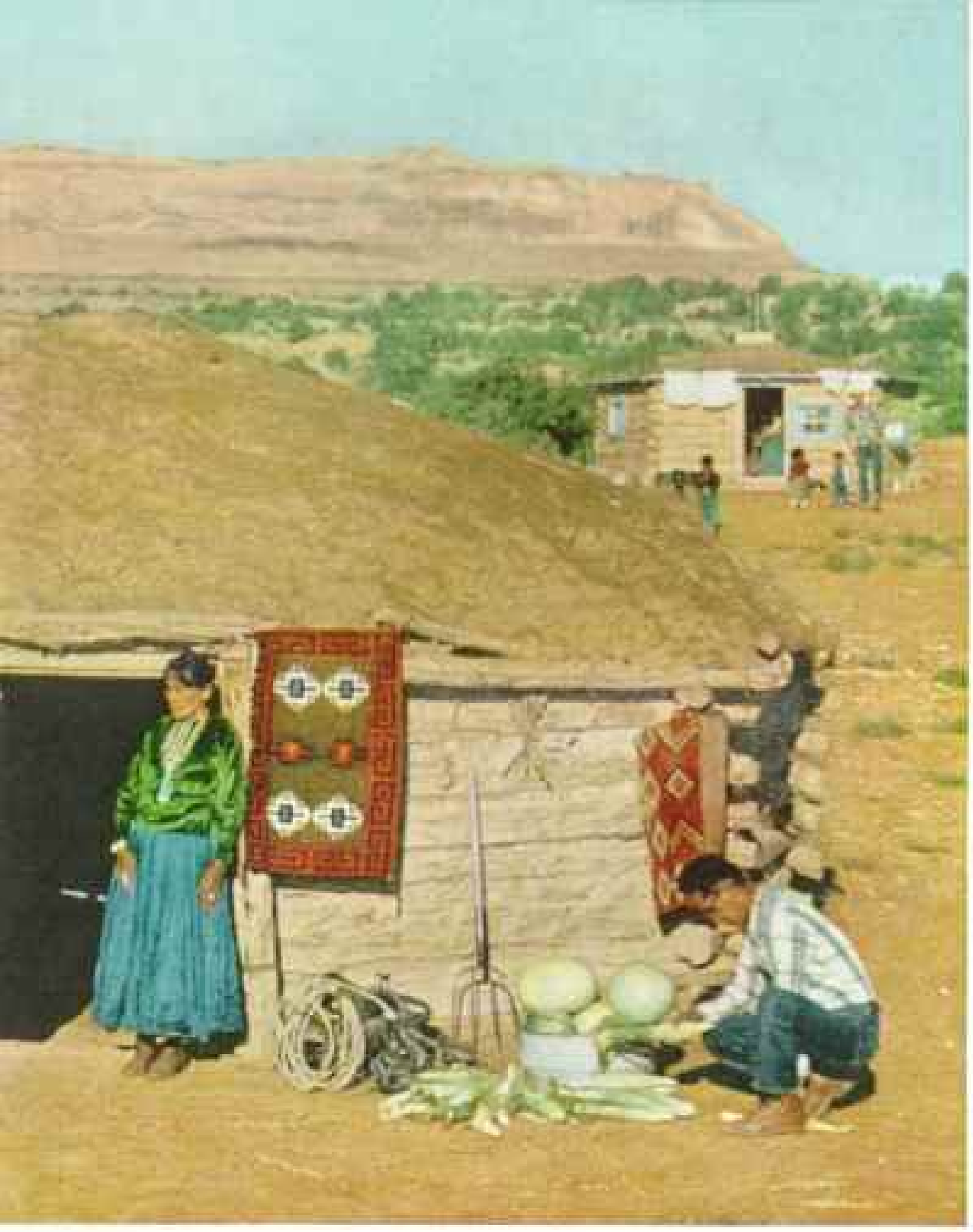
Emaciated Child Sits on a Sand Painting to Absorb Its Power

The medicine man heals by faith; he never cuts or operates, but relies on native herbs and psychological appeal. His curative art is an integral part of the Navajo's religion. The sand painting, as a thing of holiness, is intended to attract the deities' attention.

Gladys, a seven-year-old girl who suffered from headaches and night fevers, sits motionless on the colored image of the Moon God. Blankets shelter it against the winds of Monument Valley. Hands cupped as though in communion, she bows her head while the medicine man, Hosteen Tso Begay, in spotted headband, intones his chant. Visitors (standing) are rarely permitted to watch such a ceremony.

Magic design, conceived entirely from the medicine man's tradition, depicts a yellow Sun God in a slate-blue field. Pulverized stone and yellow corn pollen provide the pigments.

Feathers, radiating in all directions, "carry the sun from horizon to horizon."



School Bus Calls at the Hogan Door

"Education is the ladder; tell our people to take it," counseled Manuelito, a great 19th-century Navajo chief. For years his advice went unheeded; Navajo families, distrusting schools, hid their children when Indian agents solicited volunteers. Day schools, boarding schools, and trailer classrooms today provide a desk for nearly every child willing to attend. These children board a bus for the trip to Cove Day School.

Archery class absorbs students at 55-year-old St. Michaels Indian School.

Dolls and murals brighten a playroom at Shiprock Boarding School; some of its 1,000 students commute to their hogans on weekends. Elise Noland brushes her hair; Phyllis Ben holds a doll in its cradleboard.

Vaulted Window Rock Frames the Tribe's Seat of Government

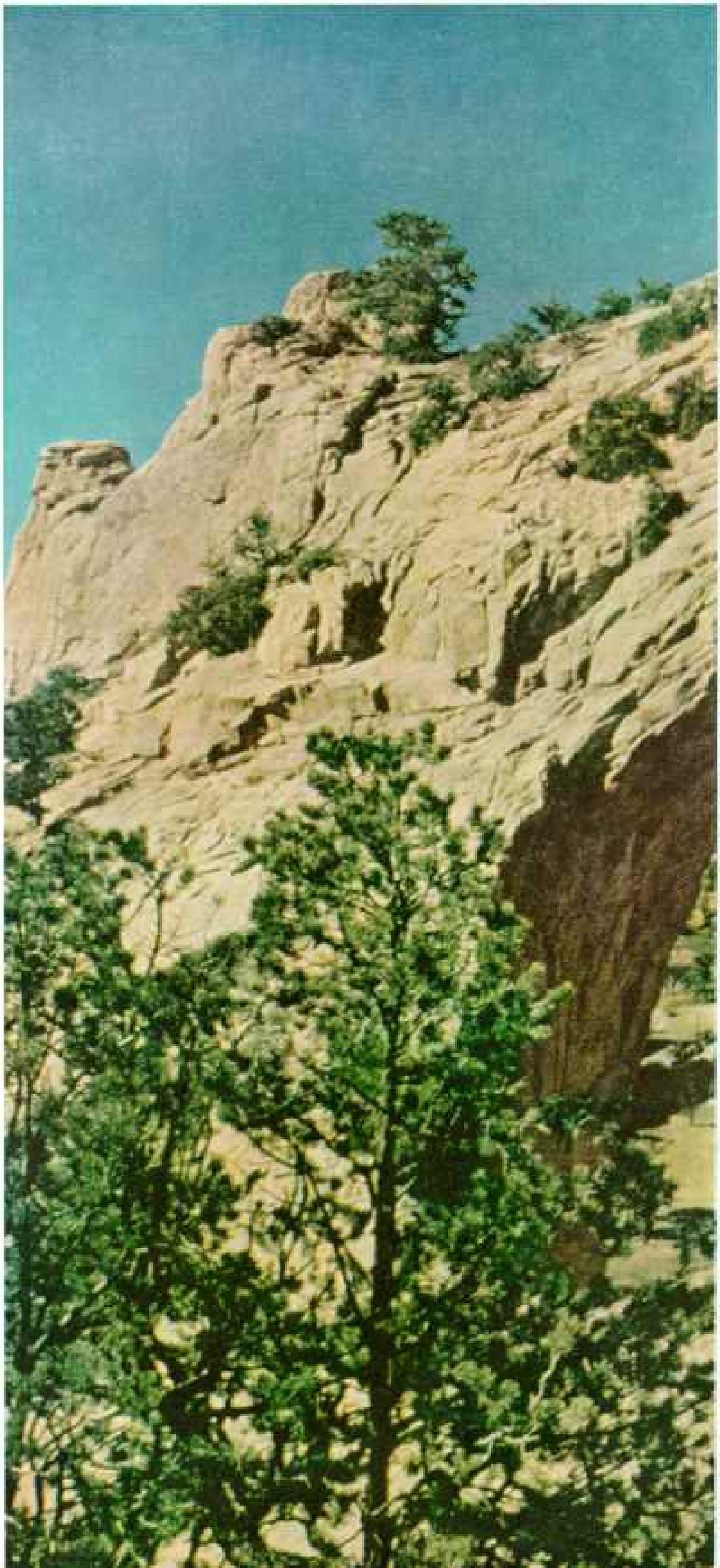
Navajos set up a tribal council in 1923 primarily to approve an oil and gas lease. Today the council serves as the tribal parliament, governing the lives of 75,000 Navajos with assistance from the United States Bureau of Indian Affairs.

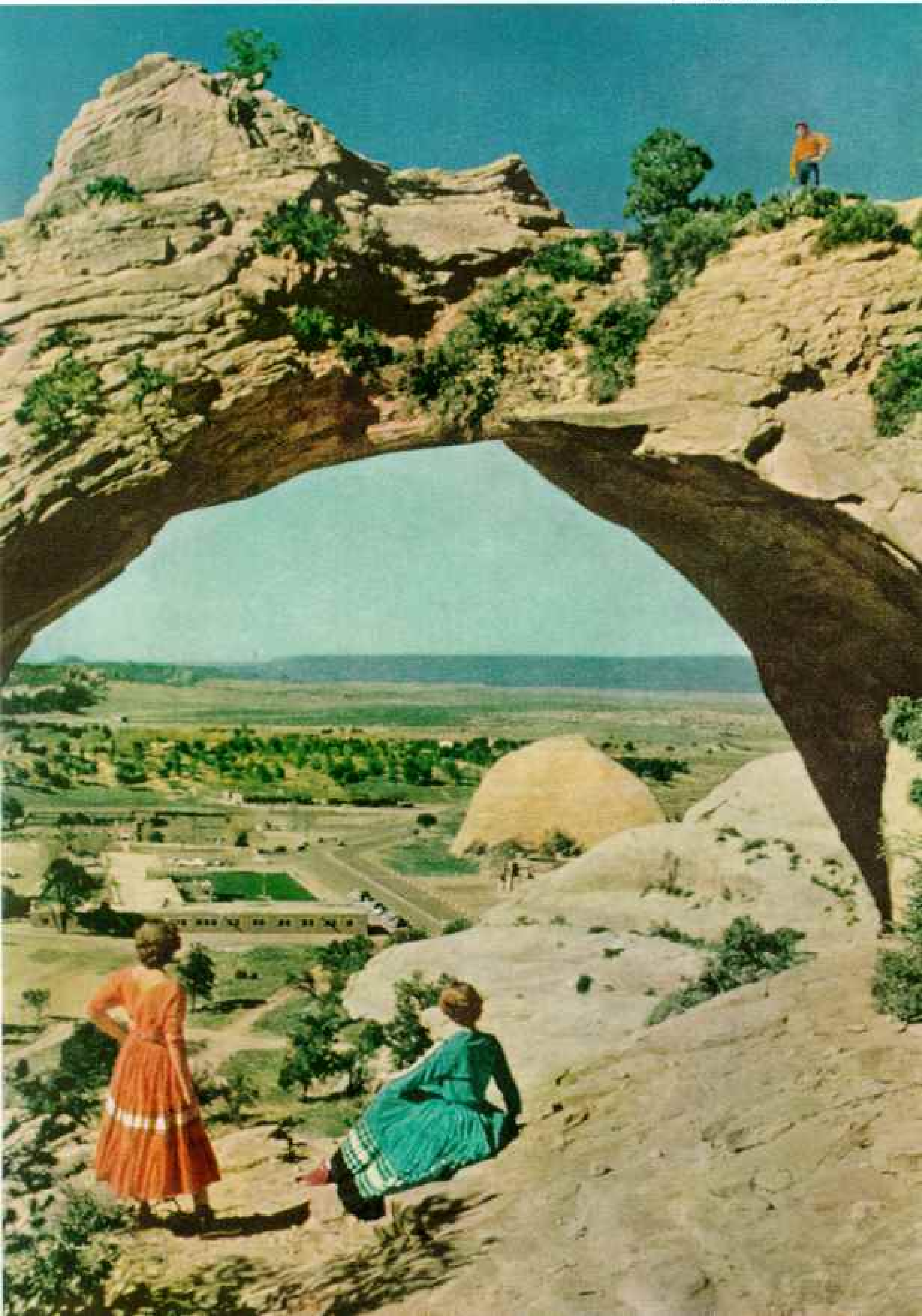
Lease bonuses and development of oil, natural gas, timber, uraniums, coal, and helium have expanded income, which the council devotes to tribal programs rather than to individuals.

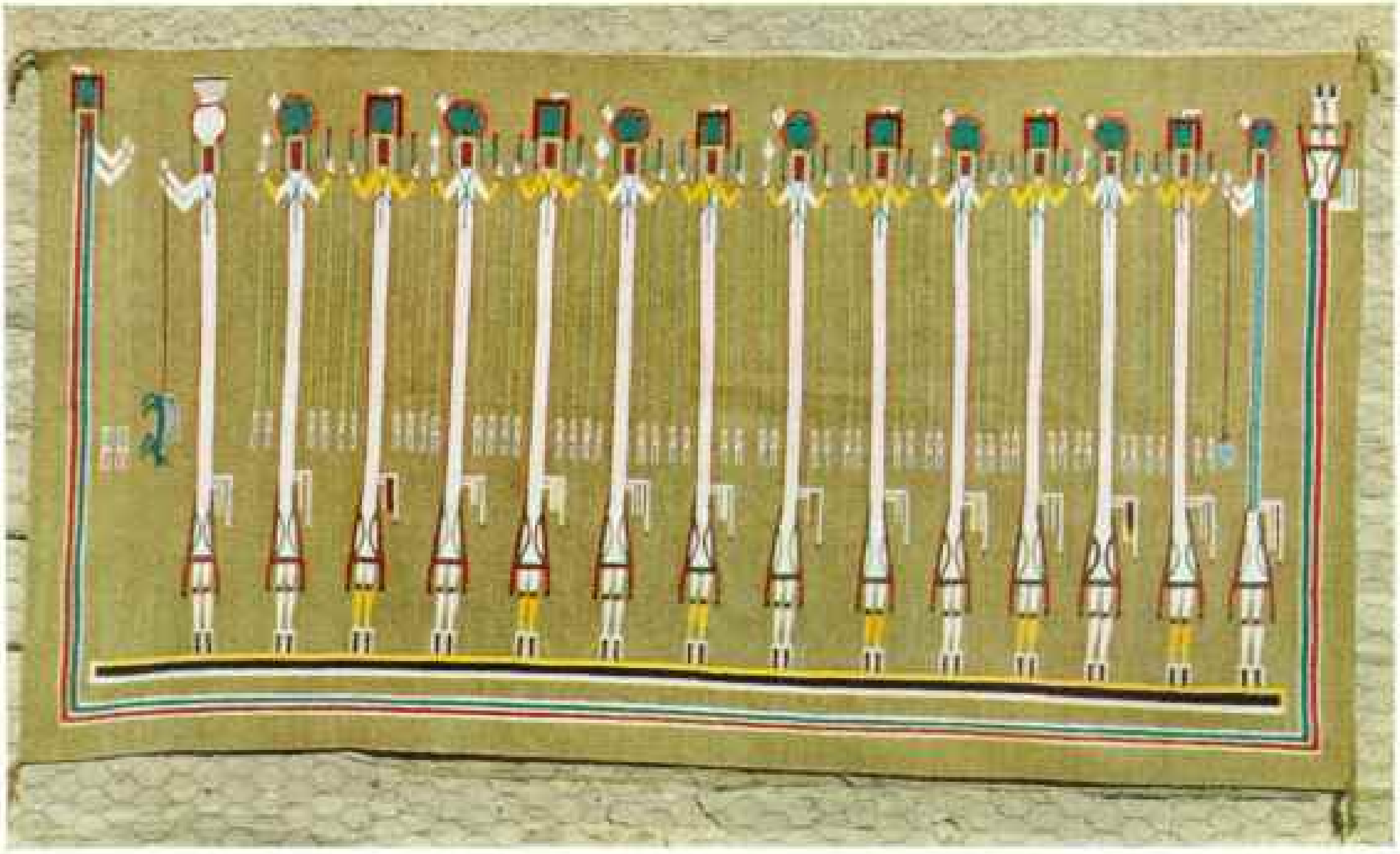
Home of the council and capital of the 15,000,000-acre reservation, the town of Window Rock takes its name from the soaring natural arch, centuries-long work of wind erosion.

This view looks down on the headquarters building, which houses offices of Federal agents and tribal executives. The council's eight-sided hogan shows at right beside the dome-shaped "haystack" rock.

Window Rock attracts visitors with a lodge, restaurant, and Arts and Crafts Guild, all administered by the tribe. Distant trees shade the modern homes of tribal leaders and U. S. Government employees.







sand painting made outdoors so that I would have adequate light for color photographs.

A special shelter would protect the sand from the wind. This was very important. If a sand painting is damaged in any way before it is completed, the gods will be displeased and will not summon their curative powers.

Colored Powders Paint Picture on Sand

The sing lasted several days. On the next to last, the sand painting began. In the morning Ada-Ki-Yazzi and Harv Black entered the shelter, carrying small sacks filled with "medicines" and colored pigments. With a flat stick they smoothed the floor very carefully. Then, with infinite care, they slowly trickled the pigmented grains between thumb and forefinger onto the sand, steadily extending the design from center to perimeter. Charcoal, corn meal, pollen, and petals supplied most of the colors.

They used no guide except the image in their own minds. The finished work, called the Moon Painting, contained four mountain ranges, four sets of feathers (with 12 feathers to a set), and four rainbows enclosing the whole composition, which took four hours to complete. Four colors predominated: white, blue, yellow, and black.

"You'll notice," said Ray Hunt, "that the painting always faces east. Like the door of a hogan. All good things and spirits come from that direction, including the sun!"

Indian Boy Scorns White Man's Comforts

When the painting was done, the sick child was brought into the enclosure and prepared for the ceremony. He was a pathetic sight, withered to skin and bones by tuberculosis. I was told that he had been in a hospital, but had run away from all the fresh milk and fruit and vegetables, the clean white sheets, and other alien comforts of the white man's world, eager for two daily meals of coffee and mutton with his wandering family.

Ada-Ki-Yazzi and Harv started a long chant, their raucous voices rising and falling in cadence with the shaking of their gourd rattles. The boy sat quietly, studying the painting. When the first chant had ended, one of the men helped the boy to a sitting position in the middle of the design.

"When he sits on the painting," Harry whispered to me, "he gets into close contact with the holy people. Each object in that painting has some religious meaning—especially the divinity in the center. The chanting, you see, has awakened the spirits. Now the child must commune with them."

Ada-Ki-Yazzi gave the boy a sip of water from a sacred gourd and instructed him to smear his body with more water and with consecrated meal from a shell. Next the boy rubbed smoke from a sacred fire over his chest and limbs.

"The water and the meal are symbols of health," Ray informed me. "The smoke is supposed to carry away the evil spirits."

Painting Hidden from Evil Spirits

Again the shaman and Harv began their chant, while the child sat motionless on the painting. He stayed there nearly half an hour. Then his mother helped him to his feet and took him from the enclosure.

Ada-Ki-Yazzi picked up a feathered stick and, still chanting, destroyed the painting, from the center outward, in the order in which it had been made. A few seconds later, no sign of the beautiful pattern remained.

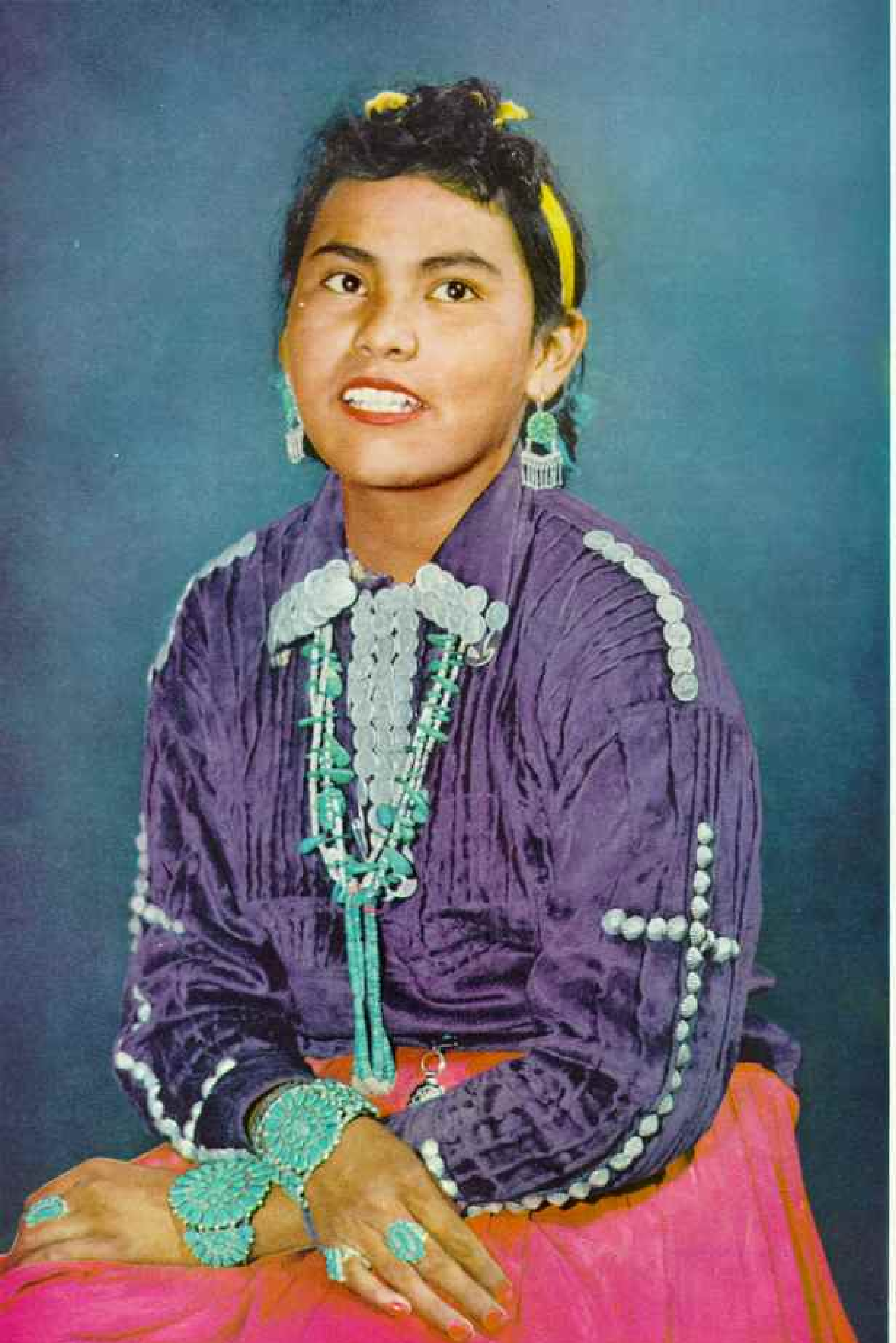
The medicine man and his helper scooped up the mass of sand into which the painting had been implanted, poured it into a sack, and left the enclosure. It was late afternoon now, and all evidence of the painting must be destroyed before dark. Otherwise the evil spirits of the night might be attracted and swoop to earth to harm someone.

More cheerful was my encounter with another Navajo ritual: the sweat bath.

Spinner and Weaver Convert the Fleece of Their Sheep into a Brilliant Rug

Latecomers in the field of weaving, the Navajos learned the art from Pueblo Indians in the 1700's; before long they outstripped their teachers in quality and design. During the late 19th century Navajo women helped support the tribe with their rugs. This Monument Valley team works below one of the Mitten buttes. Having stretched the warp threads on her loom, the weaver opens them with a stick, inserts the varicolored weft threads, and packs them down with a toothed batten.

A luxurious sand-painting rug (lower) minutely copies a symbolic design. Mrs. Sam Manuelito, the weaver, borrowed the pattern from her husband, a medicine man.



Toward the end of my holidays in the Navajo country, I was once again visiting Willie Cly and his family. Out of the blue, Willie suddenly turned to me and said:

"Take a sweat bath with us today."

To my own surprise, I found myself saying, "*Hagosheen.* Fine with me."

For water-poor Navajos the traditional sweat bath is the most practical way of bathing. More significantly, they believe that it purifies the soul as well as the body.

At all events, we took off shortly for a rocky amphitheater a few hundred yards from Willie's hogan. Here Willie had built a sweat house, a small edition of a regular mud-and-brush hogan, barely large enough to hold three or four men. Like any hogan, it had a single door facing east, but it had no smoke hole. Instead, a pit or tunnel emerged at the rear, through which hot rocks could be shoved in from the outside.

One of Willie's sons, Yazzi, had a good fire roaring and was heaping stones among the embers. Lugging buckets of water and carrying fresh juniper boughs, Willie and I marched over to the lodge and stripped off our clothes.

Yazzi, leaning on a shovel near the glowing coals, sang out: "Rocks ready!"

Willie entered first, quickly followed by my friend John, and then I crept inside.

Sing-song Chant Summons Holy People

Pulling down a canvas flap over the doorway, Willie made the tiny room even darker. A little light seeped in through the trench at the back. Several minutes passed before my eyes grew accustomed to the blackout, but there was precious little to see.

Willie started a sing-song chant, ending each stanza with yipes and grunts. "I must ask the holy people to come and cleanse our souls and our bodies," he explained.

Yazzi, meanwhile, was shoveling red-hot rocks along the trench. As Willie poured cold water over them, billows of steam rose and filled the cramped lodge. Within a few minutes rivulets of perspiration dripped from our bodies, and the temperature soared, I judged, up to 130 or 140 damp degrees.

My eyes smarted and my head throbbed, but I had to confess that my nostrils felt clearer. The juniper boughs lining the fire pit and covering the heated rocks gave a welcome sweet-scented tinge to the air.

Willie kept right on with his chant, stopping now and then to tell us some funny story. The sweat house, he reminded us, is one of the Navajo brave's few sanctuaries from women.

Twenty minutes in this oven of a sanctuary, however, was all I could take. I announced that I was coming out. Yazzi was waiting for me—with buckets of ice-cold water to splash over me, from head to foot.

No shower ever gave me quite such a shock, or felt so good. I raced around like a colt to dry my body and restore some life to my well-steamed limbs.

But not Willie. In true Navajo fashion he emerged, lay down, and rolled like a horse. The dry sand covered his body and absorbed the sweat. In a few minutes he sat up and began to brush away the caked grains. This helped remove more of the evil spirits.

Navajos Relish Dead-pan Humor

My stay in the land of the People had come to an end. This time, as before, I was leaving with mixed emotions, grateful to have discovered again that so many of the old ways remain, impressed by the rapidity with which the tribe is moving into the modern world.

No society can or should stand still, and it's idle to expect the Navajos to remain picturesquely poor forever. Yet I am confident that on my next trip I shall find unchanged not only the sheep and the russet mesas, the huckleberry skies and the serene distances, but also the friendship of this far from simple people.

As if to reassure me after I had returned to the east, my friends on the reservation sent me a message that typifies the Navajos' dead-pan drollery. It conveyed Christmas greetings to me, to my wife, and to our very small son—"To Little Pants, Pink Pants, and Wet Pants."

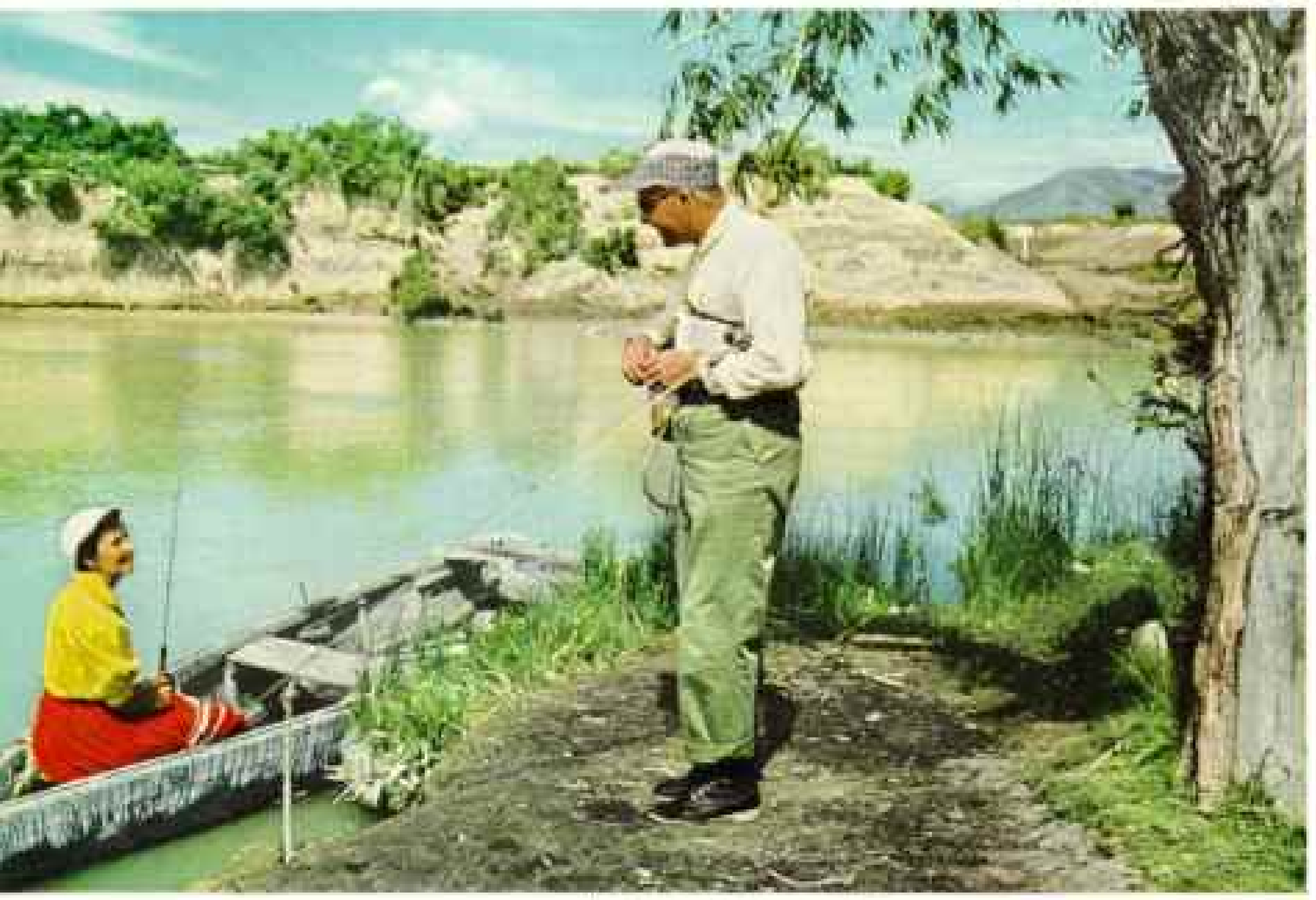
Rows of Dimes Brighten the Blouse of a Navajo Schoolgirl

Sixteen-year-old Sarah Woody attended an off-reservation school in Nevada to learn English. She wears fluted silver buttons and shell-and-turquoise necklace. Cluster rings, earrings, and bracelets complete her accessories.

Geographical Twins
A World Apart

BY DAVID S. BOYER, Foreign Editorial Staff, National Geographic Magazine

With photographs by the author



Same Scenery, Same Trees, Even the Same Name—Jordan—for the Rivers, Yet One Is in Utah, the Other in the Holy Land

Two rivers here illustrate an intriguing parallel between lands on opposite sides of the world. One waters the Great Salt Lake Valley in the western United States; the other nourishes the Jordan Valley in Israel and the Kingdom of Jordan.

Which is which? Only the Arab's red checkered headdress provides an obvious clue. Nature offers none. Each scene shows a smooth-flowing stream, arid background, weed-fringed riverbank, and a foreground framed by the leaves of a eucalyptus—which is native to Australia.

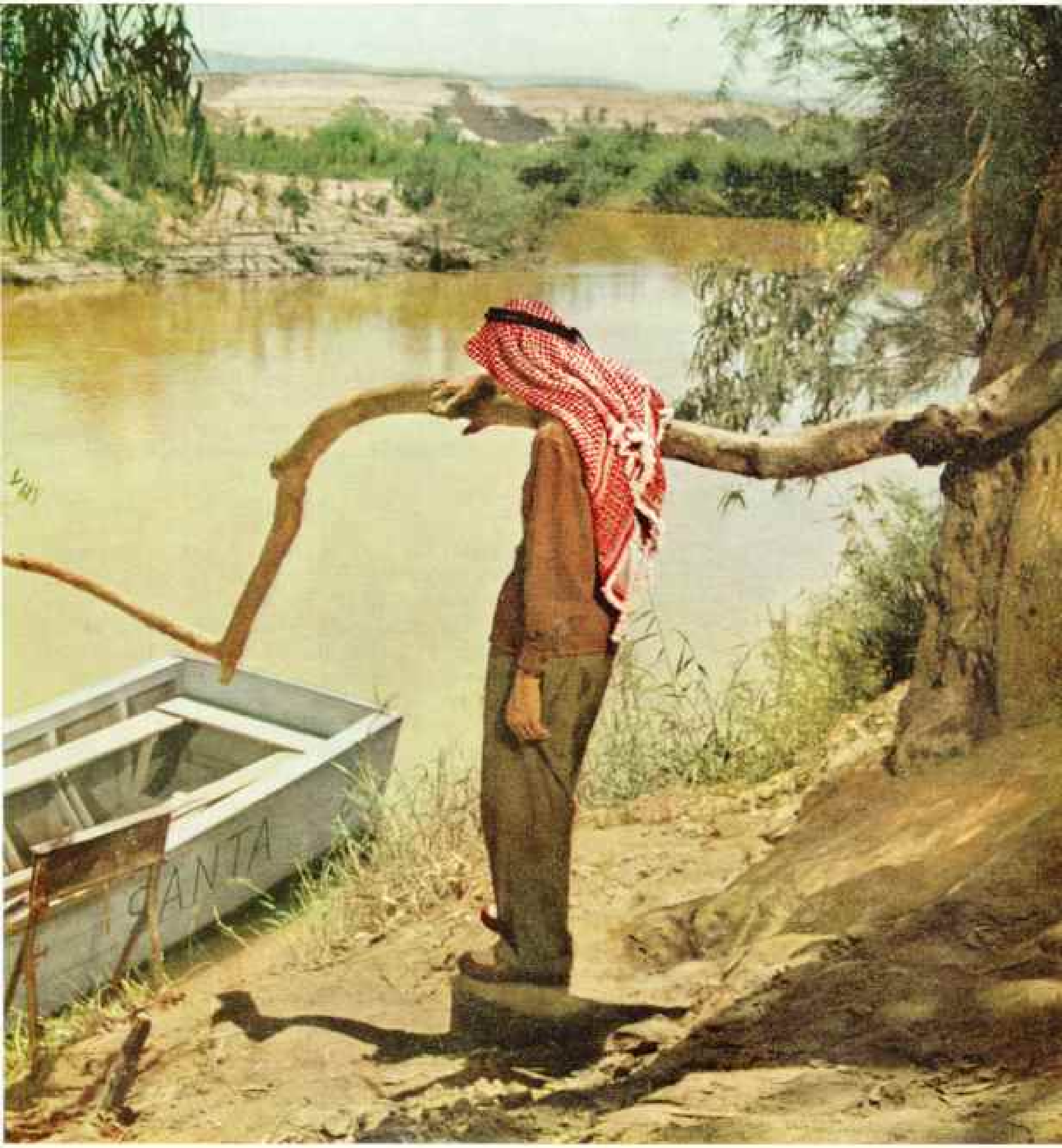
Man-made objects provide little help: the two boats, for instance, might be the work of one builder. But the name of the craft at right unmistakably sets the scene: in not the best Latin it says, "Holy Land."

TEN years ago I drove down out of the hills from Jerusalem to the Jordan Valley in the Holy Land, and what I saw that day has haunted me ever since.

Several times I have gone back. And between those visits I have returned to my native Great Salt Lake Valley in Utah. Each time I have told myself, "Someday I will take a set of pictures so that people can see what I saw." For geography reveals astonishing tricks of duplication in these two places a world apart.

What I saw that day was the snakelike Jordan River and the Dead Sea, salty and glistening, against the baking mountains of Moab. Yet this must have been almost the same scene that my Mormon pioneer ancestors saw in 1847 when they came down Emigration Canyon by covered wagon and looked out over a treeless plain stretching away toward Great Salt Lake (pages 851 and 859).

These religious refugees from Illinois named their winding river after the Jordan of the



Bible; this barren land became their Canaan.

Some 2,000 years before Christ, Abraham came from Mesopotamia to Canaan, the ancient land of the Jordan, and founded the nation of Israel. In those days, archeologists say, thriving farm villages dotted the entire region, even in today's parched Negev.

Now the Jordan and its tributaries rush unchecked and little used from the mountains of Lebanon and Syria, Israel and the Kingdom of Jordan, to waste themselves in the Dead Sea. They await only the genius of modern engineers—and political peace—to turn this forsaken area once more into good farmland. What Abraham's nephew Lot saw may again be true: "And Lot lifted up his eyes, and beheld all the plain of Jordan, that it was well watered every where . . . even as the garden of the Lord . . ." (Genesis 13:10).

Early dwellers in the Holy Land understood irrigation. And the ruins of vast canal systems in the southwestern United States indicate that prehistoric men in that part of America practiced the art long before the time of Columbus.

Hard necessity required the Mormon pioneers to be the first modern Americans to establish irrigation on an extensive scale. Today water runs fresh and clean down the gutters of Salt Lake City streets, recalling the days of Brigham Young, who laid out the "Heavenly City." Along the sides of the streets he had his men dig ditches and turn into them streams from the mountains to irrigate their thirsty fields. Thus these settlers transformed their own bleak Jordan Valley into a garden.

New Canal to Water Southern Israel

On a recent visit to the Holy Land, I watched steam shovels on the Israeli bank of the Jordan River digging a canal designed to carry 115 billion gallons of Jordan water annually to the arid plains of southern Israel.

Within shooting distance across the canyon, Syrian farmers were digging their own canal, as a gesture of protest, for Syria disputes Israel's right to the water. They labored with picks and shovels. When they had excavated a few feet of ditch, they unwalled the water behind them to see whether it would flow, and not too fast.

If they could only cross the guarded river into Israel, I thought, perhaps they could use the device Utah pioneers employed. Standing on a hill, the Mormons sometimes sighted across a dish of water, marking a level route on the far hillside.

Ten years after the conflict that divided Palestine, a technical state of war still exists between Israel and her neighbors. Part of Israel's Jordan River canal, still being constructed, was dug under fire.

Climates of the two Jordan Valleys across the globe have changed little in 5,000 years. Dry years and wet come and go.

It was drought in the time of Joseph that sent the tribesmen of Canaan into Egypt. Joseph, sold into bondage by his brothers, had been carried to the land of the Nile, where foreign conquerors, the Hyksos, ruled. There, by his extraordinary abilities, he rose to become prime minister, second only to the Pharaoh in power.

Joseph brought his famine-stricken people into Egypt. There they settled with their flocks in the land of Goshen, along the eastern fringe of the lush Nile Delta.

Migrating Quail Saved the Israelites

Finally, the alien Hyksos were driven out. The new Pharaohs "knew not Joseph" or his people and forced them into slavery. To satisfy Pharaoh's desire for great buildings, their lives were made bitter "with hard bondage, in mortar, and in brick, and in all manner of service . . ." (Exodus 1:14).

Then a great leader emerged among the Israelites. Every Sunday-school student knows the story of Moses, and of the plagues the Lord called down on Egypt, forcing Pharaoh to let His people go.

The Israelites began the long Exodus with their flocks into the wilderness of the Sinai peninsula. United by persecution, a cohesive nation for the first time under Moses, they sought the land promised by God.*

Hungry and homeless in the desert, the children of Israel remembered in Sinai how good Egypt seemed by comparison. They complained bitterly to their leader. But the Lord spoke to Moses: "At even ye shall eat flesh, and in the morning ye shall be filled with bread. . . . And it came to pass, that at even the quails came up, and covered the camp . . ." (Exodus 16:12, 13).

The story of the quail that fell as promised that night is not so often heard as the story of manna, the "bread from heaven" that

* See "Bringing Old Testament Times to Light," by G. Ernest Wright, National Geographic Magazine, December, 1957.

ALL PHOTOGRAPHS BY DAVID S. BOYER, NATIONAL GEOGRAPHIC STAFF © N. G. S.

Dead Sea or Great Salt Lake? Both Offer Swimmers a Liquid Armchair

This buoyant foursome plays bridge in the waters of Great Salt Lake, which acts as an immense evaporator, receiving fresh water and retaining salts. Six times brinier than the ocean, the lake supports swimmers with head and shoulders above the surface. As Horace Greeley observed, "You can no more sink . . . than in a claybank." Terraced cliffs reveal levels of prehistoric Lake Bonneville, which covered most of western Utah and parts of Idaho and Nevada. Salt Lake is a vestige of Bonneville.

Bather primps during a dip in the Dead Sea. Smaller than Great Salt Lake, the Dead Sea is equally saline, giving swimmers the sensation of wearing life jackets.

Both bodies of water yield valuable potash for fertilizer, and by virtually identical methods. Engineers pump the brine into shallow pans that retain the salts after evaporation.

For centuries Arabs knew the Dead Sea as Bahr Lut, the Sea of Lot.

UTAH

from Utah Lake to Great Salt Lake

appeared in the morning. Yet it reflects an interesting ornithological fact.

Every year great migrations of quail wing their way across the Mediterranean and Red Seas en route between Europe and Africa. Even today Bedouin of the Sinai peninsula catch the exhausted birds after their long flight over the water.

A similar incident is recounted in histories of the Mormon pioneers. The last refugees to leave Nauvoo, Illinois, crossed the Mississippi River in late September of 1846. Sick and without shelter, they subsisted for 10 days on parched corn.

Then, says the *History of Brigham Young*, "The Lord sent flocks of quail, which lit . . . upon the ground within their reach, which the saints, and even the sick caught with their hands until they were satisfied."

The quail "in immense quantities had attempted to cross the river," another Mormon writer added, "but it being beyond their strength, had dropped . . . on the bank."

When the pioneers reached Great Salt Lake Valley, Utah Indians were gathering crickets for winter food. These crickets, almost as dark and baleful as the locusts that invaded Egypt at the invocation of Moses, brought near ruin to the Mormons. Armies of them descended on the first ripening grain.

Great Salt Lake Valley bestrides the 60-mile-long Jordan River between fresh-water Utah Lake and Great Salt Lake. Early settlers claimed a territory that included all or parts of nine States. Their claim, reduced by four-fifths, became the State of Utah in 1896. The map has been inverted for comparison with the Holy Land (opposite).

THE HOLY LAND

from Sea of Galilee to Dead Sea

This time flocks of sea gulls saved the settlers. By tens of thousands, they flew from islands in Great Salt Lake to the grain fields. For days the gulls gobbled crickets.

I recalled all this one day as I stood in the Jordan Valley in the Holy Land and watched swarms of locusts sweep across the hills, devouring every blade of grass. If only there were rookeries of sea gulls around the Dead Sea, I thought, they might protect this land from its insect scourge.

Watching the pathetic figures of Bedouin children, barefooted and herding goats on the scorching Jordan hills, I wondered if they would be roasting the locusts that night in their tattered black tents. From ancient times, nomads of this area have turned locust plagues into a food supply.

Locusts are not the Holy Land's only plague. Much of its misery and desolation can be attributed to the ravages of the common goat. Overgrazing has left the hills of Canaan barren. Topsoil gives way easily, and rains bring flood and erosion.

Modern Israel is achieving amazing results in reforestation. Grazing is carefully restricted. Trees and grasses are planted by the square mile. Israel is determined to restore the fertility of Bible times.

The Bible itself helps Israel determine what

Jordan River Valley stretches 65 miles between the fresh-water Sea of Galilee and the Dead Sea. The valley and the Mediterranean Sea border ancient Canaan, shared today by Israel and Jordan.

Only in altitude do Great Salt Lake and the Dead Sea differ widely: they lie respectively 4,200 feet above and 1,286 feet below sea level.

Black Rock Cave near Great Salt Lake yields Indian relics estimated to be 40 centuries old. Archeologists believe this cave sheltered man 10,000 years ago.

Prof. Elmer Smith (left), of the University of Utah, examines the site where he helped unearth a skeleton judged to be 4,000 years old.

Caves at Qumrān, on the Dead Sea, unlock secrets of the Essenes, a pre-Christian Jewish sect whose copies of Old Testament books are the earliest known in Hebrew. Gerald Lankester Harding (left) and Father Roland de Vaux painstakingly sift rubble for shreds of the Dead Sea Scrolls (page 784).

to plant, for a tamarisk was the first tree Abraham planted in Beersheba. He chose wisely. Israel has set out 2,000,000 tamarisks there, and they have thrived, for they can live on less than six inches of rain a year.

The modern State of Israel plans to plant 200 million trees. Israelis alive today hope to see the fulfillment of Ezekiel's prophecy: "And they shall say, This land that was desolate is become like the garden of Eden . . ." (Ezekiel 36:35).

Great Salt Lake Valley, too, had to learn the same hard lesson. I remember the flash floods of years ago, when rivers of mud and rock poured down from the Wasatch Range. Only after Utahans restricted grazing in the hills and practiced reforestation did these tragedies cease.

The route of the Exodus through the Wilderness of Sin into the mountains of Sinai follows a track that was ancient even in the time of Moses (map, page 853). Since 3000 B. C. countless labor gangs had trudged this road, sent by Pharaohs to dig copper and turquoise in Sinai's blinding heat.

Both Areas Yield Riches in Copper

"For the Lord thy God bringeth thee into a good land . . . a land whose stones are iron, and out of whose hills thou mayest dig brass" (Deuteronomy 8:7, 9).

Thus, in part, did Moses describe the Promised Land. Brass, in the King James Bible, meant copper.

The Israelites, however, were not looking for copper; they were seeking good farming and grazing land. For 40 years they wandered, until they crossed over Jordan. It remained for Solomon to exploit the iron and copper ore Moses had predicted—to become, in fact, the mining tycoon of his world.

Several centuries after the Exodus, when most of Canaan had been conquered, there rose great kings in Israel. King David seized Jerusalem, proclaimed it his capital, and made the nation a great power. King Solomon consolidated David's gains, increased trade and wealth, refortified Jerusalem, and built the city's magnificent Temple.

At Ezion-geber, on the Gulf of Aqaba, Solomon built the finest smelter in these ancient lands. From it may have come metal to furnish the resplendent Temple—copper for the pillars, for the "altar of brass," and for the pots, shovels, and basins that were used in the Temple ritual.

Ruins of Solomon's smelters, buried and lost nearly 3,000 years, came to light only a few years ago. Dr. Nelson Glueck, who has spent a lifetime excavating in the land of the Bible, found them in 1937.*

Today the spiritual descendants of Moses and Solomon in modern Israel are mining copper near the ancient smelters.

Not many years after Brigham Young brought his pioneers into Great Salt Lake Valley, iron, lead, silver, gold, and copper were discovered in the mountains of Utah.

The Mormon leader, however, was not interested in gold or silver or copper; nor did he want his people to be.

When they talked about going to California to mine gold in 1849, he told them: "If you elders of Israel want to go to the gold mines, go and be damned." He believed that "Prosperity and riches blunt the feelings of man."

The Mormons did not go; nor did they work in Utah mines. "Outsiders" developed the deposits. In the Oquirrh Mountains, overlooking Great Salt Lake Valley, they opened one of the richest open-pit copper mines in the world.

Today in Utah, Mormons and people of other religions work side by side in the mines. At the Bingham Canyon mine of the Kennecott Copper Corporation, they have produced 7,000,000 tons of copper since 1904.

I flew over this famous copper mine last summer. Beyond it lay Great Salt Lake, and to the west of it stretched the celebrated Bonneville Salt Flats. Here I used to watch race drivers set international speed records.

Salt Flats Produce Valuable Potash

Thousands of tourists have driven their cars off U. S. Highway 40 to "try them out" on the salt flats. Few realized that they were driving over salt laid down 11,000 years ago by ancient Lake Bonneville, an inland sea about the size of Lake Michigan, shrunken now to the comparative puddle of Great Salt Lake.

Even fewer, perhaps, recognized the potash industry on the salt flats. Dazzling white and level as a breadboard, the flats spread over 75 square miles. Water from rain and melting snow, sinking into the flats, becomes saturated with salt. Drainage canals capture the brine and channel it into 4,000 acres of evaporation ponds.

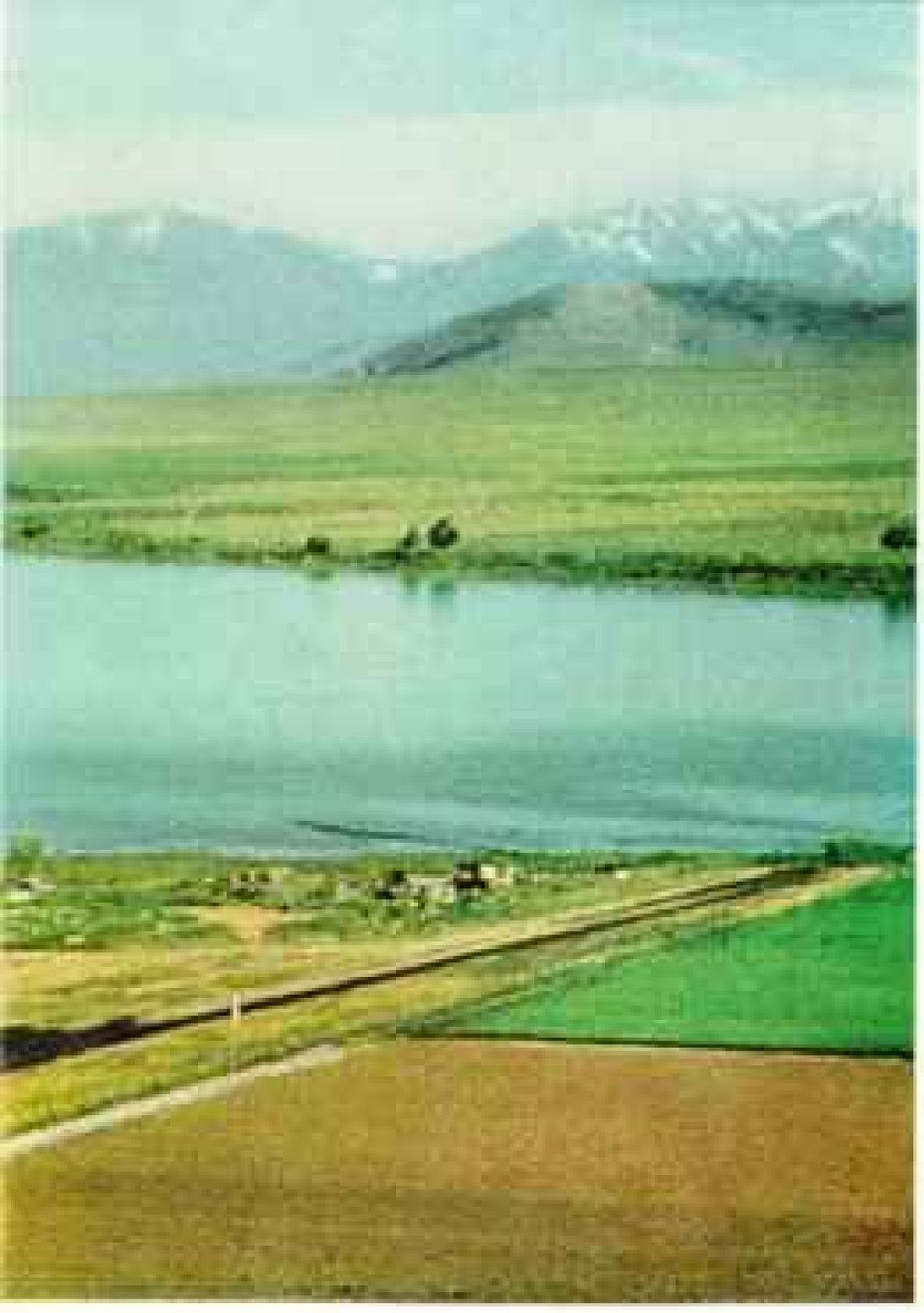
* See "On the Trail of King Solomon's Mines," by Nelson Glueck, NATIONAL GEOGRAPHIC MAGAZINE, February, 1944.

Sea of Galilee, which Romans called the Sea of Tiberias, separates the upper and lower Jordan River. Abraham's flocks may have grazed by the lake; the Bible describes how Jesus walked on its surface (John 6:19).

Modern Israeli fishing fleets work the waters where the risen Christ directed his disciples to cast their nets (John 21:6).

This view looks past an Israeli *kibbutz*, or collective farm, to snowy Mount Hermon, the Mount Sion of the Bible. Like early Utah settlements, the *kibbutzim* hold property communally.

Hot springs on Galilee's shores were known to pre-Roman inhabitants.



Utah Lake, Source of the American Jordan, Turns Desert Waste to Fertile Farmland

Pioneers, faced with thousands of square miles of parched wilderness, converted the barren wasteland by irrigation into "Beautiful Zion . . . clasped in the mountain's embrace."

Early settlements adopted strict communal rules, forbidding private ownership of water, timber, and other resources.

This view looks southeast past Saratoga Springs, a resort, to the snow-streaked Wasatch Range.

Mount Nebo (extreme right) takes its name from the peak where Moses viewed the Promised Land: "And Moses went up from the plains of Moab unto the mountain of Nebo, . . . And the Lord shewed him all the land . . ." (Deuteronomy 34:1).

Bonneville, Ltd., processes 6,000,000 tons of brine annually, which yield 60- to 70,000 tons of potash for fertilizer.

In only one other place in the world is potash produced by virtually the same process. That is on the southern shore of the Dead Sea in Israel.

Before the Arab-Israeli war, potash plants operated at both ends of the Dead Sea. With some of the Arabs who destroyed them, I had walked through the burned-out ruins of the northern installations in 1948.

Years later at Sedom in the south, I saw the rotting barges that once carried potash to the north for shipment by road. This melancholy sight, however, was relieved by the new salt pans, the enlarged plant, and the new desert highway Israel has built to revive the industry on the Dead Sea.

Locked between Jordan and Israel, this briny witches' brew that was once considered useless is estimated to hold enough potash to supply the world, at its present rate of use, for 250 years. The Dead Sea is fast becoming one of Israel's main assets.

This year the Sedom works will almost reach its goal of 135,000 tons of potash annually. And the Kingdom of Jordan hopes to rebuild the gutted plant on the Dead Sea's north shore.

Hot Springs Bubble in Both Valleys

I was glad for the Dead Sea one sweltering afternoon in Jordan in 1954. My clothes were awash with perspiration as I scrambled down from the cliffs where archeologists were uncovering the famous Dead Sea Scrolls (page 785).

Into the brine I plunged, at a place called 'Ayn Fashkhah. Later I was even more glad for 'Ayn Fashkhah. "'Ayn," in Arabic, means a spring, and here flows into the Dead Sea a brook of warm, comparatively fresh water, wonderful for washing the salt off the body and out of the hair.

This, too, was a reminder of home. Pioneers found hot springs on their first day in Great Salt Lake Valley. Today warm springs at both ends of the valley are recreational meccas for Utahans.

Settlements grew up around hot springs in the Holy Land four millenniums before Christ. Jesus himself must have passed many times the most famous hot springs of all, those near Roman Gadara, east of the Jordan, and those of Tiberias on the shore of Galilee.

I lay stretched out on a Tiberias massage table one day listening to high-fidelity music flooding the elegant bathhouse built at these springs by enterprising Israelis. When I heard the proprietors' plans for even more de luxe accommodations, including a swank hotel in the hills with Tiberias's hot water piped into private bathing rooms, I concluded that even the pleasure-loving Romans could not have imagined such luxury.

Across the Sea of Galilee from Tiberias lies 'Ein Gev, a living symbol of the trouble and insecurity of this region today. To a descendant of Utah pioneers, it is a further symbol of a strange and fascinating parallel that runs the length of two Jordan Rivers separated by more than 7,000 miles.

Galilee Fishermen Use Electronic Gear

I took a boat one day across the Sea of Galilee. There, on a beachhead of Israeli land thrusting against the mountains of Syria, I was welcomed by the communal settlers of 'Ein Gev.

These men and women make a living by fishing the waters of Galilee. Though they net fish from small boats much like those used by the disciples of Jesus, they locate schools of fish in motorboats equipped with electronic sounding gear.

By day and night, they take turns standing guard against attack from the near-by Syrian hills.

Between shifts of fishing and guard duty and work on the pinched circle of farmland they cultivate behind barbed wire, they live like a big family. Everyone eats in a central dining hall. Children grow up in a communal nursery, visiting parents for an hour or two in the evening and on the Sabbath.

Everything is owned in common—boats, farm buildings, houses, and equipment. No one earns pay; expenses are met from a common chest.

The Mormon pioneers set up a similar system after they were established in Utah. They called their communal settlements the United Order. It didn't last long. Mormons, like other Americans, weren't built that way.

I don't know whether 'Ein Gev will go the way of Mormon communal settlement. But I know it would be hard for a Utahan to visit the Holy Land, look across the Jordan River and the Dead Sea, and not seem to hear strangely ringing in his ears the words of Brigham Young, "This is the place!"

Young Utahans stroll the treeless flats beside Great Salt Lake, largest body of water in the United States west of the Mississippi River. Stansbury Mountains rise beyond the lake.

Jordanian children roam the barren shores of the Dead Sea. The land of the Moabites, bitter enemies of the Israelites, shows on the far shore. Today Jordan owns most of the Dead Sea coast.

The cold, lonely chore of hungry Eskimos becomes the winter sport of thousands on the northern lakes

Ice Fishing's Frigid Charms

By THOMAS J. ABERCROMBIE, National Geographic Staff

With Photographs by the Author

"I'LL weigh 11 pounds easy," said Frank Gudridge (opposite). His catch, a walleye two minutes out of water when I took the picture, had frozen as stiff as a baseball bat in the 25-below-zero cold at Minnesota's Mille Lacs Lake.

A raw wind that all but cut us in two reminded me of the three weeks I spent at the South Pole last year with Paul Siple. I hadn't been much more uncomfortable down there at the very end of the earth.

Mr. Gudridge, bare-fingered, threaded another minnow onto his hook, broke the thin ice over his fishing hole, and lowered his line. Only then did he draw on his heavy mitts.

"There are plenty more like this one right under your feet," he told me.

All around us parka-clad fishermen were cutting holes through the 32-inch-thick ice. That task finished, they pushed their heated shanties over the holes. I counted some 3,000 shelters dotting the 20-square-mile lake. As stoic as Eskimo fishermen, a few die-hards stayed outside to brave the wind.

Lightweight clothing and improved tackle prime the ice-fishing boom. A $50 bill buys enough cold-weather gear to keep a man warm. Stores offer candle-heated minnow buckets, motor-driven ice drills, and electrically heated stockings. Tackle devices called tip-ups automatically signal a strike by popping up a red flag, enabling a fisherman to monitor two holes at the same time.

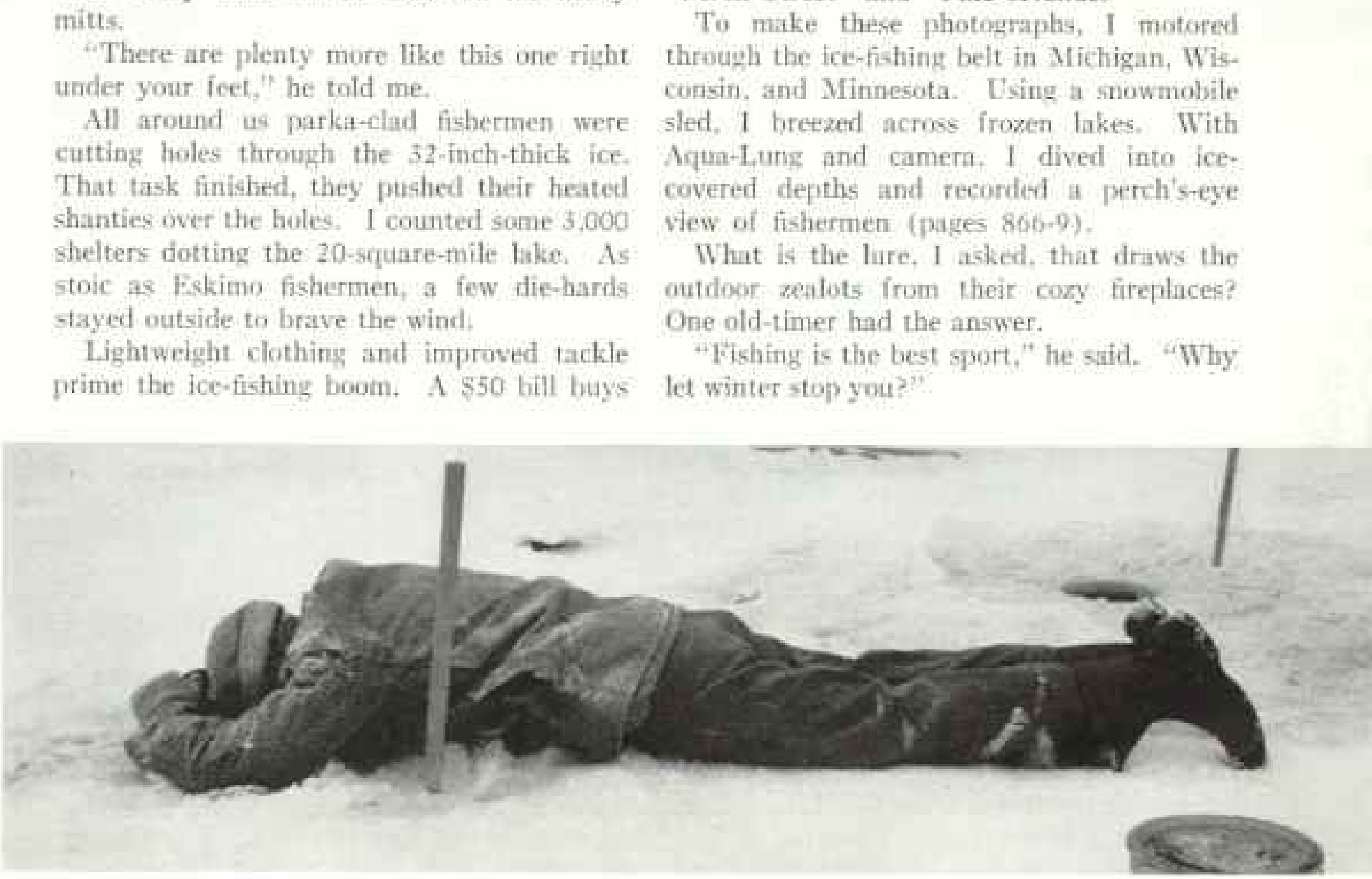
On some lakes winter sportsmen haul more fish through the ice than spring and summer anglers take from the water.

As soon as the ice thickens, temporary towns spring up on many lakes. "Perchville," a shanty village on Lake Huron's Tawas Bay, has its own mayor, who sets up city hall at "Perch Street" and "Pike Avenue."

To make these photographs, I motored through the ice-fishing belt in Michigan, Wisconsin, and Minnesota. Using a snowmobile sled, I breezed across frozen lakes. With Aqua-Lung and camera, I dived into ice-covered depths and recorded a perch's-eye view of fishermen (pages 866-9).

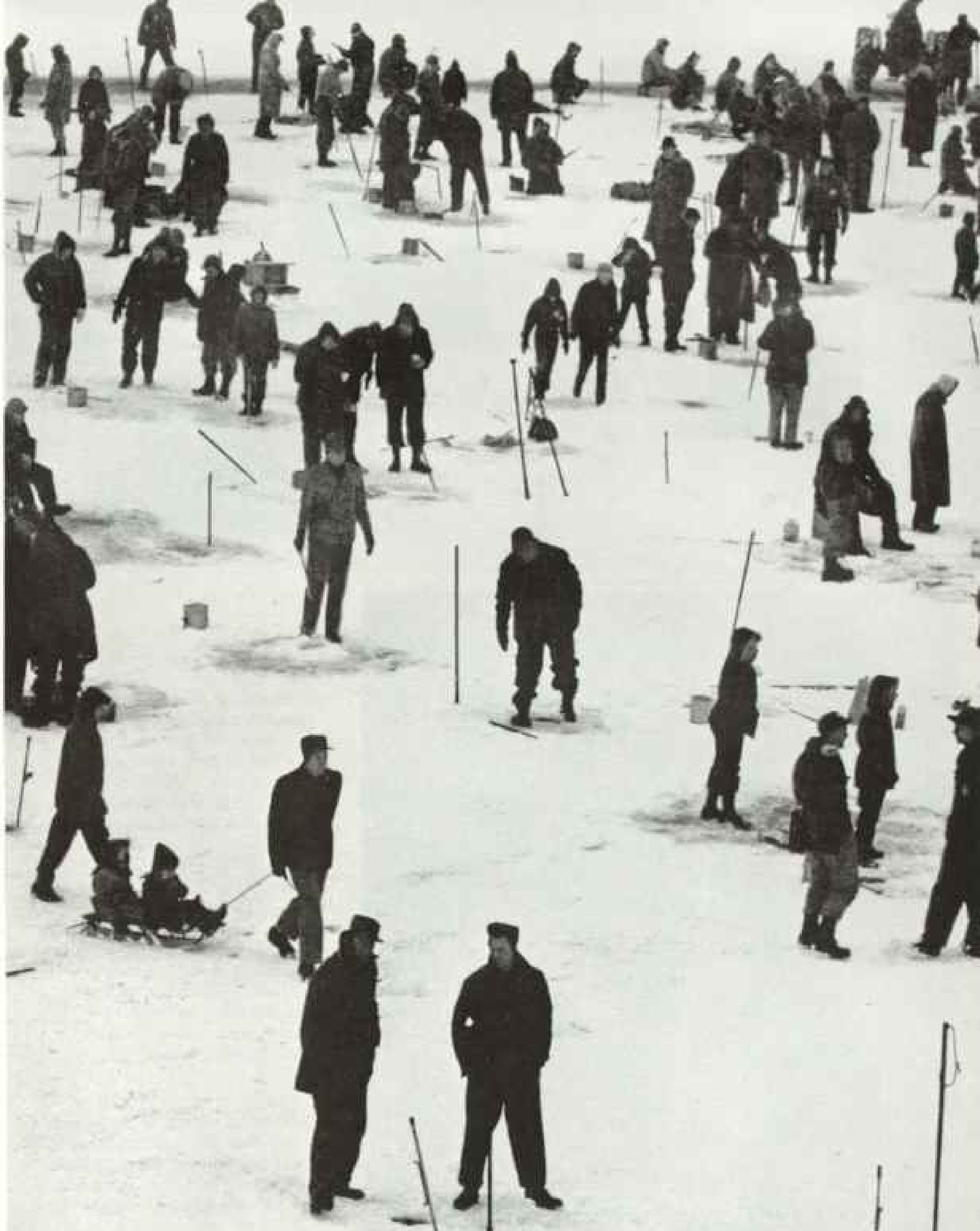
What is the lure, I asked, that draws the outdoor zealots from their cozy fireplaces? One old-timer had the answer.

"Fishing is the best sport," he said. "Why let winter stop you?"



Eyes Search a Lake's Dim Depths for Pike; Head and Hands Shut Out Confusing Light

Ice-fishing contest at White Bear Lake, Minnesota, draws a record crowd. I watched at least 6,000 people at one time or another milling and shouting within a large circle marked off as the arena. Hot-dog peddlers, skaters, dogs, and iceboats added to the confusion. It was a wonder the ice supported them all. "No fish in its right mind would swim within a thousand yards of this mob," one contestant said. Evidence supported him: the largest catch was a 2-pound 12-



ounce bass taken by a 9-year-old boy (page 870). I saw one toddler of 2½ years swathed in a greater weight of clothing, it seemed, than his own 30 pounds, and I talked with a spry 97-year-old who kept his live bait warm in a pocket flask.

Tools sticking in the snow are jig sticks, from which bait is dangled to attract fish; ladles, to scoop slush; and spuds, or chisels, to chop ice. For 50 cents, the operator of tractor in upper right bores a fishing hole with a posthole driller.

DWIGHT MILLER, MINNEAPOLIS STAR AND TRIBUNE (BELOW)

A pike looms into view; a second later the razor-sharp, five-tined spear found its mark.

Dangling a minnow bait from his jig stick, the fisherman sits in his heated dark house on a Minnesota lake. Windows are omitted because the black interior enables him to see into the depths.

The photographer's flash illuminates this dramatic scene. Hours of patient waiting were required to get the shot.

In many ice shacks like this I saw card games going on under lantern light. Bottled-gas stoves produced summer temperatures, and radios drowned out the moaning wind.

Frozen stiff, a 98-pound lake sturgeon leaves Winnebago on the shoulder of the spearman. You see the fence posts of the man's home, which adjoins the lake.

Smoked sturgeon is esteemed as a delicacy, and a female this size may hold half a bushel of roe.

Wisconsin's record sturgeon scaled 168 pounds. Winnebago yielded a 120-pounder in 1958; the average is 50 pounds.

From one of the cabins on Lake Winnebago, Wisconsin, came a cheery voice: "How about a cup of coffee?"

Inside, I found neighbors barging in and out. Between visits, they fished for sturgeon (below). Before spring thaw, they said, they would drag away their 2,000 shacks.

One courageous soul (left) insisted on facing the elements. Bundled head to foot, he carries an ice chisel

LYNN ARESCHOUGH

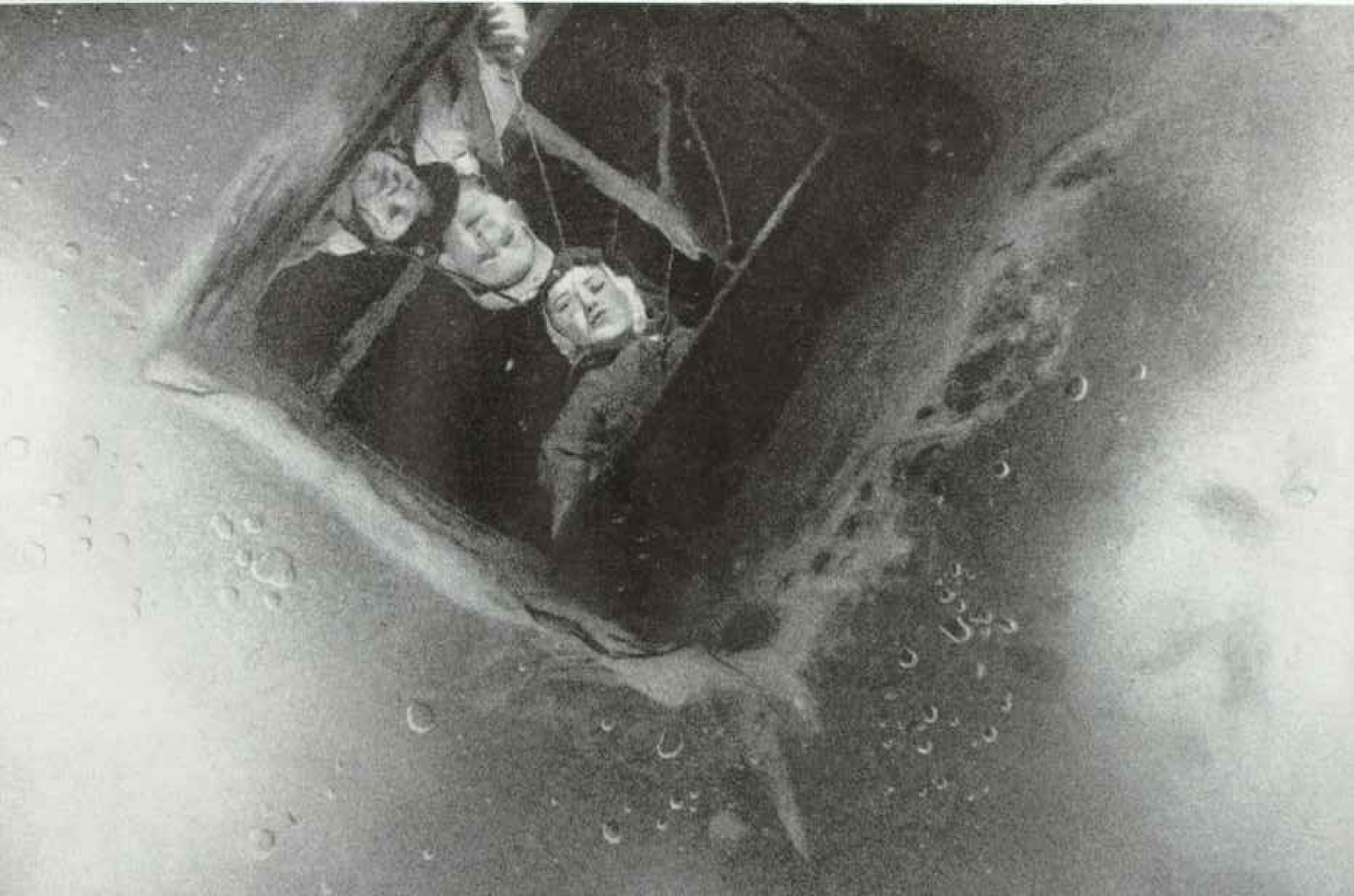
I go under the ice. At risk of offending obliging friends, I want to make it clear that I regard under-ice diving as the world's craziest sport, and I look back on my own experience in Upper Nemahbin Lake, Wisconsin, as the act of a madman.

Despite insulating rubber suits, the cold was sheer horror that drove us to the surface in half an hour. Down in that never-never water, everything seemed topsy-turvy, and we might never have found our escape hole save for a 200-foot nylon lifeline. For reward we caught one bony four-pound carp.

In the view above, I wince from the cold as diver Ara Arselian adjusts my face mask. My Aqua-Lung and camera are ready.

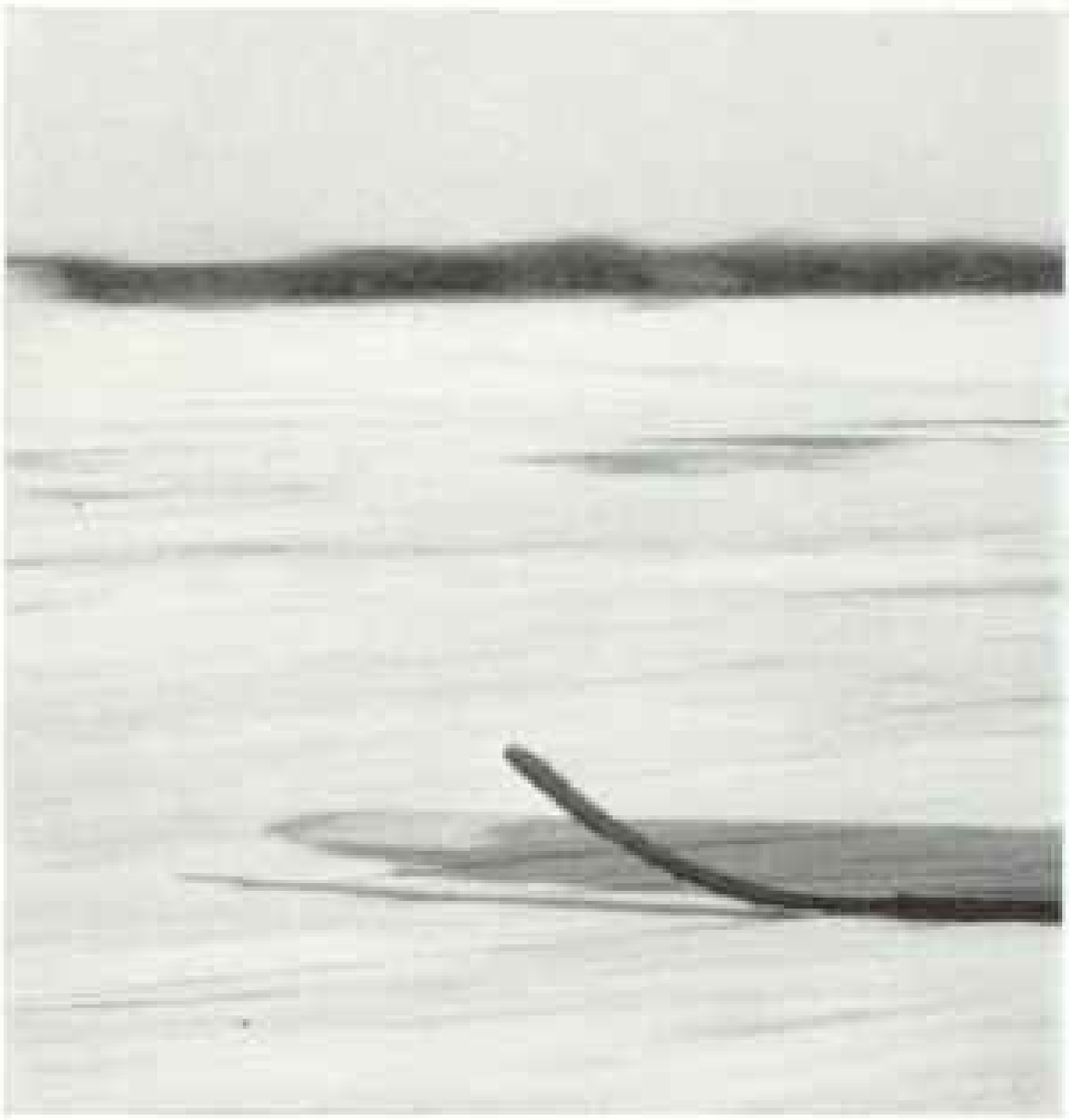
Spear gun (left) impales the carp. Dark patches above Vernon Burkart's head show pockets of our breath trapped by ice.

Dragging the carp, magnified in this view, frog-footed Burkart heads for home. In memory, the picture of our ascent still has a nightmare quality. Water and ice blended so that I could not tell one from the other. I recall vividly the shadows of spectators standing about the hole. My mind reeling, I visioned a heavenly band of campers gathered at a fire in the sky.



Fish's-eye view of ice fishermen! Looking straight up, I made this photograph while swimming under 20 feet of Lake Huron water and 20 inches of ice. Beneath the hole a hooked perch is faintly visible.

Winner, catch, and trophy. Jimmy Tobin holds a bass, the biggest fish caught in the White Bear Lake contest (page 862). His prize was a $500 boat-motor-trailer combination.



A picket fence of frozen walleyes, noses down, stands in the snow of Mille Lacs, Minnesota. Ranging from a pound and a half to seven pounds, the fish represent one family's weekend catch.

Minneapolis people at right camped in comfort in their 42-foot trailer. Driving onto the frozen lake, they heated their mobile home with a portable electric generator, dug holes in the ice, set their lines, and stood watch behind sealed windows. When a bobber jumped, all rushed out to see what they had caught.

Game warden's snowmobile took me skimming up to 60 miles an hour over thin ice where no automobile dared to go.

Jerry Liemandt, who checks fishermen for violations, patrols Lake Minnetonka, Minnesota. Propeller and 85-horsepower aircraft engine drive the skis. A built-in trailer hitch allows the warden to tow the snow sled from lake to lake. Here the wheels are retracted.

Lonely, cold, but content, Richard Rankin fishes through the ice of Perchville, Tawas Bay, Michigan. As I watched, the sun dropped low and the wind picked up, but Mr. Rankin was oblivious, for he was nearing Lake Huron's 50-a-day limit of perch and dreaming of grilling his savory catch over charcoal.

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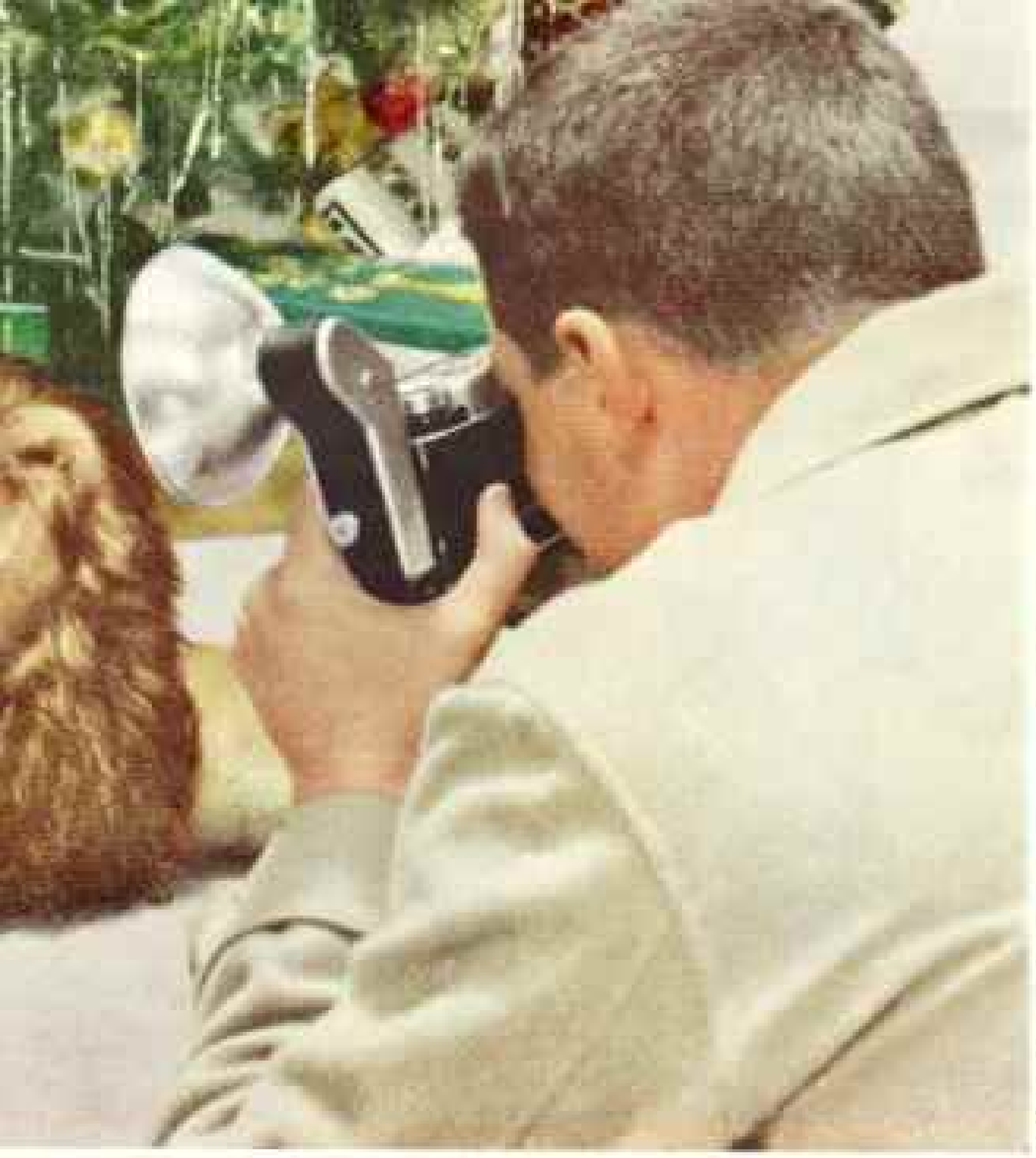

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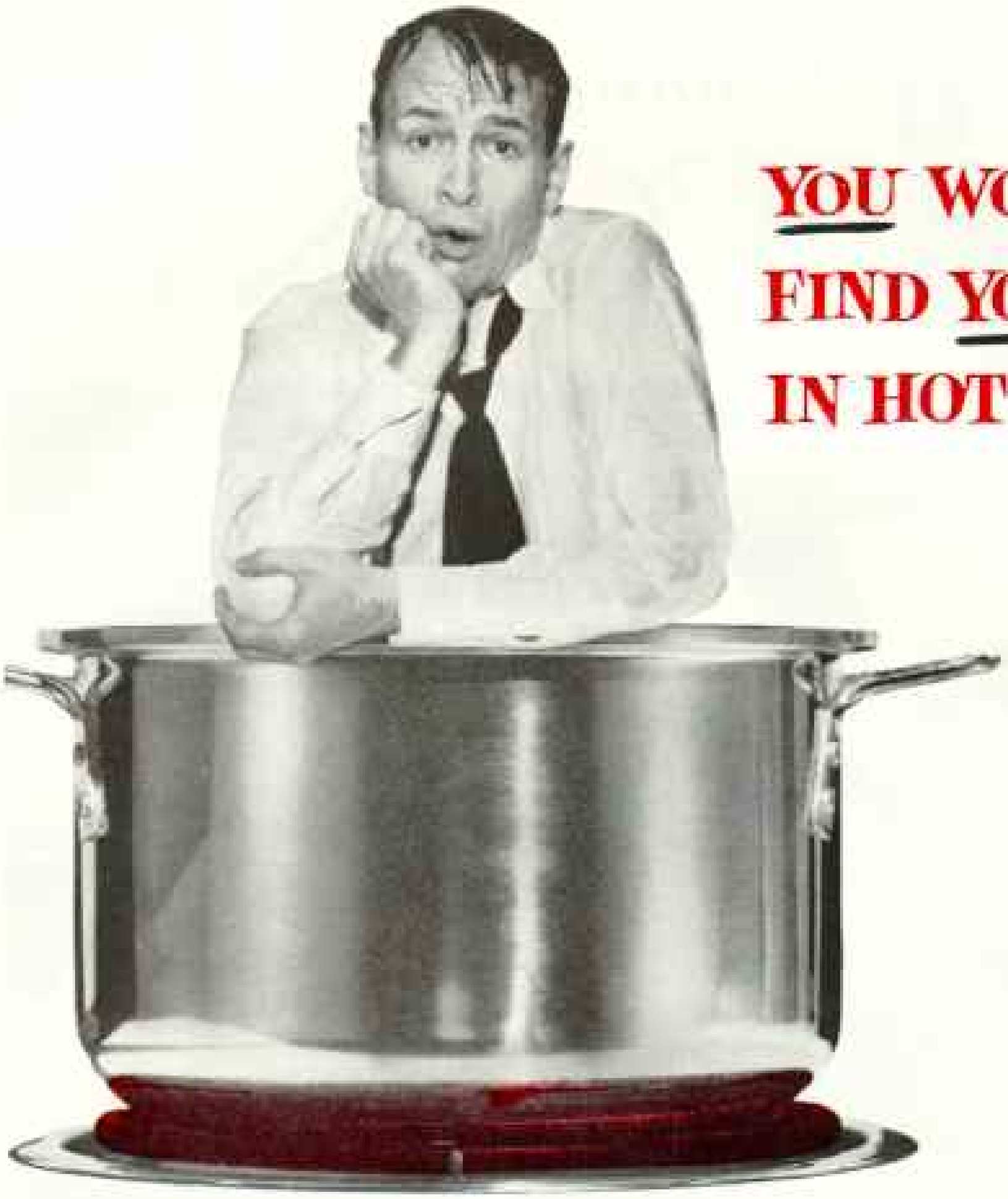

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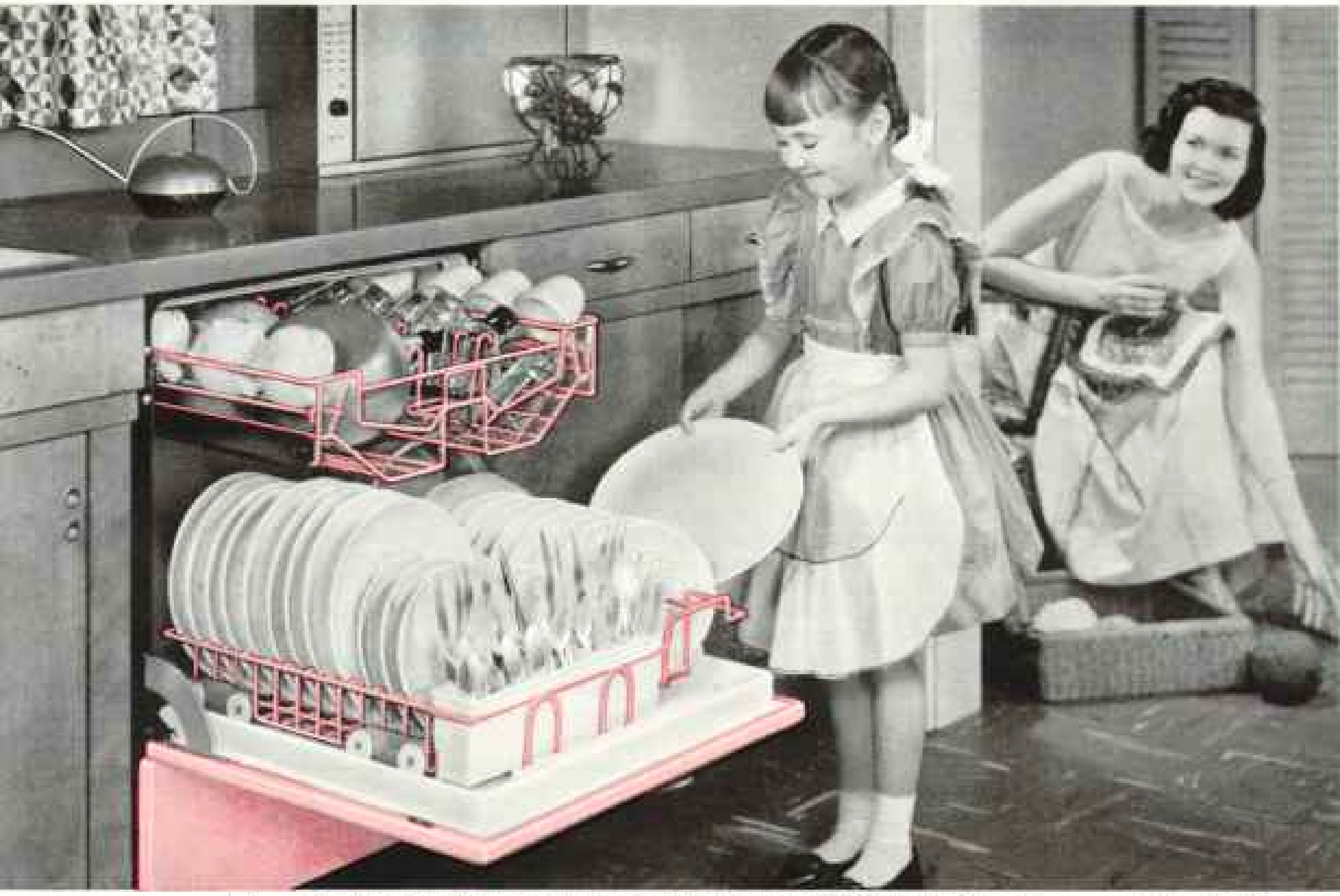

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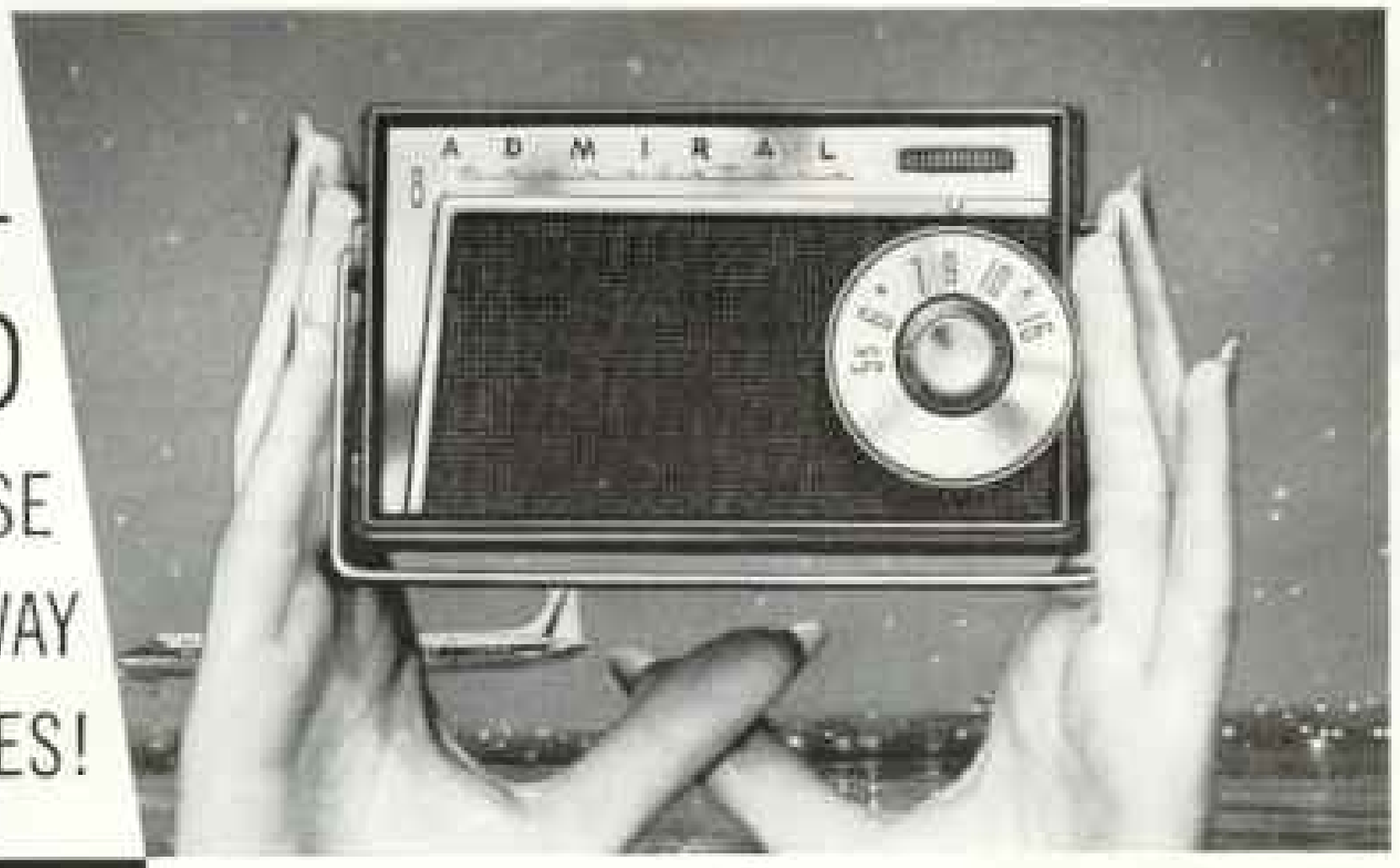

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The following questions and answers cover some of the more important things you should know to keep your family well nourished.

What is a balanced diet? It is one that supplies—*in the right amounts at breakfast, lunch and dinner*—all of the essential nutrients—*proteins, carbohydrates, vitamins, minerals and limited amounts of fats.*

Why is protein so important? Growth of children is dependent upon it; adults require it for body upkeep and repair. A continuous supply of protein is needed.

What are the best sources of protein? Meat, fish, poultry, eggs, milk and milk products, including cheese and ice cream. Good protein is also supplied by bread, cereals, dried beans and peas. Your protein should come from both animal and vegetable sources as the two types supplement each other to form the body's "building blocks."

Are green and yellow vegetables necessary? Yes. Broccoli, spinach, escarole, squash, carrots and sweet potatoes are excellent sources of essential vitamins and minerals. At least one of them should be served every day.

Why should special care be taken regarding vitamin C? Because it cannot be stored in the body and because it has many important functions. Fresh, frozen or canned orange or grapefruit juice, cantaloupe, strawberries and tomatoes are all rich sources of vitamin C.

They should be eaten as soon as possible after they have been prepared for serving, since too much exposure to air destroys vitamin C.

How can you best assure good nutrition for your family? By serving a wide variety of foods. "Fad" or "wonder" diets may lack many essential nutrients.

Metropolitan offers a practical guide to good nutrition called "Food for the Family." Mail the coupon below for your free copy.

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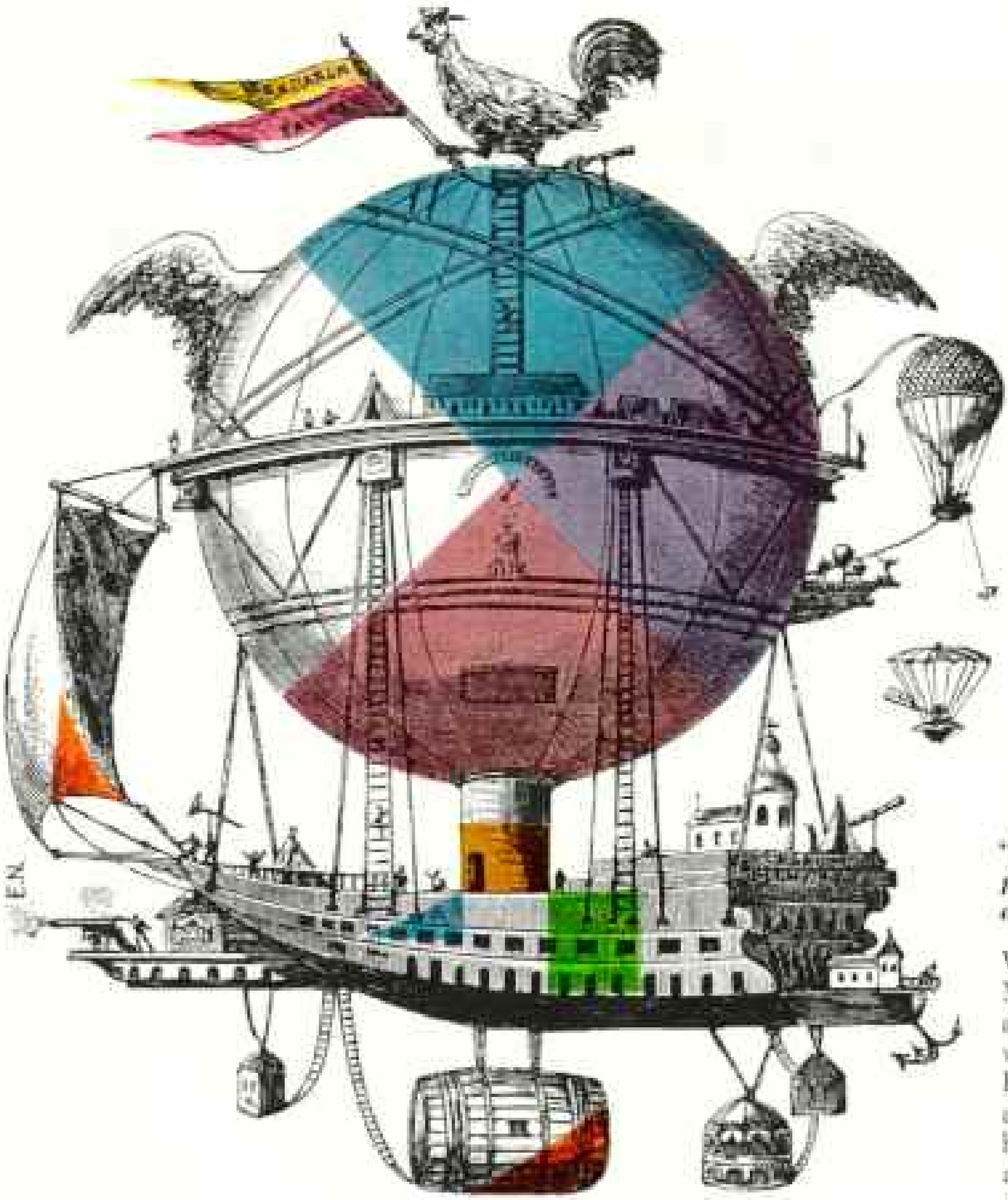

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From Chapter 4 of "Dynamic America," a history of 420 pages and 1500 illustrations to be published soon by Doubleday & Company and General Dynamics Corporation, 445 Park Avenue, New York 22, N. Y.

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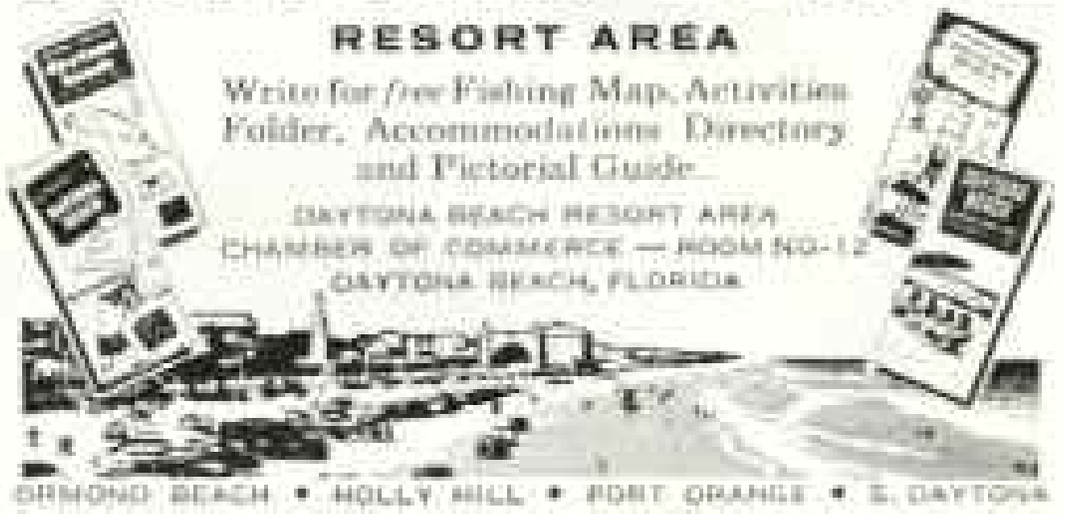

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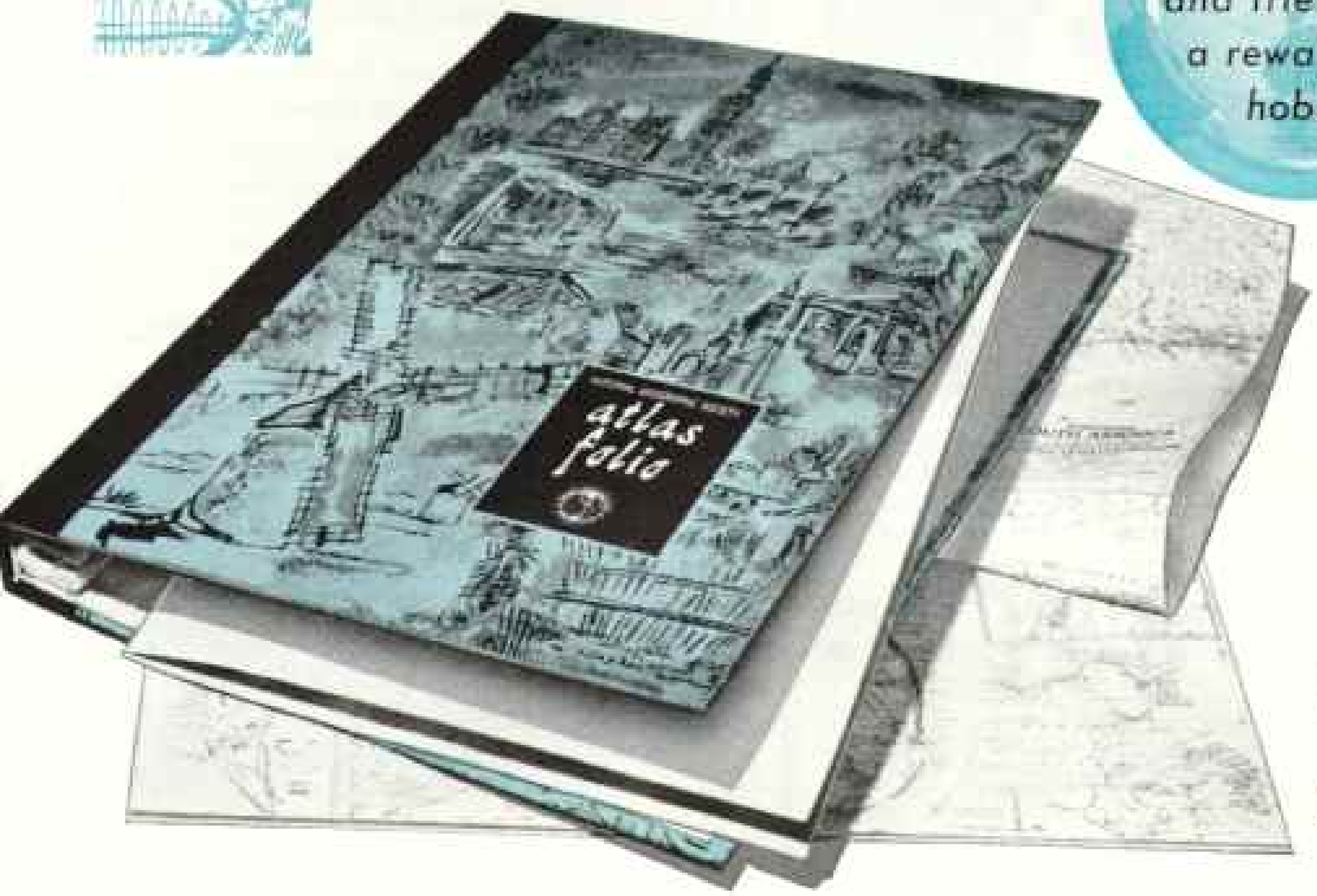

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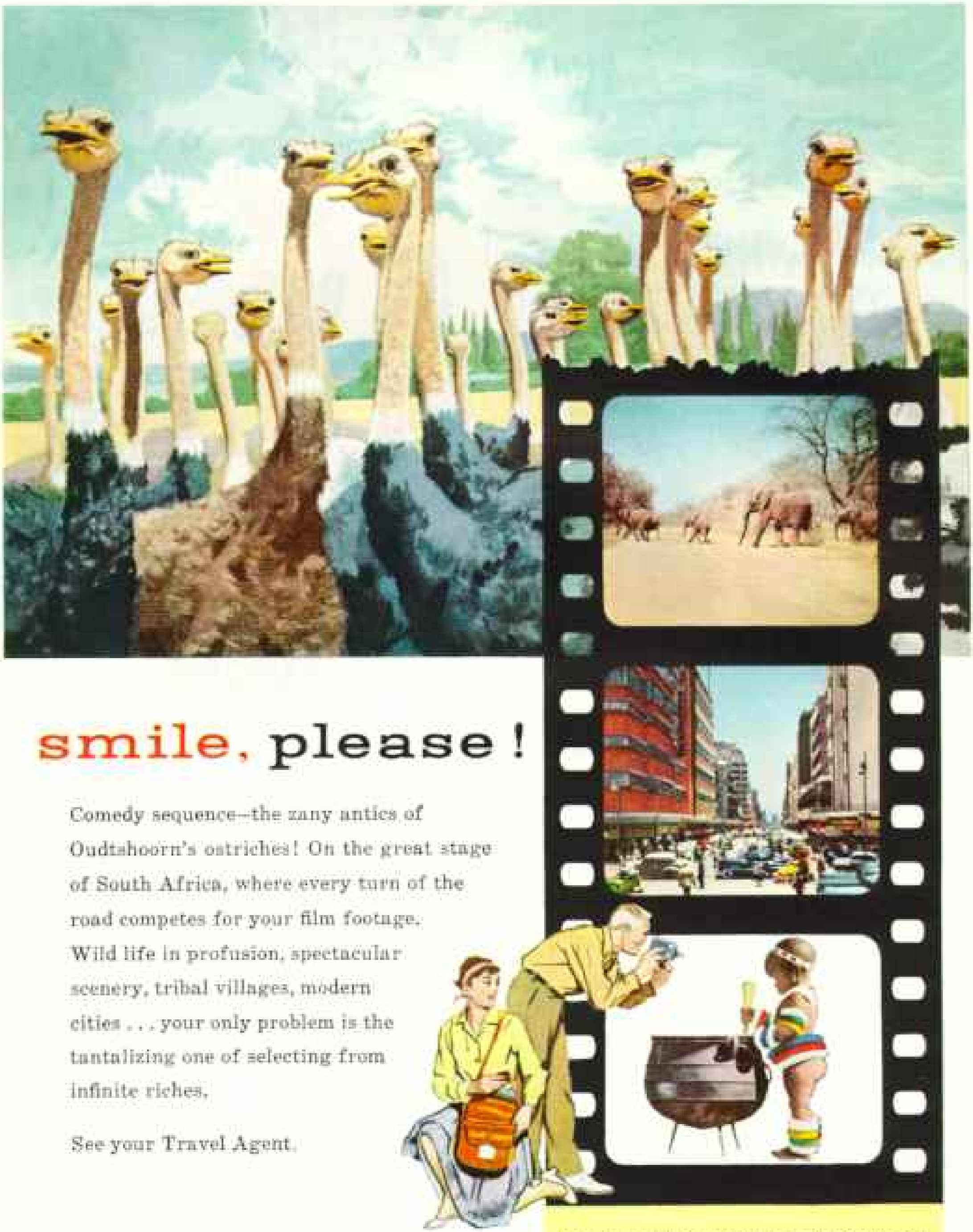

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