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SEE "SEARCH FOR THE GREAT APES" TUESDAY, JAN. 13, ON PBS TV

THE DEBATE over the world's endangered species rages more loudly, but hardly more fruitfully, with each passing year. Conservationists still too often rely on emotional statements of their cause, attributing only ignorance and greed to those who harvest wildlife. Industry spokesmen too often find belligerence their best defense, and regard all conservationists as featherheaded idealists.

Today international waters are frothing with controversy over the survival of whales; yet the furor rages perhaps with more passion than knowledge, simply because we are unable to collect and maintain indisputable census figures.

Has man the wisdom to "manage" another species? The cynic will snort, and point to skies once filled by great flocks of passenger pigeons. Somehow our tinkering has left us with noisome hordes of starlings in their place. In a few human generations great herds of bison, the timber wolf, the grizzly bear, the bighorn sheep, and other species have been reduced to remnant populations.

Consider now the sleek, silver-hued harp seal of the North Atlantic. The winter pack ice has formed; soon it will be the whelping time of these lovely and valuable animals. Only days after the pups are born, men will move in to club them to death for their white pelts. So it has been for two centuries or more.

A candid account of the annual seal hunt appeared in NATIONAL GEOGRAPHIC nearly 47 years ago, in July 1929, as veteran arctic explorer Robert A. Bartlett described how thousands of men set out in dozens of ships—at considerable hazard and for meager pay. Captain Bartlett, a sealer himself, noted that recent seasons' yields had declined to some 200,000 pelts, "in contrast with earlier years when the catch ran to 700,000."

Within the past decade public outcry over the slaughter has prompted the reduction of quotas to 150,000 animals a year. Setting the *proper* quota, however, is vital for both the species and a continuing sealing industry. In this issue Canadian biologist David Lavigne presents findings based on a new technique, the recording and counting of harp seal pups by ultraviolet aerial photography.

His conclusions are disturbing, as you will read in the article beginning on page 129. But here at last some light accompanies the heat of controversy. We hope it will help wildlife officials, conservationists, and sealers to find common ground on which to make the right decision on the harp seal.

Without such enlightened discourse among men, surely many species will suffer—most of all, in the end, *Homo sapiens* himself.

Gilbert M. Grosvenor

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In Search of Moses 2
Where and how did a humble servant of God lead the Israelites on one of history's most momentous journeys? Harvey Arden and Nathan Benn make a pilgrimage from the Nile to the Promised Land.

The Chambered Nautilus 38
Undersea photographer Douglas Faulkner captures in extraordinary color pictures the rare and mysterious Pacific mollusk whose mobile home is an architectural masterpiece.

Stockholm 43
James Cerruti finds that residents of Sweden's beautiful but expensive capital city enjoy complaining as they seek a special quality of life. Photographs by Albert Moldvay and Jonathan Blair.

Haiti: Beyond Mountains, More Mountains 70
Though overpopulation and poverty beset them, the people of that oldest West Indian republic remain remarkably lighthearted, report Carolyn Bennett Patterson and photographer Thomas Nebbia.

California's Parched Oasis 98
Distant Los Angeles controls the water of the mountain-walled Owens Valley, leaving it high, dry, and not so happy. Judith and Neil Morgan describe its plight; Jodi Cobb and Galen Rowell photograph it.

Life or Death for the Harp Seal 129
Survival of a species divides alarmed conservationists and hunters whose livelihood depends on harvest of these arctic creatures. Biologist David M. Lavigne reports their numbers seriously declining. Photographs by William R. Curtsinger.

COVER: *Snow-white pelt of a harp seal pup is both its glory and its lure to sealers.*

Was Moses found here? Ruins of Memphis in Egypt litter a Nile backwater where, local legend tells, the infant Moses was discovered amid bulrushes. The Bible says Pharaoh's daughter found him; Moslem tradition says Pharaoh's wife—one of many enigmas in the storied life of the prophet.

In Search of

By HARVEY ARDEN NATIONAL GEOGRAPHIC STAFF

Moses

Photographs by NATHAN BENN

I HAD IN MIND a sunlit riverbank with tall reeds swaying under a cloudless blue sky. Instead, I was being led into a musty basement of thousand-year-old Ben Ezra Synagogue in Cairo.

"This way to place where baby Moshe found in bulrushes," scratched the elderly caretaker's voice, which had the sleepy remoteness of an old Victrola record. Crooking a finger, he beckoned me beneath a rusting Star of David and down some footworn steps. "No bulrushes today, of course," he intoned. "River Nile change course since then."

He thrust a candle into a shadowed doorway. "Here Pharaoh's daughter find baby Moshe in ark," he said. I brushed aside a curtain of cobwebs and peered inside.

Nothing less impressive could be imagined. I saw only a sunken passageway flooded with a foot or so of fetid water.

"This is it?" I asked. The incredulity in my voice could not have escaped him.

"This the place," he affirmed. "Synagogue built right over spot a thousand year ago. Is true tradition, sir."

I nodded, less than convinced but not inclined to argue with another man's verities. At least not this man's. He and his wife, I was told, were among the last Jews in Cairo's former Jewish quarter; the others left, along with most of the rest of Egyptian Jewry, on a latter-day exodus from Egypt after the State of Israel was established in 1948.

I didn't mention to him that an Arab guide had assured me with equal certainty that Roda Island in the Nile nearby was "most definitely" the site where the infant Moses had been found. I had heard still another such claim for the ancient city of Memphis, a few miles upriver.

Such multiple-choice options confront at every turn those who would follow in Moses' footsteps. The Bible's account of Moses is, alas, as geographically perplexing as it is spiritually enlightening. Scores of geographic place-names in the Books of Exodus through Deuteronomy—wherein Moses' story is told—simply cannot be pinpointed on a modern map with any certainty.

But if I couldn't follow a definite line drawn on a map, as I had first planned, I could still pursue a kind of personal pilgrimage to the locales that Biblical scholarship, archeology,

"Moses...told Pharaoh, Thus saith the Lord God of Israel, Let my people go...."

FROM FAR ACROSS TIME, the mummified face of Pharaoh Ramesses II stares from a case in the Egyptian Museum in Cairo (**left**). Many scholars believe he was one of the pharaohs in the story of Moses—either the Pharaoh of the Oppression, who enslaved the Israelites, or the Pharaoh of the Exodus, who pursued them into the sea after the Ten Plagues compelled him to let them go. His reign: 1304-1237 B.C.

When Moses demanded the release of the Israelites from bondage, Pharaoh refused, and increased the Israelites' work load by forcing them to make bricks without supplying the straw they needed for binder. A modern Egyptian laborer (**right**) carries bricks much as the ancient Israelites must have done. Stone carving (**above**) depicts an earlier pharaoh, Akhenaten (1379-1362 B.C.), who founded a short-lived religion based on a single god, the Aten, or disk of the sun. Such belief in a single deity may have influenced Moses in developing his concept of monotheism.

and the living traditions of three major faiths have associated with the life of the great prophet and lawgiver.

A founding father of Judaism in particular and of monotheism in general, Moses abolished idol worship, banned magic and divination from religious worship, instituted observance of the Sabbath, authored—tradition holds—the Pentateuch, or Torah, and brought down from Mount Sinai the tablets whose Ten Commandments became the cornerstone of Western man's ethical life. A humble servant of God and an unsurpassed leader of men, he delivered the Israelites from Egypt and led them on history's greatest detour to the threshold of the Promised Land.

Called Moshe in Hebrew, Musa in Arabic, and Moses—by way of the Greek—in English, he casts a towering shadow across the millenniums to our own time.

Geography Dwarfed by Scope of Events

It was a shadow that I would follow from the River Nile to the arid wilderness of Sinai, and from the Mount of God—Mount Sinai—to a lonely hilltop overlooking the Promised Land. In the process I would travel through one of the most hotly disputed territories on

our planet, along Arab-Israeli borders as tense as drawn bowstrings.

Yet, considering the scale of events that have occurred there, the territory itself seems surprisingly small. The distance between the delta of the River Nile at Cairo and Mount Nebo in Jordan—the geographic beginning and end of the Moses epic (map, following pages)—is not very much greater than that between New York City and Washington, D. C. It's an exceedingly finite place for the infinite to have happened in.

Still hoping for a more satisfying beginning, I left the Ben Ezra Synagogue and hailed a cab for the 45-minute drive to the ruins of Memphis. Leaving Cairo's frenzied traffic behind, we slid into the timeless Egyptian countryside. The Pyramids of Giza floated by in an orange haze on our right. Moses, too, may have looked upon them. Now we rolled past row on row of mud-brick dwellings, hauntingly reminiscent of the Biblical episode in which Pharaoh stopped supplying his Israelite slaves with the straw needed to bind the Nile's mud into bricks.

At Memphis an Arab guide led me down an embankment to a backwater of the Nile. Tall reeds edged a pool of limpid green water. Frogs plopped rhythmically off the banks at our approach. From a nearby village came a baby's squall, suddenly drowned out by the squeals of three naked boys splashing wildly out of the reeds. My heart did a double beat.

I had found my beginning.

"Here baby Musa found in reeds," said the guide. "Pharaoh's wife adopt him."

"You mean Pharaoh's daughter," I said.

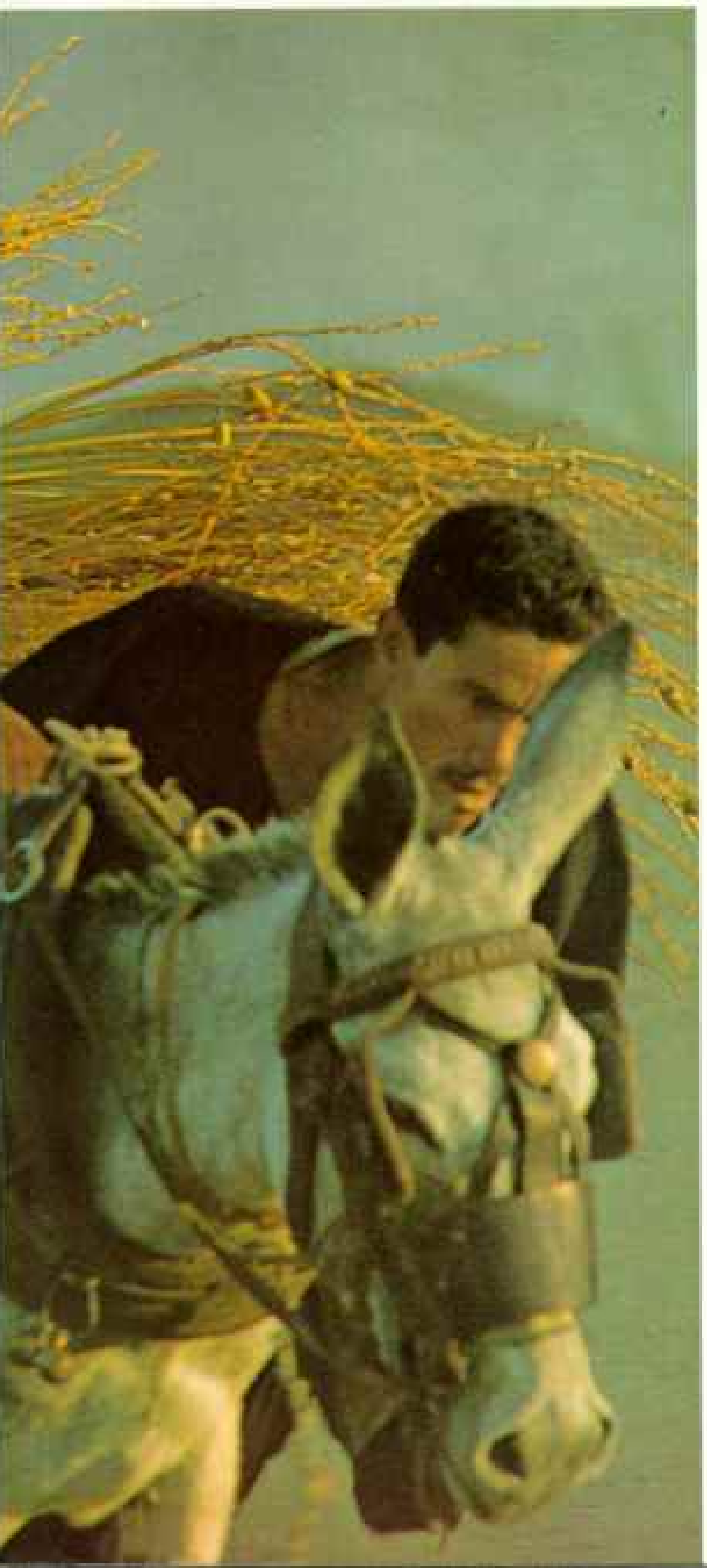
"Oh, no, his wife!" he insisted. "Holy Koran clearly say wife, not daughter. Tradition say her name Asiyah."

"And what was Pharaoh's name?" I asked, wondering if he could tell me what the Bible so maddeningly neglects to specify.

He shrugged. "Not say. But probably Ramesses the Great."

Nearby I looked on a large statue of this same Ramesses II. A fitting antagonist for a prophet he seemed, with his massive head, flaring nostrils, and powerfully muscled torso. Many scholars believe he was either the Pharaoh of the Oppression, who enslaved the Israelites, or the Pharaoh of the Exodus, who pursued them into the sea. His long reign of 67 years began in 1304 B.C. Thus, by most calculations, the Exodus took place some 32 centuries ago, at about the same time that the Greeks were sacking Troy.

Back in Cairo I gazed on Ramesses' very skin and bone—mummified—in the Egyptian Museum. The shrunken visage bears no



Echo of Exodus: An Egyptian family wends homeward from the fields at sunset. The fleeing Israelites, the Bible says, numbered some 600,000 men as well as their families and other retinue—perhaps 2½ million persons in all. Some scholars, however, think "600,000" should be translated as "600 families," or fewer than 15,000 total.

EARLY YEARS: Found in the reeds of the Nile, Moses was raised as a member of Pharaoh's court. Reaching manhood, he killed an Egyptian for beating an Israelite slave. Discovered, he fled to the desert land of Midian.

River Nile

River Nile

A SOUTHERN ROUTE of the Exodus propounded by some Biblical scholars takes the Israelites along the east coast of the Gulf of Suez past springs identified with the Biblical Marah and Elim, then southeast to 7,497-foot Jabal Musa, the traditional Mount Sinai.

EGYPT

THE TEN COMMANDMENTS, written on stone tablets, were given to Moses at the summit of Mount Sinai, holy ground to Christians, Jews, and Moslems.

Gulf of Suez

Marah?

Elim?

Wadi Gharandal

WILDERNESS OF SIN?

Rephidim?

Dophkah?

Mount Sinai?

Jabal Musa 7,497

Feiran Oasis

WILDERNESS OF SINAI

WILDERNESS

Red Sea

Hazeroth?

Gulf of Aqaba

Elat

Elath

Timna

MIDIAN

THE LAND OF MIDIAN probably flanked the Gulf of Aqaba. To this place Moses fled after killing the Egyptian overseer, and here he married Zipporah, daughter of the Midianite priest Jethro. One day, while Moses was shepherding Jethro's flocks, God spoke to him from the Burning Bush, commanding him to return to Egypt and lead the Israelites out of bondage.

ROUTE AROUND EDOM: When the King of Edom refused the Israelites passage through his land, they may have gone south to the Gulf of Aqaba, then skirted Edom on the east before heading north. Alternately, they may have traveled through the rift of the Arabah, then east along Brook Zered before turning north.

Battle *Elevations in feet*

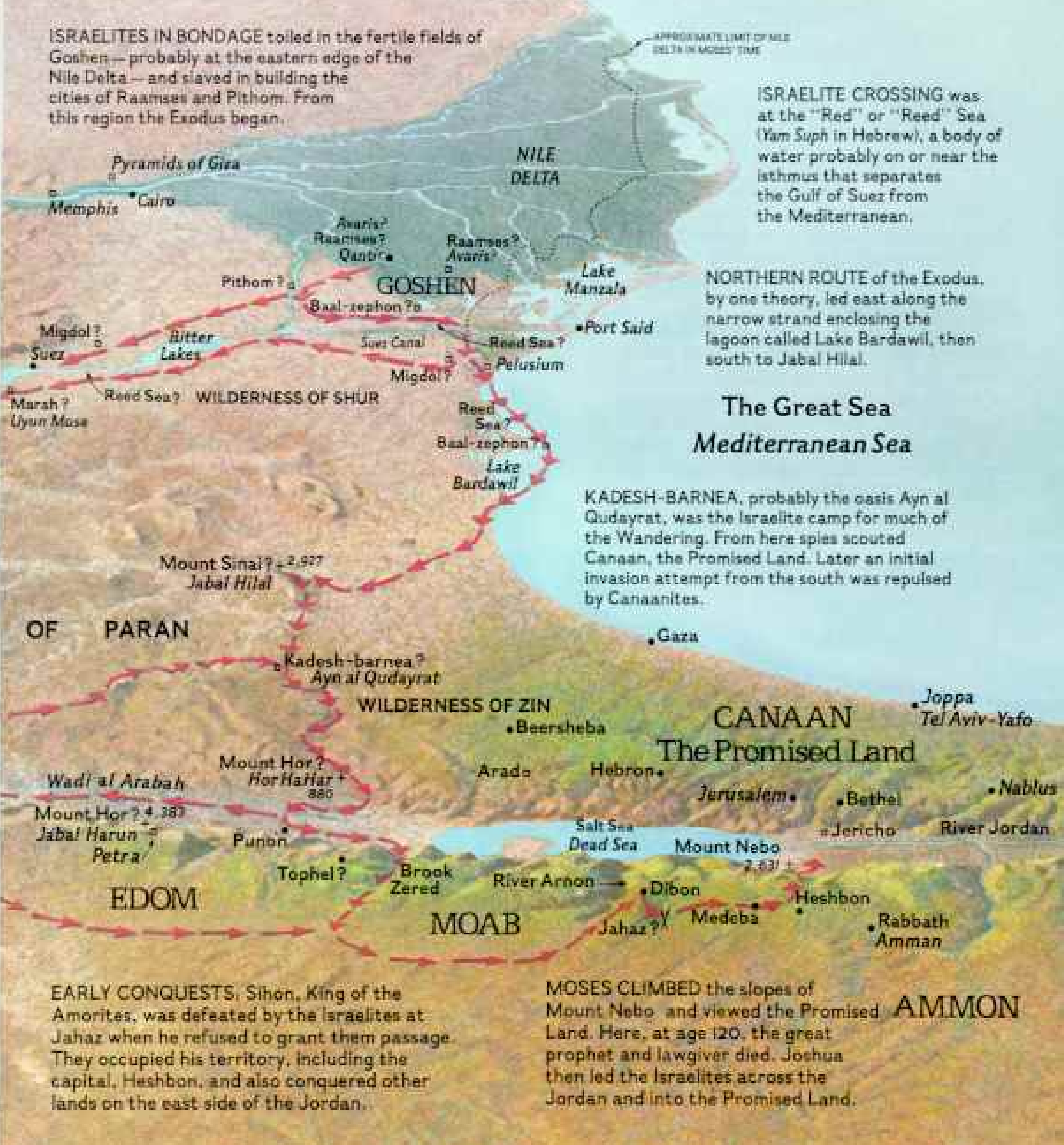
Names from the Books of Moses in Roman type Jericho

Other names in Italic type *Memphis*

N

PAINTING BY LLOYD K. TOWNSEND
RESEARCH BY DOROTHY A. NICHOLSON
NATIONAL GEOGRAPHIC ART DIVISION

Where Moses walked



Clouded by uncertainty, the actual route followed by the Israelites from bondage in Egypt to deliverance in the Promised Land has been the subject of endless scholarly debate—much of it intriguing, little of it provable. While most conjectured routes begin near the eastern edge of the Nile Delta and end just northeast of the Dead Sea in Jordan, the way between can only be guessed at, since few of the stopping places mentioned in the Bible can be located with certainty. Arrows on the map above indicate two possible routes through Sinai—one a generally southern route with Jabal Musa as Mount Sinai, the other a northern route with Jabal Hilal as Mount Sinai. Both routes converge at the oasis of Ayn al Qudayrat, commonly identified with the Biblical Kadesh-barnea. From Kadesh-barnea to Mount Nebo, atop which Moses died, new perplexities arise, for the Bible seems to indicate two separate routes by which the Israelites skirted the land of Edom, whose ruler had refused them passage. Some scholars postulate that different groups of Israelites took different routes—which might explain the seeming discrepancy.

"***And the Lord** went before them by day in a pillar of a cloud....*" Billowing smoke from a pottery factory near Cairo (**below**) recalls the beacon that guided the Israelites on their flight from Egypt and during their subsequent wanderings.

So hastily did the Israelites leave Egypt that they had no time to leaven their bread; hence, they took along unleavened bread, or matzo, which Jews use to celebrate the Exodus during their annual Passover festival. An Egyptian woman (**below right**) bakes a similar flatbread in her mud-brick home in the Nile Delta.

likeness to the awesome statue at Memphis. I was surprised to see, still clinging to the back of the mummy's skull, a shock of reddish-blond hair as silky as a baby's (page 4). One cadaverous hand rises slightly above his chest, index finger extended as if he is about to deliver some absolute edict.

One such edict had been to kill all male infants born of the Israelite slaves, *"lest they multiply, and ... join also unto our enemies, and fight against us...."*

Moses, the son of Amram and Jochebed of the Levi tribe, faced death under this edict. After hiding him for three months, his mother, Jochebed, put him in an ark of bulrushes and set it afloat in the reeds of the Nile, while his sister, Miriam, hid on the bank to observe his fate. Rescued by Pharaoh's daughter, the

infant Moses was raised at Pharaoh's court.

Thus the boy Moses probably had a princely upbringing—learning to read and write in the hieroglyphic system, to man a chariot of war, to worship the multiplicity of Egyptian gods.

A tale of his early youth at court is told in the Jewish Talmud, which expands on the Bible's account. One day, the story goes, 3-year-old Moses snatched the crown from Pharaoh's head and put it on his own. Aghast, Pharaoh devised a test to see if Moses was aware of his transgression. Two plates were set before the child, one filled with gold, the other with red-hot coals. If he chose the former, death would be his reward; if the latter, he would be spared as one without knowledge of his acts.

Moses took a coal from the second plate and put it in his mouth, searing his tongue. His life was spared, but henceforth he would be halting of speech—a handicap that might explain his later conduct at the Burning Bush, when, demurring at God's command to speak out before Pharaoh, he said, *"O my Lord, I am not eloquent ... I am slow of speech, and of a slow tongue."* Because of the disability, God appointed his brother, Aaron, as the spokesman.

Moses Perhaps Shared Pharaoh's Name

The names Ramesses and Moses may be linked linguistically. Ramesses means, roughly, "Ra [the sun-god] bore him." The root word *mes*, "to give birth," is also reflected in other pharaonic names, such as Ahmosis

and Thutmosis. The name Moses, many scholars contend, derives from this same word, although in the Bible it is ascribed to the Hebrew *mashah*, meaning "to draw out."

While growing up, Moses likely kept in contact with his Hebrew family, who were living in the Egyptian region of Goshen. Here, brought by Joseph, their ancestors had migrated in a time of famine, probably after 1700 B.C., when Semitic rulers known to history as the Hyksos established a dynasty with its capital at Avaris, in Lower Egypt. Joseph, it will be remembered, had become second in power only to Pharaoh himself, which makes sense if that particular pharaoh had been a fellow Semite. Then, about 1550 B.C., that dynasty was ousted by the non-Semitic ruler of Upper Egypt, and *"there arose up a new king over Egypt, which knew not Joseph."* Henceforth, Goshen would be a "house of bondage" for the Israelites.

Where in Egypt was this "land of Goshen"? The Bible, our sole source for the name, doesn't say. Most indications, however, point to the eastern edge of the Nile Delta. Thereabouts Israelite slaves built for Pharaoh the cities of Pithom and Raamses.

Goshen Still a Lush Region

In this moist, canal-laced land—as flat and green in places as the surface of a billiard table—the Israelites would have had ample pasture for their herds of cattle, sheep, goats, and donkeys. Today peasants of the delta still tend such animals, and also camels—domesticated on a large scale only after Moses' time. White sacred ibises perch one-legged in newly plowed fields, looking like ancient hieroglyphs imprinted on the rich, black earth. Nearby, a stern-browed foreman with a long switch in his nervous hand—like one of Pharaoh's taskmasters—stands over crews of children picking peppers; if they pause in their work, the switch flicks across their backs.

Creaking waterwheels endlessly lift buckets of water from the Nile, spreading the moisture through a capillary system of canals. Where the river's sustenance ends, the rust-red desert begins with cruel abruptness.

It was into this desert that Moses, by then a grown man, fled one day after killing an Egyptian overseer whom he had seen beating an Israelite slave. When his crime was discovered, he disappeared into that void of wind, sand, and rock shimmering in a blue haze to the east, toward Sinai and Arabia.

The Bible records with greatest brevity Moses' long stay in the desert land of Midian, which may have straddled the Gulf of Aqaba. There he married the shepherd girl Zipporah, becoming servitor to her father, the Midianite priest Jethro, or Reuel.

Scholars often debate Jethro's influence on Moses. Could he have imprinted on the younger man's mind the notion that there was but a single God, not many gods? Moses may already have gleaned such an idea from tales he had heard about his ancestor Abraham, as well as from stories about the Pharaoh Akhenaten, who less than a century earlier had established a brief-lived religion based on a single god, though that god had been the Aten, or sun disk, not an all-encompassing divinity (page 5).

Moses Quails at God's Command

It was while tending Jethro's flock one day that the shepherd Moses came to a great mountain, called both Sinai and Horeb, and saw a bush afire. From the flames issued a voice: *"Moses, Moses...,"* it called, *"I am the God of thy father, the God of Abraham, the God of Isaac, and the God of Jacob."*

So far as the Bible records, not since the time of those same Patriarchs, centuries earlier, had God thus directly confronted one of His Chosen People. Nor had any man ever been charged with a more awesome task: *"Come now...,"* the voice announces, *"I will send thee unto Pharaoh, that thou mayest bring forth my people the children of Israel out of Egypt."*

Asks the self-doubting shepherd, *"Who am I, that I should go unto Pharaoh...?"*

It was a question he might well ask, this fugitive member of Pharaoh's court. Who, indeed, was he—a desert nomad, a son of slaves, a tangle-tongued stammerer to boot—to challenge one of the world's most powerful monarchs? Who was he to persuade the Israelites, whom he had not seen for many years, to leave the land they had lived in for generations and follow him across a scorched wilderness toward a Promised Land that none of them had ever seen?

Yet God commanded and Moses obeyed. The mighty deed would be done.

And so, out of the desert, a prophet returned one day to the land of Goshen, joined by his brother, Aaron. To the Israelite elders Aaron spoke the words God had commanded,

reinforcing them with miraculous signs—turning a shepherd's rod into a serpent, making his hand a "leprous" white, transforming river water into blood. Then the brothers confronted Pharaoh:

"Thus saith the Lord God of Israel, Let my people go"—words that reverberate down the centuries. Time after time Pharaoh refused, and the Ten Plagues, one by one, were unleashed upon the land.

First the Nile's water turned to blood, a phenomenon some scholars explain as red mud swirling down the river from Ethiopia's highlands. Next: plagues of frogs, lice, flies, cattle disease, and boils—all conceivably related to conditions during unusually high annual floods and their aftermath.

Hail and fire, the seventh plague, may have been a hailstorm mixed with lightning, or possibly may have had something to do with fiery cinders from a volcanic eruption. One theory fixes on the huge explosion that rocked the Mediterranean island of Thera before 1450 B.C., but this is too early to jibe with most chronologies of Moses. Yet volcanic theories might explain the "pillar of a cloud"—dark by day, glowing by night—that guided the fleeing Israelites.

Locusts, the eighth plague, still swarm at times along the Nile. Three days of darkness, the ninth, may have been a sandstorm.

Such naturalistic interpretations, of course, do not preclude the miraculousness of the events—which can be seen as natural phenomena that God put to divine use.

With the tenth plague—the death of the firstborn of every Egyptian family—Pharaoh at last relented and let the Israelites go. This followed the phantasmagorical night of the first Passover, when God's destroying angel, en route to smiting the firstborn, "passed over" the Israelite homes, whose doorways had been marked with lamb's blood.

Vengeful Ruler Launches Pursuit

Toward the end of my own stay in Egypt, I watched a funeral procession snake its way through Cairo's streets, the deceased's white-draped coffin held high by pallbearers. The ululations of grieving women lacerated the air as the cries of Pharaoh's people must have done that terrible and wondrous night.

Hardly had the wailing faded when Pharaoh, regretting his release of the Israelites, pursued them with 600 chariots of war.

My hope had been to scout the Suez Canal area in search of likely sites for Moses' subsequent miracle of parting the waters. My request to do so, however, was rebuffed—politely but firmly—by Egyptian officials.

On reflection, I can understand their reluctance. The Egyptians in the Moses story, after all, don't fare too well, and modern Egyptians can hardly be expected to get overly enthusiastic about this ancient tale of Israelites smiting Egyptians.

"Feel free to travel around Cairo, even to Abu Simbel, if you like," I was told. "But you will need special military permits to visit the canal area, and we cannot promise you those permits, though, of course, we will try. . . ."

I remember picking unhappily at my dinner one night in a Cairo hotel. For days the city had been wildly celebrating the anniversary of what Egyptians call the "Glorious October Victory"—meaning the Arab-Israeli war of October 1973.

Depressed at my inability to visit at least one of the possible sites where the parting of the waters occurred, I brooded over an after-dinner cup of coffee that sat cooling along with my hopes of following Moses' footsteps. Leaving the hotel, I noticed a hand-scrawled sign in the lobby. A miraculous sign it seemed to me: "Visitors! See the Suez Canal! Visit the infamous Israeli Bar-Lev Line, destroyed by our victorious forces on October 6, 1973! Sign up here!"

Age-old Hatreds Undiminished

The next day, informed no permit was necessary for the bus tour, I sped along the bleak desert road from Cairo to the canalside city of Suez in the company of some enthusiastic Arab and East German tourists.

Upon reaching Suez, a city still agape with holes from the shellings of recent years, we crossed a pontoon bridge over the canal at one of the points where Egyptian troops had punctured Israel's vaunted Bar-Lev Line—and along with it the myth of Israeli invulnerability.

Our guide led us right on top of devastated Israeli bunkers. Stopping, he pointed to the rubble beneath our feet. "Down there Israelis," he said. He pressed his hands together and held them flat against one ear. "They sleep," he said, smiling. "They sleep forever."

Just to the south, the canal widens out into the Red Sea's turquoise-watered Gulf of Suez. Near here, by some traditional readings of the Book of Exodus, would be the site where

Pathway to deliverance: According to one theory of the Exodus, the spit of sand (**left**) separating Lake Bardawil from the Mediterranean may have been the "dry land in the midst of the sea" by which the Israelites fled. The walls of water that collapsed on Pharaoh's pursuing chariots are echoed by storm-lashed waves that even today crash across the slender strand.

Traditionally, Moses parted the "Red Sea," but the Hebrew phrase *Yam Suph* literally translates as "Reed Sea," which could apply to the lagoon called Bardawil, or any of several lakes in the Suez Isthmus region.

A warrior's last step: Along the northern coastal route of Sinai, a soldier's boot molders before the skeleton of an Egyptian ammunition train destroyed in the 1967 Arab-Israeli war. In Bible times this "way of the land of the Philistines" was well guarded by Egyptian troops, and Moses wisely avoided it—perhaps by detouring along Bardawil's little-used strand, or perhaps by turning south into Sinai's wilds.

Moses parted the waters of the Red Sea. In recent decades, however, scholars have pointed out that the Hebrew phrase *Yam Suph,* traditionally translated "Red Sea," should be rendered "Reed Sea." They fix its location somewhere to the north of the Red Sea proper, perhaps around the Bitter Lakes, or Lake Manzala, or even Lake Bardawil in northwest Sinai. The last ties in particularly well with a northern theory of the route of the Exodus that has the Israelites fleeing from Egypt along Sinai's Mediterranean coast. Most theories of a southern route have the multitude heading south directly after the miraculous crossing, and then along Sinai's Gulf of Suez coast.

My own plan was to check out Lake Bardawil to the north, then head south along the Gulf of Suez to the traditional Mount Sinai.

Enmity Dictates Lengthy Detour

To reach Lake Bardawil, I would have to travel a most circuitous route. Not able to cross Egyptian lines into Israeli-occupied territory, nor to fly directly from Egypt to Israel—such flights being nonexistent—I flew from Egypt to Rome and thence to Israel.

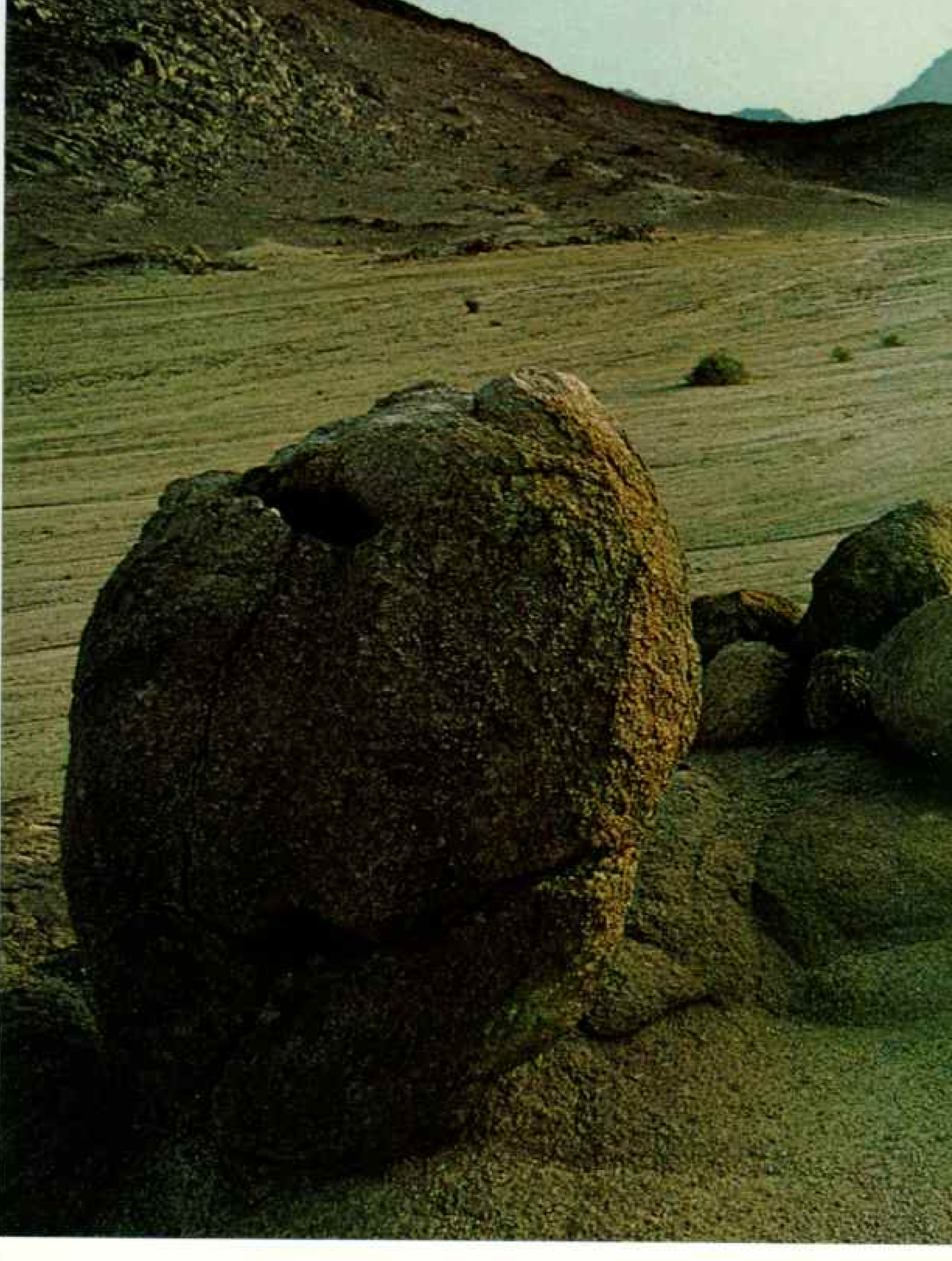
Several days later, having traveled nearly 3,000 miles to go 90, I was bouncing along in an open jeep on the northern coast road of Sinai to Lake Bardawil. My guide was a soft-talking, war-toughened Israeli named Amiram Uvrotsky, who runs Neot Hakikar Desert Safaris when not tending a farm or manning a machine gun on the front lines.

Lake Bardawil, actually a giant lagoon, is separated from the Mediterranean by a narrow spit of sand (facing page). Along this strand, one northern theory of the Exodus goes, Moses led his people on their flight from Pharaoh, whose pursuing chariots were closing fast behind them. Being stopped, perhaps by a watery gap in the sand spit, Moses stretched out his hand and a great wind arose that drove back the waters.

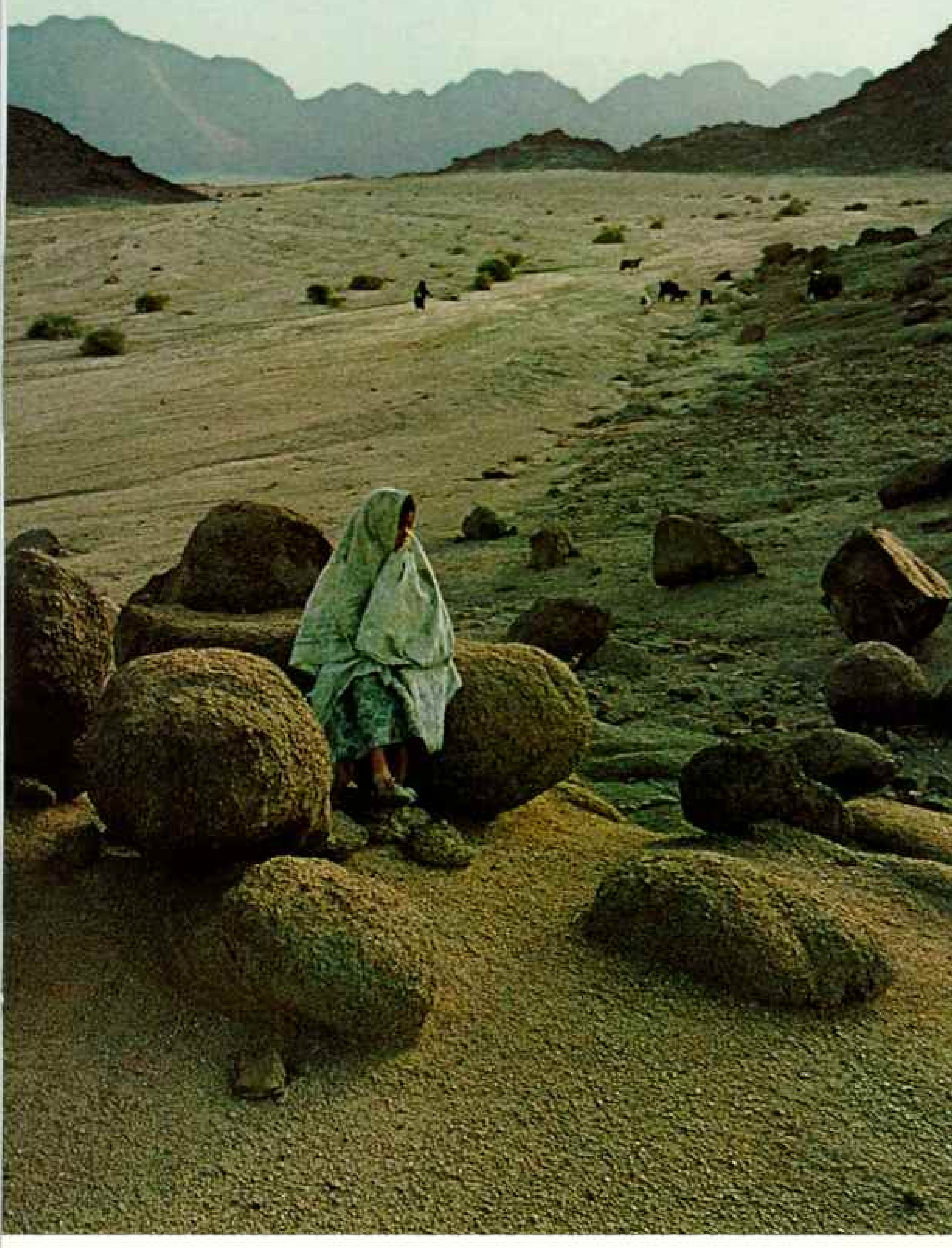
"And the children of Israel went into the midst of the sea upon the dry ground: and the waters were a wall unto them on their right hand, and on their left."

Leading the Israelites to safety on the far shore, Moses once more lifted his hand and the suspended waves swept down upon the pursuing chariots of Pharaoh.

Was Pharaoh among those killed? The Bible doesn't specifically say so, and Egyptian histories mention no such inglorious end for

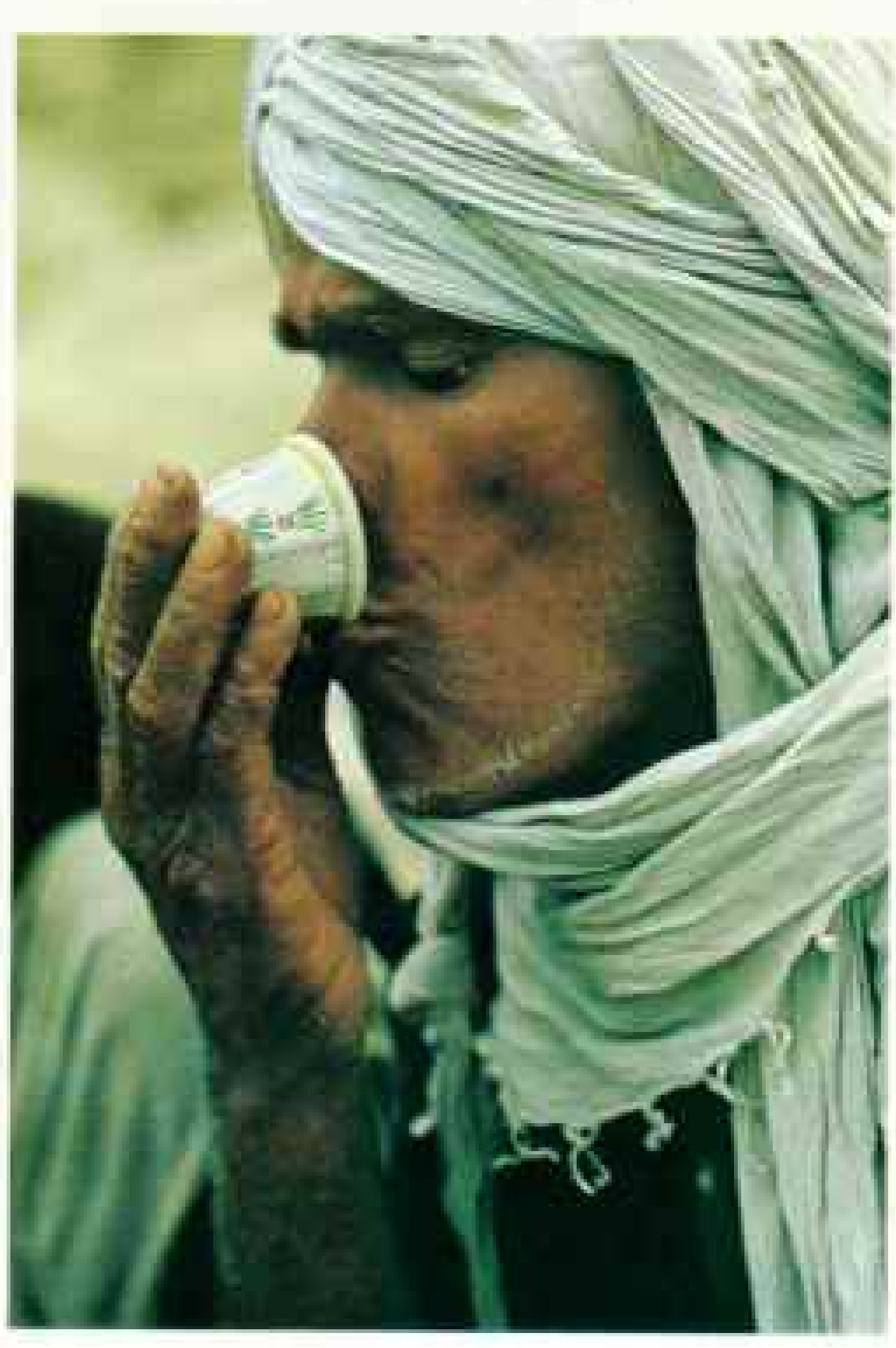


Ringside seat on eternity: A Bedouin girl merges with the rocks and silence of Sinai's wilderness, where Moses and the Israelites wandered. From rocks in



Sinai, local tradition relates, Moses brought forth water with raps of a rod, while God provided manna and quail to appease the Israelites' hunger.

People of the sand: The Bedouin of Sinai still reside at times in goathair tents like those that sheltered the ancient Israelites. Travelers coming upon one of these desert encampments are generally welcomed to a seat around the fire (**right**), there to sip a mini-cup of thick black coffee (**below**) and share the latest news and gossip. This immemorial desert hospitality finds frequent expression in such Mosaic precepts as *"...the stranger that dwelleth with you shall be unto you as one born among you, and thou shalt love him as thyself; for ye were strangers in the land of Egypt...."*



Ramesses II or any other pharaoh of that era. However, neither do they mention anyone named Moses as a member of court, or the catastrophic death of Egypt's firstborn, or a mass escape of Israelite slaves from Egypt. But then, rare the people—ancient or modern—who take the trouble to record for posterity their own failures.

Storm-churned seas, I was told, still at times inundate Bardawil's slender strand. An Arab fisherman took me out on the shallow lagoon in a putt-putting old trawler. "Look down there," he said, pointing into the murky water. I looked down, half expecting to see one of Pharaoh's war chariots sunk on the bottom, its wheels still spinning. I almost gasped to see the ghostly form of a submerged airplane. "Russian-built Egyptian bomber," the fisherman said with a shrug. "Shot down by the Israelis."

Back on shore, he showed me some flat flounderlike fish caught that morning by local fishermen. He slapped two of the fish together in sandwich fashion. Since each looked rather like half a fish, both of its eyes being on one side, the two together looked surprisingly like a single fish. "Called *samak Musa,* Musa fish!" he announced. "When Musa split the

waters, these fish get cut in two. Now that way forever!"

Nomads Taught Moses Desert Lore

Along these dune-rippled shores you occasionally see the encampments—hardly more substantial than mirages—of the Bedouin. Of all peoples, these semi-nomads perhaps most resemble the Israelites of the Exodus in their mode of life and physical surroundings. Moses lived among such people during his long stay with the Midianites, gleaning from them the desert wisdom that he would put to lifesaving use during the trials and sufferings his people encountered in their wanderings.

Near Bardawil I attended a small gathering of local Bedouin. Sitting around a fire in an open stockade of weather-blackened palm fronds, I was offered copious quantities of viscous black coffee and Egyptian cigarettes by a sheikh named Saadi. Though we shared no common tongue, he and I soon became fast nonverbal friends.

Feeling a bit lonely after a time on my side of the language gap, I drew out a small harmonica and blew a few tentative notes. Instantly Saadi swiveled and fixed his gaze on the harmonica, which I dropped into his

upturned palm. He then blew into it furiously, eliciting a truly terrible bleat. The harmonica seemed in actual pain. A camel groaned as if in answer. Saadi beamed with delight, and I gestured for him to keep the harmonica, which he did, popping it into his desert robe.

Later, as our jeep was about to pull away, he came hurrying up to me. It occurred to me —mean thought—that he might want to return the harmonica or else recompense me with some possession of his own, as Bedouin are noted for doing. To my amazement, however, he simply threw his arms around my neck and kissed me full on the mouth.

"Looks like you've made a friend," grinned my guide, Amiram, as we drove away. Behind us the raucous wail of a harmonica floated on the darkening desert air.

Author Smitten by "Bitter" Water

From Lake Bardawil we headed south along an Israeli military road paralleling the Suez Canal. Sandy dunes gradually shifted to stony desert backed by stark red cliffs, ice-blue mountains, and purple peaks as sharp and angular as witches' hats.

South of Suez we came to an oasis near Uyun Musa, often identified as one of the way-stops of the Israelites on their journey to Mount Sinai. Was this where the newly freed slaves "murmured" in complaint to Moses? Coming to a place called Marah, they found the water "bitter." Moses, flinging an unidentified species of tree into the water, made it potable.

Seeing a small well with an oil-can draw bucket, photographer Nathan Benn and I each took an experimental sip to see if the water tasted bitter. It did not, though it had a vaguely tinny aftertaste. That night and for days afterward, however, that fluid rebellion of the innards called dysentery taught us a new meaning of "bitter."

Farther on may have occurred the miracles of the manna and the quail. To stop the Israelites' complaints, God provided a substance described as *"a small round thing, as small as the hoar frost on the ground."* One theory equates this manna with a white, sweetish exudation caused by scale insects found on tamarisk trees. Bedouin make a condiment called *mann* from this substance, said to taste not unlike the Biblical description of manna—*"like wafers made with honey."* Hardly any mann has been seen in Sinai during the recent drought, however, and even in a good year nowhere near enough could be gathered to feed a multitude the size of the Israelite host.

According to the Bible, the Israelites numbered some 600,000 adult males and their families, plus the priestly tribe of Levites and miscellaneous hangers-on. This has been estimated to be two and a half million persons or so—vastly more than the Sinai supports today.

Some scholars believe that the 600,000 figure was actually a census taken of Israel centuries later, in the time of King David or King Solomon, and inserted into the much older narrative of the Wandering. It may also be, as some authorities postulate, that the Hebrew word *eleph,* which translates as "thousand," may instead have been meant to mean "family." If this is so, the Israelite host numbered only 600 families plus their retainers—fewer than 15,000 people in all, a much more reasonable number.

Evidence Backs Different Routes

The possible connection between manna and the tamarisk tree fits in nicely with theories of a southern route of the Exodus, since the tamarisk grows abundantly in southern—but not in northern—Sinai.

On the other hand, quail—the second of God's miraculous bequests of food to the hungry Israelites—commonly occur in large numbers in Sinai only along the northern coast. There, great swarms of birds migrating from Europe drop in exhaustion on the Mediterranean's southern shore. Bedouin have traditionally caught the helpless creatures in nets—a practice now illegal in many places. Since the quail don't normally alight in such numbers in southern Sinai, this tends to support theories of a northern route.

Such seeming discrepancies have suggested to some scholars that there was not one but two or more exoduses of Israelites from Egypt, perhaps spanning a century or more.

Mother of the desert, a Bedouin nurses her child in the wilds of Sinai. When Moses as a young man fled into the desert after killing an Egyptian taskmaster, he came upon just such a beauty: Zipporah, daughter of the Midianite priest Jethro. After defending her against bullying shepherds, he took her to wife, and she bore him two sons: Gershom and Eliezer.

Our Biblical narrative, by such theories, simply compresses into one these separate migrations, which may have involved, say, an exodus of the Hebrew tribe of Judah under a man named Moses and another exodus of the Joseph tribes under a leader named Joshua.

Battle Hinged on Prophet's Raised Arm

At Rephidim, as they approached Mount Sinai, the Israelites were attacked by a desert people called the Amalekites. Moses stood on a height and stretched out his arm. So long as he held it up, the Israelites prevailed. When his arm grew tired and fell, the Amalekites advanced. To assure victory, Aaron and Hur had to prop up Moses' arm.

Early one morning I stole off to a lonely mountainside and, stretching out my hand, stood there in august Mosaic posture, the imaginary legions advancing and receding before me. After three minutes of holding my arm up, my upper shoulder began aching sharply. Four minutes, and the pain extended from shoulder to elbow. Five minutes, and the discomfort became excruciating. Six minutes, and my arm dropped.

I heard a squeal of laughter behind me and turned to see a Bedouin boy and girl pointing at me and giggling. At my surprised glance, they gamboled away, followed by a herd of black-and-white goats. I was left alone with a sore shoulder and a red face.

Near the granite apex of the Sinai peninsula rises a 7,497-foot pink-and-purple crag that Arabs call Jabal Musa, the Mount of Moses. Ancient tradition has given it another name—Mount Sinai.

Monks Maintain Holy Place

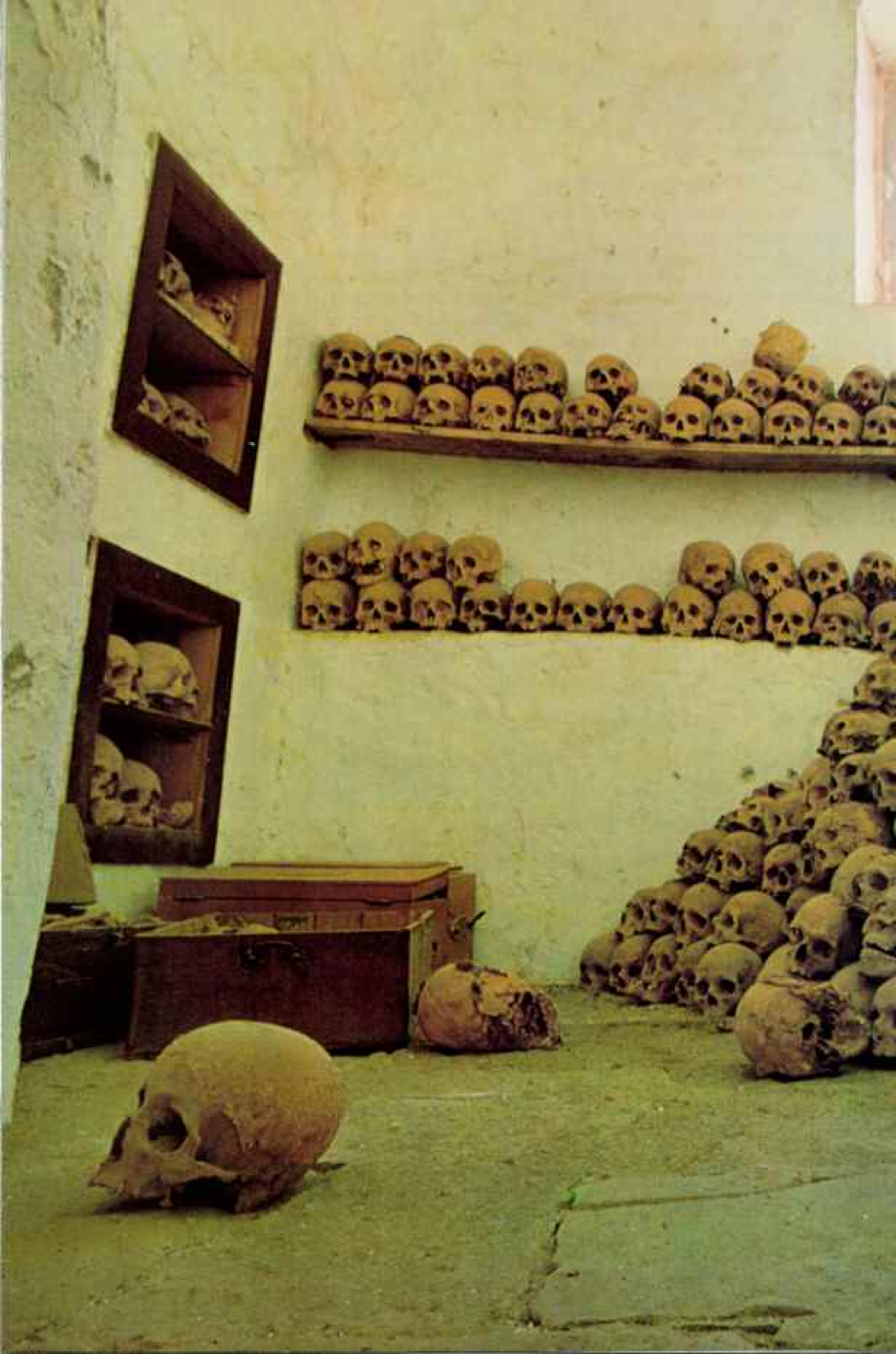
It is a gaunt, wind-tortured peak shouldered roughly about by a massed army of other peaks all similarly wild in aspect. From remote times this soaring mountain has been venerated as a spiritual pole of the universe, a height where man and God have met, talked, and come to terms with each other.

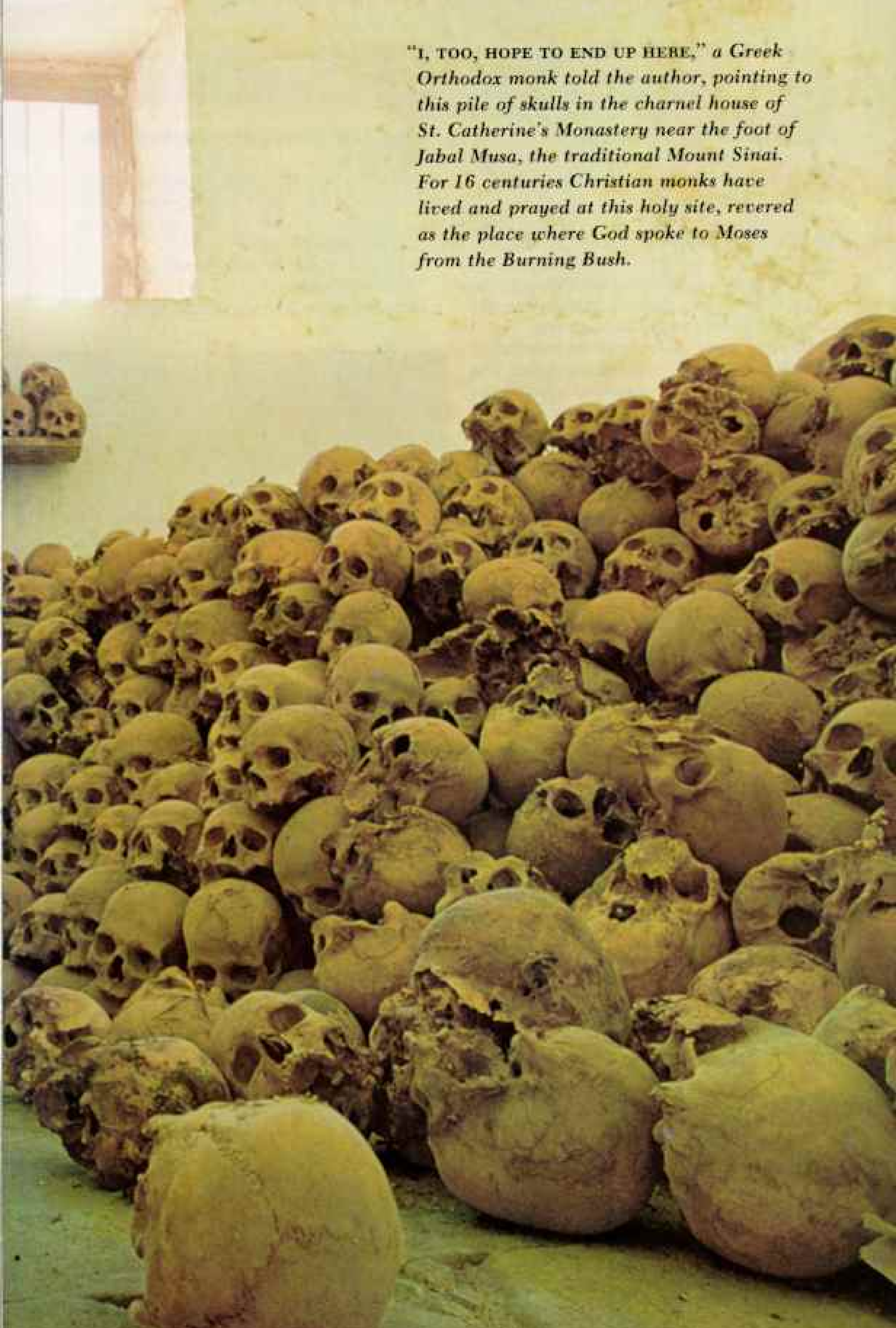
No one knows when Jabal Musa was first identified as the peak of the lawgiving. But we do know that by about A.D. 400 Christian monks were taking refuge from temptation in the mountain's caves. To them, Jabal Musa was unmistakably *the* Mount Sinai—a belief emphatically shared by Greek Orthodox monks, who for centuries have maintained the Monastery of St. Catherine near the foot of the holy mountain, purportedly on the site where God called out to Moses from the Burning Bush.

"But, of course, this *is* Mount Sinai!" insisted one of the monks when I mentioned that a number of other mountains in Sinai and Arabia had also been so dubbed. "If you spent some time up on the mountain, as I have, you would *know!*"

Marking the way, stone cairns erected by the Bedouin (**above**) flank established routes through Sinai's trackless wilds. Without them the inexpert traveler might soon be hopelessly lost amid the stone and sand. For many years Moses dwelt with the Bedouin-like Midianites, who taught him the desert wisdom he would later put to use in leading a rabble of former slaves through Sinai's awesome wilderness.

Soothing strains of a Bedouin's simple lyre waft on the desert air. Among similar Israelite instruments of Biblical times was the *kinnor,* whose liquid tones could break the impact of Sinai's overwhelming silences. After Moses' time, King David raised the lyre player's art to new heights of expressiveness, composing psalms whose words often recall the wondrous events of the Exodus.





"I, TOO, HOPE TO END UP HERE," *a Greek Orthodox monk told the author, pointing to this pile of skulls in the charnel house of St. Catherine's Monastery near the foot of Jabal Musa, the traditional Mount Sinai. For 16 centuries Christian monks have lived and prayed at this holy site, revered as the place where God spoke to Moses from the Burning Bush.*

And so it came about that I spent a wind-buffeted, soul-tossed night atop the Mount of God with Brother Jerry Kambites, a burly, black-bearded Canadian serving a six-month stint as a novice at the monastery.

On the climb up, Brother Jerry described his 20 days and nights alone on the mountain. Moses, it will be remembered, spent 40.

"It's the silence that gets to you most," Brother Jerry said, "the silence outside compared to all the noise inside yourself.

"After a time, if you pray hard enough, the inner noises quiet down a little. Then the outer silence flows right through you.

"When I came down from the mountain," he continued, "the hardest thing at first was to speak again. My voice seemed to boom like a circus drum. Other people's voices echoed and grated inside my head. When Moses smashed the tablets of the Ten Commandments to the ground, it may have been not only because the Israelites were worshiping a golden calf but also because of the awful racket they were making. That alone would have been intolerable!"

Mountaintop Covenant Molds the Future

We reached the summit just as dusk wrapped the mountain in deep-blue darkness. Taking a huge iron key from his black robe, Brother Jerry opened the creaking door of the little chapel of Moses that shares the topmost crag with a small white mosque. He began lighting candles until the chapel's interior glowed. Next he lit a hand-held censer and began swinging it so that a sweetly acrid blue smoke wafted on the air. Then, in a surprisingly beautiful tenor, he began chanting the Greek Orthodox vespers—a service attended only by him, myself, and the wind.

That night, while we slept, a cold front moved in. By the time I blinked my eyes open at dawn, a transformation had taken place under the mantle of darkness. After weeks of cloudless desert sky, great clouds thick as cotton candy filled every valley, every depth. We stood above them, overpowered. The granite mountaintops around us rose out of the billowing cloud sea like an unearthly archipelago. We seemed afloat, completely detached from any world below (following pages).

"You see?" Brother Jerry breathed. "This *is* the mountain."

"And it came to pass . . . that there were thunders and lightnings. . . . And mount Sinai was altogether on a smoke, because the Lord descended upon it in fire. . . .

"And God spake all these words, saying,

"I am the Lord thy God . . ."

Thus begin the Ten Commandments.

Like Moses, a servant of God: A Greek Orthodox clergyman breakfasts on grapefruit grown outside his monastery just west of Feiran Oasis, one of many Sinai oases said to have sprung from a rock that Moses smote with his rod to bring forth water.

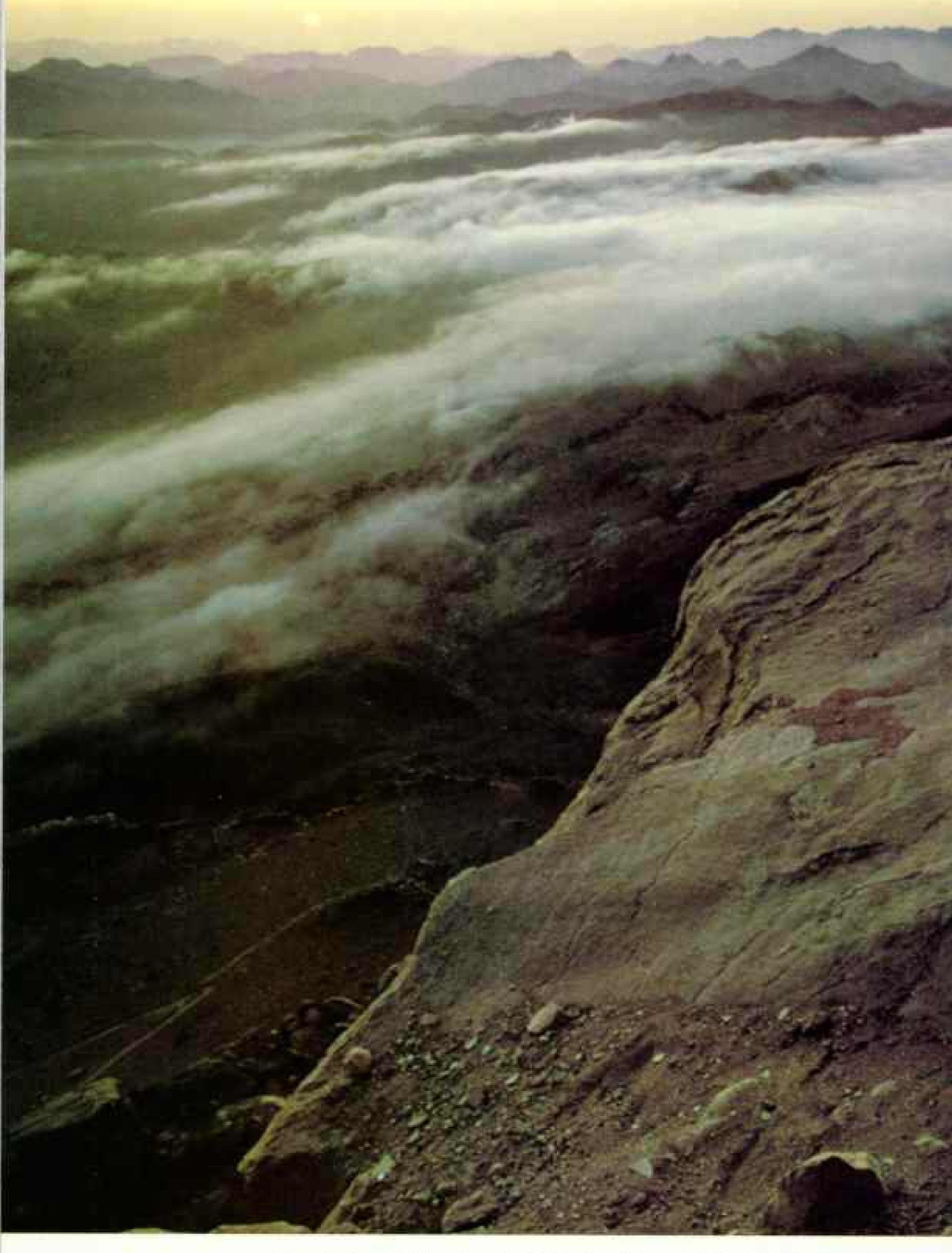
"Thou shalt have no other gods before me.
"Thou shalt not make unto thee any graven image. . . .
"Thou shalt not take the name of the Lord thy God in vain. . . .
"Remember the sabbath day, to keep it holy. . . .
"Honour thy father and thy mother. . . .
"Thou shalt not kill.
"Thou shalt not commit adultery.
"Thou shalt not steal.
"Thou shalt not bear false witness. . . .
"Thou shalt not covet. . . ."

"Written with the finger of God" on two stone tablets, these transcendent words were to become the foundation of Western ethics.

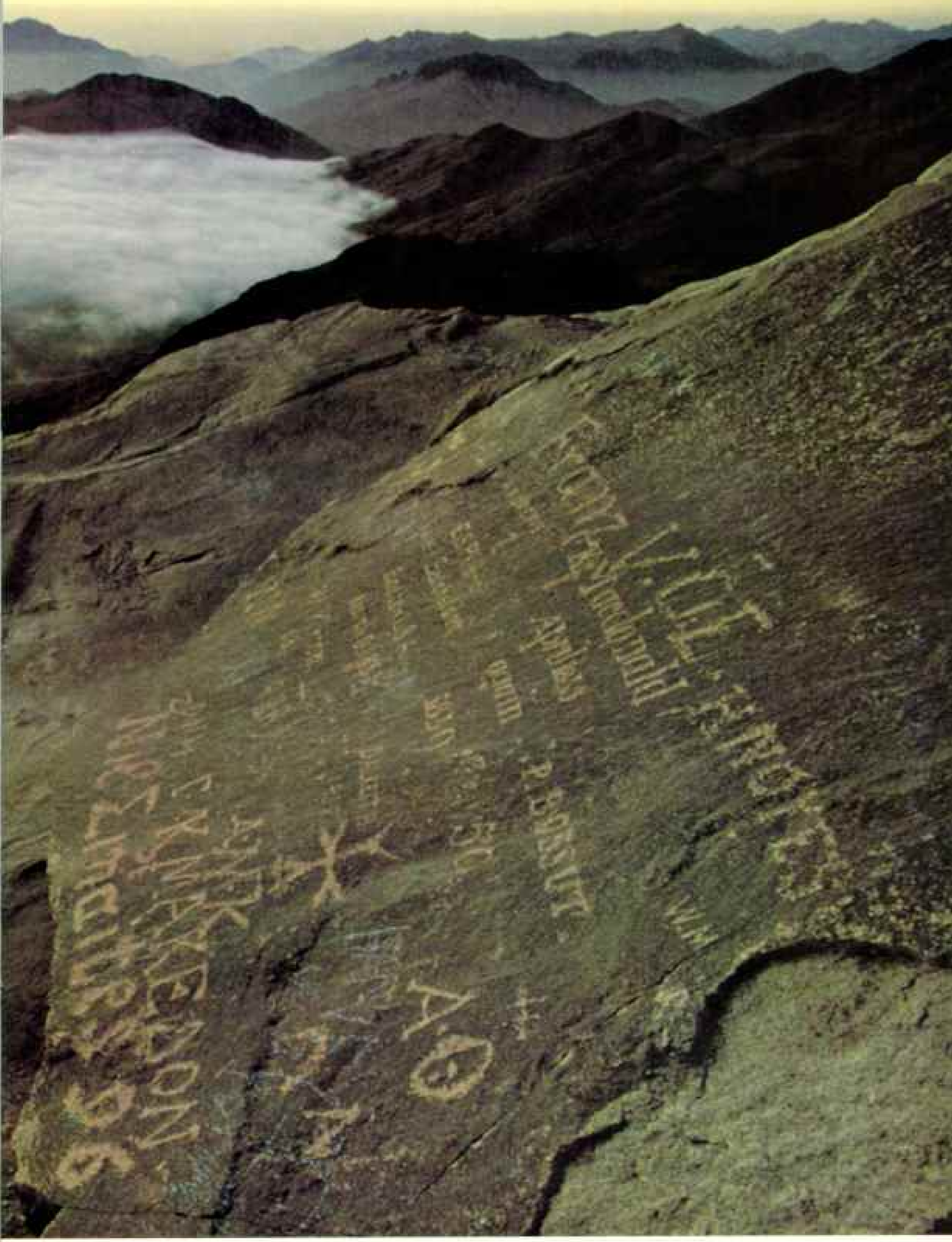
According to an old Jewish tradition, the souls of all Jews, even those as yet unborn, were present at Mount Sinai when God sealed His special covenant with His Chosen People.

I remember, before starting my travels in search of Moses, speaking to a gray-bearded Hasidic rabbi in Brooklyn. Hearing that I was going to Sinai, tears welled in his old eyes. "So," he sighed, "you're going back!"

Recalling his words while standing there



Inscriptions in the clouds, pilgrims' markings etch the 7,500-foot summit of Jabal Musa. From this same granite may have been hewn the tablets of the



Ten Commandments, which Moses smashed in a rage at finding the Israelites worshiping a golden calf. Moses later brought down a second set of tablets.

Recalling the brass serpent that Moses raised high overhead to save the lives of Israelites bitten by snakes, this five-inch gilt-headed copper snake from a Midianite temple at Timna, Israel, dates from Moses' time.

atop the Mount of God, I thought to myself, "Yes . . . yes, I've come back."

Moses, on bringing the stone tablets down, found the Israelites worshiping a golden calf. Remembering how, atop the mountain, he had successfully pleaded with an already angry God not to destroy this "stiffnecked people," Moses became enraged and shattered the tablets. But at God's command, the prophet later hewed two more tablets and returned to the peak. Once more the words were inscribed, renewing the covenant.

When Moses descended with the second set of tablets, the Bible tells us, *"the skin of his face shone."* For many centuries the Hebrew word meaning "shone" *(qaran)* was translated as "horned" *(qeren)*, which gave rise to the tradition, generally obsolete, that Moses had horns sprouting from his head, instead of rays of light. The famous horned statue, "Moses," by Michelangelo in Rome is probably the best-known manifestation of this old interpretation.

Streamlets Green the Desert Sands

Leaving Mount Sinai, I traveled east and north through the rocky wilderness. I spent a lazy afternoon walking around the oasis of Ayn al Qudayrat, often identified with the Kadesh-barnea where Moses and his Israelite multitude camped for most of the Wandering. Here the Twelve Tribes pitched their tents around the sacred Tabernacle, spiritual prototype for the Temple that was later built in Jerusalem.

You come upon such an oasis not abruptly, as in the movies, but by slow and almost imperceptible stages. Subtly, as if trying not to surprise you, a rivulet flows out of a rock somewhere and begins trickling along the desert floor. It's an insignificant-looking streamlet that seems hardly big enough to fill a coffeepot. You'd think the sand would quickly drain it away. But not so—the tiny river holds its ground, somehow growing until it brims over its banks, creating little swampy areas. Along its fringes sprout tall grasses, curlicue ferns, flowering thornbushes, even—almost miraculously—a grove of towering date palms. A red dragonfly poises on the trembling tip of a twig, peering at you with bulbous eyes. And over there, four camels munch the yellow tips of tall green reeds.

Now you hear a *thwack! thwack!* and a Bedouin woman materializes on the other bank, leading a donkey. She screams at the

beast for no apparent reason, hitting it smartly time and again with a long switch. Her black veil sags to one side and you get a glimpse of a worn, lined face—a face that perhaps has not had much to smile at over the years. She sees you looking and pulls the veil taut, frowning as though she wouldn't mind transferring a whack or two from the donkey's backside to your own. Then she huffs off and disappears behind some olive trees, thwacking as she goes.

Beneath those same trees we had lunch, including a reddish loaf of something that Amiram handed me with a twinkle in his eye. "It's the Israeli soldier's staff of life in the field," he said. "Go on. Try it."

"I know, I know, I'll *like* it," I said.

Intently eyed by two Israelis, two Arabs, and a stray camel, I took a cautious bite.

"Well," asked Amiram, "how is it?"

"I can't taste much of anything at all," I confessed.

"You see!" he cried. "At least it doesn't taste bad! Now you know Israel's biggest military secret—pressed soybean loaf!"

I recalled how the Israelites of old had murmured about the taste of the manna God had provided. *"Our soul loatheth this light bread,"* they had cried. I wondered how they might have fared on a diet of soybean loaf, the manna of modern Israel.

All—Almost—Belongs to Allah

Through an interpreter, I spoke with a Bedouin man tending nearby olive trees.

"Do you own this land?" I asked him.

He shook his head. "The land belongs to Allah," he said.

"What about the trees?" I asked. He had just harvested a basket of green olives, and I assumed that at least the trees were his.

"The trees, too, are Allah's," he replied.

I marveled at this man who seemed unencumbered by material considerations . . . or so I was thinking when, as if in afterthought, he said, "Of course, I own the *olives!*"

From Kadesh-barnea, Moses sent out twelve spies, including Caleb and Joshua, to reconnoiter the Promised Land. Reaching the valley of Eshcol, near Hebron, the spies found a land flowing "with milk and honey." At Eshcol they cut down a single cluster of grapes so large that it required two men to carry it between them on a staff.

The spies, however—all except Caleb and Joshua—shrank in fear before the powerful inhabitants of this fertile land. They gave an "evil report" to Moses of what they had seen, saying Canaan was *"a land that eateth up the inhabitants thereof,"* a place filled with giants so awesome that *"we were in our own sight as grasshoppers."*

Once again the Israelites, terrified, murmured against Moses, threatening rebellion. God then condemned those 20 years and older—excepting only the unwavering Joshua and Caleb—to wander *"until your carcases be wasted in the wilderness."* Only the younger generation, whose moral fiber was uncorroded by slavery, would be allowed to enter the Promised Land.

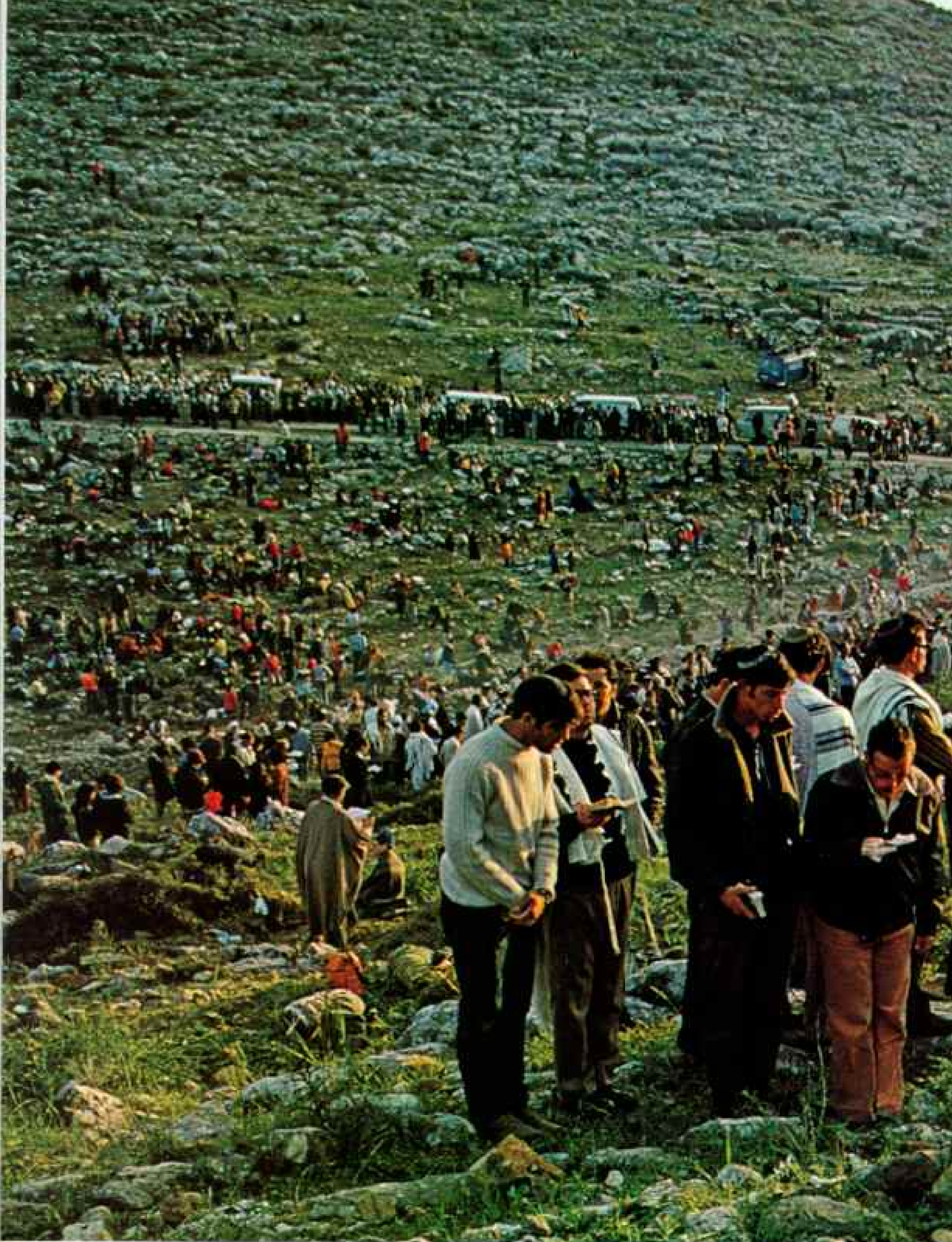
Land of Canaan Denied to Moses

Somewhere near Kadesh-barnea occurred the pivotal incident in which God told Moses to speak to a rock and bring forth water for the Israelites. Moses, however, struck the rock twice with his rod rather than merely speaking to it. God apparently considered this a breach of faith and condemned Moses never to enter the Promised Land himself.

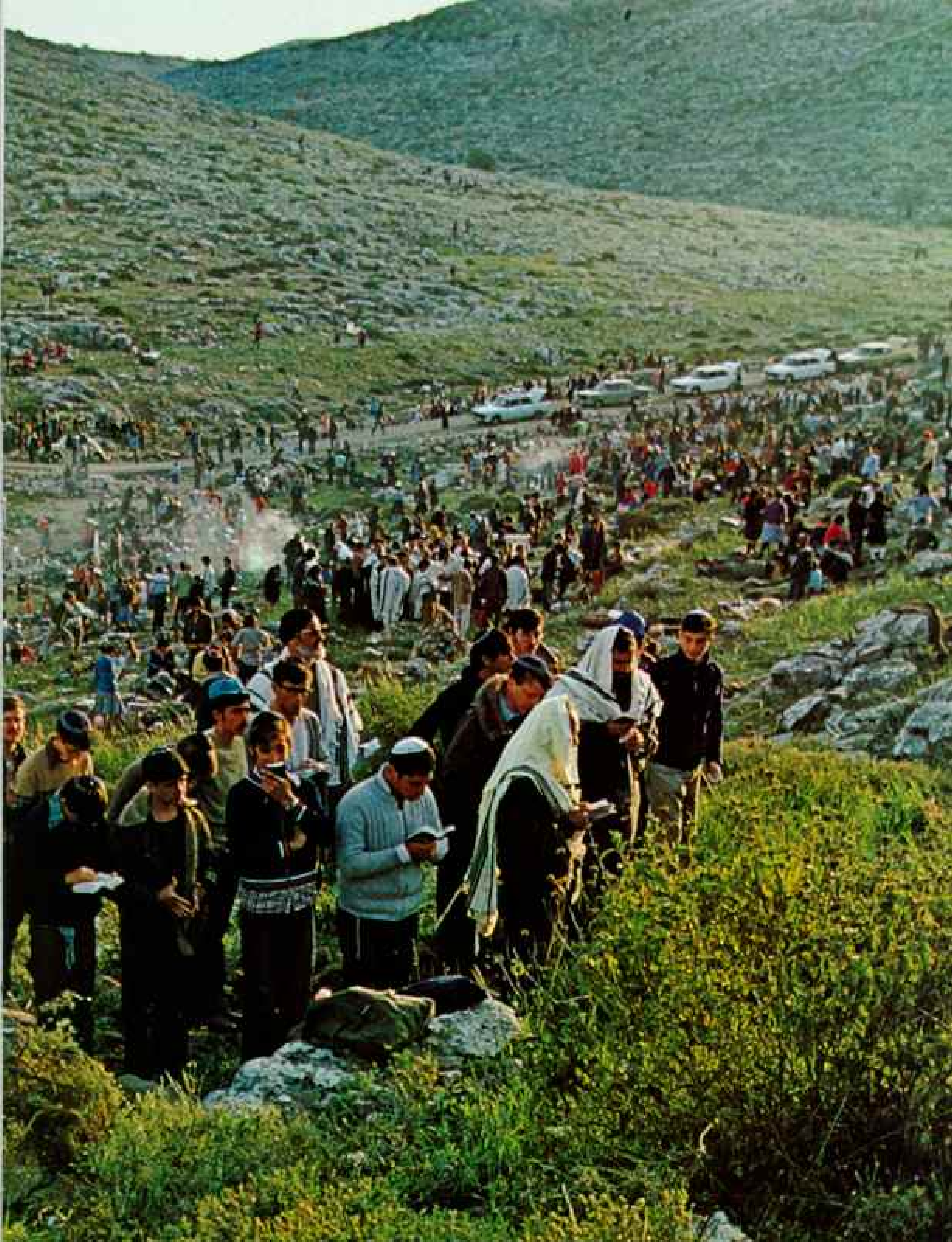
I saw many such "rocks of the striking." Almost anywhere a spring burbles from a rock in the Middle East, the local tradition ascribes the phenomenon to Moses. Tales have been told of travelers who tap a rock in Sinai and stand back amazed to see water gushing forth. This, while highly unlikely, is at least a scientific possibility, since pockets of water do form in Sinai's porous limestone at times.

Modern Israeli geologists have gone Moses one better in this regard, having discovered vast reserves of "fossil water" deep beneath Sinai's burning sands—as much water, it's estimated, as the Jordan River carries in a century or more. Having percolated down into subterranean crevices over millions of years, this water—if political problems ever evaporate—may someday be recovered to form a series of new oases in the parched Sinai, a latter-day miracle that Moses himself would have marveled at.

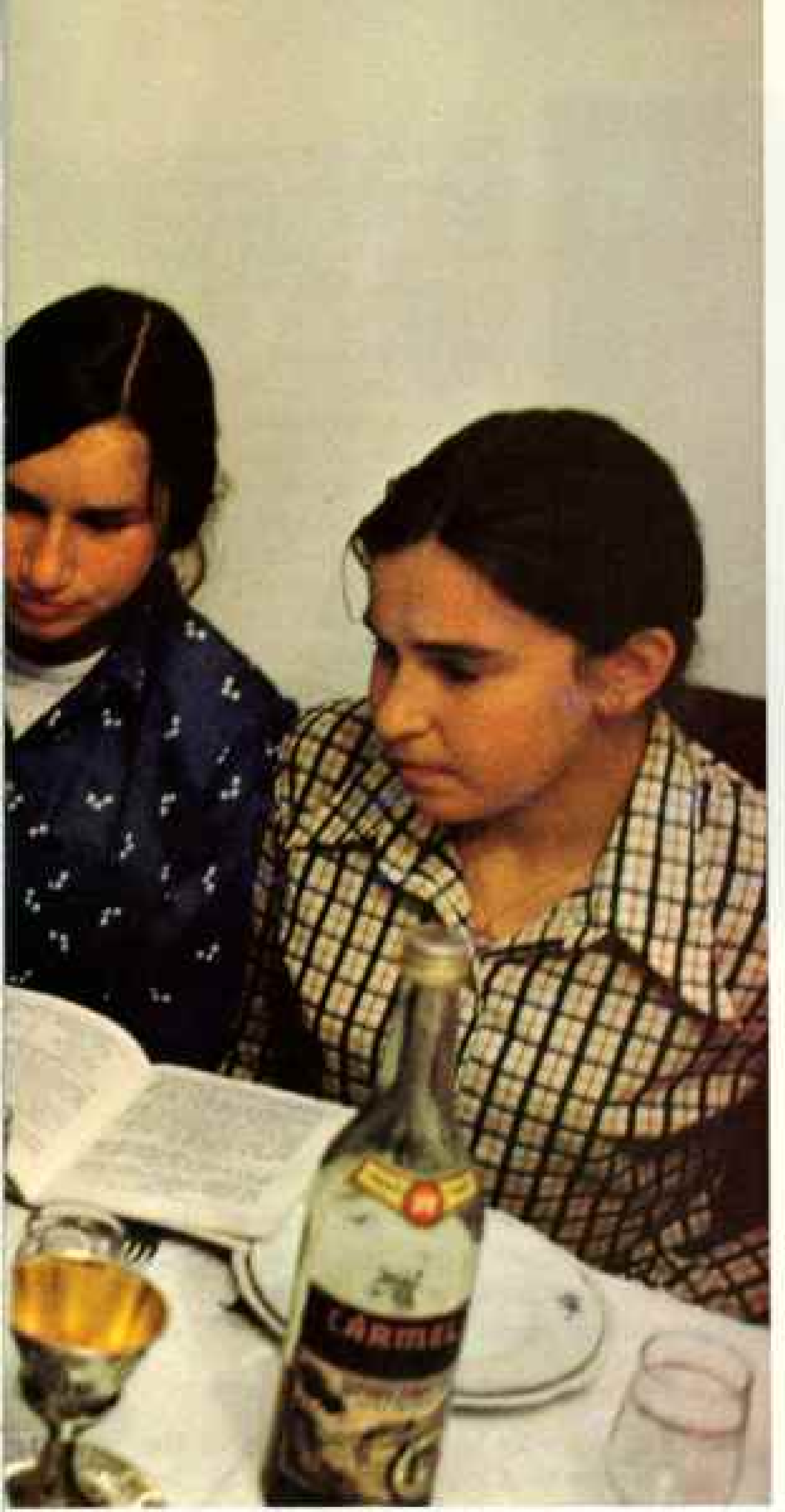
After the Israelites failed in an attempt to enter Canaan from the south, being stopped near Beersheba by a Canaanite army, Moses proceeded toward the Promised Land from the east. When the powerful Edomites refused him passage through their land, he circled around Edom, conquered Sihon the Amorite, and camped northeast of the Dead Sea in the land of Moab. *(Continued on page 35)*



The Promised Land, yes . . . but for whom? On the Israeli-occupied West Bank of Jordan, zealously nationalistic Israelis pause for prayers during a demonstration near Nablus. They oppose Israel's policy restricting settlement in the region, which lies within the



boundaries of the Biblical Promised Land. Nominally still a part of Jordan, but administered since 1967 by Israel, the West Bank has been sought as a homeland by Palestinian refugees —many of whom view this same contested territory as part of a promised land of their own.



To intersect their conjectured route, I had to make quite a roundabout journey of my own, traveling from Elat to Jerusalem, and thence to Jericho and the Allenby checkpoint—the only legal crossing point between Israel and Jordan.

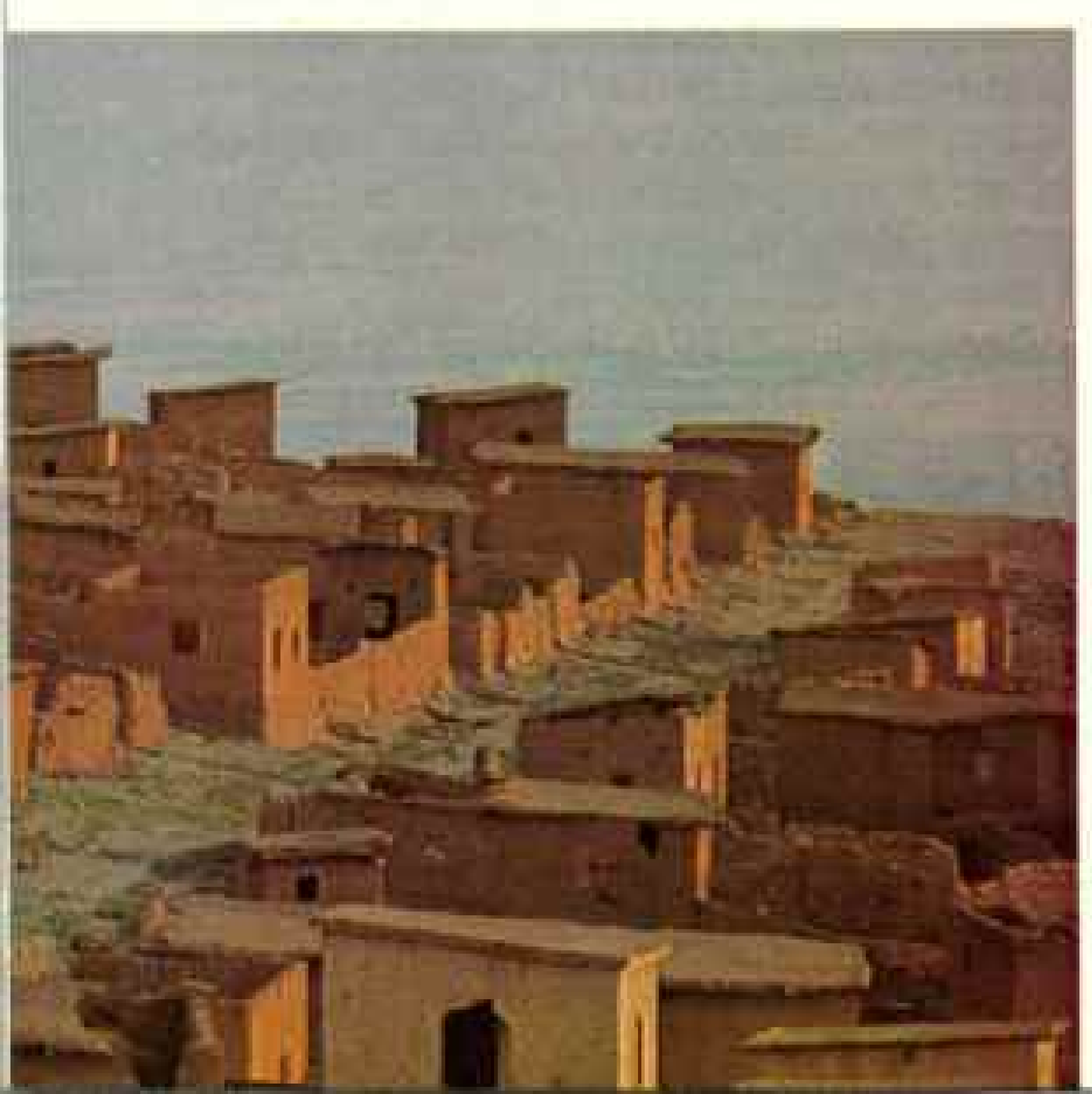
From there I drove south over the semiarid hills of Moab and Edom. I stopped at the mountain-locked ruins of Petra, with its magnificent temples and tombs carved out of rose-red sandstone cliffs. This had been the capital of the Nabataeans, who in Jesus' day guarded many of the same trade routes that the Edomites and the Midianites controlled in the time of Moses.

Moslems Honor Hebrew's Memory

Nearby rises the peak of Jabal Harun, the Mount of Aaron. Tradition equates it with Mount Hor, where Moses' brother, Aaron, died. Within a small white mosque on its summit is a cloth-draped bier. This, according to a Moslem tradition, is the "tomb" of Aaron. Reaching the summit of the imposing mountain after an arduous two-hour climb, I was instructed by my young Jordanian guide, "Please, sir, take off your shoes. This is holy ground."

I couldn't help but remember God's words to Moses during their first confrontation at the Burning Bush: *"Moses, Moses. . . . put off thy shoes from off thy feet, for the place whereon thou standest is holy ground."* Virtually the same words! My search after Moses was approaching full circle.

Returning north through the hills of Moab, I made the final stop of my months-long journey—atop the traditional Mount Nebo. Here the aged prophet came at last to view



Celebrating the deliverance of the ancient Israelites from bondage in Egypt, a family of Russian Jews in Jerusalem observes the ritual of the Passover, which commemorates the events of the Exodus. Unleavened matzo recalls the Biblical episode in which the Israelites, fleeing from Pharaoh, could not tarry long enough to prepare leavened bread.

Abandoned by its inhabitants during the 1967 war, a Palestinian refugee camp gathers shadows on the West Bank of Jordan near Jericho. Not far from here the ancient Israelites, shortly after Moses' death, crossed the River Jordan and made their long-delayed entry into the Promised Land.

The death of two brothers: Forbidden by God from entering the Promised Land, both Moses and his faithful brother, Aaron, died before the Israelites—led by Joshua—conquered Canaan.

Near Petra in southwest Jordan, a custodian guards the "tomb of Aaron" (**left**) atop Jabal Harun, which is equated in local legend with the Biblical Mount Hor.

Tradition has it that Moses was buried inside a cave near Jordan's Mount Nebo, from which he viewed the Promised Land before his death. A lovely cavern not far from there is curtained by a waterfall (**right**) fed by Ayn Musa, the Spring of Moses.

the Promised Land of Canaan, which God allowed him to see but not to enter. The vista from this lonely height is across the north end of the Dead Sea and the mouth of the River Jordan to the gray-blue hills of Judaea—threshold of the Promised Land. On my way up to Mount Nebo, I had passed forlorn camps of Palestinian refugees, a people who look upon these same hills with a longing no less passionate than that of Moses and the Israelites. The notion of a "promised land" dies hard.

Passing the mantle of military leadership on to Joshua, Moses then breathed his last. "*And Moses was an hundred and twenty years old when he died: his eye was not dim, nor his natural force abated.*"

According to an old Jewish tradition, God kissed His faithful servant as he died. Another venerable tradition, recalled in the New Testament Book of Jude, states that Satan and the archangel Michael contended for Moses' body after his death. The Book of Deuteronomy records that the aged prophet was buried in a valley nearby, "*but no man knoweth of his sepulchre.*"

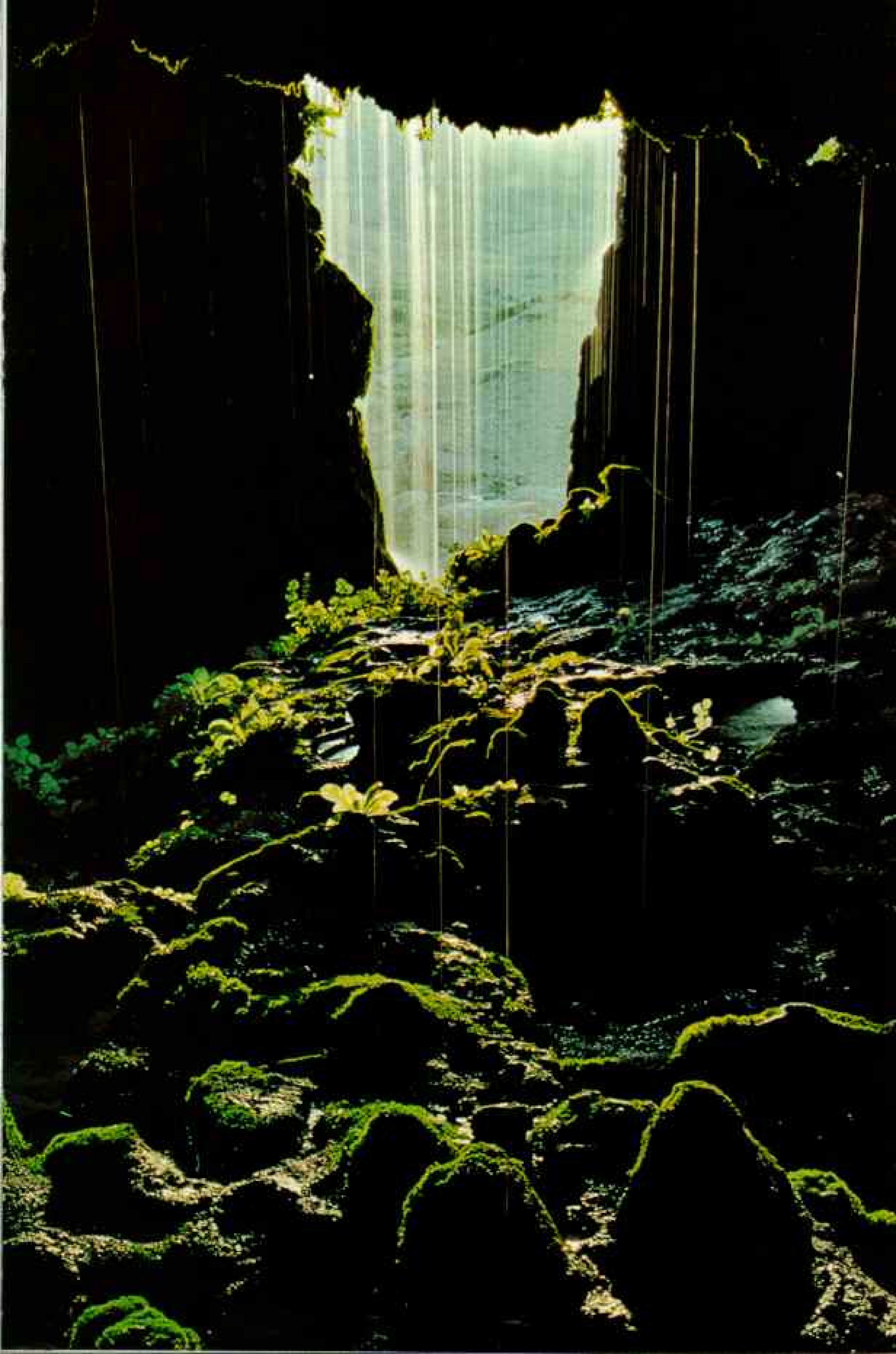
As a matter of fact, there *is* a Moslem sepulcher of Moses near Jericho, at a site called Nabi Musa—Prophet Moses. But it is a sad, unprepossessing place, without any sense of a prophet's haunting presence. I felt compelled, once again, to seek out an alternate locale, a place where my search for Moses could come to a fitting conclusion.

Such places have a way of finding you instead of your finding them. Just below Mount Nebo runs a steep valley fed by a spring called Ayn Musa, the Spring of Moses. It's another rock of the striking, of course. The water trickles from a dry and stony hilltop, transforming otherwise sere slopes into a lovely oasis of green.

A View Through a Liquid Rainbow

Picking my way to the other side of the valley, I came to a lovely little cave, hidden from above. The waters of Ayn Musa drop right over the cave's mouth (right) so that, ducking inside, I could look out through the bright prismatic colors of the falling water to Mount Nebo and to the hills of the Promised Land. If the presence of Moses rests anywhere outside the hearts of his descendants, I think it must be here.

Looking out, I saw a shepherd boy leading his goats into the valley to feed on vegetation watered, in a sense, by the rod of Moses himself. Putting down his shepherd's rod, the lad knelt on a spur of rock and performed the evening prayer, his figure silhouetted starkly against the reddening sky. I was moved beyond words. No sight could have been more fitting. My search for Moses had reached its end, and a new beginning. □



EXQUISITE LIVING FOSSIL

The Chambered Nautilus

Photographs by DOUGLAS FAULKNER

IT HAS FASCINATED man for centuries, this beautiful and elusive mollusk. Star of pictures, poetry, and prose, the chambered nautilus even has an international fan magazine. But don't call the amazing nautilus just another pretty shell. It remains essentially the same as its ancestors of 180 million years ago, a living link with the past.

Douglas Faulkner, one of the world's foremost undersea photographers, periodically searched for living chambered nautiluses during eight years of work in the Palau Islands (map, below). The reward for his perseverance: these rare color photographs of nautiluses swimming free in the ocean. The one at left curls its water-spurting funnel, visible between the two lowest tentacles, back under the shell for forward propulsion.

Some 3,500 different nautiloid species once flourished in the shallow seas that nearly covered the prehistoric earth. The fossil of a long-extinct variety that sported a nine-foot shell turned up recently in an Arkansas streambed. Probably fewer than half a dozen species still exist, surviving in the Pacific Ocean from the Philippines to Fiji, sometimes as deep as 2,000 feet. Time has whittled these descendants to about eight inches, only a fraction of their giant ancestors' size, but their form remains similar, providing tantalizing clues to primeval life.

Specialized Tentacles Keep Creature Alive

Yet until scientists study the mollusk deep in the ocean, they will never fully solve the secrets of its life: How does it reproduce, and where? What happens at birth? How long does it live? Why have so few species survived the ages? Is it a predator as well as a scavenger?

What we do know is that the nautilus owes its survival largely to its camouflaged pressure-resistant shell; tentacles that "sniff out" supper, then snare it; and an internal design straight out of Jules Verne, right down to airtight chambers that act as ballast tanks. In fact, the remarkable nautilus lent its name to the deep-diving submarine in Verne's adventure *Twenty Thousand Leagues Under the Sea*.

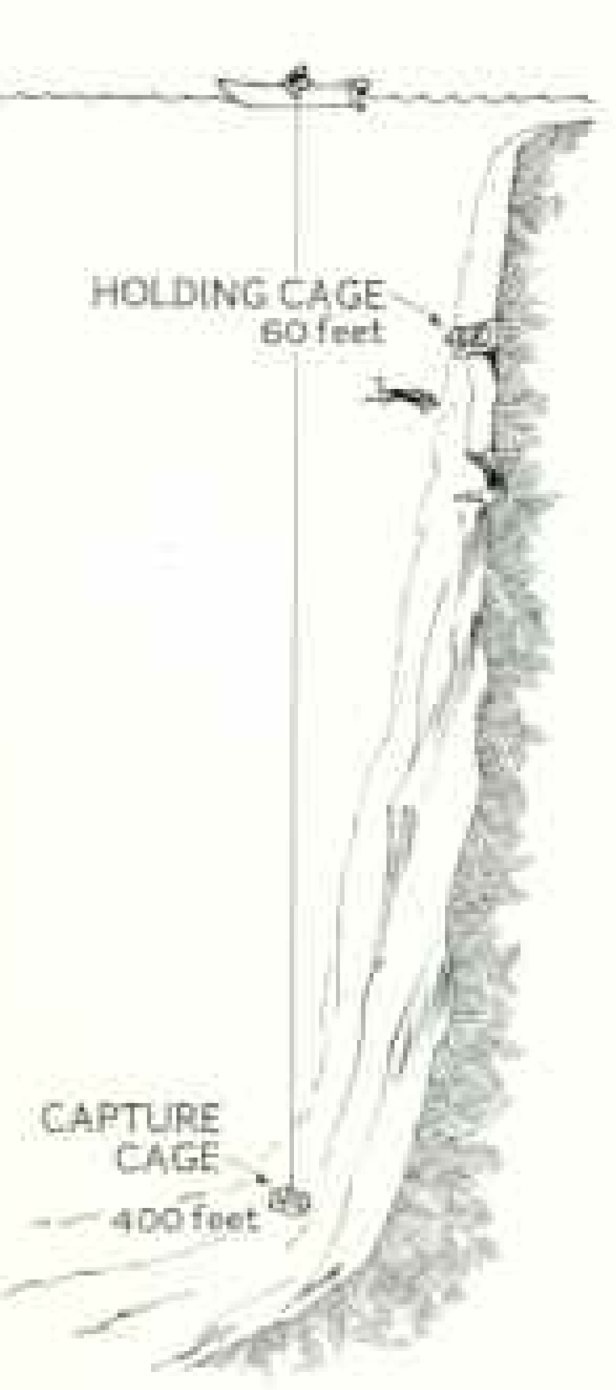
As fascinated as Verne, the renowned photographer Edward Weston captured a cross section of the graceful nautilus in a classic 1927 photograph (above right). He called the beautiful mother-of-pearl-lined shell "one of the most exquisite forms . . . in nature."

COURTESY COLE WESTON

That graceful form combines function with beauty. As the nautilus grows, it moves forward in the expanding shell, and natural secretions form a partition, or septum, behind its fleshy body. Thus the nautilus creates a series of ever-larger chambers, at an estimated rate of one every few weeks. With a master builder's skill, the mollusk fashions as many as 38 chambers, most of them increasing in size with a mathematical consistency. The final chamber, inexplicably, is smaller.

A thin tube, the siphuncle, links all the chambers to the body like a lifeline. It is thought to control buoyancy by regulating the ratio of gas to liquid in the chambers. The shell displays a spiral symmetry found often in nature. But even the most perfect spiderweb can't match the flawless nautilus.

Yet its shell, the "ship of pearl" made



Sharing a snack, two nautiluses munch a dead sweetlips (**above**) provided by the photographer. The eight-inch mollusks, lured by dead fish and clams to a trap 400 feet deep, were kept in a holding cage at 60 feet. When released for photo sessions, they often sought shelter in crevices of the coral or headed for the bottom. Backed against a reef wall, a nautilus (**right**) devours a damselfish with the powerful parrotlike beak that lies hidden among its tentacles.

NATIONAL GEOGRAPHIC ART DIVISION

famous by poet Oliver Wendell Holmes, marks the nautilus as more primitive than other cephalopods—the squids, octopuses, and cuttlefish. Those carry their shells, or remnants of them, internally. Primitive but prominent grooved eyes (left), similar to a pinhole camera, also denote the nautilus's lesser development.

But when it comes to the number of tentacles, the nautilus beats the other cephalopods "hands" down. It boasts 60 to 90 Medusa-like appendages, each with a retractable extension called a cirrus. The suckerless tentacles, some able to smell, others to grasp, keep this sometime gourmet supplied with its favorite meals, especially lobster and crab. It is now known, however, that the appendages do not enable the animal to crawl.

Two trailing tentacles help the nautilus follow natural contours as it glides along the ocean floor (lower right). To shift into reverse—the normal swimming method—it aims its funnel forward and spurts off, slower than a swimmer wearing flippers.

And when the nautilus is disturbed, or just wants to be alone? It simply pulls its tentacles inside the shell and drops a leathery hood over the opening like a trapdoor.

Nautilus Endangered by Its Own Beauty

With no known undersea predators, nautiluses may be their own worst enemy. Shells often reveal beak-size bites from other nautiluses. But there is a more worrisome threat—man. Though the nautilus is not in immediate danger, experts are afraid that increasing demand for shells by collectors and by manufacturers of mother-of-pearl jewelry could imperil the remaining species.

Uncertainty about the nautilus's future is just another of the questions scientists are working on. As answers are found, the "Chambered Nautilus Newsletter" prints them. Published by the Delaware Museum of Natural History at Greenville, it goes to 135 museums, universities, and researchers around the world studying this star of the sea. Six copies go to the Soviet Union.

"We are trying to help the geologist in Moscow know what the paleontologist in Iowa is doing," says newsletter founder and editor H. K. Dugdale, a Wilmington businessman and nautilophile. But he's not counting on any major breakthroughs just now. After 180 million years, the reclusive nautilus has learned to keep its secrets. □

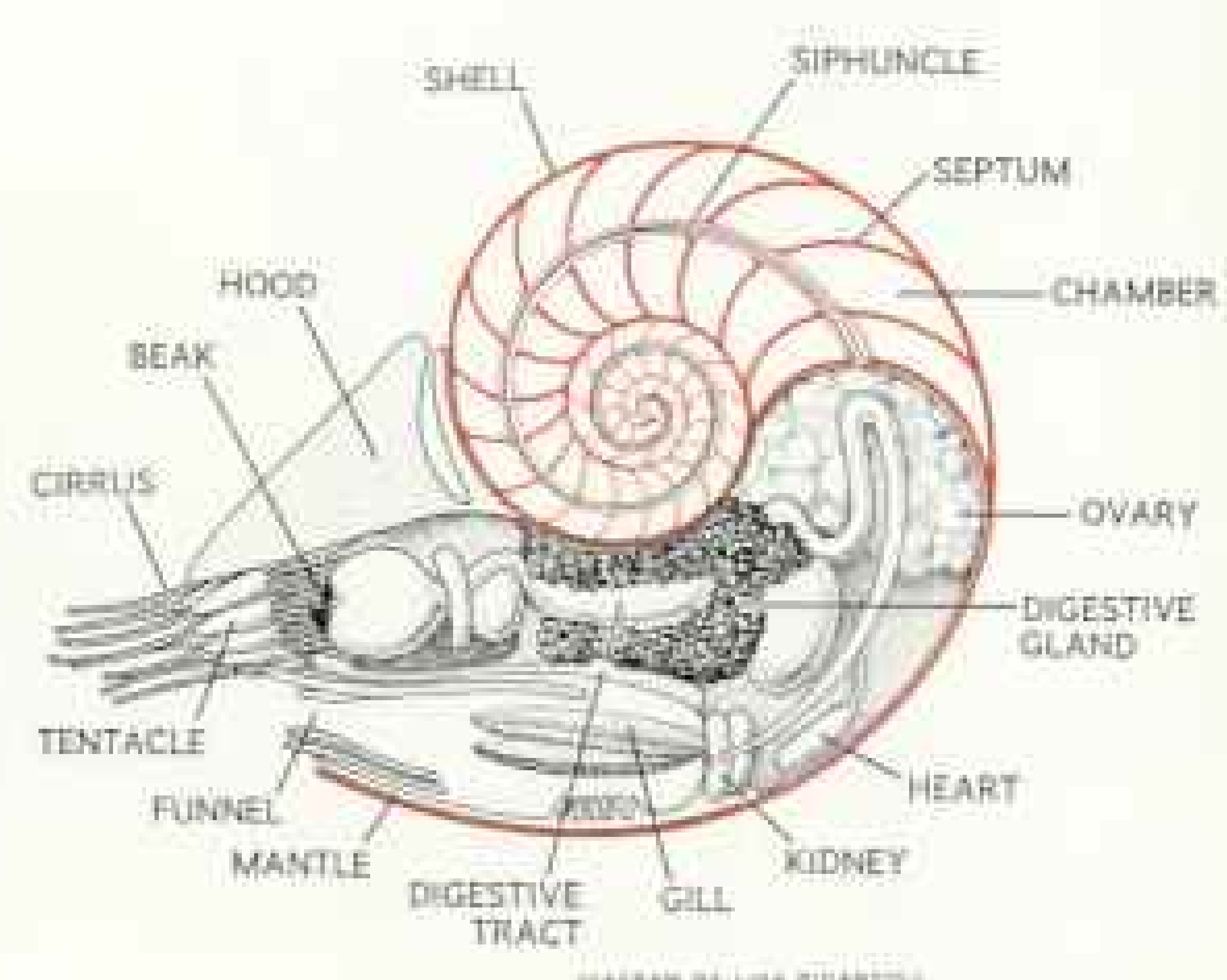


DIAGRAM BY LISA BIGANZOLI, NATIONAL GEOGRAPHIC ART DIVISION

Like a scorpion's tail, the shell of a nautilus coils above its outermost chamber (**cutaway view, above**), the only one the fleshy animal occupies. The buoyant sealed air chambers above the open-ended body chamber stabilize the nautilus in its upright position.

The dual-purpose tube-shaped funnel (**below**) provides locomotion by expelling water like a jet, and also aids respiration. The funnel's rhythmic movement forces water—sucked in through a passage behind each eye—into the nautilus's body cavity, bringing oxygen to the gills.

WHERE "KVALITET" IS A WAY OF LIFE

Stockholm

By JAMES CERRUTI
SENIOR ASSISTANT EDITOR

Photographs by
ALBERT MOLDVAY and
JONATHAN BLAIR

IN THE LEXICON of the Stockholmer, the word *kvalitet* looms large. Department stores feature quality rather than low prices, probably because low prices are so scarce. Stockholm is one of the most expensive cities in the world. Taxes to city, county, and state, mainly to cover welfare benefits, take 34 percent of an annual income of $7,000, and 56 percent of $23,000. So a Stockholmer could lose his shirt—if it weren't for the shirt's high kvalitet.

Staffan Wrigge, a modestly paid government worker of 32, told me, "I pay $17 for a shirt, but I am still wearing shirts 14 years old; the last one I bought was four years ago. Kvalitet! It saves money, and I don't waste time shopping."

But the kvalitet that Staffan and his fellow Stockholmers most avidly demand is the quality of living—and they feel they are not getting enough of it. Staffan is an activist in Alternativ Stad, an organization dedicated to creating a city more livable than present-day Stockholm.

In Stockholm, complaint is the universal catharsis. Bertil Martinsson, a business executive, showed me around his apartment in Solna, a *kommun*, or municipality, of Greater Stockholm. Lanky, and at 40 galvanically youthful, Bertil strode through his "living machine" criticizing

Dominoes of glass and steel line up in the center of Stockholm. The buildings face a 123-foot fountain-splashed sculpture ringed by skylights of an underground plaza. Such examples of Swedish modern blend with centuries-old tradition for the best of both worlds.

ALBERT MOLDVAY

everything, but especially its location in a cluster of eight-story high rises.

"Stacking people is not acceptable," Bertil said. "It makes you a part of the stack—a module, the square man in this society in which nobody is expected to be original."

Bertil's business associate, Ulrich Schröder, a West German, disagreed. "Why do Stockholmers always cry? Bertil, this is beautiful; you should compare it to New York City, London, Paris—chaos!"

Bertil rejoined, "I question everything. I will always be dissatisfied. Because I see ways things can be made better."

In his constructive dissatisfaction Bertil is typical of Stockholmers under 50. The traditional stereotype of the Stockholmer as a shy, sheeplike accepter of authority is out of date. The modern Stockholmer disagrees with everybody—and perhaps even himself. Of a very "red" journalist, a liberal opponent said, "If his ideas were accepted by the government, he'd be against them." It's the complaining that Stockholmers enjoy. And every complainer will tell you that his opponents' complaints are ridiculous, but his own are constructive.

A City Spread Across Islands

A chief target of constructive criticism is construction itself. Though many architects praise Stockholm as a jewel of city planning, every Stockholmer can point to some satellite city that is hateful, or to a new downtown

JONATHAN BLAIR (ABOVE AND ABOVE LEFT) AND ALBERT MOLDVAY

Drinking the spring sun is a welcome change for city dwellers (**above**), who have endured winter months with as little as six hours of light a day. In summer the sun repays its debt with brilliant "white nights."

Swedes have one of the world's highest living standards and enjoy abundant leisure, much of it spent outdoors. Hot-air balloon enthusiasts in Ladugårdsgärdet park, popularly called Gärdet (**above right**), use propane torches to inflate their craft. Here, a spark has ignited one of the paper balloons. In Skansen, an open-air museum of Swedish life, a youthful chauffeur takes lessons from a backseat driver (**right**).

redevelopment project that makes matters worse. Nevertheless, no one objected when I opined that Stockholm may be the world's most beautiful city.

It floats upon the waters where Lake Mälaren joins the Baltic. The kommun of Stockholm—the area within municipal boundaries—spreads across 14 islands, tied by 50 bridges (pages 52-3). Greater Stockholm—19 suburban kommuns within Stockholm's orbit—encompasses innumerable other islands.

In September, one of the best months, with an average of 22 rainless days, I found the thermometer rising almost daily to the summer average of 64 degrees F. Even in winter Stockholm is not bitterly cold; it averages 26° F. But it is dark; in return for the summer skies that are light almost through the night, the Stockholmer in winter must endure as much as 18 hours of darkness each day.

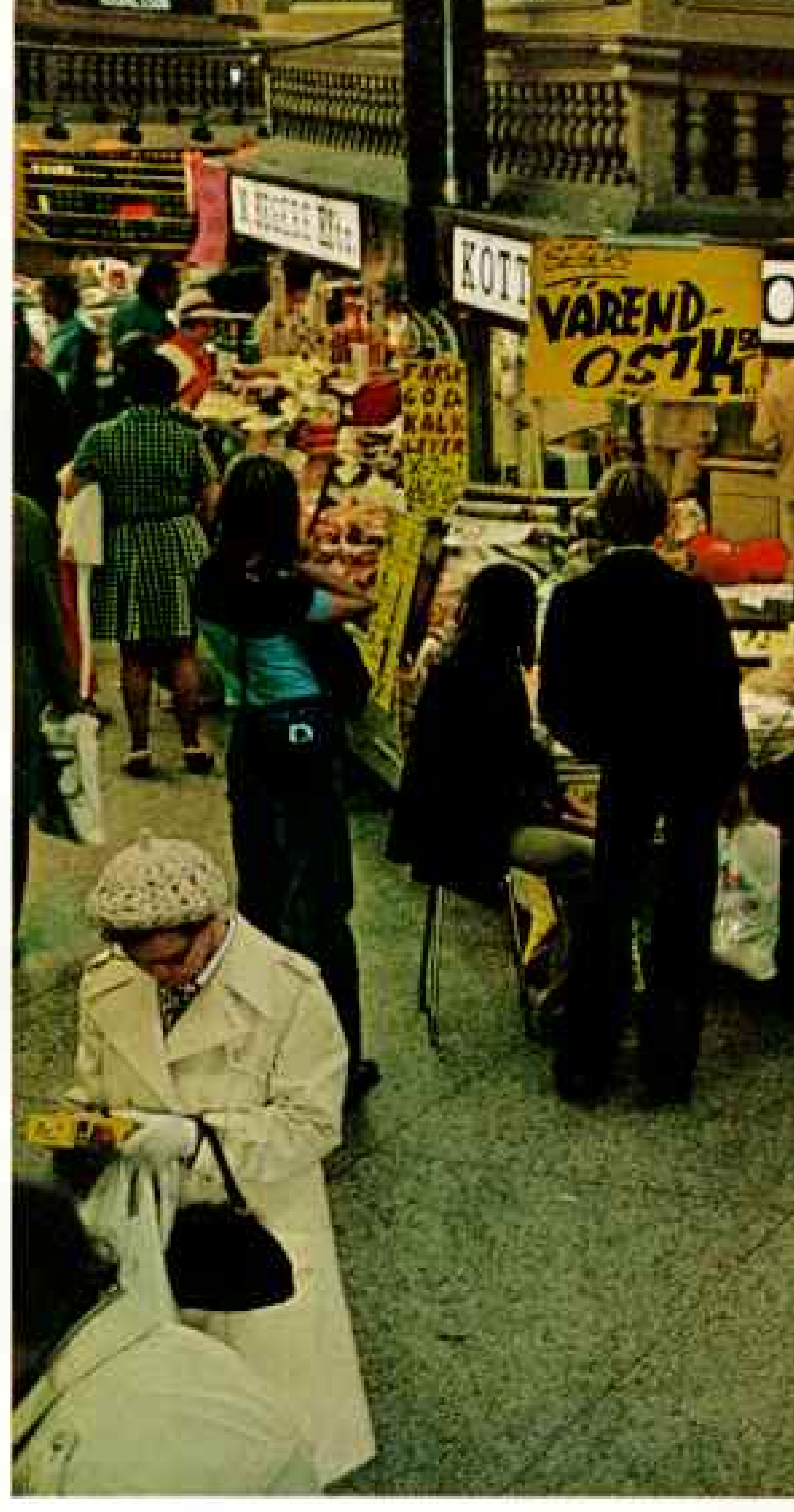
Greenery Softens the Cityscapes

In its brighter season, Stockholm sparkles not only in water-reflected light but also in itself. Stockholm is maintained; its centuries-old buildings look as trim as the latest skyscraper, with the landscape everywhere softened by greenery. From 508-foot Kaknäs Tower, a telecommunications center and Scandinavia's tallest building, I saw thick woods everywhere. "The countryside city." Stockholm kommun alone, with a fourth the area of New York City, has 12,500 acres of park, compared to New York's total of 25,000.

There are no slums—unless you look on the satellite cities as Bertil Martinsson does. He drove me out to the southwest to see the satellites he hates most. Skärholmen—a clot of thirty or so nearly identical architectural slabs—stacks some 6,000 people at one stop on the subway line. Alby and Hallunda, isolated in valleys five miles farther out, are gray warrens with high-rise buildings like watchtowers seeming to guard monotonous rows of barracks.

"These are nothing but high-quality slums," Bertil said.

The man responsible for the kvalitet of the Swedish capital's housing is aware of criticisms like Bertil's. Architect Torsten Westman, Planning Director of Stockholm, a tall impressive man in his mid-fifties, said, "We have built multiple-story housing because if you have to make a great number of dwellings in a short time, within a limited area, that is the only practical and economical way."



Smorgasbord of produce fills a market in the fashionable eastern section of the capital. Signs advertise *ost* and *bröd*—cheese and bread—and *saltgurka*, Estonian salted pickles. Although modern supermarkets abound in Stockholm, small independent merchants make a good living by catering to those who prefer the old ways—and can afford them.

The most expensive district in this expensive city is Gamla Stan—the medieval "town between the bridges"—where a modest apartment rents for $350 a month. Since its beginnings, troubadours have wandered Gamla Stan, chronicling the events of their day with song and verse. That heritage finds a modern echo on Västerlånggatan (**right**), the district's main street.

ALBERT MOLDVAY (ABOVE) AND JONATHAN BLAIR

In the past thirty years, as big farming drove out small farmers, hundreds of thousands of country-people came to Stockholm looking for jobs in government, the port, and the city's chemical, metal, and light industries. Immigrants also poured in, from Finland and southern Europe. A fifth of Finland's 7,500 Gypsies emigrated across the Baltic by ferry—perhaps a tribute to Stockholm's greener welfare fields. Today, Greater Stockholm has 106,000 immigrants, about 8 percent of its population, but almost a fourth of the immigrants in Sweden.

Satellite Communities Breed Isolation

By the late 1940's, Stockholm was wrestling with a tremendous housing shortage that private developers could hardly dent. The city planners decided to build public housing on land Stockholm had purchased outside its borders. As these satellite cities went up, a subway would be built and constantly extended with city boundaries. Industry would (it was hoped) be developed in each satellite to create jobs.

As things have worked out, not enough industries developed and subway extension lags behind. In the remoter satellites people feel isolated in die-stamped bedroom communities.

"But we have ended the housing shortage," Mr. Westman said. "So in the next decade we will build

ALBERT MOLDVAY (LEFT) AND JONATHAN BLAIR

Preplanned, prefabricated, and predictable, a score of satellite cities such as those at Täby (**left**) now house one Stockholmer out of four. These self-contained communities offset a once-severe housing shortage. Though the facilities include such conveniences as day-care centers (**above**), critics charge that the structured life is dehumanizing. But Stockholm has no slums.

better and more varied flats; in the neighboring kommuns they will construct more single dwellings. Our critics have good motives. It is hard to have identity in a uniform."

This responsiveness to public demand has not silenced criticism. Now Stockholmers who cannot afford to buy a $50,000 house complain that communities of such expensive single homes create "segregation." That is a dreadful word to a socialist politician's ear, and Stockholm's Olof Palme, Prime Minister of Sweden, lives desegregated in a modest row house in Vällingby.

Low Profile for Prime Minister

Vällingby, now 20 years old, is the earliest and most pleasant of the high-rise satellite cities, interspersed with colorful low garden-type apartments, row houses, and green spaces. I wanted to rubberneck at Mr. Palme's home, so I inquired about its location at the Vällingby police station. An officer directed me to the Prime Minister's house without frisking me or even hesitating. And modest indeed was the ministerial home—one of half a dozen small units on a cul-de-sac.

Later I interviewed the Prime Minister in his office. I asked why he lived in Vällingby.

"I have lived there 15 years. My wife works, and we have three children. We have no help and we like to run our home ourselves. So a modest house is better."

How does he get to work?

"Sometimes I drive with a colleague or my wife. Sometimes an official car. Sometimes by bus and subway."

Mr. Palme, slim and youthful at 49, looked as though he would merge into any subway crowd, dressed in a brown-check sport jacket, rather rumpled slacks, and old loafers.

His critics say that all this self-effacement is political: An intellectual from a wealthy family needs to keep a low profile to lead the left-leaning Social Democratic Party.

I asked the Prime Minister about the recent normalization of diplomatic relations with the United States. President Nixon had curtailed them in 1973 because of Mr. Palme's criticism of the bombing of Hanoi. Were we to be friends again?

"I was always a friend of the U. S., though I am critical of some U. S. policies. I studied at Kenyon College in Ohio, and that was a wonderful experience for me."

Did he influence the decision to give asylum to the Viet Nam draft evaders and deserters?

"Such sanctuary is a long-standing tradition in Sweden—it was not invented for Americans. We only upheld our laws regarding asylum. If the evaders established the right of asylum, they got it—just like the émigrés from Russia in World War I.

"There is nothing political in our attitude. In any case it was not a big problem. At any given moment there were only 400 evaders in Sweden."

As Mr. Palme walked me out, he remarked that he had been keeping his next caller waiting a quarter of an hour during our talk. Since the caller was U. S. Ambassador Robert Strausz-Hupé, I slunk away, hoping I hadn't caused new international strain.

The Prime Minister's office and my flat were both in Gamla Stan, so I walked home, puffing up steep cobblestone streets that failed to dim my delight in the surroundings. Gamla Stan means "Old Town," and it is the most pervasively old Old Town I know, with open-air markets and little shops down narrow alleys that, except for electric lights, might have been the same 400 years ago.

Gamla Stan is where Stockholm began, on three islands in the narrow middle of the navigable route between Lake Mälaren and the Baltic—a strategic trade site. Legend has it that to discourage unwelcome seafarers, the first Stockholmers erected barricades of logs *(stockar)*, thus giving Stockholm its name, "Log Island."

Stockholm celebrated its seven hundredth anniversary in 1953, based on the tradition of its founding in 1253 by a lord named Birger Jarl. It was almost 400 years before it became Sweden's capital, with a population of 9,000. Today, Stockholm kommun has 711,463, Greater Stockholm 1,350,000—a sixth of the population of Sweden.

Swedes Live It Up Downstairs

Gamla Stan in its old age is still the liveliest part of Stockholm, favored by the young and artistic (page 47). Late at night, sounds of gaiety filter from *källare*—restaurants in medieval warehouse cellars—discotheques, nightclubs, and the sidewalk café in Stortorget, the Great Square.

By contrast, Stockholm's redeveloped downtown center, Sergelstorg, on the "mainland" just a subway stop away, is almost empty after dark.

I loved to go underground in Gamla Stan, to källares like Diana, Aurora, and, best of all,

historic Den Gyldene Freden, owned, through an artist's gift, by the Swedish Academy. In their candlelit, barrel-vaulted precincts, I partook of such seasonal delicacies as steaks of moose, saddle of hare, the tiny red roe of the bleak (a carplike fish) served on blini with chopped onions and sour cream, and immense brown crabs. The cost was high, but so was the kvalitet.

English Pub, American Jazz

A five-minute walk from our flat, my wife, Hannah, and I could renew ourselves among the youth that jammed Stampen, an upstairs-downstairs nightclub that combines a turn-of-the-century English-pub atmosphere with live American jazz. For our elderly moments we went to Nya Bacchi to execute such antiquated dances as the waltz and fox-trot, once again popular with the young.

At Zum Franziskaner, a Swedish-German tavern, we had our first traditional Swedish Thursday dinner: yellow-pea soup with ham chunks, accompanied by cold beer and hot *punsch* (a brandy-and-rum drink), and topped off by Swedish pancakes with lingonberries. Delicious, but I only tried it there once, because on following Thursdays four different friends invited us to a real home-cooked Swedish treat. And what do you think it was, every time? . . . I still like it.

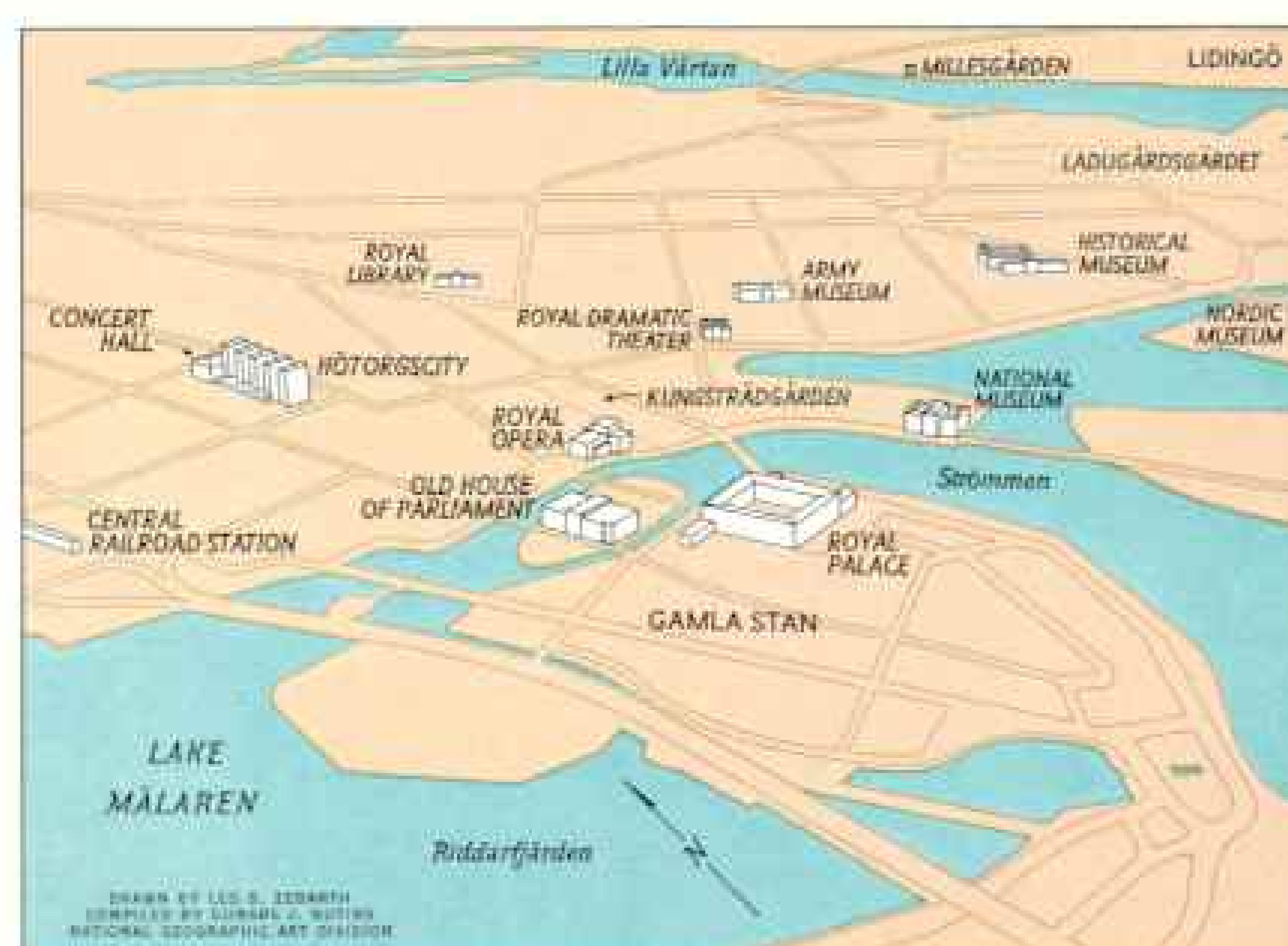
Another great Swedish treat is *pyttipanna,* a traditional late-supper hash of golden-brown potato cubes, chopped onion, and cubed beef and ham, served with a raw egg yolk. That was a supper I really had to sweat for—in fact, I almost boiled.

Clas Kjellin, a young artist and editor, and his beautiful blond wife, Sylvie, had invited me to sauna and supper at Gamla Stan's elegant, intimate Hotel Reisen. There executive assistant manager Olle Asp joined Clas and me in the sauna, to reassure me that the intense dry heat need not be fatal. He didn't quite convince.

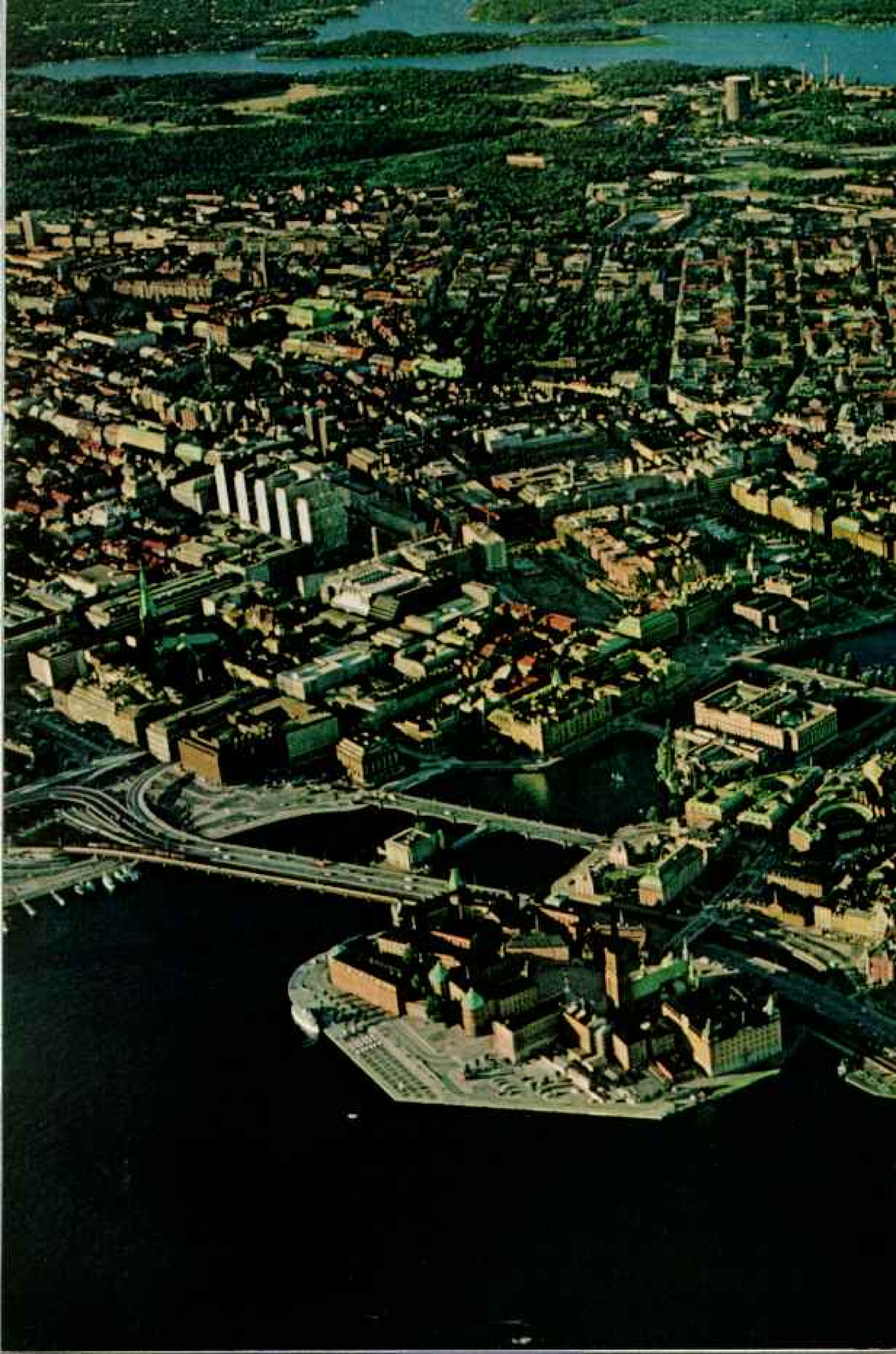
"You see, there is no lock on the door. The Finns have had some sad accidents," Olle said. "You must step out every five minutes for a cold shower."

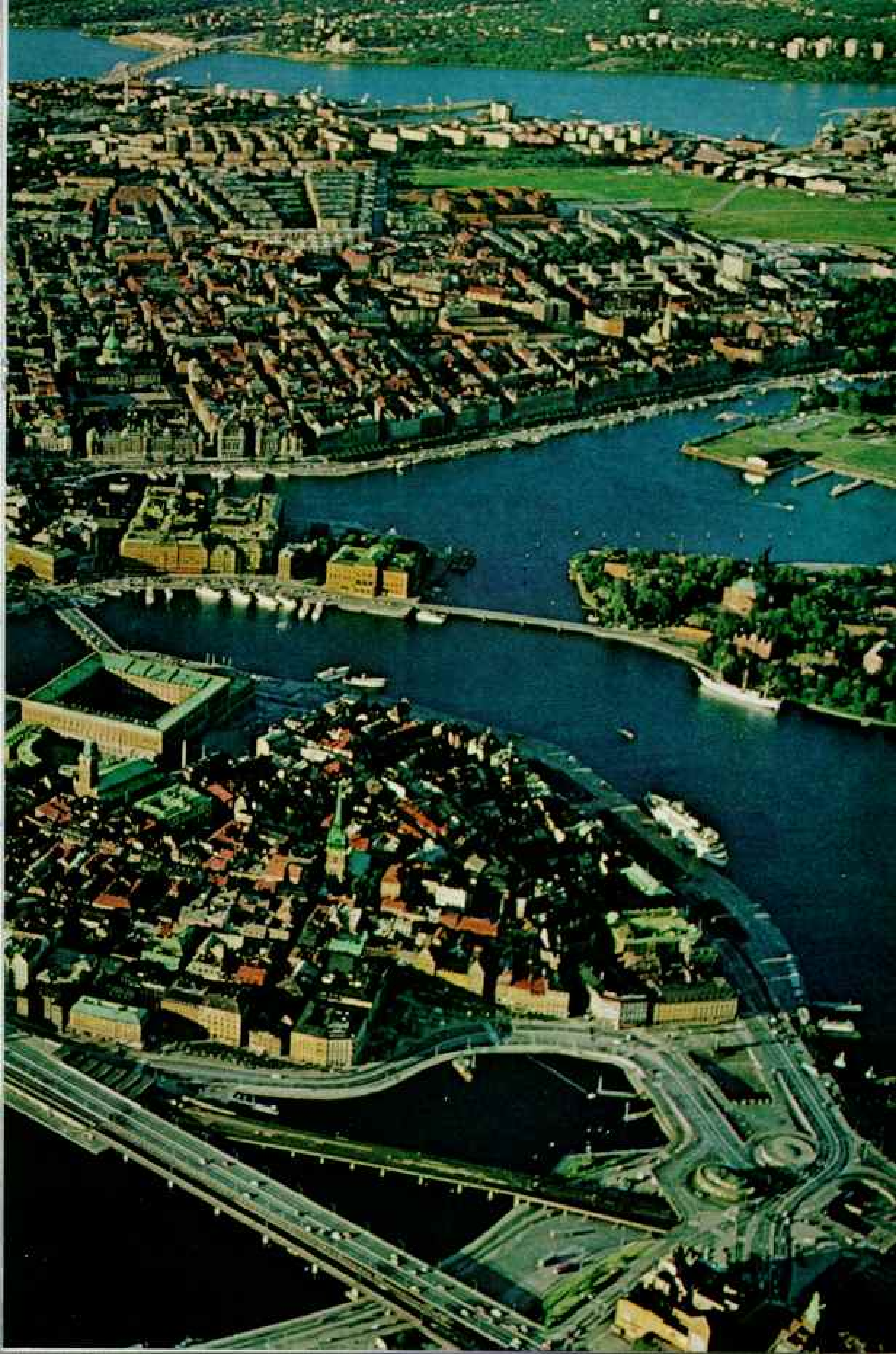
After three showers I was getting no cooler. "Just what *is* the temperature?" I asked. Olle pointed to the thermometer: 97° Celsius—that's 207° F., five degrees short of boiling! Snatching a pair of trunks, I repaired in haste to the cold pool, where Sylvie and a girl friend, in conservative swimsuits, were already splashing. When Olle joined us, he said—a bit *(Continued on page 55)*

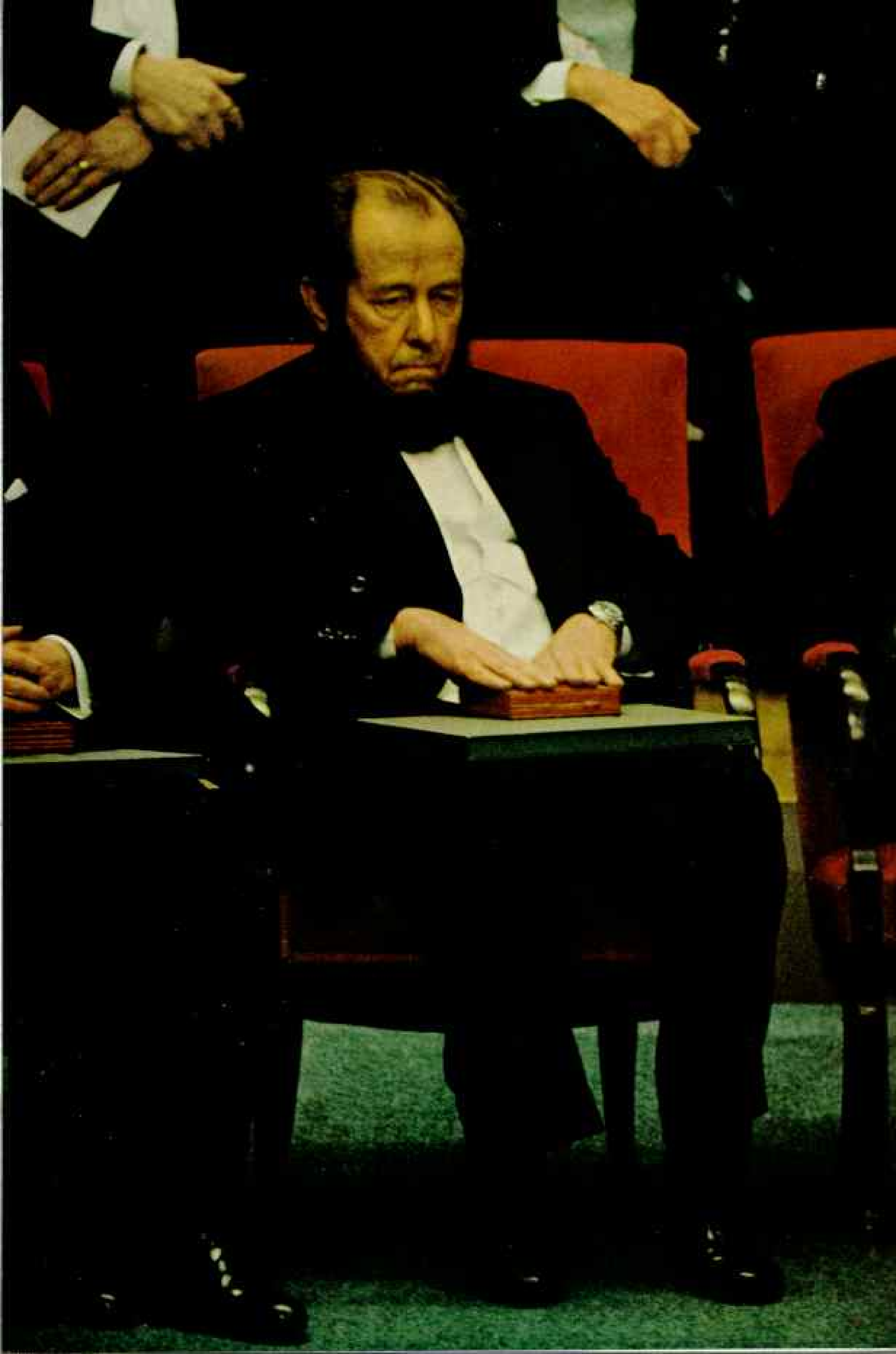
KEY TO PHOTOGRAPH ON FOLLOWING PAGES



"The city that floats on the water," wrote Swedish novelist Selma Lagerlöf of the capital that sprawls across 14 islands laced by some 50 bridges. Established 700 years ago as a small trading center, Greater Stockholm has become a hub of European commerce with a population of 1,350,000.







apologetically—"You see, we do not have mixed saunas, just swims. We are not so advanced as foreigners think."

Just how advanced are Stockholmers in sexual mores and women's liberation? I called on former Minister of Disarmament Alva Myrdal in the home that she and her husband, Gunnar, the distinguished economist, own in Gamla Stan. In her eighth decade, still a beautiful blonde, she fielded my questions on women's lib with ministerial aplomb.

What about the women's liberationist who suggested that she and her husband should be introduced as "Minister and Professor Alva Myrdal"?

"No," she said, "I am Mrs. Myrdal. But women's liberation is advanced here. In Stockholm more than 60 percent of married women work, and many are in the highest positions. A friend of mine is on the Supreme Court.

"Our young Prime Minister pushes the other side: The men must take care of the children. He does this himself in his summer home on Gotland. And just as we encourage women to join the police, we encourage men to become nurses."

Sonja Köhler, a young ex-policewoman, thought police "lib" had some way to go. "A woman applicant must be 165 centimeters tall, a male 175. The Policemen's Trade Union is proposing, on the grounds of absolute equality, 175 [five feet, nine] for all. That eliminates the majority of women."

Legal Pornography Stirs Debate

A more general complaint of women's liberationists is legalized pornography, which treats women strictly as sex objects. But Björn Norrbom, a conservative young banker, thinks the sex shops, at least, may be safety valves: "Better to be satisfied to look at a 'Lolita' magazine than to molest young girls."

It seemed strange that just a few streets from my friendly neighborhood sex shop, the world's most honored literary prize was about to be awarded. I walked to the Swedish Academy, past the customary elderly beer drinkers who drowse in its portico. In a drowsy ceremony, the Permanent Secretary announced to the press in four languages the news of the year's winner of the Nobel Prize in literature, worth $144,700 tax free.

Gunnar Myrdal shared the Nobel Prize in economics in 1974. Alva's husband is a salty-tongued, foxy grandpa of 78, and one of the major planners of the Swedish socialist state. Professor Myrdal startled me when I talked to him:

"Stockholm is a wonderful city, but not by planning—by accident. They destroy a lot—downtown is terrible! Tanks to Gott, the only reason you have Gamla Stan today is they did not have the money to do all the destructive work a hundred years ago."

Great Place, but Can You Afford It?

One of the results, however, is that housing in Gamla Stan is in short supply. Stockholmers grouse that one must be a king or minister to afford a home there. Sweden's Finance Minister Gunnar Sträng was criticized for buying there. And, of course, the Royal Palace is Gamla Stan's premier address.

I visited the palace, appropriately, with a queen. Not King Carl XVI Gustaf's queen, however—he is a bachelor of 29—but with Cecilia Runnström, Queen of Lake Mälaren, a title bestowed each summer on a young lady of beauty and talent. Her knowledge of her city was encyclopedic.

"There was a castle here since the 13th century, called Three Crowns," Ceci said. "It burned down in 1697; the present palace, completed in 1754, kept two generations of Tessins, the architects, busy for 47 years." I could see why. The palace has close to six hundred rooms, most decorated on every available surface in rococo style.

In the vaults of the Royal Treasury I saw the Crown Jewels—property of the nation, not the king. In fact, he never gets to wear them.

In the palace's Hall of State, where the king has traditionally officiated at the opening of parliament, Ceci said: "The crown and the scepter are placed there, beside Queen Christina's silver throne. No king has been crowned since the 19th century, so the king may not wear the crown or hold the scepter—and, under our *(Continued on page 59)*

Courageous dissident and literary giant, Soviet exile Alexander Solzhenitsyn sits pensively after receiving his Nobel Prize for literature at Stockholm's Concert Hall. Swedish chemist-industrialist Alfred Nobel, who invented dynamite, left most of his fortune to honor the world's greatest writers, scientists, and peacemakers.

ALBERT MOLDVAY

Midsummer magic grips revelers at Skansen (**left**) as they join hands around a *majstång*—a flower-decked pole. Wreaths on the crossbeam symbolize fruitfulness and prosperity. Midsummer's Eve dates to days of pagan worship, reaffirming Sweden's love affair with the sun. "When the woods and fields are green and flowers are in bloom," wrote Olaus Magnus in 1555, "the people assemble...to dance."

A young Swedish beauty (**below left**) smiles from beneath a circlet of flowers. It is said that on this night, any maiden who places seven different wild flowers beneath her pillow dreams of the man she will marry. Eventually, this "day that never ends" fades as does the brief summer season, but there is no shortage of festivals.

December 13 is St. Lucia day, when in homes all over Sweden the eldest daughter rises before dawn and, attended by her brothers and sisters, steals into her parents' room with "bread for hunger and candles to light the darkness." Then they sing songs to honor the saint and to defy winter's gloom. From this family tradition has evolved a national celebration, with hotels, shopping centers, even whole cities having their "Lucias." One group of choristers (**right**) serenades an office building in Stockholm.

ALBERT MOLDVAY (FACING PAGE) AND JONATHAN BLAIR

JONATHAN BLAIR (ABOVE AND BELOW) AND ALBERT MOLDVAY

Domed mufflers fight decibels in the noisy L. M. Ericsson plant (**above**) as Yugoslavian Ilinka Kotevski inspects its product—silver contacts for telephone relays. Jobs are still available for immigrants in Sweden, where the unemployment rate rarely tops 2 percent.

At Huddinge Hospital, one of the country's newest and largest, beds are made up and equipped to order by a special staff (**below**) to save nurse's aides' time. An automated track transports the beds to a central station.

"Automation in all things" seems a motto of modern Stockholm. In a downtown bingo parlor (**right**), shoppers play with the aid of a computer.

new constitution, the king will no longer open parliament here. Instead, the speaker will open it in the parliament building downtown. Very sad."

Many feel as Ceci does and fear that Carl XVI Gustaf will be Sweden's last king. The new constitution gives him exactly the same political powers as Queen Ceci—none. But considering the tourist value of such royal panoply as the changing of the guard, the government may well find an idealistic reason for continuing the king as titular head of state. The Swedes are masters at reconciling contradictions.

Novelist F. Scott Fitzgerald wrote: "The test of a first-rate intelligence is the ability to hold two opposed ideas in the mind at the same time, and still retain the ability to function." Swedes must be geniuses, for they live with three or four basic political and economic contradictions.

In addition to the monarchy, they must reconcile their socialist state to a capitalist economy, in which 94 percent of industry is privately owned. This reconciliation is achieved by the presence of prominent socialists from labor unions on company boards, while the capitalists are given tax breaks on investments and permitted to attribute such luxuries as summer houses, limousines, and yachts to "company expenses."

As for socialism's welfare benefits, responsibility is so intertwined among kommun, county, and state—all of which take a tax bite—that a Stockholmer needs to be a genius just to know where to apply for what is coming to him. But the basic system works, and even conservatives approve it. Though taxes may leave them little to put in the bank, the things their parents always worried about saving for—health and old-age care, higher education for the children—are all provided by the state.

Sailors Mistake Rest Home for Palace

I had a look at some of these benefits, and, at the risk of seeming callous, must say I spent a wonderful day among Stockholm's ill, aged, alcoholic, and drug-addicted.

Danvikshem, an old folks' home that looks like a towered castle, is often saluted by Soviet sailors on shore leave; they mistake it for the Royal Palace. There I met Mrs. Alfrida Säll, 86, who lives in her own cozy apartment with her own furniture of a lifetime. "I pay 1,300 kronor a month [$300] out of my pension money and rental from property my husband left," she said. "That covers everything—electricity, meals, medicines, nursing care, my little kitchen for snacks. I had to wait a year to get in, but it was worth it."

Danvikshem is currently filled up, with 255

PARKFORV.

ALBERT MOLDVAY (BELOW LEFT) AND JONATHAN BLAIR

Angels alight in Millesgården, museum-home of famed sculptor Carl Milles. Silhouetted smokestacks on the far shore of Värtan strait blend with the pedestals. At the base of one figure the artist inscribed: "Born of clay, made what I am by the hand of Milles . . . I stand here to help you forget the dreary things of life." Milles emigrated to the United States in 1929 and taught at the Cranbrook Academy of Art in Michigan. He became an American citizen in 1945, ten years before his death.

Tongue-in-cheek sculpture (**left**) by K. G. Bejemark has been startling Stockholm passersby for more than ten years. The work is a tribute to street workers, and to the Swedish sense of humor.

residents, including 25 couples. Like other old-age homes, it has a long waiting list, and when vacancies occur they go to those most in need, those over 75. That leaves 2,200 Stockholmers above the retirement age of 67 still on the list for homes. "The problem is," one doctor said, "no one ever dies in Sweden." Average life span is 75.

Alcohol, Drugs, a Growing Concern

The Mariapoliklinik for alcoholics and drug addicts, with 220 beds, also can't handle the load. It treats most cases as outpatients—100,000 visits a year. Inpatients are a problem because of the overlapping financial jurisdiction of state and county. Dr. Rune Dimberg, chief of the clinic, said, "The state pays for patients held six days or less; the county pays for the rest. So the county is after me not to hold patients so long. But what can you do for people in six days?"

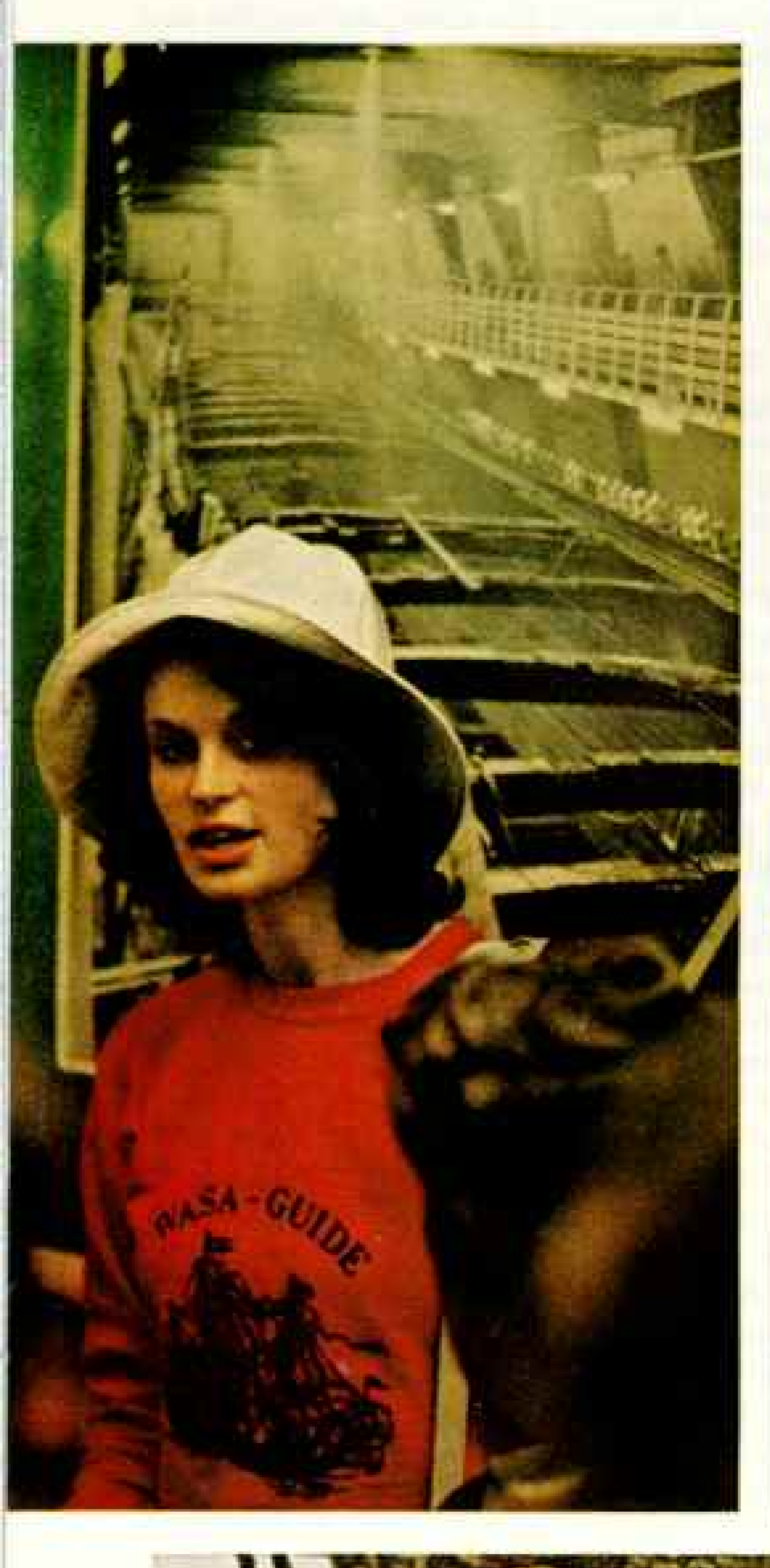
Sweden ranks only twenty-first in the world in per capita alcohol consumption, but this still greatly worries the government because the rate is rising. Stockholm's bothersome alcoholics are hauled before the Temperance Board, which can commit them for treatment. The Mariapoliklinik's assistant chief, Dr. Janez Jez, said, "Fifty percent of our alcoholics are sent here by the Temperance Board—but they come voluntarily. The board says, 'If you don't go to Maria, we can arrange compulsory treatment elsewhere.' So *all* our people are voluntary."

Anyone just plain sick must look in a thick county directory to see what hospital will admit him, according to what "catchment area" he falls into by residence and disease. Once in, his total costs will run about two dollars a day—and that will include a private room if his condition requires it; a private room cannot be "bought."

Director Edgar Borgenhammar showed me around his Södersjukhus. Completed in 1943, it was the first of Stockholm's gigantic hospital machines. It has 24 miles of corridors, and one gets around it by scooter or bicycle.

In one corridor we met young Christer Carlson, representative of SKAF, a nationwide blue-collar union. Mr. Carlson looks after hospital workers' interests, and he is particularly concerned for nurse's aides.

"They are 95 percent women, and they get back injuries lifting big, heavy people—products of the welfare state. Just down there are three women in one room, none under


WASA-GUIDE

JONATHAN BLAIR (ABOVE) AND ALBERT MOLDVAY

Battling old age—the only enemy she has ever known—the royal warship *Vasa* is preserved and restored in a floating museum near Skansen. On August 10, 1628, only minutes into her maiden voyage, a squall heeled her over and the sea poured through open gunports. Weighted with 64 cannon, the 200-foot-long ship sank quickly, taking 50 lives. She sat in 110 feet of water until raised in 1961.

Today Christina Winberg (**above left**) guides visitors around the popular tourist attraction. A gilded lion figurehead (**above**) is a copy of the original, which is on separate display. Reconstruction continues as workmen (**left**) lower the bowsprit. A wooden face, one detail of a replica frieze, seems to watch their progress.

240 pounds. We need *two* aides to lift them."

Director Borgenhammar took me to Stockholm's 1,400-bed Huddinge Hospital—the "finest hospital in the world," a marvel of automation, even bigger than the Södersjukhus. In addition, it is beautiful—full of sculptures, fountains, tapestries.

At a nursing station, Mr. Borgenhammar proudly explained the workings of a computer keyboard. Every Swede has a ten-digit identification number. Punch the number into a keyboard such as this, and it goes to the central computer that has the numbers of all residents of Greater Stockholm. Back come the subject's medical record, latest test results—and a lifetime of data the government has on him.

Immigrants Grumble, Stockholm-style

The government also has the number of every immigrant and affords him almost the same welfare benefits as a citizen. Nevertheless, Stockholm's foreign workers have caught the Stockholm mood of constructive complaint. Finns, the largest group, complain they can get only menial jobs because they "cannot Swedish," and insist they are "too old" to go to the free language schools. Greeks are reluctant to learn the language because they want to preserve their national character.

Georgios Tsokanis, an auto mechanic who is president of the Swedish-Greek Organization, told me: "We have it better here than Greeks in other European countries, but we like to remain ourselves. So I am here 16 years and have not become a Swedish citizen.

"Some Greeks who marry Swedish girls can barely speak to their own children. Can you imagine? The children speak no Greek, and they speak no Swedish. The Swedes don't understand why we don't learn their language and become real Swedes. But a Greek cannot become a Svensk."

The Finns play another variation on this theme: They have been corrupted by Stockholm materialism. Eija-Irmeli Lahti, a dramatics teacher who immigrated five years ago when she was 17, told me: "The Finns come here only because they haven't any jobs in Finland. They try to save money to go back, but they have bought so many cars and TV's on time they can't get away from their debts.

"If they go back, their neighbors call them city slickers and say they have failed in Sweden. They don't like this because they are countrypeople too. They don't wish to live in these big apartment houses; they want to have their gardens."

With that, many Stockholmers can sympathize. They have come from the country in the last few decades; for most, parents or grandparents were countryfolk. The rural immigrants have infected many Stockholmers with the back-to-nature bug.

Other Stockholmers have a different perspective. Staffan Wrigge, my friend of the quality shirts, and his friend, Ina Widegren, the loveliest electronics engineer I have ever seen, are third-generation Stockholmers. As activists in Alternativ Stad, they are concerned with creating a better environment in Stockholm, but within the traditional, integrated big-city atmosphere.

When the government ordered destruction of a grove of 13 elms in Kungsträdgården park in 1971 to make way for a subway entrance, the group organized vigils and TV and newspaper campaigns. When sawyers began to cut, the activists slung hammocks and themselves in the trees all night. Alternativ Stad won.

Staffan lives in Hammarbyhöjden, in the southern part of Stockholm, the traditional laboring man's quarter. This suburb is a charming group of four-story apartment buildings with balconies and red-tile roofs, dating from pre-high-rise days. But what Staffan and Ina like most is the three square miles of Nacka recreation area that adjoin it.

As we walked through this wilderness, Staffan remarked: "See those lights strung up the hill? For skiing, just three miles from town. Or I can start on the Sickla canal, down there, and skate from lake to lake for 20 miles."

Back to Nature, by the Numbers!

Stockholmers love to abandon themselves to nature while keeping fit, but Swedish discipline never loses control. On some running paths I saw special training signs: Now You Can Run.... Now You Can Walk.... Now You Can Fast Run.... Now You Can Sauna.

As Staffan said, "Swedes over-organize everything. You Americans trust people too much; we, not enough."

Staffan pointed across the canal to the Henriksdal sewage-processing plant. "Because of such plants, Stockholm waters are now 95 percent pure. We have a bathing beach near City Hall."

Thorsten Sundström, Stockholm Commissioner of Environment and Recreation, who

is responsible for this progress, knew the exact distance from the beach to City Hall. By coincidence, the beach was built in Smedsudden, near the commissioner's home, and he walks the 1.3 miles to City Hall daily.

"We are planning nine more city beaches," the commissioner said, "but it all depends on money."

All this outdoorsiness within sight of skyscrapers is well enough, but every Stockholmer yearns for a summer home, *sommarstuga,* in real country. *The* place for a summer house is the Skärgård, the Stockholm archipelago—thousands of islands that stretch 90 miles along the Baltic shore (following pages). There the luckiest Stockholmers own or rent escape hatches that range from two-room cottages to contemporary glass ranch houses to Victorian gingerbread mansions on islets all their own.

Hannah and I traveled the breadth of the archipelago on the Silja Line's *Svea Regina,* an overnight luxury ferry to Helsinki, 260 miles away. This is an economical as well as scenic voyage, with round-trip fares ranging from $20 without cabin to $54 for the best. The dinner was gourmet—and staggering, especially for $4.30. "Before high taxes and inflation we had 80 smorgasbord dishes; now we have cut down to 50," Capt. Bo Lundberg apologized.

Fairy Tales and Politics Afloat

Stockholmers like to take every pleasure they can upon their waters, and this includes theater. Plying the archipelago spring through fall, the showboat *Nyttig* presents an odd repertoire of fairy-tale plays for children and slashing left-wing political satires. A boat ride across Lake Mälaren can also be a delightful prelude to an evening at Drottningholm Court Theater, on one of Mälaren's many islands. This 18th-century gem, in which the cream of the Royal Opera and Royal Ballet performs works of the period, uses 200-year-old stage machinery.

The most dazzling theatrical event of our stay, however, was the gala reopening of Oscar's Theater, the social highlight of the Stockholm season. The curtain could not rise on *The Merry Widow* until the king appeared in his box, and he exercised his royal prerogative of arriving late.

After the performance, we joined the more affluent members of the audience at Operakällaren, the city's finest restaurant, which

BOTH BY JONATHAN BLAIR

Love's labor's won. Ann-Marie and Tomas Wingenfeldt cuddle their new baby girl (**above**) after a natural delivery with the husband present (**top**) at Stockholm's 200-year-old Public Maternity Hospital. Sweden, a world leader in health care, has twice as many hospital beds per capita as the United States.

Weekend alter ego, the Stockholm archipelago (**above**) strings thousands of islands along a 90-mile stretch of Baltic coast. Some 500,000 privately owned boats proclaim the Swedes' love of water. Tens of thousands of Stockholmers ward off the strains of city life with vacation homes in the archipelago.

Others find the islands permanently addictive. Olof Arnold (**left**) gave up law school at age 27 to start his own water-taxi business. A government loan enabled him to buy a boat and build a small cottage. Archipelago old-timer Karl Erik Sven Pettersson (**right**) has lived for 59 years on Möja Island, where he owns and operates a boatyard. His family came to the island in 1887, and he has absolutely no plans to leave.

ALL BY ALBERT MOLDVAY

prepares banquets for the palace. Carl XVI Gustaf did not attend, but his uncle, Count Sigvard Bernadotte, did. He is a mild gray-haired man in his late 60's, and has never earned his living as nobility; he designs for Georg Jensen, silversmith, and others. We dined with the count and his countess, Marianne, and Tore Wretman, owner of the Operakällaren, and his blond wife, Ewa, amid an ornate 19th-century decor that is only a little less famous than the ornate modern of the Stockholm City Hall.

Youthful Leadership Guides Stockholm

Built from 1911 to 1923 at tremendous cost, the City Hall, though an architectural wonder, does not wholly please its present socialist occupants.

"They didn't give a damn about people being poor. They built this while we had hunger demonstrations," said Jan Karlsson. A good Social Democrat, Jan is right-hand man to John-Olof Persson, the city's finance commissioner, who, by control of the purse strings, is de facto "mayor."

John-Olof Persson, at 37, and Jan Karlsson, at 36, are typical of the youthful leadership that prevails in politics and industry. Commissioner Persson appeared before the council, Stockholm's legislature, in sport jacket, slacks, and sport shirt without tie.

"Because so many of the old have retired from government," Jan said, "older people no longer feel at home in this high-speed country run by younger people."

By a quirk of fate, Commissioner Persson happens to be the landlord of the Swedish parliament. When parliament went unicameral in 1971, its old bicameral building became unsuitable and parliament thereupon rented what was intended to be the theater of the city's new culture house. Landlord Persson collects $2,500,000 annually on this rental, but it makes for worry. Parliament has voted to renovate and move back to its old quarters; when that happens, the Stockholm tax rate may go up.

But more memorable to me than the public Stockholm is the private city—all those Stockholmers who took us into their homes, and all that delicious pea soup. One evening we spent with crane operator Einar Larsson, a widower of 65, and Brita Lundgren, a flower-shop saleslady in her youthful early 40's to whom Einar was paying court.

They gave us a dinner party at Brita's apartment. Perhaps I had some idea that here I would see how the "average" Stockholmer lived. I learned quickly that in Stockholm the average is, on the average, not average.

The apartment was spacious, beautifully appointed in Swedish modern. And the repast would certainly have strained my purse, featuring smoked salmon ($7 a pound), crayfish, prawns, pickled Baltic herring, Swedish meatballs, and browned pancakes stuffed with cheese and mushrooms. Aquavit and beer came with dinner; afterward, liqueurs.

Living in the Liberated Century

The other guests were three young people —a teacher, a university student of political science, and a secretary. Brita was more an intellectual than any of us, with a library of Swedish and English classics around her, and volumes by contemporary Swedish poets who are her friends.

But, in a society where the intellectual has the greatest respect for the workingman, the star of the evening was Einar. He told of the hard days, before the others had been born: how he came to Stockholm during the Depression and eked out the bad times as a messenger boy and worker in a margarine factory; how he went to work in the steel plant where he operated a crane before his retirement, "the most delicate crane in the shop," he said with pride, "hand-operated, not mechanical."

Later Brita led the young people in the songs of Carl Michael Bellman, an 18th-century Stockholm balladeer. As the devil-may-care verses tumbled out, it dawned on me that contemporary Stockholmers have leaped a century to find their roots. Overflying the proper and prudish 19th and early 20th centuries, Stockholmers have come comfortably to rest in that insouciant, liberated century in which Bellman scorned "the devil, the Bank, and civic renown" for "a girl and a bottle and . . . beer in the town." □

Counting sheep to fall asleep takes little imagination for campers in the midnight sun near Wenner-Gren Center. Traditionally in early summer, the park administration's four-legged lawn mowers are herded through the city streets from wintering pens to the greener pastures of Gärdet park. It's no great surprise for residents of surprising Stockholm. JONATHAN BLAIR

Haiti: Beyond Mountains, More Mountains

By CAROLYN BENNETT PATTERSON
SENIOR ASSISTANT EDITOR

Photographs by
THOMAS NEBBIA

With miles of up-and-down trail behind her, a woman finds a moment of rest at Jacmel, her head-carried cargo of fruit consigned to her lap. Most of the country's produce moves to market in this manner.

Poorest and one of the most densely populated nations in the Western Hemisphere, Haiti struggles to surmount obstacles no less mountainous than the land itself.

DAWN COMES ALMOST UNNOTICED in a Haitian day that has no real beginning, no definite end. It is my first night in the thatch-roofed, one-room cottage I have built for a sojourn in Labadi, a north-coast village. And sleep has not come.

I have listened through the night to the cries of children, oddly still at play on the beach at my door. I have heard fishermen dragging their homemade boats up onto the wet sand or down to the water—the hour makes no difference whether they come or go.

Even so, my ear failed to tell me when the gifts arrived.

With the coming of light, I open my door and look out. Women are up and about, preparing for an hours-long walk to market in Cap Haïtien. Farmers heading for mountainside gardens call out to one another in Creole, a native brew of language beyond my understanding.

That's when I discover the gifts: four freshly husked coconuts, a tremendous conch shell with fluted mouth of gold, a large crab.

I have come to live among a people so beset with poverty that an income equivalent to $100 a year is a bonanza. I am white in an all-black village. I am a stranger who can communicate only with frowns or smiles. Yet I am welcomed with gifts.

A party of men approaches. They stop at my terrace and display another present, this time of a remarkable sight. In their arms is a four-foot-long snake, a native boa, now dead.

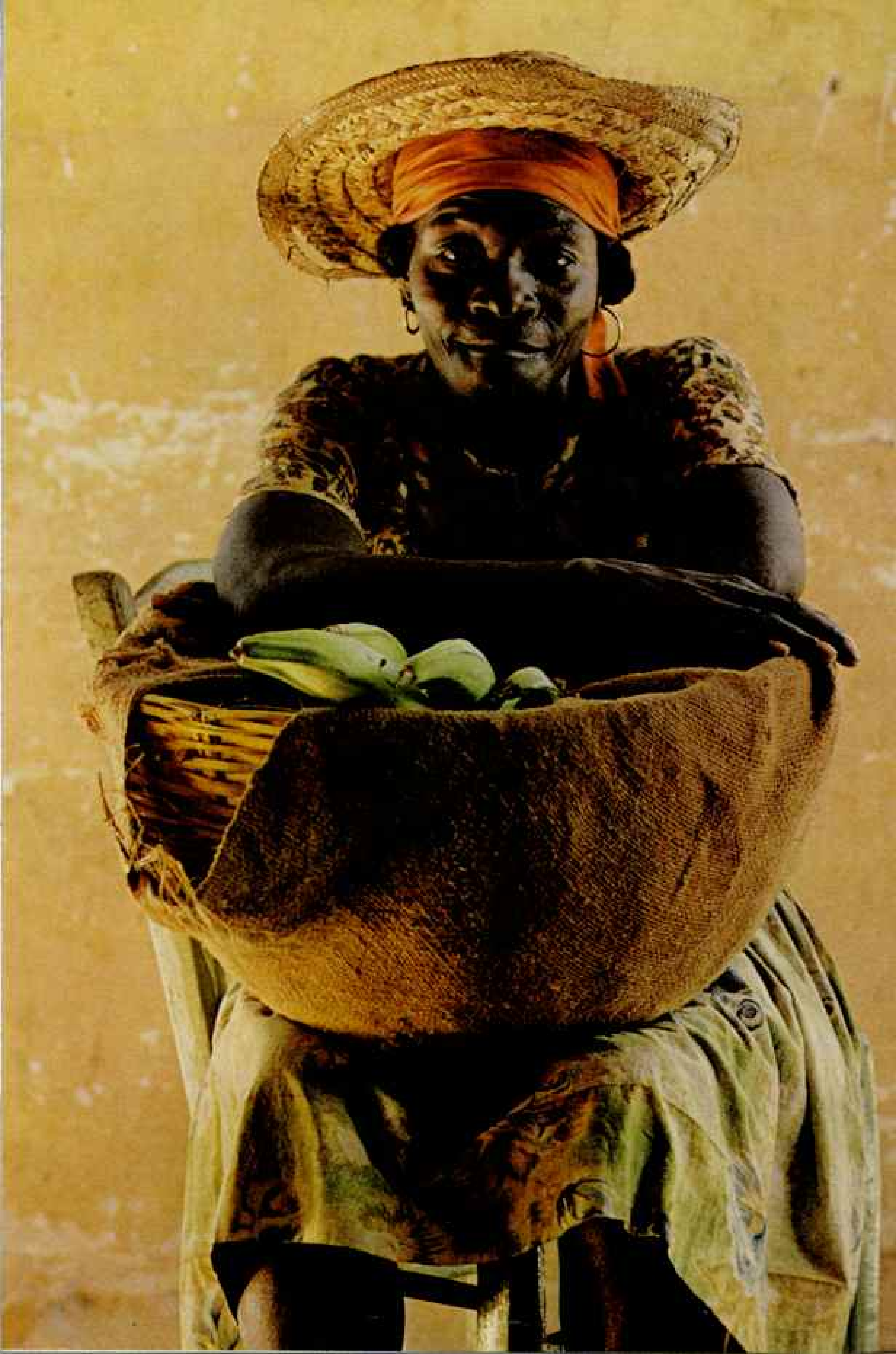
It is a prize, and the men watch my face to glimpse my astonishment, my delight. I cry sounds of wonder, and they smile broadly at me, at one another. Then, proudly, they withdraw. The snake, I am thankful to see, goes with them.

The scene shifts.

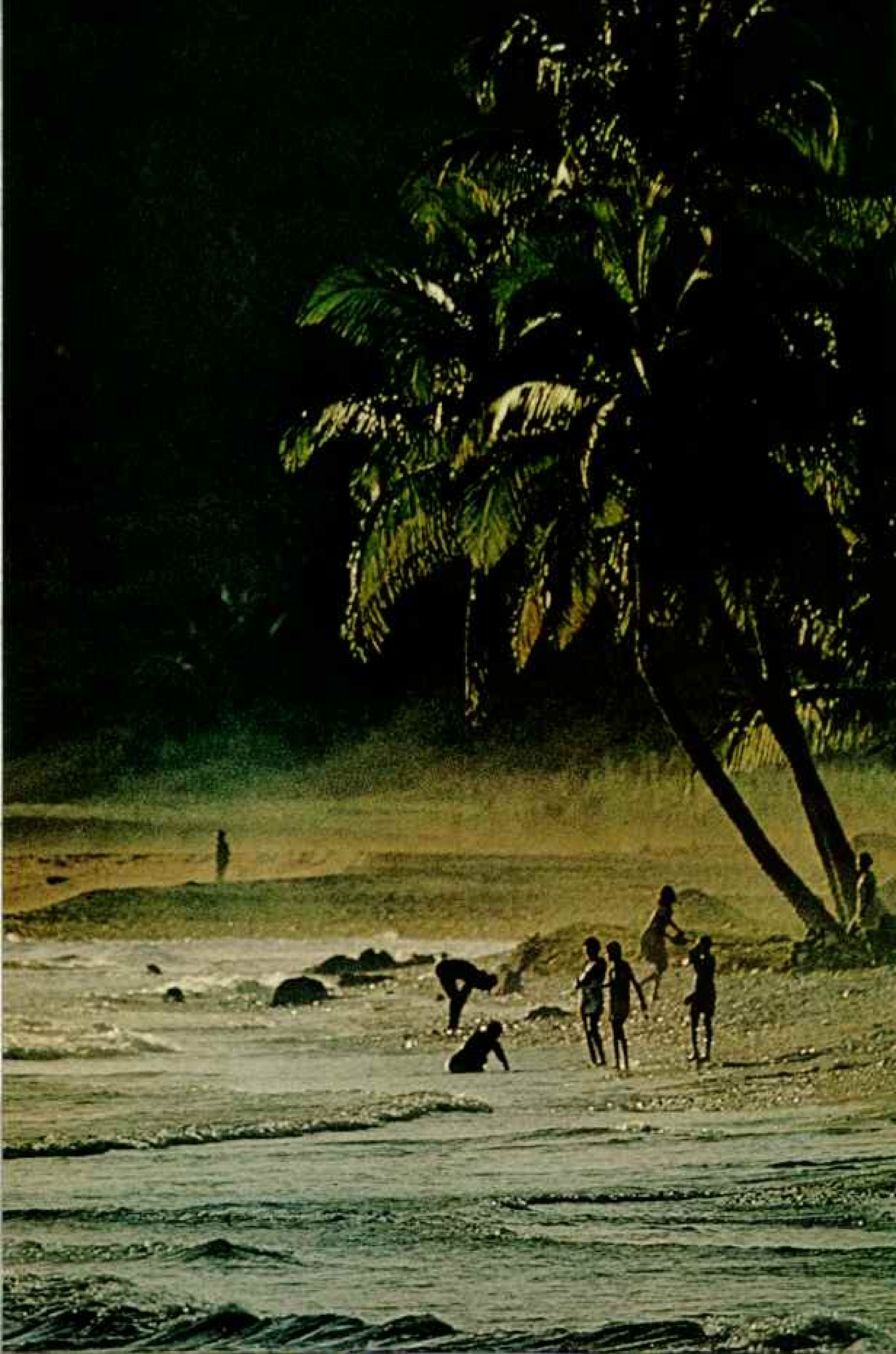
With friends I am returning from a Sunday drive in the country near Port au Prince, the capital. It is just before Mardi Gras; the road is alive with people on foot, in overflowing rattletrap buses, in *tap-taps*—rainbow-colored pickup trucks fitted out for passengers and bearing such names as "Grandeur of Jesus," "God Before All," "Mother of Christ."

We round a curve and come upon a throng that slows all traffic to the pace of a dance, a dance fired by a five-piece orchestra on a creeping truck. And, in all the flashing color, the wild music under the whip of drum, the ceaseless gyrations of bodies, I nearly miss seeing her.

She stands beyond the roadside ditch behind a wire fence that she is using for a clothesline. She is young and slim and beautiful.



AS IN THE MORNING OF TIME, *fishermen launch a handmade boat in the surf at Jacmel, onetime thriving coffee port. Half a century ago, oceangoing ships stopped here to load produce and passengers, who found it easier to sail to Europe than to struggle overland 25 miles to the capital at Port au Prince.*



STEPHEN L. DUNWELL (ABOVE)

Ever-present portrait of "Papa Doc" and son Jean-Claude Duvalier—past and present rulers of Haiti—adorns the police station at Milot. A painted salute joins the sign for peace on the bare back of a Carnival celebrator (**facing page**). The repressive regime of the elder Duvalier drew world censure and created thousands of refugees.

She sees the truck and the people; she hears the music. She is transformed. One hand drops the wet clothes and flies with the other high over her head. Her body, all vivid life and grace, begins to swing with the rhythm of the music. It is no less than an instant of purest pleasure—for her in the doing, for me in the watching.

Again, another time, another place.

As others, I am caught up in Carnival, that last moment of abandon before Ash Wednesday and the penance of Lent. My station, on the bed of a truck, is along the route of a parade through Port au Prince that is splashed with tinsel glitter, gaudy color, and music amplified to an assault on the ear.

At the beginning the truck is the resort of middle-aged adults, some seated comfortably on folding chairs. Soon, however, a slow but steady tide of children rises, first to the truck bed, then to its cab. I stand amid them, feeling not unlike a post, available to provide a steadying touch when, in the excitement, someone nearly topples from his perch.

A friend tosses me a package of candy mints. I peel one off for myself and detach another for my nearest young neighbor, whose mouth is only a couple of inches from mine.

"*Merci,*" he whispers, wide-eyed and solemn. Turning, he breaks the small candy in two and passes a piece to a friend, whose own "merci" comes to me like an echo.

I peel off another candy ring for the little face beside me. This time the two pieces go to other kids.

"Merci . . . Merci."

With one roll of mints and another one and still one more, I feed the multitude and listen to "thank you's" from all over the truck.

No one has more than a taste. But the sweetness of that exchange on a street in Port au Prince is truly abundant.

MY ENCOUNTERS with the remarkable spirit of the Haitian people came during a two-month sojourn in their black republic, which is slightly larger than the State of Maryland and occupies the western third of Hispaniola, largest island in the Caribbean except Cuba (map, page 79).

"Beyond mountains, more mountains," goes a Creole proverb that characterizes not only Haiti's vertical geography but also the struggle of its people. Surmounting one obstacle, they encounter others, then others.

One of the most densely populated nations

VIVE
JEANCLAU
DUVALIE
LOVE

in the New World, Haiti, with five million inhabitants, is also the poorest. Its per capita income of $125 a year makes neighbors such as Jamaica with $1,100 and Trinidad with $1,380 seem rich. Still, things have improved from a few years ago, when Haiti's per capita income of $80 was only $20 more than that of Rwanda and Burundi in Africa, the world's poorest nations.

Thus Haiti is woefully impoverished in almost every endeavor its society undertakes. Malnutrition is a plague and health services, outside urban areas, usually come from church or humanitarian agencies abroad.

Agriculture, mainstay of the economy, suffers yearly setbacks, principally from unchecked erosion on mountain slopes. Yet the trees that could hold the soil continue to be cut for charcoal so that people can enjoy something as basic as cooked food, there being scant electricity or other forms of energy.

Except for a very few of the well-to-do, private automobiles are beyond even the dreams of most Haitians. Public transportation requires the stamina of a battle-seasoned soldier. And the roads are so pocked with holes and washed out by rains that the location of whole sections is sometimes debatable.

Telephone service, though improvements have been made, is still erratic enough to provoke a sense of thanksgiving with every successful connection. Even in Port au Prince, line failure due to repairs is a way of life.

BUT WHAT STRIKES ME as frustration and failure does not, in fact, appear that way to the vast majority of Haitians. They strive for food and hope for good health, of course, but since everybody walks, simple paths are adequate. And few are even aware of how convenient—and irritating—a telephone can be.

SUSAN M. DOOLEY

Wasted by want, a youngster finds body-mending nourishment at the Albert Schweitzer Hospital. Throughout Haiti children show the ravages of malnutrition: reddening hair, bloated faces, bony backs, distended bellies. Last year drought brought crop failures in the north—and out-and-out starvation. A United Nations relief agency came to the rescue with $1,350,700 in food, only a stopgap measure in the unrelenting struggle to find enough to eat.

Also on the positive side, the Haitian is blessed with an optimistic nature, so much so that his name for a slot machine is "jackpot." Apparently he operates on the intelligent precept that being at bottom, the only way left to go is up.

And his creativity can only be described as astonishing. Brilliant paintings paper the walls of proliferating art galleries and hotels; even street vendors stock oils. There are at least a dozen major Haitian painters and sculptors and uncounted imitators, beginners, and minor talents at work full time.

Turning to other materials and disciplines, artists convert steel drums into flat-faced sculptures, carve figures from mahogany, and give free reign to fancy with embroidery and woven goods of straw, sisal, or bamboo.

"A renaissance," acclaims Selden Rodman, American author and interpreter of the Haitian scene.

Haiti needs no renaissance of tolerance; its citizens are so profoundly tolerant as to be almost blind. There is a distinct lack of racial bias. White people are safe on the streets, day or night, alone or in company. Even simple resentment of the fantastically more affluent foreigner failed to show during my stay. In this Haiti is different—different from many countries in the Caribbean, from parts of the United States, from sections of Africa.

"Why?" I asked Albert Mangonès, the prestigious Haitian architect, sculptor, and authority on his nation's culture. We sat at twilight on the lawn of his hilltop home and watched the lights wink on across Port au Prince, sprawled at the edge of the sea with mountains at her back (page 79).

"Because independence came early," he answered. "Haiti is unique in history, going directly from slavery to nationhood. That achievement gave us a sense of knowing who we are. We joke about ourselves; we criticize ourselves; sometimes we even despise ourselves. But we know that we are something.

"There's a saying in Creole, *'Tout' homme cé l'homme'*—'Every man is MAN!' "

I thought of his words again as I stood in the capital's Independence Square, long known as the Champs de Mars, and felt the unleashed emotion of Mangonès's powerful bronze sculpture of a nearly naked black man, on his knees but with his leg-iron broken, blowing the conch shell that called fellow slaves to revolt and to eventual freedom.

That call came in 1791, near the French colonial capital of Cap Français, now Cap Haïtien. Thirteen bloody years later the struggle against France ended with Haiti proclaiming its sovereignty—a nation of ex-slaves, the New World's second republic after the United States of America.

Thus the Republic of Haiti began life almost alone. And so it has remained for most of its years—even its recent and most depressing ones.

"WE WERE ALONE," my informant said in a whisper. "Cut off from the rest of the world in the middle of the 20th century. Never knowing when the police would strike. That was life under Papa Doc."

It was night and we sat out of doors, apart from the others, apart from the music and the lights. I could not see the expression of his black face, but I knew it was watchful. I had learned that it was still risky to speak honestly about François Duvalier, even though he had been dead for three years.

A soft-spoken physician who had studied in the United States, Duvalier had come to power by legitimately winning an election as President by an overwhelming majority in 1957. His aims: to shift power from a mulatto minority to a black majority and to improve self-sufficiency. But in consolidating his power, he is alleged to have resorted to abduction, imprisonment, torture, even murder.

Duvalier's brutal *tontons macoute*—"bogeymen"—in their blue serge suits, open-necked shirts, dark glasses, and side arms terrorized Duvalier supporters as well as opponents, since his policy was to trust no one.

During most of the Duvalier years, the late 1950's through the 1960's, Haiti had virtually no economic growth. One source of help, U. S. aid, was reduced for several years in protest against Duvalier's policies.

My nighttime confidant had once been a friend and supporter of the President-for-life, and he told me these things sadly.

"Worst of all," he concluded, "the regime made fear a pervading part of Haitian life."

That stranglehold of fear during Papa Doc's day was powerfully strengthened by the President's uncanny resemblance—perhaps cultivated—to popular renderings of Baron Samedi, the awesome keeper of the tombs in the folk religion, voodoo.

Flickering candles on the altar provided the only light in the tiny chapel devoted to the worship of Baron Samedi, but it was enough

for me to identify the picture of the man on the altar. Black suit, black hat, owlish eyes rimmed in black glasses, François Duvalier yet commands a place in the voodoo rites practiced in the backcountry of the Artibonite River valley.

Before my night out with the Haitian gods, the subject of voodoo had excited my wildest imaginings. It called to mind terrifying ceremonies, bloody with the sacrifice of animals—or, perhaps, humans—crazed dancing, possibly orgies, and mysterious miseries, even death, visited on an enemy by the sticking of pins into his image.

WHAT I FOUND, instead, was a meeting as friendly and easy as that of a Wednesday night missionary society. Furthermore, the priest, or *houngan*, who spoke some English, smilingly confessed that the occasion for the whole affair was to celebrate his birthday.

He had greeted me at the entrance to the temple compound, a rustic arch of intertwined branches leading to a packed-earth yard, neatly swept, lit by torches, and marked by a cross of whitewashed stones.

The temple itself was composed of six one-room thatch-roofed shrines, each dedicated to a different god or goddess, their plastered walls alive with brilliantly colored designs, or *vèvè*, sacred to the honored deity.

Voodoo, unlike most other religions, does not set deity apart to be formally worshiped. Rather, the voodoo gods join the believer, entering his body and speaking with his tongue. The dance and the trance provide the bonds for this union.

When the drums started, a chorus of women began to sing, a prelude lasting the better part of an hour. The actual rites began when the houngan lit a candle and, by dribbling cornmeal, formed on the ground a design sacred to the god Loko Atisu, a favorite of priests, whom he invoked and invited to "mount," or enter his body.

Then, as the drums kept up a steady beat, girls dressed in white streamed out and began to dance around the priest, who held his candle and rattled his gourd, or *asson*, symbol of authority. Waving flags, the dancers dipped and bowed in a kind of graceful minuet, as formal as in any 18th-century drawing room.

Hour chased hour and the dancing, singing, and drumming went on and on. But the god Loko was either in a contemplative mood or

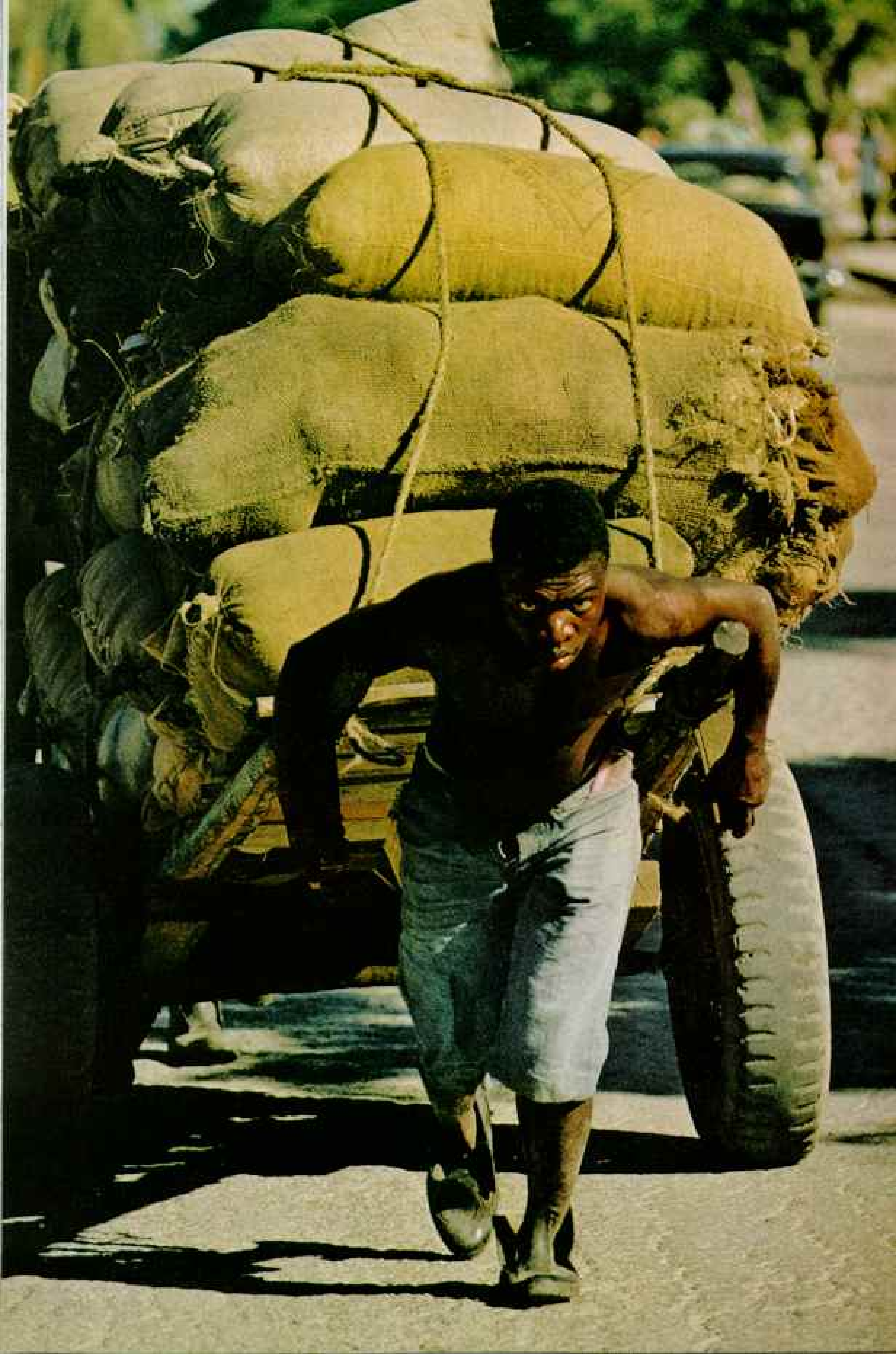
With youth his ally and a sense of fun to his credit, 24-year-old President-for-life Jean-Claude Duvalier grapples with his nation's monumental needs. Financial and technical assistance from abroad brings some progress, but slowly. Port au Prince, queenly by night (**right**) but besplotched with slums, sees increasing tourism with the enlargement of the airport. Air service and cheap labor encourage U. S.-based industries—baseball sewing, shoe finishing, electronic assembly. New port facilities now accommodate transatlantic vessels, and new turbines at the Péligre Dam create more energy. An ambitious road-building program is underway.

An even more hopeful sign: President Duvalier has quietly dispatched a cadre of bright young people to universities abroad, with instructions to return home and help him remake the country.

WESTERN CLAW of Hispaniola, Haiti was the site of Columbus's first settlement in 1492. Ruled by Spain, then France, Haiti became the New World's second republic in 1804. Its name, from an Indian word, means "mountain land." Rich in lofty beauty, Haiti struggles to feed itself.

AREA: 10,714 sq. miles. **POPULATION:** 5,200,000. **LANGUAGE:** French (official), Creole. **RELIGION:** Roman Catholic, voodoo. **ECONOMY:** coffee, sugar, light industry, tourism. **CURRENCY UNIT:** the gourde (20 cents U. S.). **MAJOR CITIES:** Port au Prince (capital), Cap Haïtien. **CLIMATE:** tropical, modified by trade winds, dry October to April.

Haiti



asleep, for no strange messages, no frenzied dancing, no animal sacrifices came forth.

The priest, peacefully jigging throughout, merely sipped some friendly liquid from a gourd, celebrating his birthday with his god in a manner obviously pleasing to both.

If voodoo showed me its happy face, the fact remains that the religion is a deeply serious affair—a living force that profoundly affects the lives of millions. Thus when Papa Doc, Baron Samedi's look-alike, designated his son, Jean-Claude, as President-for-life, the succession may have seemed ordained.

IT WAS ONE of those bright blue days of tropical winter, glistening with sunlight and tonic with sea-cleaned breezes.

I stood on the steps of the white palace at Port au Prince and let my eyes sweep across its green park where a dozen gray geese grazed serenely. Almost hidden amid the red of bougainvillea and the pink of crape myrtle were soldiers, who fingered machine guns.

The ear-splitting roar of a motorcycle told me that he was coming. Careening around a corner of the palace, he raced at full tilt toward me, arriving with a gravel-flying stop.

A grin spread across his full round face. A sport shirt and shiny black boots confirmed the picture of youth—handsome, hanging loose. After all, he was only 24 years old (page 78).

"Mr. President!" I greeted.

He replied with an airy wave of the hand and roared off for another run on his new Harley-Davidson Super Glide.

My interview with President-for-life Jean-Claude Duvalier had come earlier, in his office in the palace. In a dark pin-striped business suit and seated beneath a portrait of his father, he had tackled my questions with seriousness.

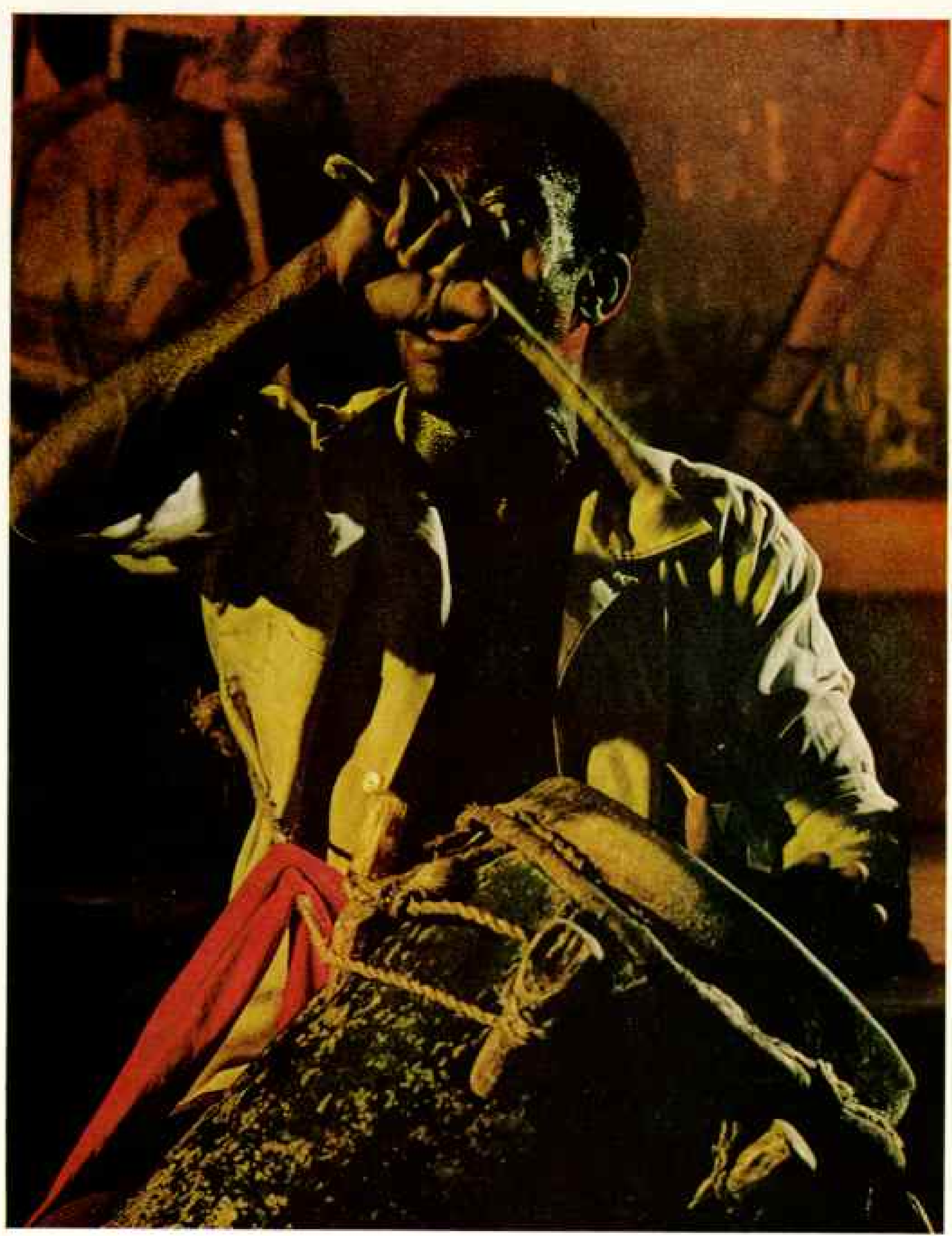
"What are your goals?" I asked. And he replied: "To raise the standard of living of the people."

Thereafter he set about detailing a formidable list of priorities: An extensive highway-building program. Installation of telecommunications. Enlargement and equipment of the port of Port au Prince. Electrification of the nation. Improvement of water distribution. Renovation of irrigation systems. Mechanization of farming. Importation of chemical fertilizer. Construction of an industrial park. New schools. New clinics.

"I am particularly counting on the youth of my country," he *(Continued on page 85)*

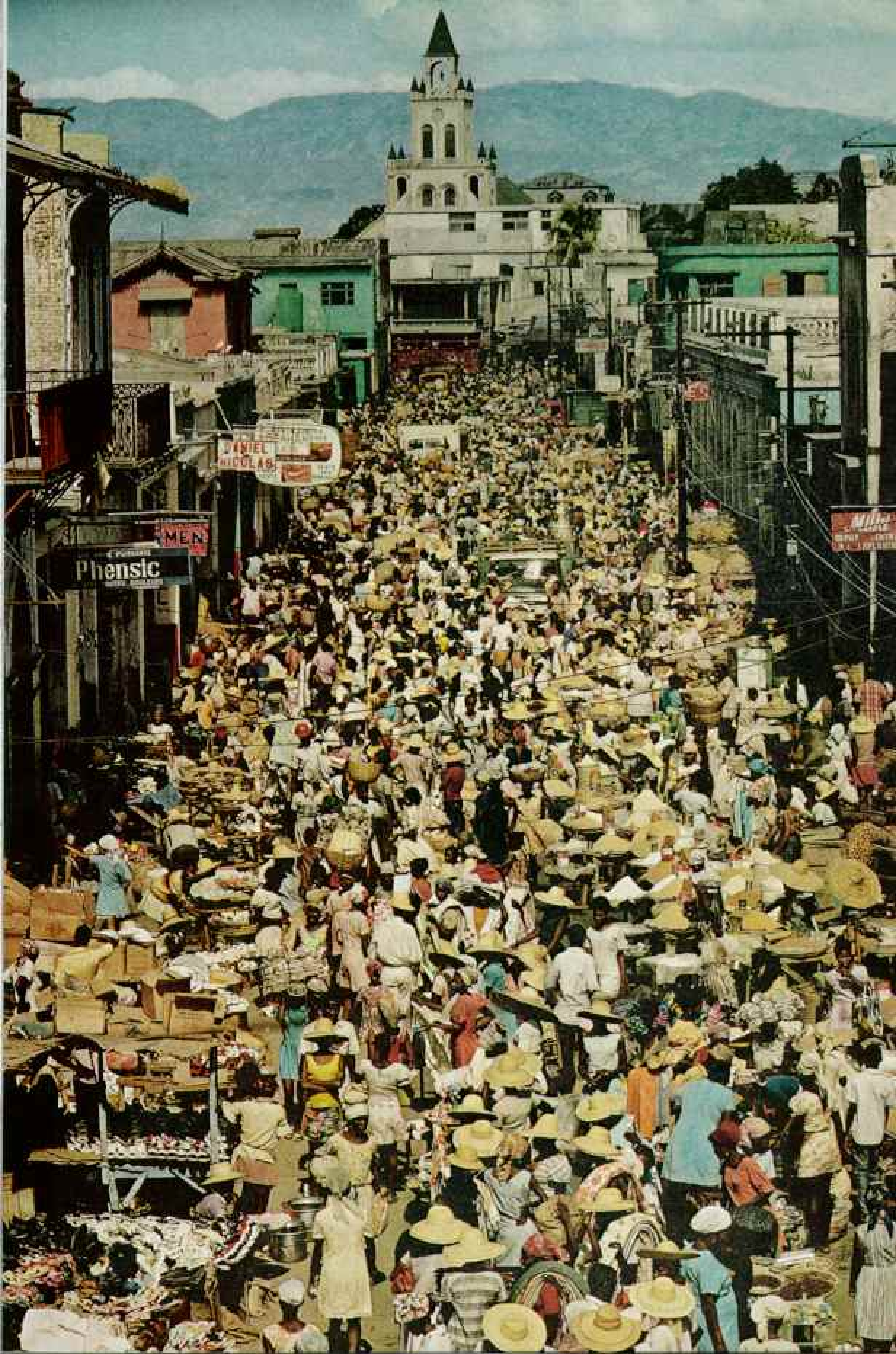
No burden too heavy but there's a man to pull it (**facing page**); no task too tedious but there's a dance in doing it (**above**). After hours of sorting coffee beans, a woman carries her selects through a Jacmel warehouse.

While most Haitians scratch a living from mountainside gardens—increasingly eroded as trees are cut for fuel—flatland crops such as sugarcane and sisal grow in sufficient quantities for sale abroad, helping earn Haiti $64,000,000 in exports during 1974.



Drums call the gods. In a nightclub near Port au Prince, a drummer and his troupe give visitors a taste of voodoo, the folk religion of Haiti. In everyday life, Haitians use the drum and the dance to induce a trance, inviting the spirits to "mount," or enter their bodies. From such unions, worshipers seek divine assistance or respite from fears.

Market draws the people. It is mostly the women who come, many before dawn, loaded with produce, walking from miles around, eager to sell, to buy. It is a social event, a time for news and gossip and laughter. They come every day to Port au Prince, where buyers and sellers throng a street beneath the tower of St. Joseph's.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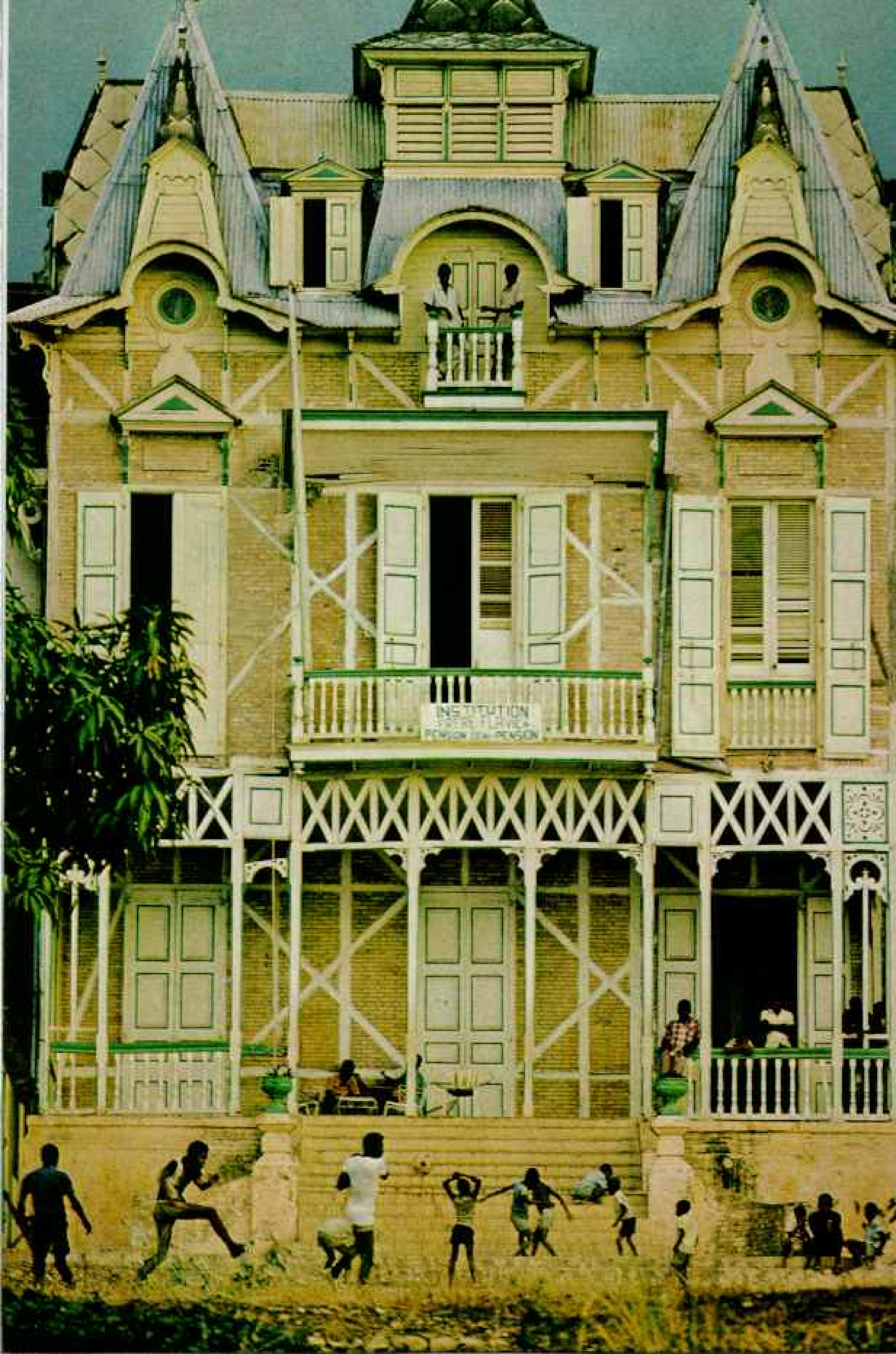

INSTITUTION

said, adding, "I symbolize for them the proof of its vitality and the promise of a better tomorrow."

He is also counting on foreign aid—and he's getting it.

But even with Jean-Claude as a symbol and foreign aid as a surety, Haiti ultimately will have to rely on its people, all its people, to turn trials into triumphs.

"MISSY, LOOK!"

"Here, Missy. Look here!"

"You want? You like?"

"Here, Missy, look! Look here!"

The litany of hawkers fills the ears; the variety and color of their wares overwhelms the eyes. But the Iron Market at Port au Prince, so named for the use of iron in its construction, does more than feast the senses (page 83). It is the premier showcase for the Haitian genius of making something out of nothing—the art of make-do.

Everything has value; anything can be sold.

Old tires? Only 50 cents each, and dandy for making sandals. Beer cans? Excellent for trays, when flattened. Old magazines, 10, 20, 40 years old? Very decorative as wallpaper.

Pictures of Catholic saints? Fine to pray to but also valuable for display in voodoo shrines. Hand-size dolls made from scraps of material? Made to order for a voodoo ceremony to receive an illness transferred from a sick person. From scrap metal: candlesticks, mailboxes, pots, pans, sculptures, anything.

My Haitian companion, Theo Duval, tells me a story: A car crashes and falls into a ravine. People pick the car to pieces, finding a use for every bit. Within a week nothing is left.

"With our penchant for recycling, we already have an ecological approach," the urbane Theo murmurs with a smile.

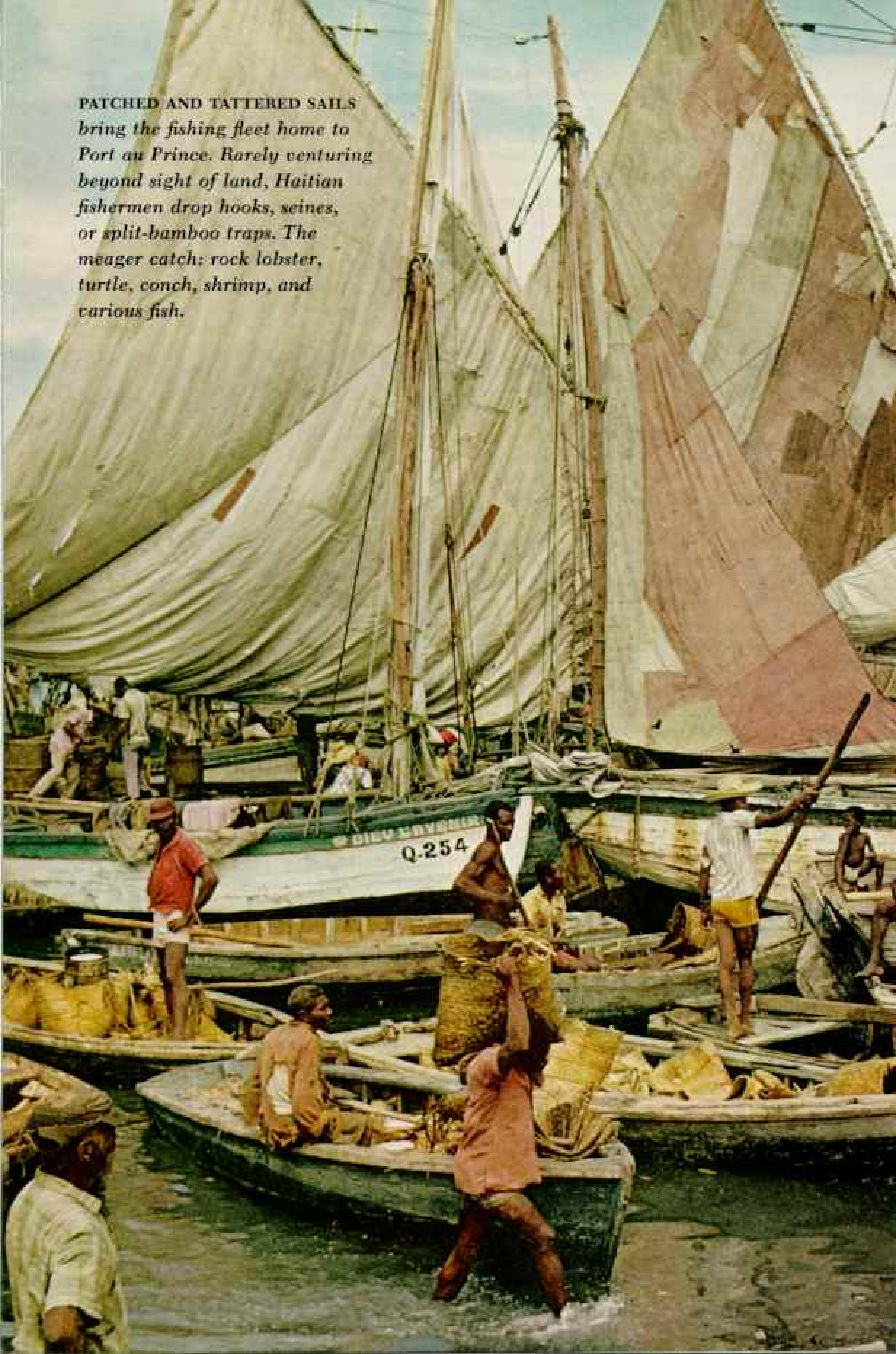
Whatever the approach, it all takes hard work. And through history the Haitian has paid out his energies in prodigious labor, especially during his years in slavery, as I could see during a flight along the north coast.

Below me, the ruins of the great estates appeared to be a veritable litter on the landscape. From the Môle St. Nicolas, where Christopher Columbus anchored on December 6, 1492—"lands . . . for everything in the world that man can want"—to the borders of the Dominican Republic, I saw everywhere the white stones of crumbled buildings piled like so many bones.

Sugar, coffee, cacao, indigo, and cotton plantations made France's St. Domingue perhaps the richest colonial possession on earth in the 18th century. Millions of slaves created that wealth at a cost in suffering that still flogs memory. Historians have estimated that the terrible attrition required replacement of the entire slave population every 20 years.

Even the chaos of revolutionary war failed to break the habit of hard, sustained labor, as was seen in the early 1800's during the reign of slave-born King Henry Christophe, who ruled in northern Haiti.

An old house. An old man. Both bespeak the immense artistic creativity of the Haitian. The house in Port au Prince (**facing page**), now a school, shows the ornate Victorian architecture popular in the city 75 years ago. The distinguished painter Philomé Obin of Cap Haïtien is a sophisticated "primitive," whose canvases sell for thousands of dollars. "Obin was a pioneer in a true modern-day renaissance of art," declares Selden Rodman, the noted historian and critic who has fostered Haitian art.



PATCHED AND TATTERED SAILS *bring the fishing fleet home to Port au Prince. Rarely venturing beyond sight of land, Haitian fishermen drop hooks, seines, or split-bamboo traps. The meager catch: rock lobster, turtle, conch, shrimp, and various fish.*

I STAND AT SUNRISE and listen to a choir of young voices singing Mass beneath the dome of Christophe's rebuilt church at Milot, near Cap Haïtien. Beyond the sanctuary stand the ruins of his palace, Sans Souci. A poem in high baroque, the palace is all that remains of Christophe's dream of a black kingdom with a court of grandeur.

With consummate elegance twin staircases sweep upward from the ground to roofless halls of state (pages 92-3). My mind's eye sees that other-age Sans Souci: all marble and mosaic floors, polished mahogany walls hung with imported tapestries, and lords and ladies, dukes and duchesses in satins and brocades cultivating the graces of the kind of society their monarch yearned to create.

On a nearby mountain peak, like a monstrous stone battleship, Christophe's Citadel is anchored in the sky (pages 94-5), yet another monument to the energy and endurance of Haitian working people.

I ride a tired horse up the rocky, twisting trail. Little ones, naked to the sun, run out to dance to the strains of "Auld Lang Syne," played on tiny bamboo flutes.

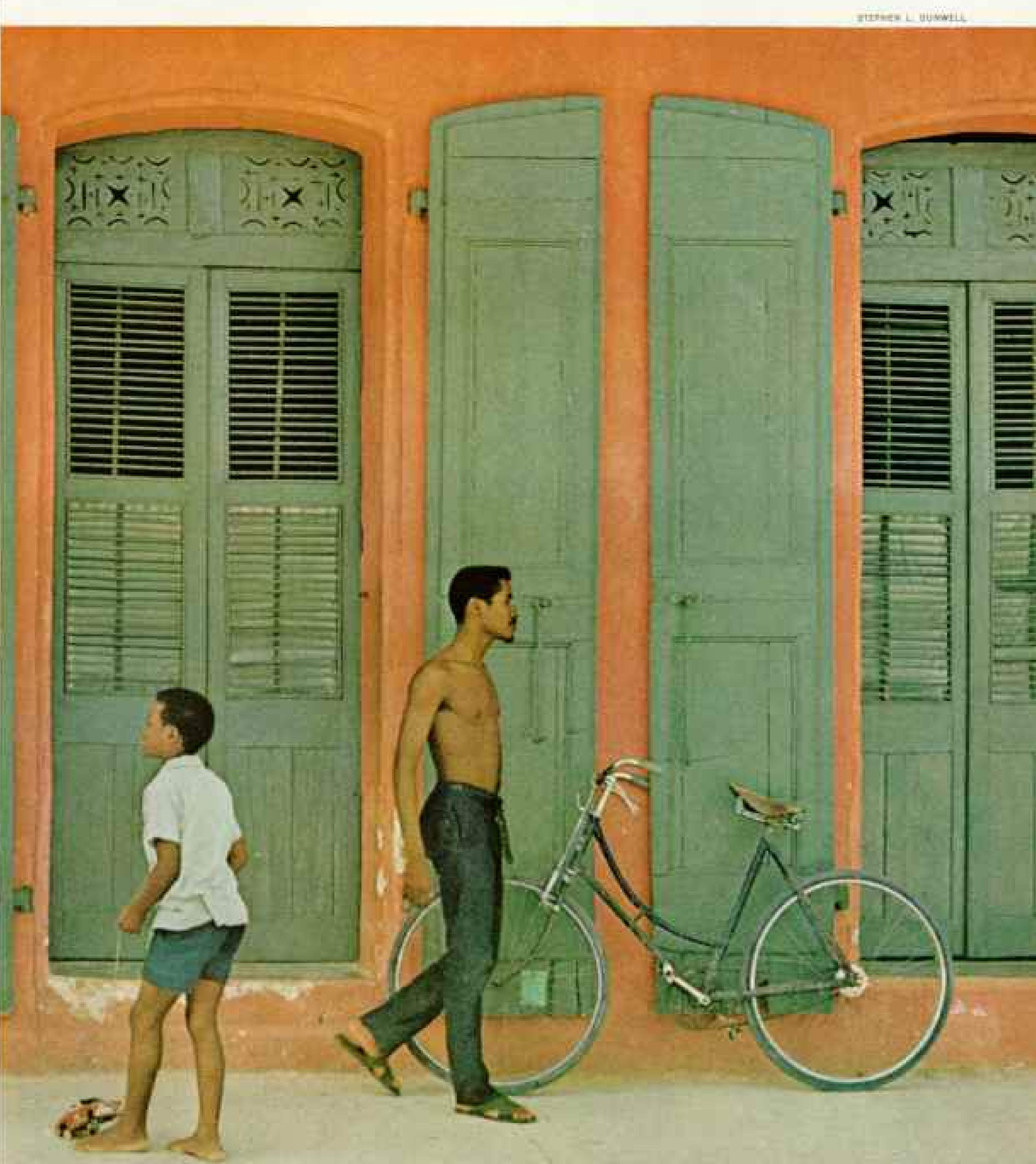
As the trail rises more steeply, I readily believe the story that 20,000 men died and hundreds of thousands of others suffered cruel hardships during some 15 years of pulling up stone, cannon, and supplies for the fortress.

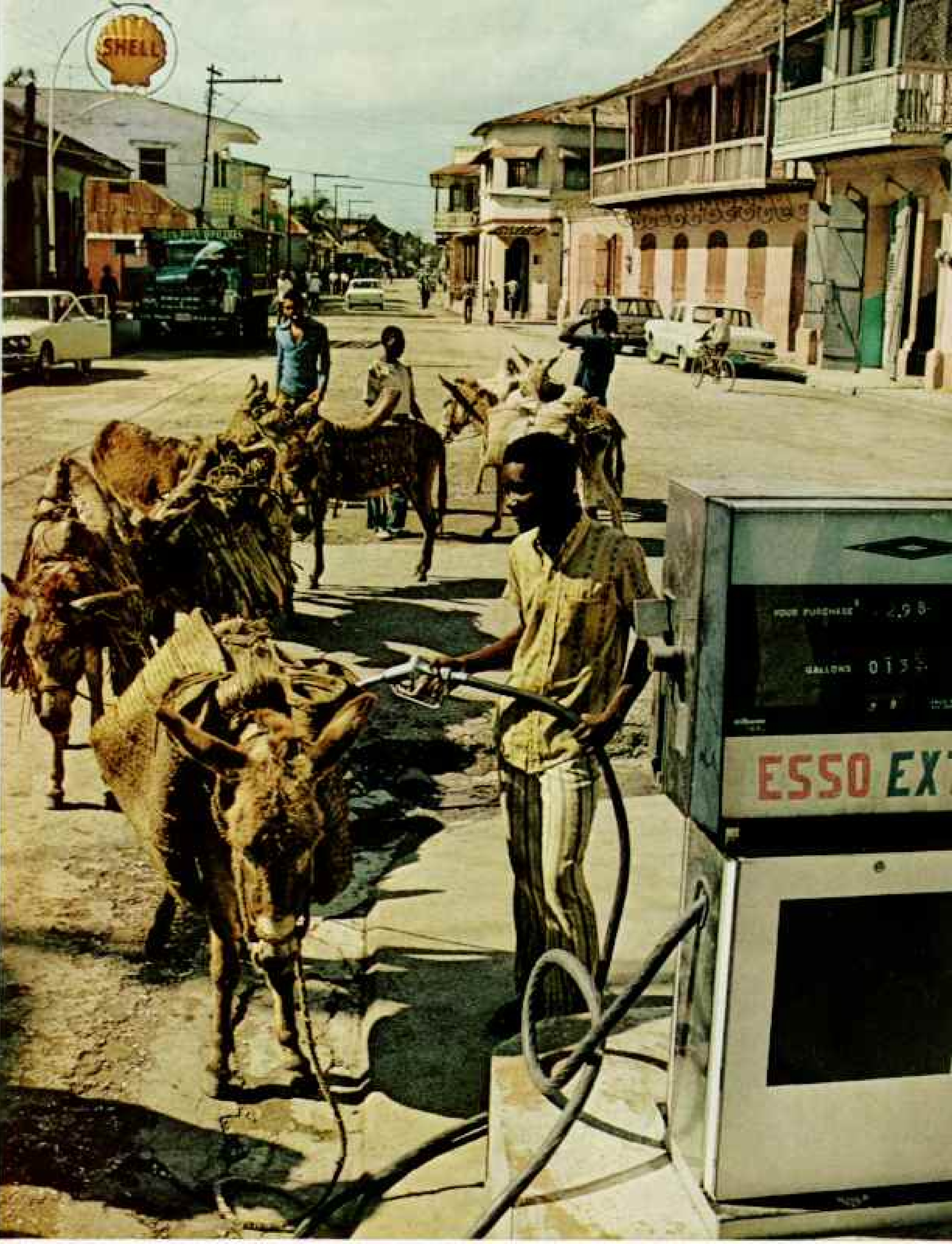
The result of their labor is so monumental the mind numbs: Walls up to 20 feet thick, a garrison for 10,000, palatial quarters for the king and his retinue, rooms to store ammunition, to make gunpowder, to hold water, to treat the sick, to safeguard the treasure.

We have permission to spend the night, and we build a fire in the so-called king's billiard

Gracefully deceptive, Cap Haïtien—onetime capital of France's richest colony in the New World—is neither as old nor as French as it looks. Burned in 1802, the rebuilt city was partially destroyed by earthquake in 1842. Risen from its ruins, Cap Haïtien today is a favorite port of call for cruise ships, with some of the nation's best beaches and most-historic monuments near at hand.

STEPHEN L. DUNWELL





Four-footed traffic backs up at a service station in the heart of downtown Cap Haïtien. The burro train transports gasoline in tins to villages miles away, a method of distribution less costly than trucking, which must itself consume the expensive fuel.

room, light candles, and waltz to tunes played on my tape recorder. It is a friendly affair in a place once shadowed by the tyranny of megalomanic Christophe.

In the dead of night I rise and stroll the Citadel's ramparts alone, seeking an audience with Christophe's ghost. But he denies it, leaving me only time's hand-me-down—history—to conjure the past.

Though never tested in battle, the Citadel now fights for its life, as I later learned from the project manager for its preservation, the young architect Frederick Mangonès, son of Albert Mangonès.

"The fortress is in danger! Vines and tree roots are ripping walls apart," he told me. "Little has been done in a century and a half to mend the ravages of time."

As many another would-be preserver of things of value in Haiti, Mangonès looks abroad for help. It is one of his nation's assets that many foreign individuals and institutions do, indeed, lend a hand.

LIKE A GROTESQUE Christmas tree, the huge tropical almond stands laden with the sacks and purses of patients who stash them there while waiting for treatment at the clinic of the Albert Schweitzer Hospital.

The hospital's U.S. founder-directors, William Larimer Mellon and his wife, Gwen Grant Mellon, have devoted much of their lives and personal fortune to the sick and destitute people in the Artibonite valley.

To rest from my tour of the ultramodern 144-bed hospital, I sit beside clinic patients and admire babies, listening all the while to Miss Pete, my guide. A diminutive birdlike woman, Nurse Walborg Peterson came to Haiti to help open the hospital in 1956; she has remained on duty ever since.

"We treat some 2,000 patients a week in the clinic alone," she explains. "Much is preventive medicine . . . shots for tetanus, diphtheria, whooping cough, measles. We also teach, especially expectant mothers. Since most Haitian babies are born on filthy dirt floors, we ask that the newborn be brought here with placentas attached so that we can do the separating and prevent infection."

Another U. S. couple devoting their lives to helping Haitians, Eleanor and Wallace Turnbull, run the Baptist Mission, one of the best of Haiti's many evangelical task forces.

Since the Turnbulls arrived in 1946, their work, supported by a Baptist mission group with headquarters in Grand Rapids, Michigan, has borne abundant fruit: 60 churches and 57 outstations ministering to 40,000 people, a hospital and a clinic serving 14,000 patients a year, 107 literacy schools for 7,400 mountain children, funds for disaster relief, road and farm improvement programs, and the Mountain Maid handicraft center, an outlet for the cottage industries instituted by the mission.

I walk with Wallace about his headquarters, 20 acres atop a knoll near Kenscoff, a mountain village near Port au Prince. The plunging slopes on every side remind me of Switzerland, but with an important difference: Here most of the plots are brown with parched grasses or sepulchral white with limestone barren of soil—the dreadful price of erosion after trees have disappeared.

"We're literally making soil and reaching countless mountain people with the news of how to do it," says Wallace, introducing a subject close to his heart—terracing.

"We started back in 1969 with a dry-wall contour terrace on that hillside. Then it was all gravelly and good for nothing." He points to a strawberry patch red with luscious fruit and shaded by recently planted trees.

"We put up the walls with stone taken from the field itself. The compost we added contributed an acidity that began to break down the limestone. Result: soil."

An inventive man, Wallace experiments with a system for capturing methane gas from human sewage to burn as fuel.

"With trees virtually gone, I see kids going hungry because there's no way to cook their food," he says.

At times there is no food to cook along the Gosseline River, where I go to see earthen dikes and an irrigation canal built with labor paid entirely in food supplied by Church World Service.

I borrow a jeep and driver for a hair-raising four-hour journey overland from Port au Prince to Jacmel, some 50 miles by road (map, page 79).

The difficulty is that the route gets confused with a winding river and dives into it at frequent intervals. At one wrong turn—dead easy with no road signs, much switchbacking, and water as an ofttimes running surface—we are dangerously out of fording depth and pushing downstream at the pace of racing current. Like a boat! Stopped by rock, we grind ashore just in time to avert disaster.

In Jacmel's Pension Craft, an old mansion overlooking the town square, I find a balm for travel aches, rocking on the upstairs veranda overlooking the palm-fringed sea with Haitian owner-managers Erick, Adeline, and Marlene Danies.

Another water-fretted ride the next morning brings me to the dedication of the irrigation canal at Marbial. Only a foot wide in places, it looks like a simple ditch to me, but its importance is quickly established by the size of the festivity underway.

Ceremonial grounds on a hillside are decorated with striking circular designs, made of green leaves, powdered charcoal, white sand, yellow sawdust, and purple clover. An out-of-tune but enthusiastic band plays for an hour before the blue-uniformed home guard parades. Speeches begin, welcoming the Minister of Agriculture, Mr. Jaures Leveque, who has come from Port au Prince.

A sudden, furious downpour breaks up the party, washing out the hillside designs and sending the band, militia, and out-of-town dignitaries scurrying for shelter.

As our jeep sloshes homeward, I muse upon the truth: The people were the festival. Dressed in their best, they came from miles around, walking but carrying shoes to keep them clean. They were smiling, with that eager look of expectancy that makes children so endearing. Yet when our eyes met, I saw a weary sadness. These are people who have endured, who will endure. It is their spirit that is Haiti's greatest asset.

HABITATION AMITIÉ, the House of Friendship, is my small contribution to Haiti. Upon my departure the house will become village property, with a rental potential that could give the community its first income for public improvements.

Small and simple though the house may be, Habitation Amitié—like the Marbial Canal—must be properly dedicated.

It is Gerard Almajor, chief man of Labadi,

Glory haunts the ruins of Sans Souci at Milot, the palace built by King Henry Christophe in 1813. Marbles and mahoganies, brocades and satins made it sumptuous; mountain water, flowing through ducts, kept it cool. To celebrate Haiti's 150th birthday in 1954, Marian Anderson sang on the floodlit grand staircase while a costumed king and his courtiers paraded above.

STEPHEN L. DUNWELL

Sailing a sea of mountains, the stone-prowed Citadel was raised by Christophe at monstrous cost in human suffering. It was designed to withstand any invasion sent by Napoleon, whose forces had earlier been repulsed by the upstart new nation. Commanding a view of the distant sea, the fortress waited in vain for the expected attack. Its cannon (**left**), many bearing the sunburst symbol of France's Louis XIV, never fired a shot.

who speaks—and in French. His audience: most of the villagers, who number 800 in all, and a few friends from Cap Haïtien and Port au Prince. But chiefly, he speaks to me.

"Thank you for coming here to our home from your great and remote country we know only by name," he says.

"When you landed, you said how beautiful you found the village and for this reason, how could we not love it more, we who live here?

"Sometimes we ask ourselves what are you coming to see here? Is it the spring? Is it the beaches and the mountains?

"We think the answer is this: You are in search of one place where the beauty of creation is still bursting!"

With guitars and drums, Labadi's band of young men then plays and everyone dances the merengue on the beach. Tall, raw-boned Father André Lebarzic, in immaculate tan suit and white collar, joins hands with a dozen 8-year-old girls, equally immaculate in starched pastel dresses and big hair bows. They skip a wild ring-around-the-rosy.

Ladies of the village ladle out big bowls of rice and savory goat stew. Village gentlemen pass around bottles of *clairin,* a fiery unrefined rum.

Late in the afternoon, the crowd departs and I sit on my terrace and watch the sky turn mauve and stain the sea the same color. Little girls pass by and shyly wave, their sweet *"bonsoirs"* come soft as a breeze.

DAYS THAT FOLLOW are filled with encounters. Each morning a tall, gaunt old man with stoic face appears to rake my beach. Since he rakes all the beaches, I think he must work for the village. But since the village has no public funds, I pay him.

The milkman, Pierre, brings the cow to the door and draws a five-cent cup for my kitten, whom he showers with gentle affection. Other entrepreneurs drop by. One has a chicken to sell for a dollar, another a crab for 40 cents. Superb langouste, clawless but with meat as tender and tasty as Maine lobster, dangle before my eyes, only three dollars for four. Limes, sweet small bananas called "figs," papaya, fresh butterbeans, fresh thyme are priced at a few pennies.

I stroll wide village paths worn smooth by bare human feet. No car or other vehicle disputes my passage in a place whose only access to the outside world is by rugged mountain path or by open sea.

Mama François Foster sits at her door, pounding peanuts with wooden mortar and pestle, her enormous bulk surrounded by peanut hulls. She fills my jar with the paste, deliciously seasoned with hot peppers.

At one of Labadi's front-porch "stores" my eye needs but a glance to take in the complete stock: three soft drinks, half a dozen pieces of bread (2 cents each), a jar of brown sugar candy, an enamel bowl of rough sea salt, a few pinches of dried herbs.

I am sad that I cannot speak Creole; my limited French is understood by no one. But my friend Almajor struggles valiantly to converse with me in English. I recall an incident during the construction of the house.

With Almajor acting as contractor, the building of Habitation Amitié was a community affair; at one time or another most of the men of Labadi donated their labor to the project.

On one of my trips to see how things were progressing, I noted that the door from the living room to the back porch had been cut some three feet off the desired center.

Almajor and I had a conference. I spoke slowly, with many gestures. Almajor looked perplexed, with brows knitted in concentration. Finally, a broad smile broke.

"Ah," he cried with relief and delight. "Error! It was error!" His pleasure at having found just the right English word erased completely any misgivings over the mistake itself. And the matter was closed.

MY PLEASURE in living at Labadi cannot erase, however, my distress at being unable to alleviate the poverty surrounding me.

Take what seems at first simply fair play in the game of curiosity: I spend the day observing the people of Labadi; they claim the night for looking at me and my husband, who has come for a visit.

We dine by candlelight on our porch, shielded as it is from the sea wind. We are an island of light and we are on stage. All the neighbors come out for the show. Children take front-row, ground-level seats; adults stand behind.

There is much talking and laughter until we sit down to dinner. Then the audience grows quiet, as if a curtain has gone up. And they watch with undivided attention.

We go inside for coffee and, as if house lights had gone up, our audience begins again to visit among themselves.

Then one night we are awakened about midnight by the sound of group singing. It comes from the home of a neighbor on the hill just behind us.

At first the song is slow and sad, like a dirge. Sometimes the people sing it in rounds. As the night wears on, the singing gets stronger, more beautiful, like mighty chords from a great choir.

Toward dawn, melodies come, so sweet the heart melts, and softer, evoking a sense of peace. Then silence.

Almajor comes with the news. "A young boy died. He sick a long time."

It is malnutrition, we learn.

And we wonder if the boy could have been one of those faces, with big wondering eyes, peering out from the dirt at the edge of light from our dinner table. And we feel an ache too sad for tears.

They take the boy's body from his home, a one-room dirt-floored dwelling that had been cleared of furniture and draped in white cloth. With family and friends we follow the coffin to the church, where the priest's helper reads a service for the dead. Afterward we climb the mountain to a cemetery so poor there are no tombstones.

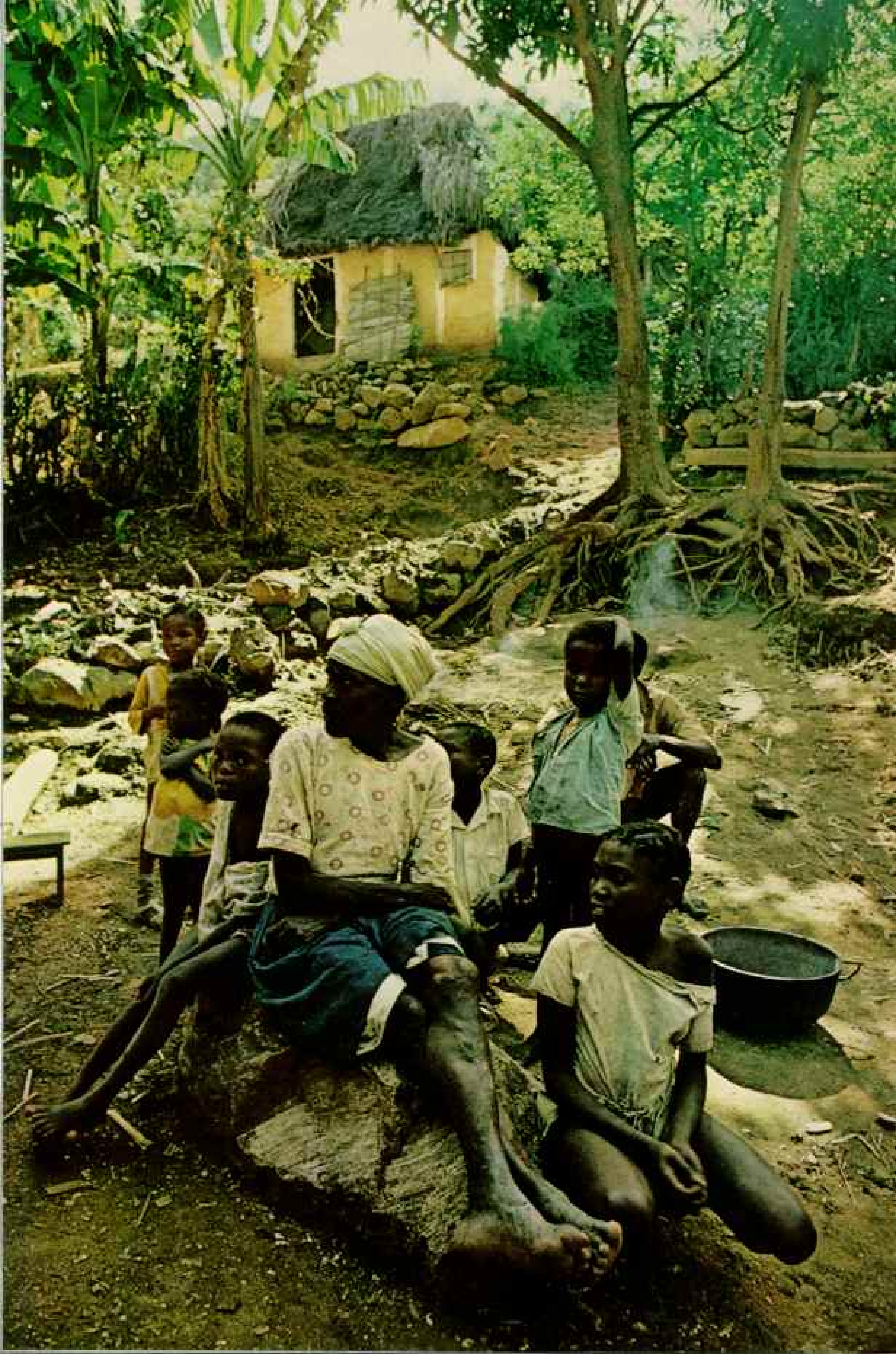
A guitar picks out the plaintive strains of "Auld Lang Syne" and it is over, we think. But there is something yet to happen.

Nine days after the burial, we are sitting on our terrace, packed and ready to leave Labadi. Several neighbors walk by, nod and pass on; they carry freshly cut leafy boughs like wands. At the still-shrouded house of the dead boy, they stop and enter.

Inside, they pin their green offerings to the white cloth, making a bower. In it, they sing once more, through the night. Thereafter, it is over.

My Haitian friends have made it across one more mountain. □

All they have is one another, this mother and seven children living in the one-room thatched hut. But Haitian children are much loved and tend to grow up, if indeed they live so long, with a warm and generous spirit, always willing to share. And to appreciate. The mayor here at Labadi told the author, "The beauty of creation is still bursting."



California's Parched Oasis

The quiet, peaceful Owens Valley—did it win or lose in its water war with Los Angeles?

JODI COBB (ABOVE) AND GALEN ROWELL

In everlasting prayer, a three-inch clay figure of a worshipful chief (**above**) by Paiute sculptor Raymond Stone seems to symbolize the reverence for water in the Owens Valley. Residents protested vehemently when the Los Angeles Aqueduct (**right**), completed in 1913, began bearing most of the Owens River to that distant city. A decade later, amid a drought, sections of the 222-mile conduit were sabotaged. Controversy continues, but many in the valley now prize a way of life preserved by the city's thirst.

IN THAT DEEP and disputed valley where greed for water has broken men and molded California, we were returning to the primeval. Squatting on wintry earth in the blackness of a Paiute Indian sweat lodge, we sipped mountain water and ladled it upon hot lava rocks. Steam hissed up, pungent with herbs, and seized at our lungs.

As the medicine man began to chant, the dark circle of Paiute worshipers erupted with soaring cries and guttural responses in a language almost lost. Wrapped in towels, we soon sat in the mud of our own sweat. Through us water was reentering the parched earth of the Owens Valley.

This was the sacred sweat ceremony, a tribute of oneness with earth and water and the Great Spirit, to whom the Indians were praying for respite from pain and disease. We heard reverent praise of those Paiute subdeities, the eagle and buffalo, and a smoking pipe was passed.

Just as it seemed we could endure the heat no longer, the Paiutes raised the flaps of our sweat lodge, a framework of saplings supporting a thick dome of tarpaulins. Blinking in the light, we sat and cooled.

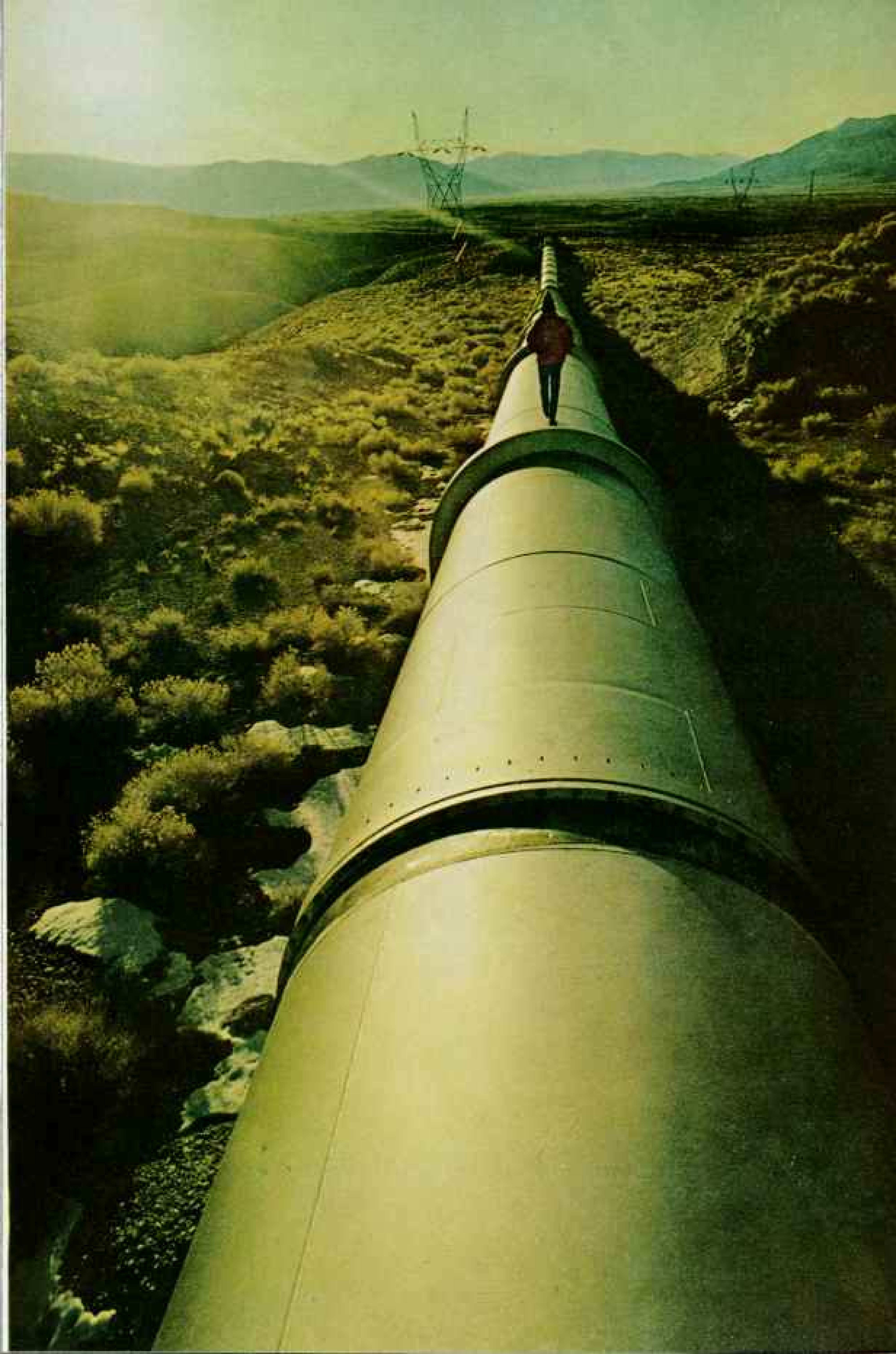
"Give your minds to the Great Spirit," the medicine man said quietly, "and you will breathe."

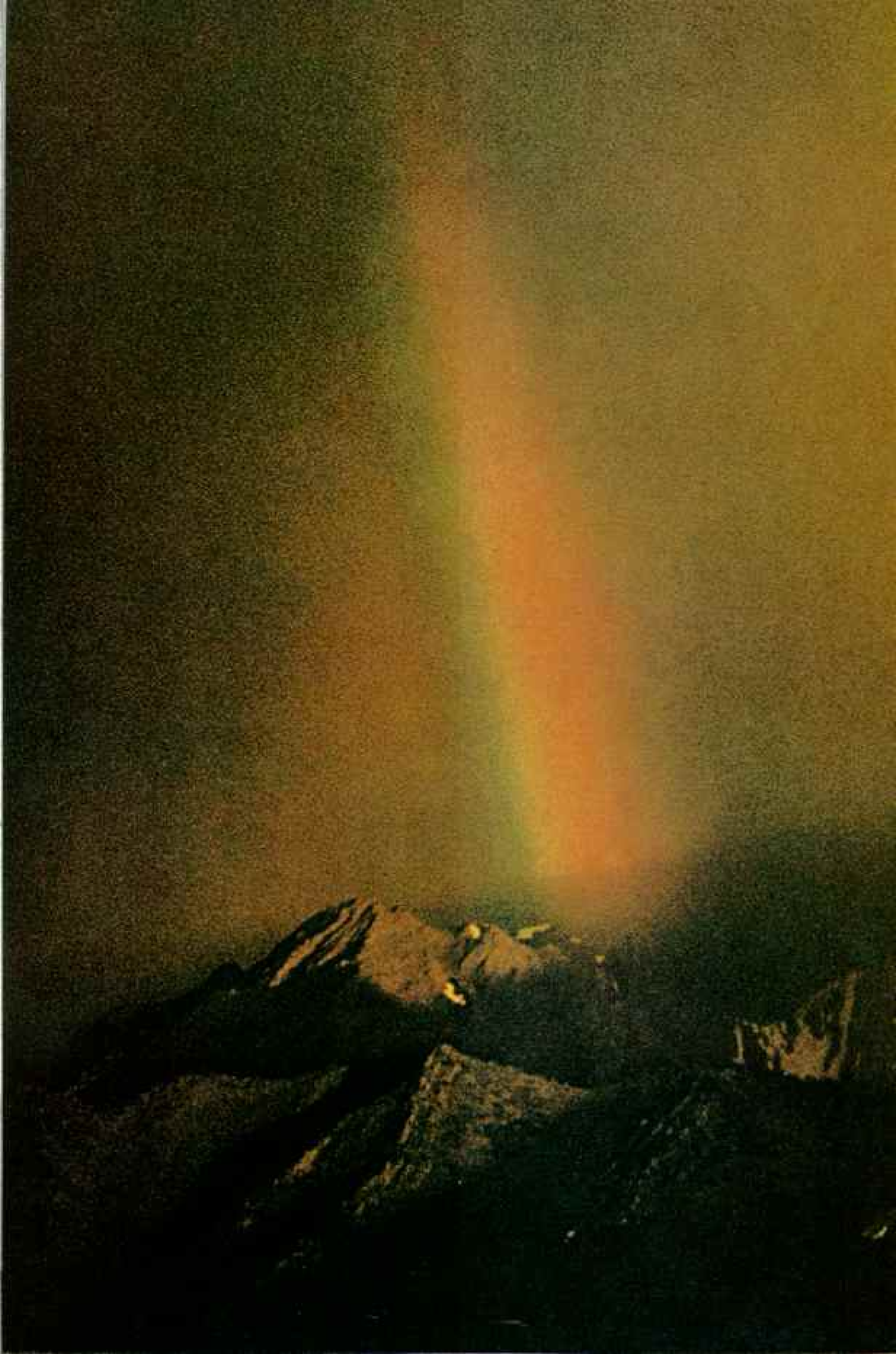
Indian rituals are less bizarre than the intrigues of the white man in Owens Valley, a majestic mountain corridor on the sparsely settled, almost forgotten eastern side of California. For more than eighty miles parallel ranges wall the valley. On the west is the stern and jagged escarpment of the Sierra Nevada. To the east are the arid White and Inyo Mountains, crowned with bristlecone pines, most ancient

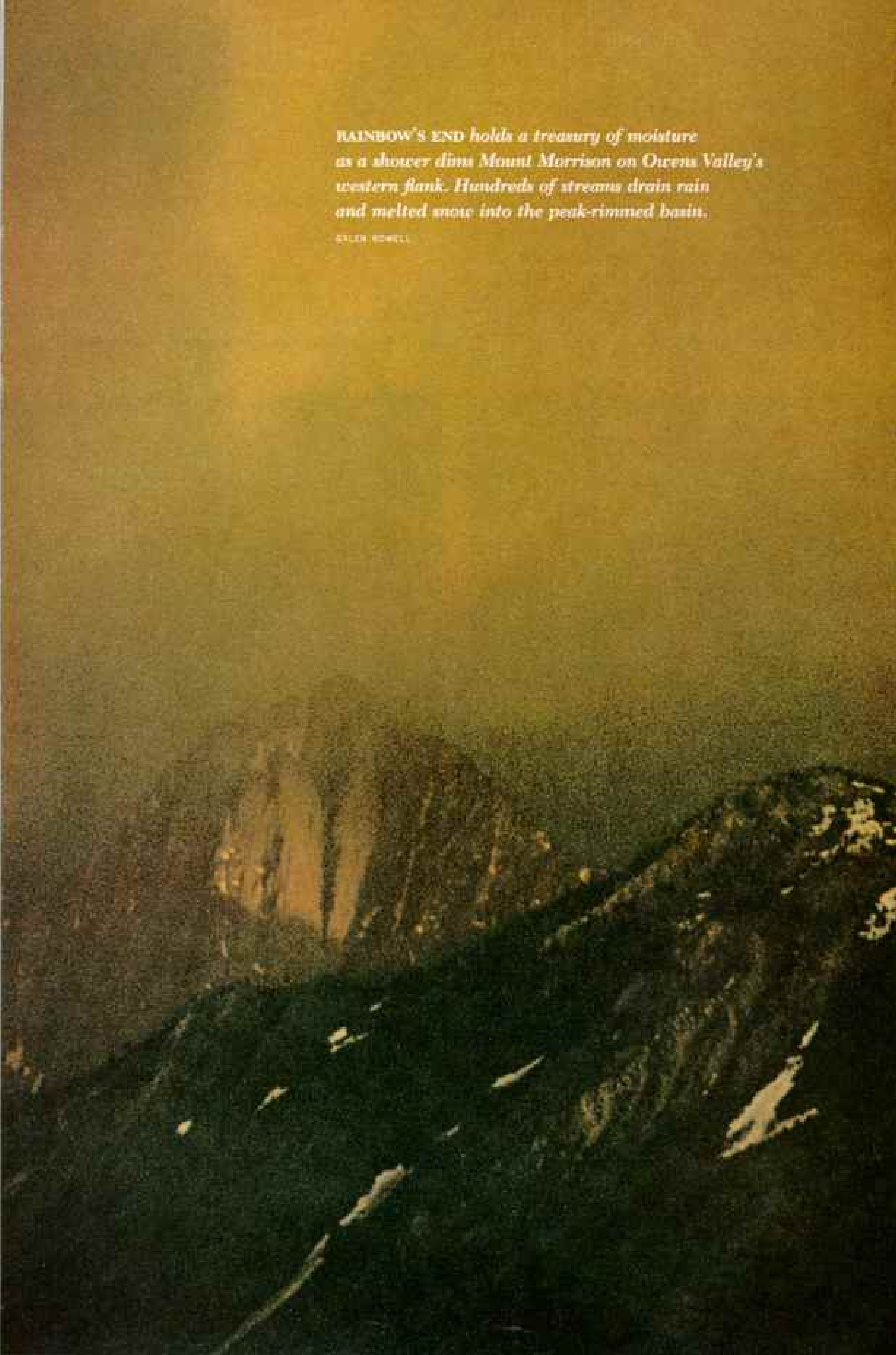
By JUDITH and NEIL MORGAN

Photographs by

JODI COBB and GALEN ROWELL







RAINBOW'S END *holds a treasury of moisture as a shower dims Mount Morrison on Owens Valley's western flank. Hundreds of streams drain rain and melted snow into the peak-rimmed basin.*

GALEN ROWELL

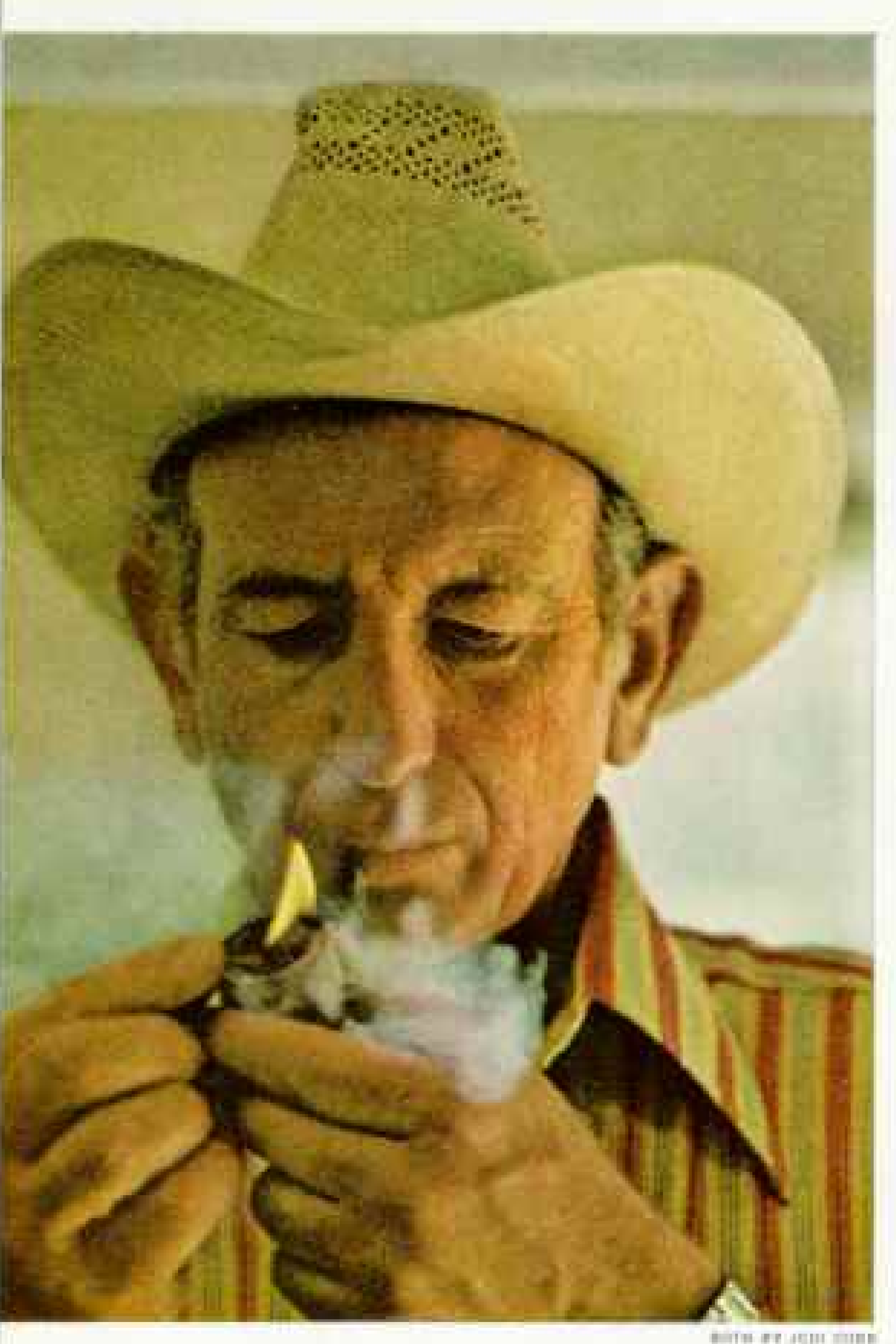
of all living things. At the valley's narrowest it is less than twenty miles across from one crest to another, with 14,000-foot peaks on both sides.

On a fall day we looked down from near Mount Whitney to the valley floor two miles below. Beneath a sky of stained-glass blue, Owens Valley seemed a desert (pages 104-105). Yet it is a bountiful water source—and one of the most disputed on earth. The melted snow that cascades from the Sierra Nevada ends up 130 miles away in Los Angeles, which controls 99 percent of the valley's water, above and below ground.

"We are a colony of Los Angeles," a rancher told us. "Less than 2 percent of our valley belongs to us. We pay rent to the Department of Water and Power, even for our stores and churches. There is more Los Angeles land here than down there in the city."

Metropolis Quenches Its Thirst

Early in this century rapidly expanding Los Angeles was faced with drought. In a daring solution, moving deviously but within the law, city agents bought Owens Valley land and water rights. By 1913 the city had built a 222-mile aqueduct northward across



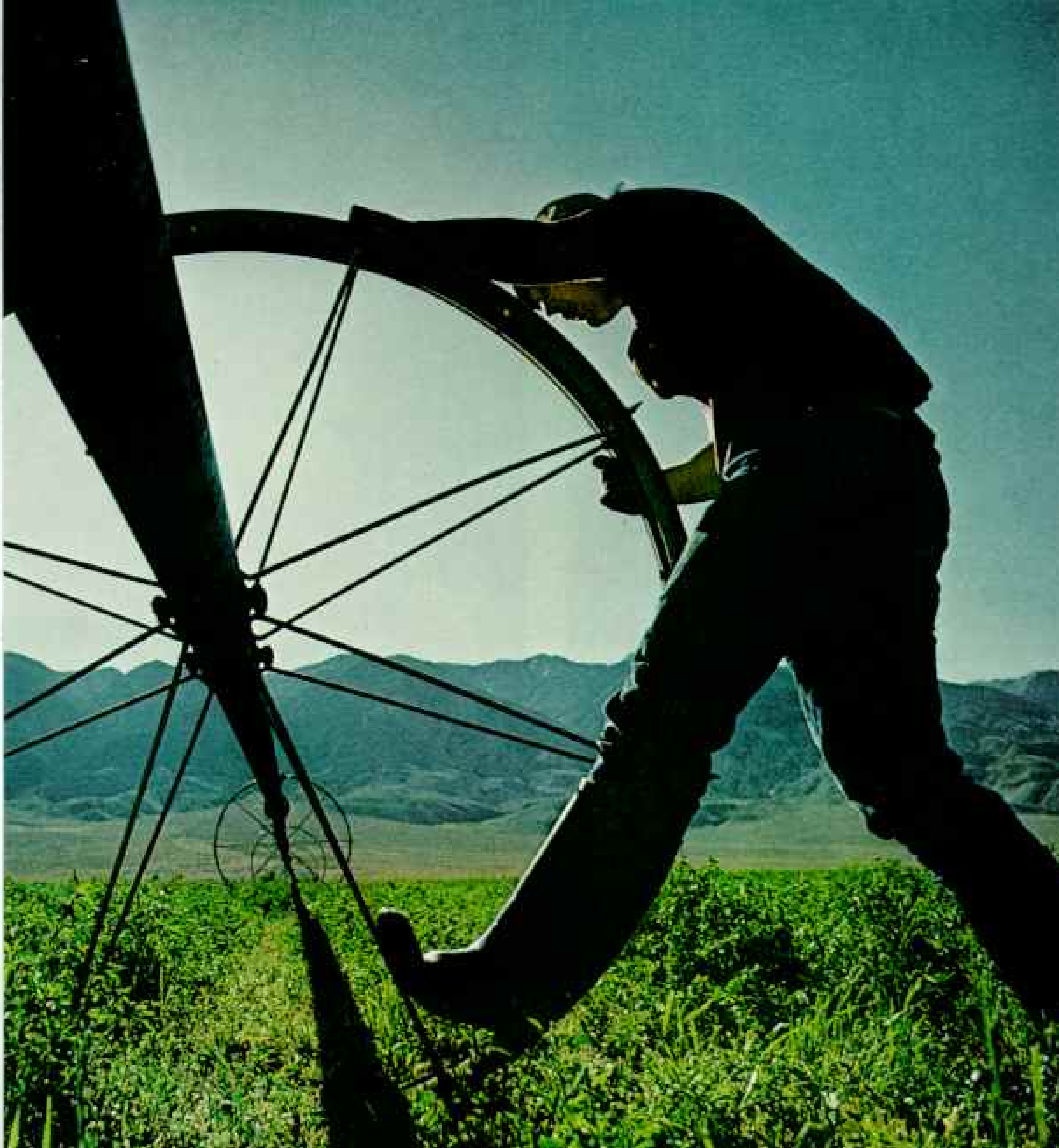
Water on wheels: Fred Zack shifts irrigation pipe (**right**) to soak alfalfa on the family ranch. Quiet, uncluttered vistas drew his father, Milton (**above**), and uncle, Morris, from city medical practices in 1965 to one of the few valley spreads with its own water. Much of the land once used for produce fields and orchards has reverted to desert. Stock raising has declined as well, but remains an important part of the valley economy.

the Mojave Desert to tap the Owens River near Independence (map, following page). Valley ranchers retained the right to divert upstream water for irrigation.

During another drought cycle in the 1920's, the city began buying out valley settlers to extend its rights far northward to the headwaters of the river. Bitterness and suspicion flared. The aqueduct was dynamited. Six months later, ranchers seized and held the aqueduct's control gates for five days.

Bank credit became a critical factor, as bankers outside the valley refused loans to defiant ranchers seeking to maintain their land. Mark and Wilfred Watterson, brothers who owned the local banks, became virtually the valley's sole creditors and led the fight against the city. But with an unexpected visit of a bank examiner one day in 1927, the Watterson banks collapsed. The brothers were convicted of embezzlement and sent to San Quentin prison.

Ranchers who had sold out to the city and deposited the money with the Wattersons lost their windfalls; the others lost the will to fight on. Soon the city controlled virtually all water rights. Most ranchers sold their land, and many left. Dairies, fields, and orchards withered.



Ribbon of life for millions, the Owens River nourishes little but its banks in its own arid valley (**right**). A canal at upper right diverts the flow to the original aqueduct, plus a second conduit added in 1970. Tunneled through mountains, siphoned along deep canyons, the system takes more than half of the valley water for use in Los Angeles. JODI COBB

Magnet of open space attracts more people to Owens Valley each year. Droves of motorcyclists gather at Mammoth Lakes on the rugged western rim for annual races and stunting. Padded for protection, members of the "Old Timers" club rest between spills (**below, right**).

A backpacking dog named Domino leads a family of mountaineering novices and their Sierra Club instructor through Echo Lake high country. Sensitive to accusations of "water imperialism," Angelenos helped push for a paved highway beside the Sierra that opened the valley to pleasure-seekers.

The scars of the 50-year-old water war are slow to heal. A new battle has broken out, this time in the courts. In litigation between Inyo County and Los Angeles, the valley seeks to limit the city's pumping of underground water to fill a second aqueduct.

"Our people must have *some* control over their destiny," reasons Wilma Muth, an urbane woman who serves as Inyo County supervisor. Yet Los Angeles is the big landlord in the valley, and valley talk turns inevitably to the "City," the "Department," or even, as one bemused official put it, the "Kingdom of Water and Power."

The colonial relationship is schizophrenic. The city's tight but usually benevolent grip has retarded valley growth, leaving its scenic

glories relatively undisturbed. Sagebrush land owned by Los Angeles pushes up to the outer streets of every community. Tourism has become the staple of the valley economy; service stations bring in twice as many dollars as cattle. But this only heightens colonial tensions. The valley provides Los Angeles with 80 percent of its water, and has become its playground as well.

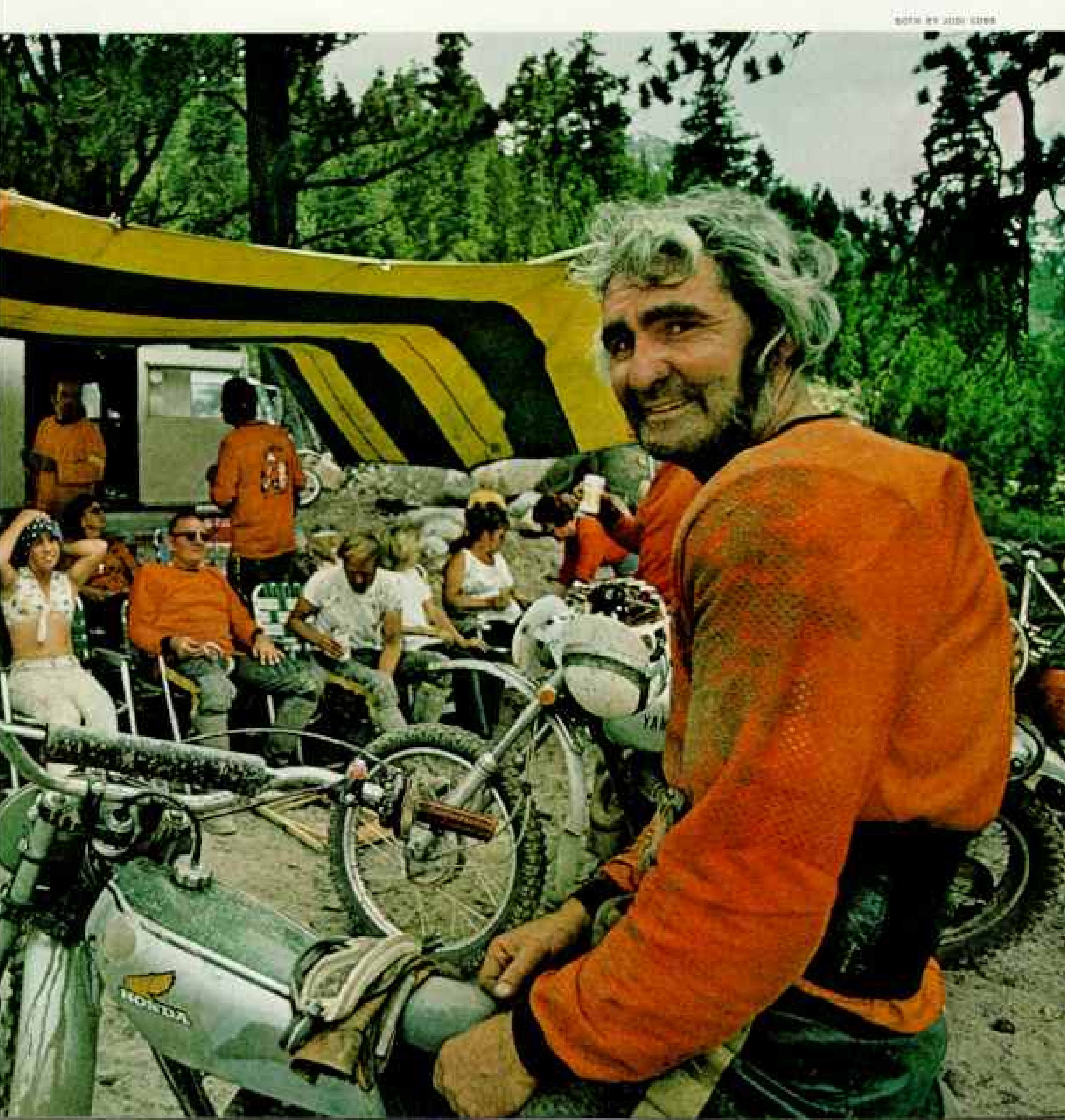
Valley Lives an Outdoor Life

Inyo County, slightly larger than Vermont, encompasses Mount Whitney and Death Valley, the highest and lowest points of the contiguous 48 states. Most of its 17,000 people live in villages strung along Owens Valley from Lone Pine north to Bishop. Life is shaped by remoteness and by the outdoors.

Leisure flows with the seasons, from trout fishing to river rafting, quail and chukar hunting, mountaineering, and skiing. It includes pine nutting, which we learned with Genevieve and J. Emil Morhardt.

A photographer who once traveled with Zane Grey, "Aim" Morhardt paints the valley in water colors, prospects its mountains, and writes much of its music and verse.

The Morhardt nutting method is to spread a sheet beneath a piñon pine and shake the tree with a pole. We settled for a sticky handful of nuts, then went on with a picnic basket and a bottle of wine to a hideaway beside a creek that races off Mount Tom. Aim built a fire of willow branches, while Gen



JODI COBB AND GALEN ROWELL (LEFT)

Island of shade spares a hitchhiker from heat waves at Bishop, Owens Valley's largest town. With the loss of water in the 1920's, population waned and a third of the businesses folded. Townsmen received reparations from Los Angeles, and when the flow of tourist dollars began in the late 1930's, many expatriates returned, swelling Bishop's population to 11,000 today.

Almost as many lived in the valley "town" of Manzanar, one of ten relocation centers established during World War II. A monument and barbed wire (**left**) mark the internment of some 10,000 Japanese-Americans by their mistrustful government.

created a centerpiece of dried wild iris pods.

We made steak sandwiches with a local specialty: Sheepherder Bread, baked from a Basque recipe that requires long fermentation and prolongs freshness. It is a distant runner-up to water and power as the valley's most renowned export.

Aim sprawled beside the creek, radiating the joys of a man born to this setting. "My painting supports my prospecting," he said. "And we're lucky. Beyond that ridge we own half of an old Indian ranch with water. We could grow everything we need."

Gen had driven that week to Reno, 204 miles north, to shop. "It's the nearest place for a lot of things," she said. "Of course, the Sears catalog is the really big store in Bishop."

Valley neighbors team up for weekend trips to the Music Center in Los Angeles, or drive 110 miles to play slot machines and have dinner in Hawthorne, Nevada.

Big Ears Listen to Space

Such distances seem trivial to George A. Seielstad, the radio astronomer who supervises three giant antennas that the California Institute of Technology placed in the valley near Big Pine. As Seielstad showed us around, he discussed the observatory's success in the "chase" for quasars. The antennas search space as distant as 10 billion light-years—almost, says Seielstad, "to the beginning of time." As they scan, these big ears loom above the valley like porcelain plates. They are here because mountain walls shield them from man-made radio signals.

Seielstad settled in the valley in 1964. Ten years later he felt enough of a native to enter politics, and failed by only a small margin to become the first U.S. Congressman from Owens Valley. He shares his neighbors' skepticism of "the Department."

"They have no reservation or hesitation concerning the complete destruction of a scenic resource," he said.

Owens Valley farming has almost disappeared, and ranching has waned. The city allots water for only 11,500 acres of alfalfa land and pasture in the entire valley. Among the few with their own land and water are the Zack brothers, Milton and Morris. They abandoned city medical practices ten years ago in early middle age to ranch 1,300 acres beside Willow Creek, nestling below 14,246-foot White Mountain Peak.

One Sunday at the Zack ranch we watched

sprinklers spray well water across alfalfa fields almost surrounded by sagebrush.

"This land was mostly brush," Milton said. "We put 1,100 acres in alfalfa, and the price went up to $60 a ton. If baling wire hadn't tripled in price, we could have made good money. We won't ever get rich, but we'll stay."

"Why you?" we wondered.

"This valley chooses its own people. I grew up in Los Angeles, and my wife came from Maryland. We have five children. We all saw this valley and forgot everywhere else."

Residents Fear for Environment

Back in Bishop, where more than half the valley people live, we met another outsider who became an insider. Frank Herbert Fowles III, a Philadelphia-born attorney, came here nine years ago as district attorney.

"That's over now," he said. We sat amid a jumble of files in his new law office. "I'm staying in Owens Valley because this is where I want to live. These are proud people, the best people I've ever known."

Fowles filed the case against the city after Los Angeles had increased its pumping of underground water from six to 150 million gallons on an average day. Inyo County holds that this violates California's Environmental Quality Act, threatening frail plants and wildlife. The Department of Water and Power contends that its obligation, and the greater need, lies with Los Angeles.

"We know all the department guys by their first names," Fowles told us. "They're good guys. Their job is to take our water so Los Angeles can keep growing, and they do it supremely well. Our job is to keep our valley from drying up completely."

On a bright November morning we asked Col. Ray Waski, an Air Force pilot who retired in Bishop, to take us into the air to survey the battleground of this water war. For our guide we invited Russ Rawson, a six-foot-fiver who acts for the department as landlord to hundreds of valley agricultural tenants.

We flew north over dry canyons, and about 50 miles northwest of Bishop we circled the headwaters of the Owens River, 250 miles from Los Angeles. Then we flew south along the water that finds its way into the highballs of Hollywood stars and the sculptured fountains of Forest Lawn cemetery. In the Owens River Gorge it is a captive current, squeezing through tunnels and tumbling over turbines generating 105,000 kilowatts.

Like an indigo snake on a beige carpet, the river emerges near the head of Owens Valley to move placidly in its own channel for 40 miles. Escorted by willows and cottonwoods, it drifts past Bishop and Big Pine.

Near Independence it is nudged into a straighter, man-made canal and flows past the ghost camp of Manzanar (page 108). Here, 10,000 Japanese-Americans were interned during World War II beneath mountains that made the elders homesick for Fujiyama. It was once the largest, and much the saddest, town in the valley.

The canal leads south by the eroded Alabama Hills, a favorite setting of filmmakers. Close by is a 23-foot-high scarp, a vivid remnant of an 1872 earthquake more intense than the San Francisco quake of 1906. Here beneath Mount Whitney, where hikers and packers sojourn, the river once disappeared into Owens Lake, a natural sump that is almost dry today. Bypassing the lake, the water submits to a series of engineering contortions. Two aqueducts, the second finished in 1970, siphon its flow through the grim Mojave Desert in miles of airtight concrete-and-steel tubes (page 99).

Elevator for Glider Pilots

Turning north again, Ray flew tight circles around the stone shelter atop Mount Whitney and skimmed the Pacific Crest Trail, where almost a dozen peaks tower above 14,000 feet. We studied the sky to no avail for lens-shaped clouds that portend the Sierra Wave, the utopia of glider pilots. A type of lee wave, it begins when wind speeding up the Sierra slope surges at the crest. Such waves have reached as high as 65,000 feet above Owens Valley; the world's soaring record of 46,267 feet was set near here in 1961.

"All of a sudden your altimeter needle is

Eyes bright as hope light the face of Little Hummingbird, descendant of Owens Valley's first residents. Paiute Indians skirmished fiercely with white settlers in the early 1860's, but were exiled to a reservation in 1863. Working to reinstill a sense of pride, the Bishop Indian Education Center has raised tribal employment and cut the school dropout rate from 40 to 3 percent. JODI COBB

rotating wildly," Waski said. "It's like somebody has grabbed you and is hoisting you straight up. The primary sensation is extreme smoothness. The danger is being lifted so high you run short of oxygen."

Leaving the elusive Sierra Wave to heartier souls, we landed at Bishop and drove to the water department's valley office at Independence, Inyo County seat and a charming village of 1,000 where many of the 260 department employees make their homes. They take a lot of good-natured kidding from neighbors, we heard, who claim that Los Angeles pipes out water in one barrel and ships back smog in the other.

At headquarters we talked to James F. Wickser, Northern District Engineer for the aqueduct. "In the past 40 years we've sold off only about a hundred acres," Wickser said. "Most valley people would rather look out over pasturelands than condominiums. Newcomers who charge us with 'rape, pillage, and burn' try my patience. It's more difficult to challenge the memory and the biases of those who lived through the trouble."

Bitter Memories Still Haunt

There still are a few who were in the valley in those turbulent days when Los Angeles first arrived. On an autumn Sunday when the creeks meandering out of the Sierra were serpentines of golden aspen and water birch, we drove to the village of Big Pine to see Enid Larson in her cottage on Flower Alley.

"I have to go chipmunking soon," she warned us at the door. For 20 years she has studied the Merriam's chipmunk in nearby wilds. Her white hair cropped, she stood small but formidable. We got to the point.

"By 1905 the die was cast," she said. "The city was buying water rights. The ranchers who irrigated joined in a group called Associated Ditches. My father was secretary. They sought a compromise so there could be a dam to provide water both for the ranchers and for the people in Los Angeles. But the valley couldn't agree. So the city said, 'Very well, we won't build a dam. We'll buy out the ranches and take the water, take it all.'"

Tears welled in her eyes. She pressed her forearm against her lips.

"What did your father do?"

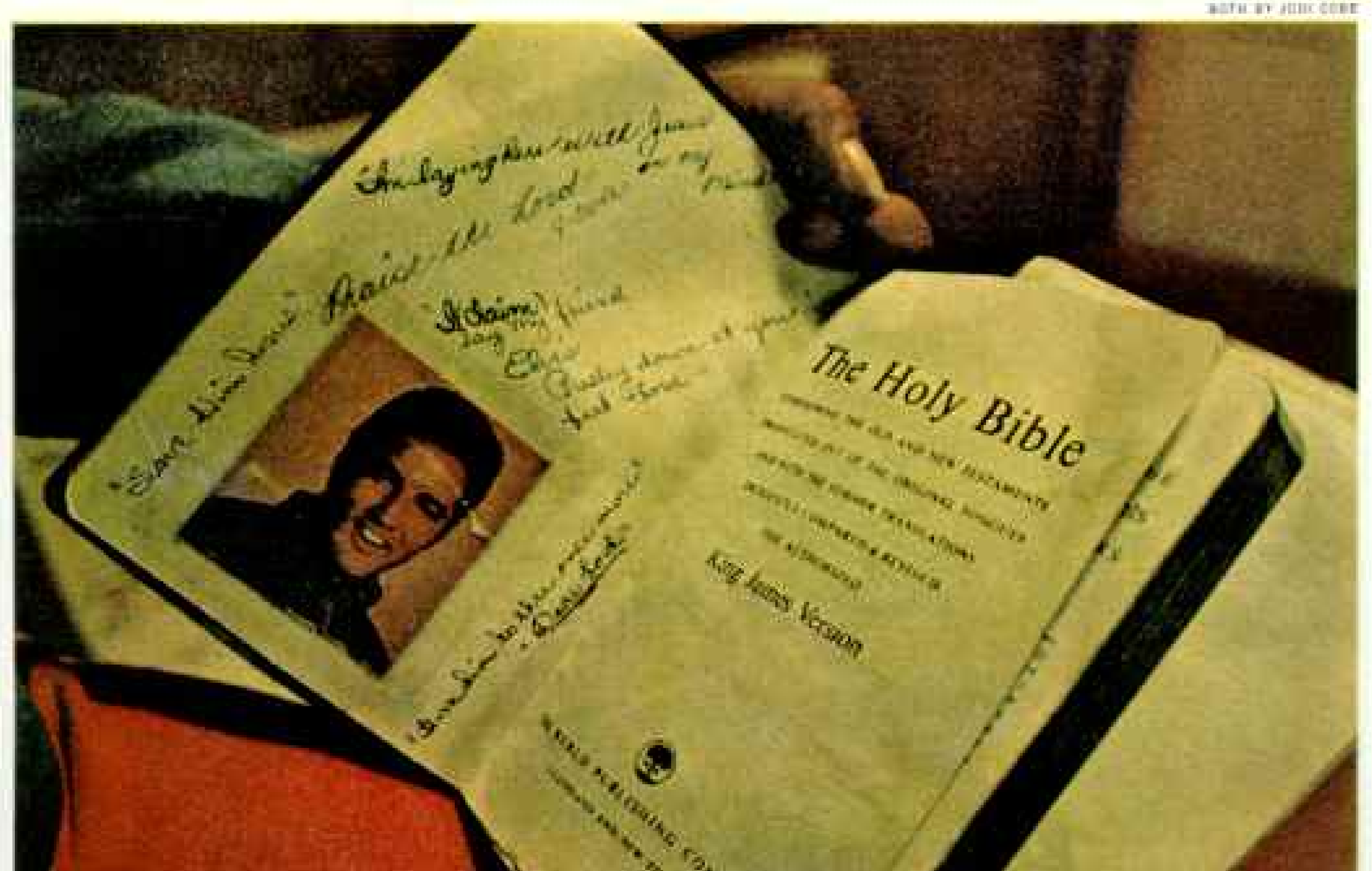
"He knew what was coming. I was only 18. I pleaded with him to stay and fight. But he sold out and left. It broke his heart. It killed him."

She turned away and fought to calm her

Intent on salvation, a sparse congregation attends the Foursquare Indian Mission, as a youngster's interest drifts to paper aerodynamics. One Bible reveals a concern for the spiritual welfare of Elvis Presley (**right**). Paiute traditionalists seek to preserve their own religion, based upon reverence for nature and sanctity of the land.

One faction of the tribe hotly disputes an Indian Claims Commission award of 20 million dollars for loss of their land, saying they never relinquished rights to it. But some had already sold their land to Los Angeles, and others, even among the traditionalists, have filed for the per capita payments.

BOTH BY JODI COBB



BOTH BY JODI COBB

An informality nearly obsolete in large cities endures in small towns like Lone Pine, where hotel manager Mary Elizabeth Ward (**above**) interrupts midmorning chores to commune with a feline guest. Businesses now court customers from Los Angeles; in the bitter twenties, Angelenos visited here at their own risk.

Informality also reigns at a Deep Springs College class (**left**). The 24 enrollees, who rank academically among the top one-half percent in the nation, raise their own food on the remote campus that doubles as a ranch.

voice. "He brought the land up from sagebrush to support six of us. It was grub hoe and shovel that cleared the ranch, and Father dug every ditch by hand. We grew fruit and alfalfa and cattle and shipped out butter. I was in college at Berkeley in 1925 when Father sold. I stayed away and taught school and didn't come back for 33 years."

"Why did you come back?"

"For me the world begins and ends at the crest of the Sierra and there's only one side, this side. Here is home. Now, go sit over there."

We moved to a couch facing a glass wall. Enid Larson opened the drapes, and an alpine panorama filled the room.

"Over there," she began, like a teacher at her blackboard, "the one with a V in it, that's Split Mountain, more than 14,000 feet high. In front is my beloved Mount Tinemaha. Then Middle Palisade, one of the southernmost glaciers in North America."

She swept the drapes shut and said with intensity, "For two years after I came back, I couldn't pass our old ranch without crying. Now we fight the same old problem. The city built its damnable second aqueduct, and it's pumping underground water to fill it. They've dried every spring in the valley floor. They're destroying vegetation. There are rare species in this valley. Instead of fighting for a ranch, we're now fighting for the survival of plant and animal communities."

Cattle Mixed With College Classes

One of those rare species is a small black toad found in the marshes around Deep Springs Lake, an alkali smudge in a mountain-rimmed desert basin. Its one oasis is Deep Springs College, where 24 bright and hardy young men divide their time between liberal arts studies and running a cattle ranch (left).

The lonely road to Deep Springs over Westgard Pass writhes in a hundred dips, an asphalt whip flailing at desert peaks. It is a route where the mail carrier remains a frontier hero as he rides his 300-mile circuit through two states. At the pass we saw no trace of life between us and the cottonwoods that marked the campus ten miles away.

Dr. Randall Reid, then head of the college, greeted us in Levis. We sat in rocking chairs in their stone bungalow as his wife, Earline, poured coffee and he told how Lucien Nunn, a Colorado power baron, had endowed the school in 1917. The site was chosen for its isolation. Then Dr. Reid told us why he had

left a tenured faculty post at the University of Chicago to head a remote two-year college.

"The contrast is like that between critic and actor," he said. "You can't deal with life by expressing an opinion. Students here must accept responsibility for our community."

We soon saw what he meant. At the dairy barn Juan Ramon Resina, from Barcelona, Spain, was milking one of seven Holsteins. Six other students, raw from the cold desert wind, clattered up in an open truck after half a day of fence building. In the chicken barn the mood was funereal; a phone call had brought a poultry inspector's diagnosis that meant destruction of 200 diseased chickens.

"We have 200 cattle and three cuttings of alfalfa each year," Dr. Reid told us. "With prices the way they are, I'm trying to find a way to feed the cattle to the alfalfa."

He laughed when we asked about the black toad. "It's about an inch long. The students made it their mascot. We don't know which species is more endangered. Toads outnumber students four to one; lately the toads seem to get more funding."

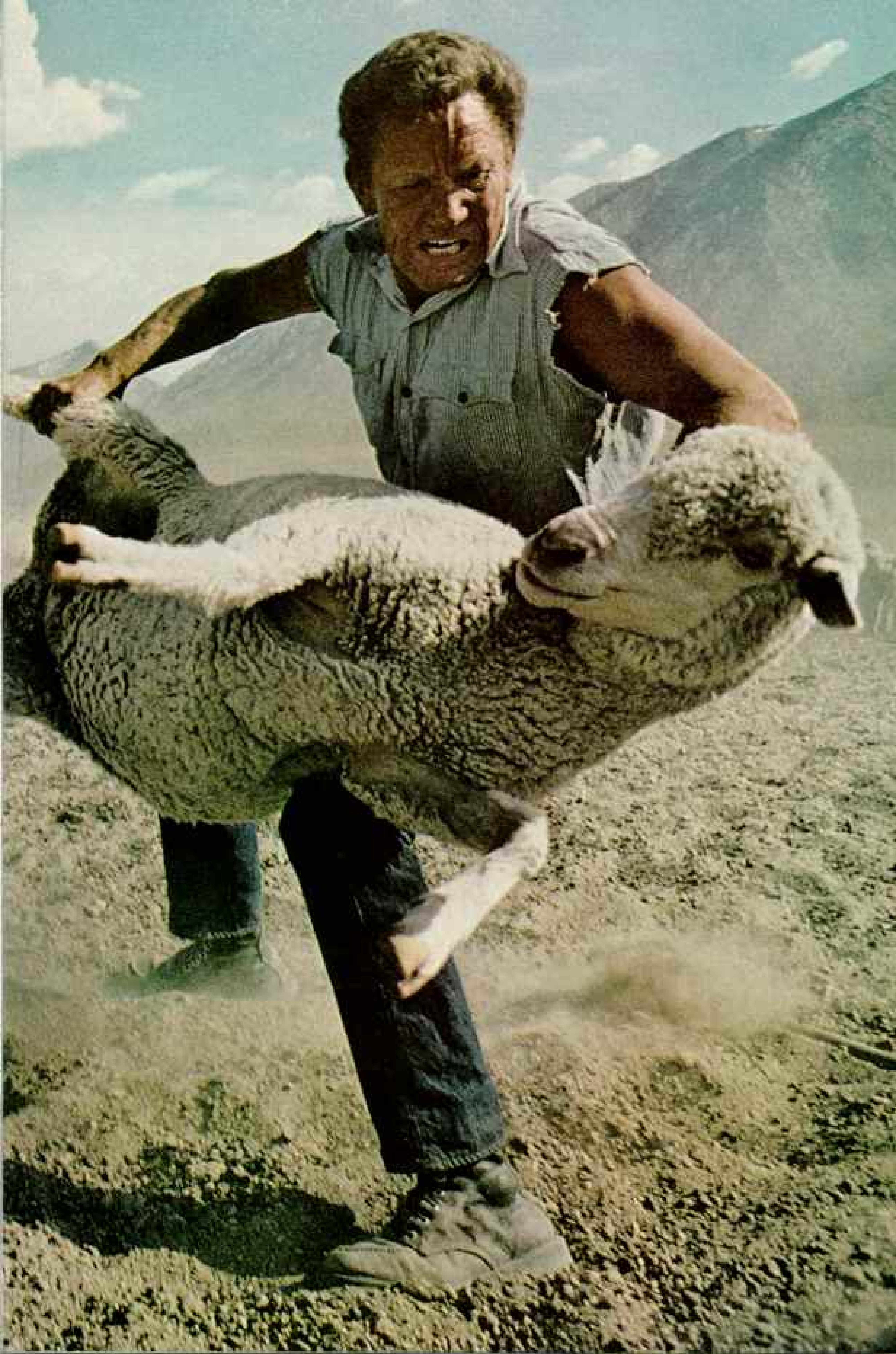
Paiute Customs Make a Comeback

In the college library is a pipestone carving by Raymond Stone, a Paiute Indian from the Big Pine reservation who has lectured at Deep Springs. We visited him at his home. Regarded by many Paiutes as their spokesman, Stone works as a school janitor. At our urging he brought out his carvings of Indian figures, animals, and birds.

"My father's grandfather was the last real Paiute chief," he said as we admired an eagle. "We lost our Indian ways for a while, but some are coming back." He told us that the songs of the tribe's cry dance, the dance of burial, survive only with two or three older men. But young Indians want to learn.

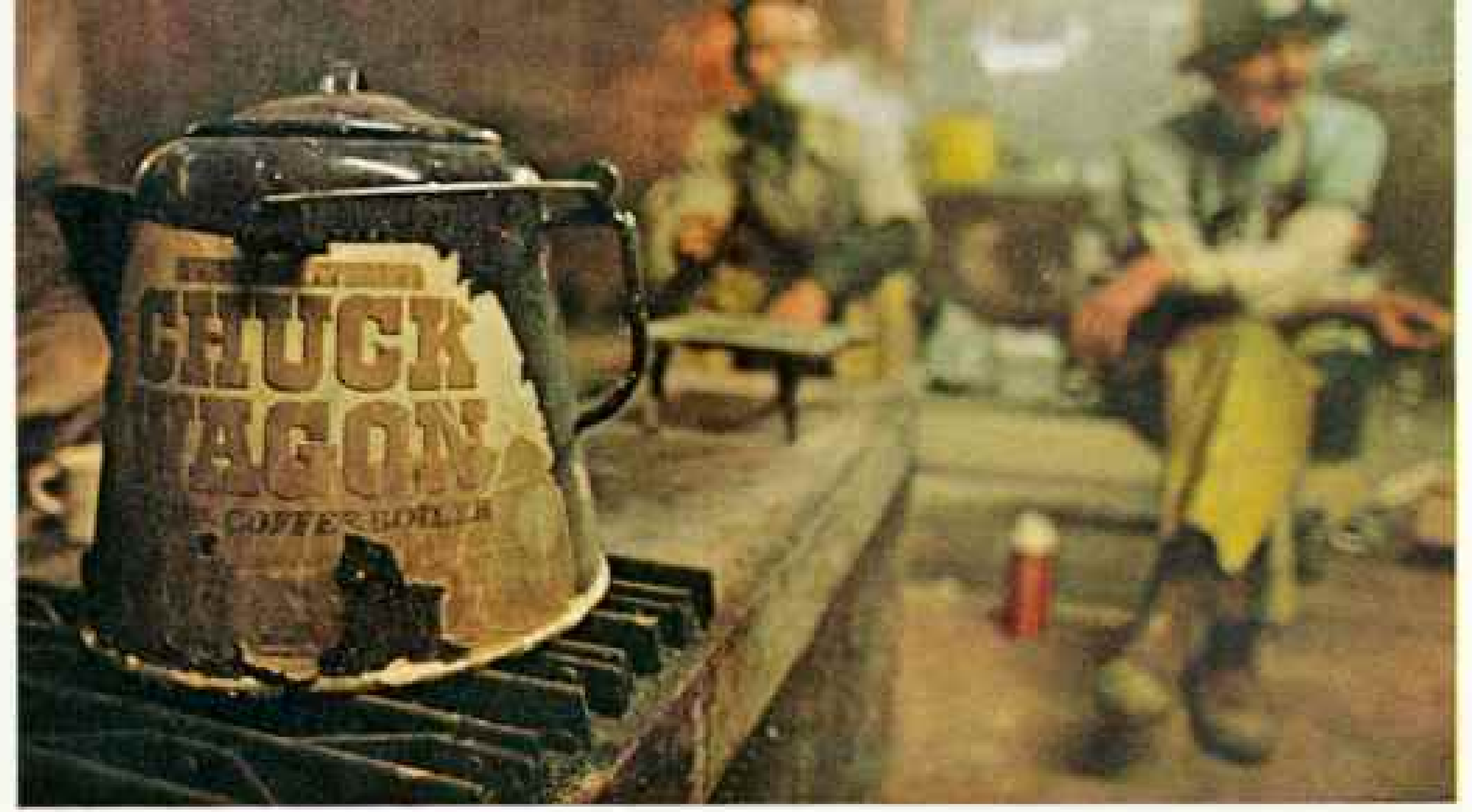
Earl Lent, a typographer at a Bishop publishing house, has been a tribal official for more than 15 years. He took us to meet other Paiutes, and there was much talk of a powerful medicine man due soon in the valley on his circuit. He had *(Continued on page 120)*

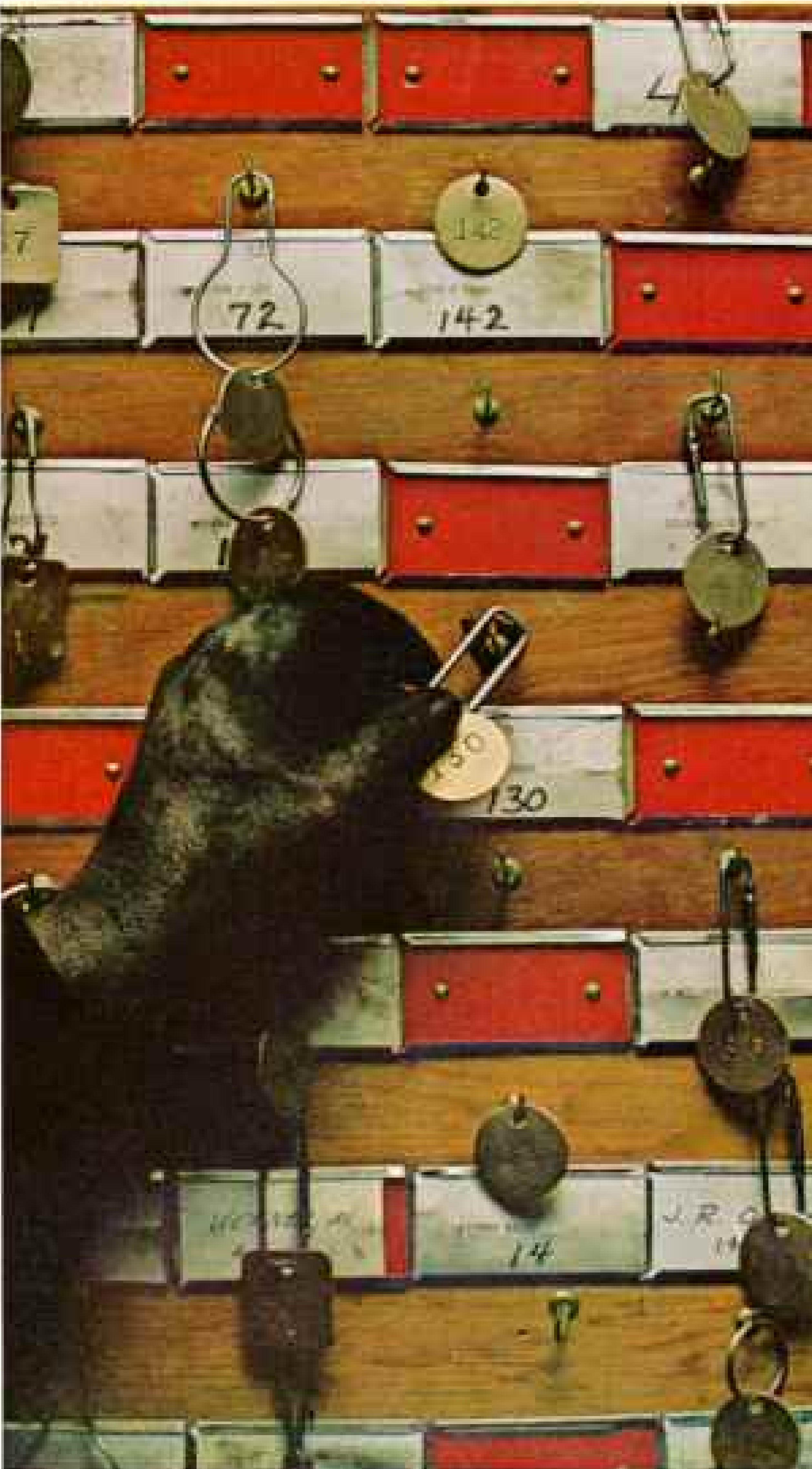
Sheep wrestler Oral Bryant throws one of his flock to check its teeth. Dental wear would mark it for slaughter, before weight loss begins. Ranchers argue that increased pumping of ground water by Los Angeles threatens the valley's already dry pastures.



Wealth from a mountain's attic provides more than half the nation's tungsten, plus a major source of income for Owens Valley. Their grim warnings at rest, spare signs dangle from a wall (**below**) at Union Carbide's Pine Creek Mine west of Bishop. Here miners go up, not down. Most deposits in this most productive of U. S. tungsten mines lie above the 8,100-foot entrance level. Operations during the tungsten boom of the 1950's tapped some veins at 13,000 feet. The lunch room, or "dog house" (**right**), may lie an hour's ride by narrow-gauge railway and elevator from the entrance. Upon leaving, each miner hangs his tag on a board (**below, right**) to ensure that no one has been left behind.

An earlier mining success, the Cerro Gordo—Fat Mountain—mines east of Owens Lake turned out some $18,000,000 in silver and lead between 1868 and 1877. A small steamer hauled ingots across the lake, a salt sea before the later export of river water left it a cracked, dusty lake bed.





JODI COBB (TOP AND LEFT) AND GALEN ROWELL

been invited by the local healer, who would help prepare for the religious ceremonies.

"The medicine man comes to your house at night," Lent explained. "Everything must be dark. You sit very still as he talks and sings. He is the interpreter for the spirits, and you can sense their presence all around you. The ceremonies have worked. Our people have been healed."

Old-timer Holds No Grudges

Back in 1866, when the last Paiute incident flared in the valley, a cattleman named Thomas Edwards laid out Independence as a town six blocks square. He named streets for Washington, Grant, Webster, Jackson, Clay, and Crockett. Then he named the main street for himself. There on Edwards Street, in his elm-shaded cottage, we found Arlie A. Brierly, 91, who was born in the valley on his parents' ranch and served Inyo County as surveyor, undersheriff, assessor, and superintendent of schools. Now he runs 800 cattle on 15,000 acres of scrubland leased from Los Angeles without water rights. We interrupted him as he read his new *Scientific American.*

"No matter," he said. "Come sit."

Wide suspenders supported snappy plaid trousers. He leaned on a gnarled sapling, and he looked like Dwight Eisenhower. He was not mad at anybody.

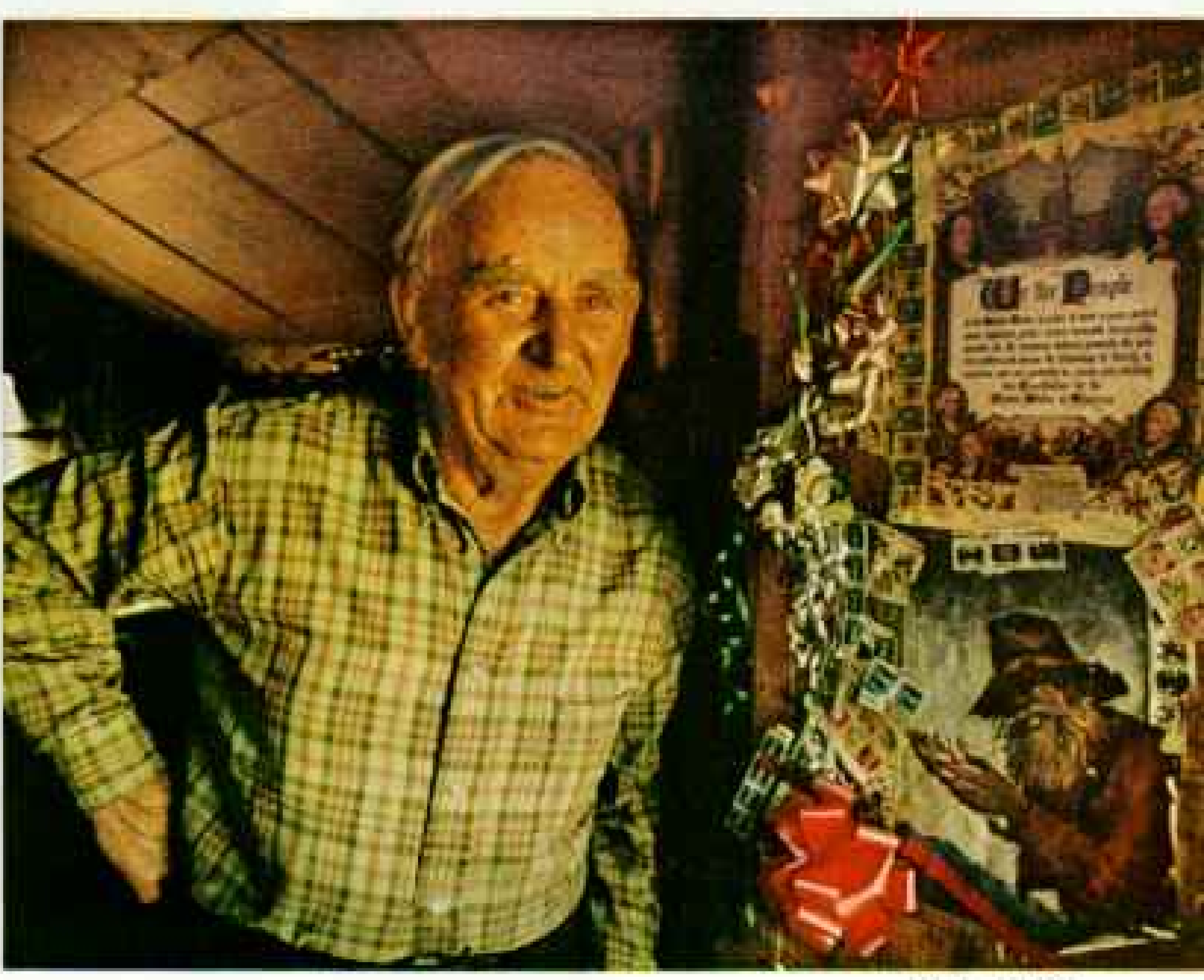
"My mother was the first woman to homestead in Inyo County," he said. "The city paid a fair price for our ranch, as it did for all the others. Course it didn't help when our banks went broke. That put an end to the scrap with the city. My mother was a character witness for the Wattersons, but the jury sent them to San Quentin anyhow.

"Their sister, Mary Gorman, is the only Watterson left. She comes into town sometimes, but we don't bring up the past. It's a wonder

Water-war veteran Mrs. Mary Gorman, whose banker brothers, Mark and Wilfred Watterson, led the unsuccessful struggle against loss of the Owens River water in the 1920's, prunes ivy fringing her home near Independence (**left**).

The city acquired its water legally, but resentments still seethe over its methods. In whirlwind land purchases, Los Angeles agents sometimes spread false rumors of mass sales to convince valley ranchers to pull out.

A post-feud newcomer, 75-year-old George Totland (**below**) settled in the town of Lee Vining in 1933. The lifetime bachelor and gold-miner hopes to marry, he says, when he can save enough money.



BOTH BY JODI COBB

somebody wasn't killed in all that racket."

Arlie Brierly squinted and looked toward the highway. It was Sunday afternoon, and the cavalcade of skiers had begun, from Mammoth Mountain back to Los Angeles.

"One thing I know," he said without rancor. "There's too many people in California. Too many people wanting too many things. Sure are a lot of them drive past my door."

Skiers Crowd Mammoth Slopes

After the first big snow last winter, we followed that ski traffic to Mammoth. At the foot of the slopes we found Dave McCoy, a square-jawed man with curly silver hair. He has built his life around this pumice mountain since 1936, when he surveyed snowfall for the department. Lifts and runs he has laid out on U. S. Forest Service land serve as many as 18,000 skiers in a weekend (page 126), and have made him wealthy.

We asked him to show us his mountain, and he whisked us in a gondola over a sea of skiers to the summit at 11,053 feet. Nearby, we watched as his avalanche patrol skied off and began setting dynamite charges.

We looked along the jagged teeth of the Sierra. The Pacific Crest Trail led down through conifers to the south. To the northwest were the stiletto spires of the Minarets. The sleek array of basaltic columns called Devils Postpile lay below us to the west.

"Mammoth stands by itself between these two low passes," McCoy said. "When a funnel of air tries to force its way past, it dumps blizzards of snow right here."

The shadow of Mammoth is both real and symbolic. In 1972 the California Supreme Court issued its landmark Friends of Mammoth ruling. It stopped a rising wall of condominiums and established for the first time in the United States that citizens may halt

Gnarled monument to longevity, a bristlecone pine raises twisted limbs before a full moon in early morning. Earth's oldest living things seem to thrive on adversity in the White Mountains. Senior specimens, including one dated at more than 4,600 years old, live above 10,000 feet in dry, rocky soil.

Spiny fruit of the bristlecone pine gives the tree both its name and its progeny; branches contain both male and female cones for pollination of seeds before they drop to the ground.

Oz-like towers of tufa line the shores of Mono Lake, alkaline receptacle for mountain streams north of Owens Valley (**above, right**). The lake level has dropped some 30 feet since Los Angeles extended the aqueduct to Mono's watershed in 1940. Environmentalists rage over depletion of the geologic oddity, lifeless but for brine shrimp eaten by a tumult of sea gulls (**right**).

GALEN ROWELL (FAR LEFT AND BOTTOM); JAY JENSEN (LEFT); AND JODI COBB

private construction that has not received a proper environmental impact study.

The case was supported by a group of distant urban residents who feel ties with Owens Valley. We met some of them one afternoon at a mountain cabin below Wheeler Crest. They call themselves the Eastern Sierra Nevada Task Force of the Sierra Club. A number of local residents have joined as well.

Sprawled on a knoll at 7,000 feet, we looked down at volcanic tableland and the great rift of Owens Valley. Bishop was a stamp-size grid. At midafternoon, when 20-mile-long Sierra shadows tinted the valley floor pink, we moved inside to the warmth of a fire. Mike Weege, an airline employee from San Diego, presided from a tree-stump stool.

"We recognize that Los Angeles is probably the savior of the valley," Weege told us. "Our goal is to preserve the valley as it is now."

The Sierra Club is concerned about wilderness status for remote bristlecone pine areas of the Inyo National Forest because such designation might bring more visitors to those fragile sanctuaries.

A narrow Forest Service road leads to the 10,000-foot level and the Schulman Grove. On a November morning we went there in a four-wheel-drive vehicle to hike over untracked snow along the Methuselah Trail. Among these 4,000-year-old relics (opposite) we felt we were mingling with the writhing

The thirst for profit and pleasure triggers a variety of uses for Owens Valley water. In the Alabama Hills near Lone Pine, a makeshift shower douses a model during filming of a shampoo commercial (**above**). An inner tube voyager cavorts on Bishop Creek, an Owens River tributary (**right**). At larger dams, cascading waters spin turbines for hydroelectric power.

chorus of a Greek tragedy, their sleek amber arms stabbing defiantly at the cobalt sky.

When we tried to drive higher to the Patriarch Grove, our route was blocked by three young men from Los Angeles and their van, which seemed hopelessly submerged in a snowdrift. Mustering our equipment and their brawn, they brought us all out to safety.

"You've saved our lives," George Harding of Hollywood told us earnestly.

Then he and a companion unfurled what seemed to be flimsy nylon kites and strapped themselves to them. We had watched the brave hang-glider cult jump from sea cliffs near our home in La Jolla, but what we were about to see was big league. They leaped casually off into Owens Valley, more than a mile lower, and wafted down like bright butterflies. The third member of the trio roared away in the van to retrieve them.

Tungsten Flows From a Mountain

On the opposite side of the valley is a tungsten-rich mountain that provides 400 valley residents with jobs and the United States with more than half of its supply of this strong, hard metal, used in products from ballpoints to rockets. Without this Union Carbide mine, valley people would be even more dependent on what wry villagers call foreign aid from flatlanders. One day we drove 20 miles northwest from Bishop to the 8,000-foot level of Pine Creek Canyon and on one flank saw an ore train emerging from the mountain.

"Maybe it's the first upside-down mine you've seen," said Jim Smith, a mine official. "The miners ride narrow-gauge cars through rock tunnels to the first shaft and then take elevators up to the two-mile level. It can take over an hour to get to work. Most of their big machines have never seen daylight; they were assembled in a diesel shop two and a half miles inside that mountain."

At 4 p.m. we met the train that brought miners blinking into the daylight. Switching off their headlamps, they tumbled out of little rail cars to hang up their brass number tags—the traditional miner's device to guard against being left behind (page 119). They pushed into the dry room and stripped out of damp rubber oversuits and boots.

"Sure, it's tough work," said Tom Charlie, a Shoshone Indian who has worked his way up since 1961 to become an underground foreman. "But that's the only kind I ever had."

In the mill, where raw ore from the mine

is processed, we descended toward a roar like an approaching subway train.

Suddenly we came on a bizarre scene as full of potential terror as any James Bond torture. A grizzled man, spun within a web of ore dust, stood over a jaw crusher, its steel mouth the size of a small car. Chunks of stone, some as large as a boy, moved along a conveyor and dropped into the jaws. They ground inexorably back and forth, reducing boulders to pebbles. Beneath his ghostly cloak of dust the miner wore hard hat, respirator, and ear muffs. Buckled around his belt was a rope ensuring that he could not become his own victim.

Mixed Feelings Toward Los Angeles

Our stay in Owens Valley was at an end. But one strong link was missing. The Watterson brothers, long dead, had been at the vortex of the water war. Their fanatic zeal was legend. At 85, their sister Mary Gorman was aware of much of the conflict that brought ruin to many in the valley.

So we checked out of our motel in Bishop and drove south to Oak Creek, near Independence, and Mary Gorman's lonely white cottage. A tautly elegant woman, Mrs. Gorman led us into a snug library, bright with afternoon sunlight and fragrant with well-read books. "I've lived in this house for 44 years," she said amiably. "My husband is dead. I stay on alone with my cat. I hope my cat will outlive me." She was smiling, her eyes wrinkled into triangles.

"Do you remember the valley as green?"

"I should say it was. Now when I go to the market, it saddens me that everything we have has to be hauled into this rich valley."

"How do you feel now about the city?"

"It's too bad the way they acquired this valley," she said. "They were unscrupulous."

"Your brothers," we said gently. "Were they unjustly convicted?"

"No. They used very, very poor judgment. But the greater guilt was with the city of Los Angeles and those bankers and politicians who wanted the valley to fail." She was quiet for a long time. "But in a way—one way only—I'm grateful to Los Angeles. The valley I knew is lost, but at least this one is not cluttered with people."

City Prevails in Water War

We remembered Robert Denton, a wise doctor in Bishop, who had told us that for all the wrong reasons, Los Angeles has done many of the right things in Owens Valley. High in a city office, we tried that thought on Duane Georgeson, engineer for the Los Angeles Aqueduct, who sits near the throne of the "Kingdom of Water and Power." Suave and only mildly defensive, he shrugged.

"We've had some good luck in that valley," he said. "Many people recognize the wisdom of our policies, but energy is the real story now. That water flows from Owens Valley by gravity. It takes fuel oil to pump all other water to Southern California. But when we bring in Owens Valley water, we produce electricity equal to two million barrels of oil a year."

"Has Los Angeles treated the valley fairly?"

"Look. The kind of thing that Los Angeles did 50 years ago couldn't have been done without hurting some people. But the 'rape' of Owens Valley never happened. The ranchers were willing to sell."

We asked Georgeson if the city felt pressure in the current court challenge by Inyo County.

"With this emphasis on the environment," he conceded, "there is some short-term threat to our rights. But in the long term there is no alternative."

His point was clear: Los Angeles won the water war long ago. The issues that remain involve the integrity of nature and the dignity of people.

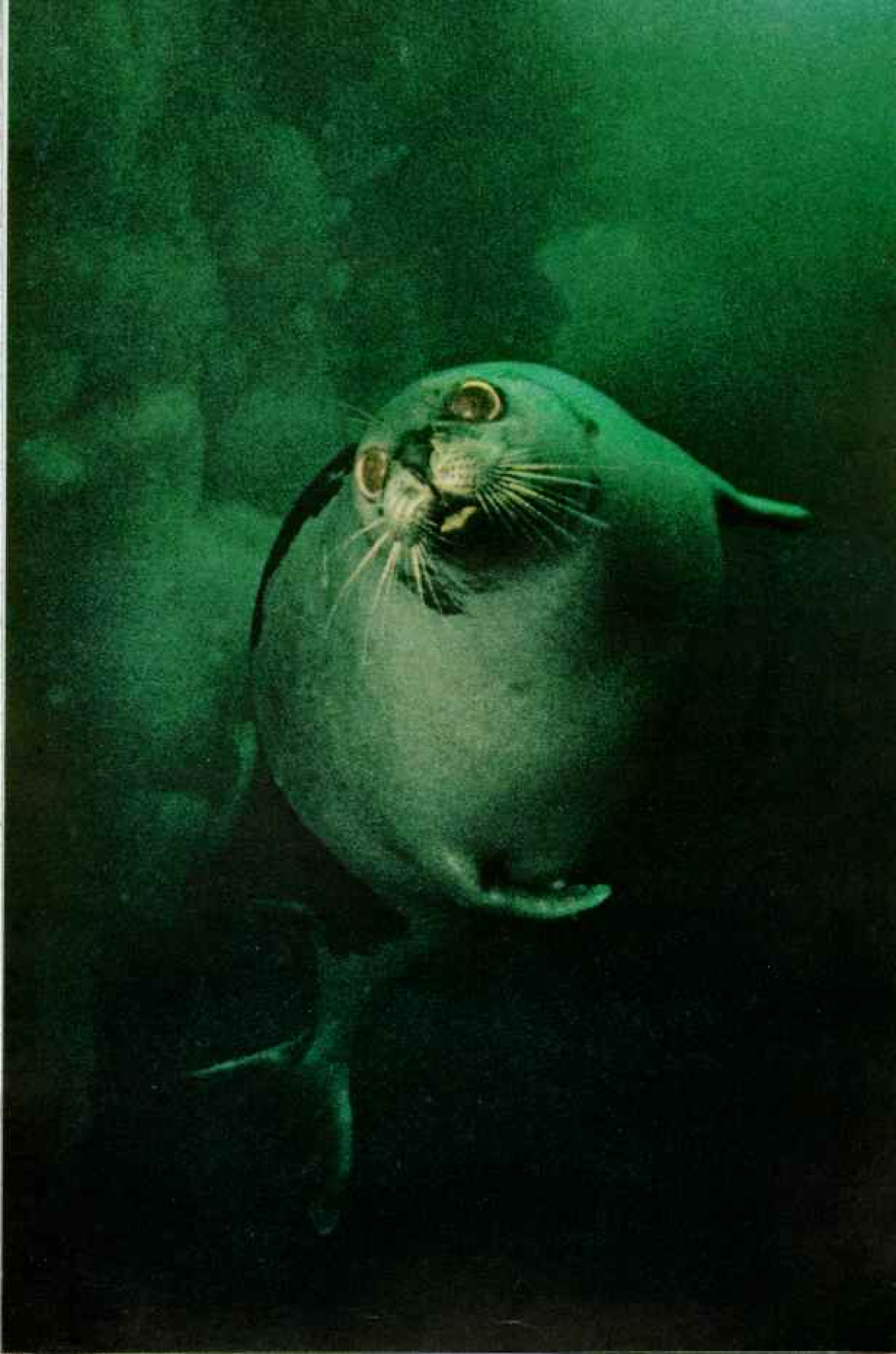
As we turned to leave his office, Georgeson spoke softly.

"It's a wonderful valley, isn't it?" he said.

We nodded, and drove home to La Jolla. In our trunk was a clump of wild iris from the slopes of Mount Tom. In our hearts there was more. □

Dash of hurtling color, a skier descends the steep face of Mammoth Mountain, a lone peak jutting in a huge opening in the Sierra wall. Weather systems funneling through the gap dump snowfalls so heavy that drifts once blocked the ski area's chair lifts. The resort represents a modern partnership between former antagonists: Runoff that once fed the valley now flows to Los Angeles, while weekend skiers from the city return a flow of cash to the source of their water.

GALEN ROWELL



Life or Death for the Harp Seal

By DAVID M. LAVIGNE, Ph.D.

Photographs by WILLIAM R. CURTSINGER

Saucer eyes steer a bewhiskered harp seal past clouds of submerged ice in Canada's Gulf of St. Lawrence. Awkward above ice, harp seals become fast and graceful swimmers beneath it.

For more than two hundred years hunters have sought the pelts, blubber, and meat of these mammals and their white-coated pups, often taken while they are still nursing. The soft pelts yield fur trim and leather; the blubber produces fine oil for margarine, soaps, lotions, and lubricants.

In trying to assess accurately the harp seal's chances for survival, the author is conducting an aerial census over a period of several years. His findings to date: the species is indeed in danger.

ALREADY THEY HAVE BEGUN the long journey south, driven by the relentless thrust of the Arctic pack ice. From the west coast of Greenland and Canada's eastern Arctic, hundreds of thousands of migrating harp seals are heading for their wintering grounds off the coast of Labrador and in the Gulf of St. Lawrence.

There in late February or early March the female harp seal will give birth to a single white-coated pup, reviving a bitter worldwide debate.

The controversy centers on the annual seal hunt, which has taken place off the coast of Canada for more than two centuries and which presently accounts for as many as 150,000 seals each winter. The lines are sharply drawn between those who demand a permanent end to the hunt and others who insist on the right to harvest a valuable marine resource.

Just how durable that resource is remains the vital question: whether the harp seal can survive present levels of hunting, or whether it faces ultimate extinction. As a Canadian, a zoologist, and a student of harp seals, I am familiar with the arguments on both sides. Neither is backed by conclusive evidence, for the simple reason that until recently no such evidence existed. At best scientists could make only rough estimates of the harp seal population.

Now, at last, more accurate figures appear within reach, thanks to a new technique of taking aerial censuses with highly sensitive ultraviolet photographs (page 136). Although it is still too early to give a definitive answer, it seems clear that the harp seal is in trouble.

Pagophilus groenlandicus (literally, "the ice-lover from Greenland") earns its common name, harp seal, not from any sound it makes but from the harp-shaped black marking on the adult's silvery back. Although adult seals are hunted in considerable numbers, it is the infant pup with its snow-white pelt that appeals both to public sentiment and to the furrier.

In recent years conservationists and humane groups in several countries have campaigned to abolish the hunt on grounds of cruelty. They cite the common method of killing the pups by clubbing their skulls as they lie defenseless on the ice.

In response to the campaign the Canadian Minister of Fisheries set up a Committee on Seals and Sealing in 1971 to examine all aspects of the issue, including annual hunting quotas.

The result has been a ban on large sealing vessels in the Gulf of St. Lawrence and a reduction of quotas. The present hunting limit is 150,000

animals a year—60,000 each to the Canadian and Norwegian sealing fleets operating off Newfoundland and the remaining 30,000 to "landsmen," or coastal residents from the Gulf of St. Lawrence to northern Labrador.

This quota applies only to harp seals in the western Atlantic. Two smaller breeding populations are also hunted in Russia's White Sea and the Greenland Sea between Svalbard and Jan Mayen Island (map, page 136).

Estimates Point to a Dangerous Decline

To many observers the reduction of quotas seems long overdue. In the 1950's alone the harp seal population in the western Atlantic appears to have dropped by more than half, from an estimated 3,300,000 to 1,250,000 animals. Obviously births declined as well, though no one knows by exactly how much. Available evidence, however, suggests that even under present hunting quotas the harp seal may be reduced to precarious levels before the end of this century.

Ironically, the same white coat for which the harp seal pup is hunted helps to protect it from death by other causes. Recent studies indicate that the white hair is not, as many believe, a form of camouflage but rather a protective feature against the cold of the pup's subarctic nursery. Camouflage would be of limited value in any case, since the seal pup cries continually during its first week or two on the ice—a perfect homing signal for passing predators such as polar bears.

According to my colleague Nils Øritsland, a Norwegian physiologist who has studied the harp seal, the white coat enables the newborn pup to absorb solar energy in addition to the energy supplied by its mother's milk.

"The pup's hair," Nils explains, "is actually transparent rather than white. It transmits the sun's rays down through the pelt toward the animal's skin, where it is absorbed as heat. In addition, the hair creates a 'greenhouse' effect, reducing loss of body heat by radiation."

The fact may be vital to the infant harp seal, for it is born without the thick layer of insulating blubber that protects adults from the cold. From an average of 15 pounds at birth, the pup grows rapidly on its mother's fat-rich milk to a weight of some 100 pounds in three weeks, at which point the mother abandons her offspring to fend for itself. With its new layer of protective blubber, the pup soon sheds its *(Continued on page 137)*

Ice-terraced swimming pool lures harp seals to a twilight dip off Canada's Magdalen Islands. Tens of thousands of seals gather here each spring to bear young and mate.

Taking their courtship underwater (**right**), two seals cavort in a fluid ballet. Mating occurs in water, according to photographer William Curtsinger and his diving partner, Bora Merdsoy. Their observations of harp seals, the most extensive ever made, add valuable insights to the seals' underwater behavior.

Females often rebuff amorous males with growls and threats. Curtsinger saw one undaunted bull ignore his intended mate's disinterest and nip one of her foreflippers. The pair vanished into the water together.

HEAD RAISED, FLIPPERS EXTENDED, *a seal uses body language to warn photographer Curtsinger away. Strong winds and tides compress floes into billowy pressure ridges that extend like upside-down hills more than fifty feet below the surface. Sunlight floods through a break in the ice.*

Hushed by mother's milk, a doe-eyed pup (**above**) nurses contentedly. The milk, more than ten times as rich in fat as a cow's, swiftly turns a 15-pound newborn pup into a pint-size version of its blimp-shaped parent: Within three weeks its weight will balloon to 100 pounds.

Females give birth on the ice to one pup and refuse to nurse any other. Thus, young orphans may starve. Finding her offspring among thousands of look-alikes never panics a mother. She identifies her pup (**right**) by location, whimper, and odor. Less discerning, pups often nuzzle the wrong parent; a whack from a flipper sets them straight.

Thousands of pups may die when gales wrack their icy nurseries, crushing the youngsters between floes or tossing them into the sea to drown. By the time they are three to four weeks old, the pups are weaned, and soon enter the water to provide for themselves. Most will have molted, their soft white fetal suits replaced by coarse gray adolescent hair.

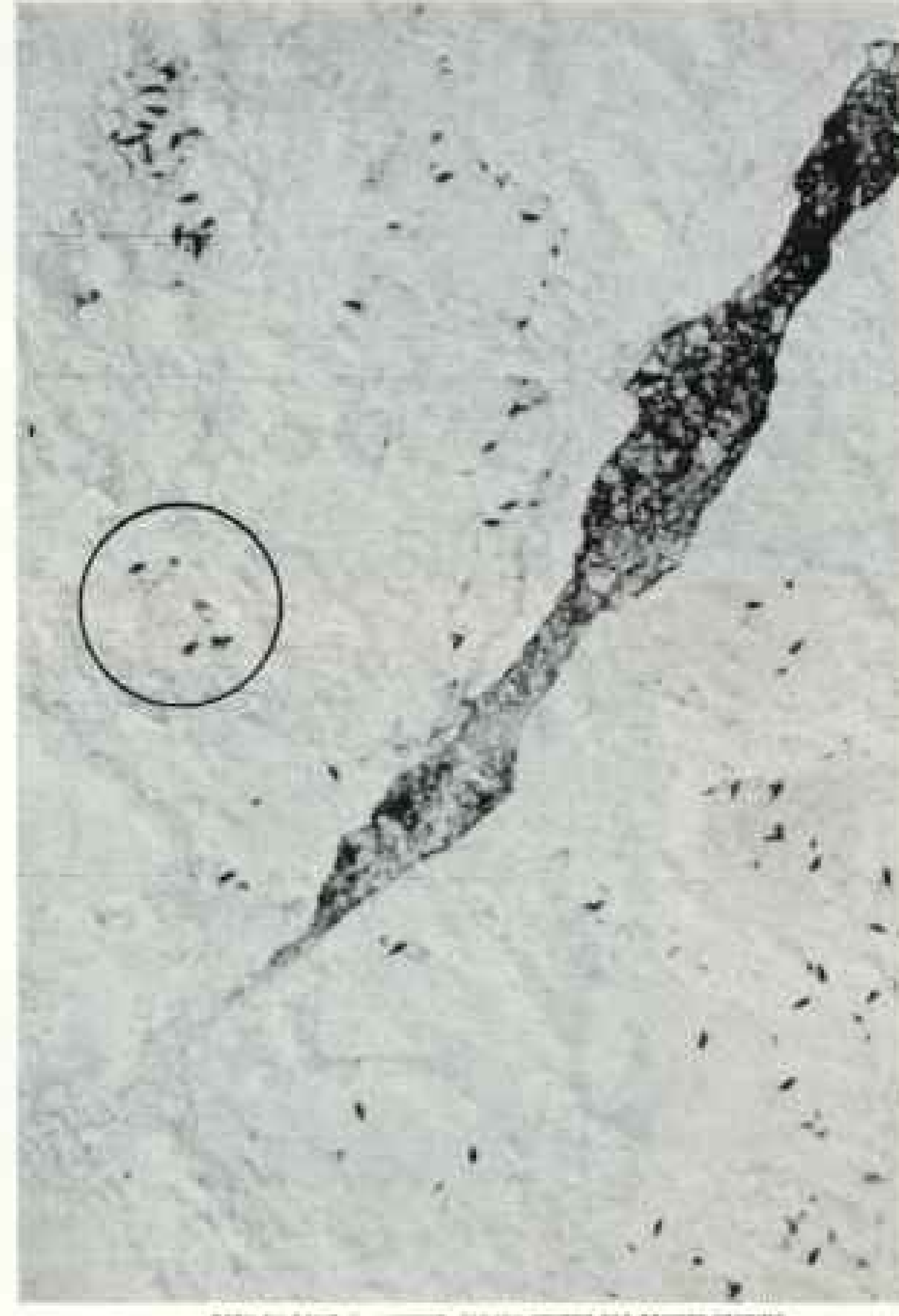
Harp Seals

● *Breeding area* ⁄⁄⁄⁄ *Range*

The invisible becomes visible when white-coated seals are counted with ultraviolet photography. Standard black-and-white film registers only the dark-colored adults on the ice (**below, left**). But with a special lens and film sensitive to ultraviolet rays, white-coated pups emerge from the white background, appearing as additional spots (**below, right**). The method works because pups' fur absorbs the sun's ultraviolet radiation, while the ice reflects it.

From his aerial census, the author estimates the western Atlantic herd to be smaller than most authorities thought—fewer than a million.

Harp seals range widely over the Arctic and subarctic, migrating as far as 2,000 miles (**left**). Each fall the western Atlantic herds start slowly southward to whelping grounds off Labrador and Newfoundland and in the Gulf of St. Lawrence.



BOTH BY DAVID M. LAVIGNE, CANADA CENTRE FOR REMOTE SENSING

(Continued from page 130) white coat for a darker, so-called "beater," pelt.

To scientists the pup's white coat has posed a major problem in conducting aerial censuses. Ordinary films record the dark shapes of adults against white snow and ice, but they fail to register the white-on-white of pups. Since adults are continually in and out of water, it is impossible to count them at any given moment. The only constant factor is the number of pups, which tend to remain on the ice for the first few weeks of life.

In 1973 Nils Øritsland and I sought to solve the problem. After months of research we concluded that ultraviolet photography held the key. For reasons still unknown, the infant harp seal's white coat absorbs much of the ultraviolet spectrum in sunlight. So does the white coat of the polar bear, although those of the arctic fox and hare tend to reflect ultraviolet light.

Snow and ice also reflect the ultraviolet, so by using a special lens and film for ultraviolet rays, one should get a black image—the pup—on a white background.

We received valuable support from Professor Keith Ronald, Dean of the College of Biological Science at the University of Guelph in Ontario, and also Chairman of the Committee on Seals and Sealing. Additional help came from the Canada Centre for Remote Sensing and Dr. David Sergeant of the Arctic Biological Station, Environment Canada.

Nils and I equipped an aerial survey camera with a quartz lens and filter that admitted ultraviolet rays but screened out most visible light. Exhaustive laboratory tests and winter flights over the Gulf of St. Lawrence confirmed our theory: With the new technique we could count harp seal pups as accurately from the air (left) as we could on the surface.

Our work had other, less welcome, results, for we also discovered that our camera saw right through certain types of arctic military camouflage! Not only were seal pups unveiled, but also installations and equipment carefully concealed beneath particular types of white paint. The discovery added yet another problem to arctic military operations.

With the new ultraviolet technique we conducted our first full-scale aerial census of harp seals in the western Atlantic last February and March. Although still in the experimental stage, the survey gives sealers and conservationists alike cause for concern.

Our pup count came to fewer than 200,000, suggesting a total population—both adults and young—of fewer than a million harp seals in the western Atlantic. The figure supports the view that production of pups has declined steadily in recent years, despite the reduction of hunting quotas and the ban on large sealing vessels in the Gulf of St. Lawrence. In fact, our pup count was less than a fifth of the estimated figure for 1952, which was made without the advantage of modern equipment.

Factory Ships Take a Huge Toll

The results of our census may well inspire renewed calls for a total ban on the hunting of harp seals. Yet in any controversy there are few absolutes, and the debate over the harp seal is no exception. Wholesale hunting by large ships equivalent to floating factories is far different from the individual techniques of the local sealer, or landsman, who has borne the brunt of criticism for the hunt.

On the Magdalen Islands in the Gulf of St. Lawrence live 14,000 Canadians who

KEVIN McVEIGH, FISHERIES AND MARINE SERVICE, ENVIRONMENT CANADA

Pup's temperature registers on the scale of the author's radiant-heat detector. An assistant professor of zoology at the University of Guelph, he gathered varied data in the course of his search for a reliable seal census.

have subsisted for more than two centuries on the resources of the sea. During harsh winter months when their land is locked in the ice, as many as three-quarters of the adult Madelinots are unemployed and on relief.

Historically the islanders have hunted the harp seal and harvested herring, lobster, and shellfish from surrounding waters. The seal hunt is hard and dangerous work, and the islands have lost their share of men and boats to treacherous winter ice.

Nor are the Madelinots principally to blame for the decimation of the harp seal. Operating mostly in small groups, afoot or aboard their wooden *canots*, the islanders can venture only a few miles from land. When favorable winds and currents drive the ice on which the harp seals whelp close to shore, the catch may number 20,000 or 30,000. More often than not the "whelping ice" remains far offshore, and the catch numbers only a few thousand or none at all.

Had the hunting of harp seals been confined to such limits, we might not be faced with the present situation. Years of large-scale sealing, with big ships and harvests of hundreds of thousands of animals, has posed the major threat to survival.

Why does a harp seal lounge on an undersea ice shelf? To await a snack . . . a mate?

"We look on the seal hunt as a renewal of island life after the long winter," one Madelinot explained to me. "The arrival of the seals is like the opening of deer season to mainland hunters, but it is more than sport—it is both a cherished tradition and a livelihood."

A hazardous livelihood, too, as I have learned from personal experience. Several winters ago a colleague, Jack Terhune, and I flew out by helicopter to gather tissue samples from pup carcasses for pesticide analysis. It was one of those "warm" sunny days that sometimes interrupt the blowing snow and high winds of March in the Magdalens.

Only the harp seal knows.

Setting down on the ice, Jack and I walked through the seal herd. Most adults scattered at our approach, vanishing down their breathing holes, to reappear now and then in upperiscope fashion for a quick look around.

A few females with pups stood their ground, adopting the classic threatening stance, head raised, growling fiercely.

Soon we came to an area where the sealers had recently worked. The silence was eerie. No living seals occupied the ice, which was strewn with scores of small carcasses, stripped of their pelts.

Our tissue-sampling completed, Jack and I retraced our steps toward the helicopter, only to find that the footprints suddenly came to an end! Across a flat pan of ice they reappeared again, leading toward our landing site.

Obviously a section of ice we had walked on earlier had capsized. Had it chosen to do so while we were crossing it, we could have drowned or been crushed between floes. We carefully detoured the pan and picked up our path on the other side. Mishaps on the ice have not been uncommon during the winter hunt, and nearly every year takes its toll.

Seal's Life Remains a Puzzle

While public attention focuses on the harp seal pup, scientists are equally concerned with its elders. The adult harp seal is a fascinating creature whose adaptation to life both above and beneath the sea still presents many riddles. We know, for example, that the seal can dive at least 600 feet and remain submerged 30 minutes, yet scientifically we cannot explain how. Harp seals do not take large amounts of air on a dive, nor are their lungs proportionately larger than man's. Physiologically we can account only for the first few minutes underwater.

We know, too, that the adult makes a variety of sounds underwater, some of them doubtless related to courtship and mating. Yet the limits of harp seal hearing and the apparent absence of echolocation-type sounds suggest that the creature neither orients itself nor detects food by the method common to some whales and dolphins. How it performs either vital function is still unclear, though vision would seem a key factor.

For obvious reasons of cold and inaccessibility, visual observations of harp seals in their natural underwater environment are rare. Photographer William Curtsinger and his diving partner, Bora Merdsoy, have made

Like waves of attacking infantrymen, Newfoundlanders fan out from their icebound ship during the 1929 seal hunt. In July of that year NATIONAL GEOGRAPHIC published a detailed account of the sealers' annual campaign.

The hunters in those days took some 200,000 animals annually; in the 1830's, during sealing's heyday, the total in one year reached an estimated 700,000 pelts. There were no quotas.

In the late 1960's Canada began to regulate hunting methods, limiting the size of the club and specifying how it should be wielded (**below**). The early 1970's brought increasing restrictions, including a ban on sealing by large vessels in the Gulf of St. Lawrence. An official Canadian study recommended phasing

© HOLLOWAY (LEFT); JOHN DE VISSER

out the hunt. Instead, a quota of 150,000 seals was set for the western Atlantic by international agreement.

Opponents call the hunt barbaric; defenders say it is humane and painless. Fishermen add a third voice to the controversy, claiming the voracious seals decimate fish schools and must be hunted to preserve the fishing industry. Meanwhile, the author and colleagues analyze their census findings in a quest for dependable data. Preliminary analysis gives them serious doubt about the wisdom of continuing large-scale commercial sealing.

a notable contribution to our knowledge of the harp seal through the extraordinary photographs accompanying this article. Day after subzero day Bill and Bora flew by helicopter far out onto the ice, where they donned diving and photographic gear over their thermal "Unisuits" to record harp seal behavior as few before have ever seen it.

Much of our knowledge of the harp seal has been gained from the study of captive animals. Under the direction of Keith Ronald at the University of Guelph, we have conducted series of experiments with live seals in tanks, establishing basic communication between scientist and subject.

One early study focused on harp seal hearing. Jack Terhune taught a female to answer series of questions by pushing underwater levers with her nose. Using sound as the stimulus, Jack taught the seal, appropriately named "Number One," to push a lever located near an underwater loudspeaker. If a sound resulted, Number One pushed a second lever indicating, "Yes, I heard it," or in the case of no sound, still a third lever which meant, "I didn't hear it."

One of our favorite pupils at Guelph is C-9, a female harp seal that I worked with for several years. She is now approaching her seventh birthday and by our reckoning is at work on her fourth graduate degree!

In one series of experiments involving responses to a light stimulus, C-9 performed superbly. Not only did she answer correctly each time, but if anything went wrong with the equipment in mid-experiment, she generally spotted it before I did.

Seals, like human beings, have their geniuses and their dullards, and not every student at Guelph has earned high academic honors. I recall a male and female harp seal designated respectively D-3 and D-5. Initially, both animals seemed capable and enthusiastic, but appearances can be deceptive. After a frustrating year Charles Bernholz, a psychology graduate, and I gave up in despair; D-3 and D-5 simply weren't college material.

Extinction of a Species Can Be Avoided

As the harp seal migration season approaches once again, hundreds of thousands of adults will take up winter residence on the ice off Labrador and in the Gulf of St. Lawrence to produce yet another generation. In large part their success or failure will depend upon human reason and awareness of a valuable but threatened natural resource.

As our census continues, we see increasing evidence that the western Atlantic harp seal population cannot survive continued harvesting by big factory ships. Perhaps the landsmen, under strict rules, may still go out on the seasonal hunts. But we must work fast to provide reliable figures to hunters and conservationists alike. The survival of the harp seal hangs in the balance. □

One that got away. A harp seal pup, almost a month old, has begun to shed the fluffy white coat that hunters prefer. This "ragged jacket" will soon complete its molt to mottled gray and become known as a "beater."

Less sociable than older seals, the "beaters" usually swim alone, feeding on small crustaceans that sometimes crowd shoals so thickly that the water changes color. Later the young seals follow the adults north, where they may yet fall prey to hunters.

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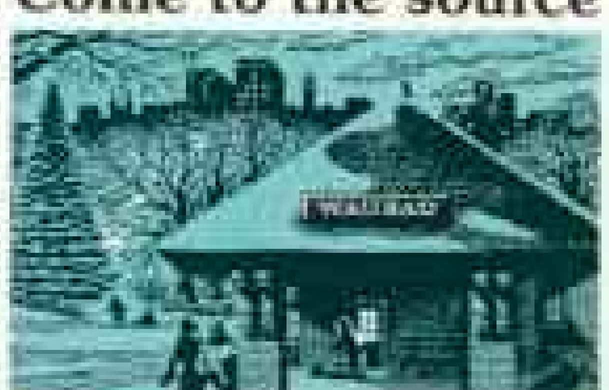

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WILLIAM R. CURTSINGER (ABOVE) AND STEVEN [illegible]

Under the ice with harp seals

TAKING ITS FIRST SWIM, a three-week-old harp seal comes face to lens with photographer William Curtsinger's underwater camera (**above**). Aided by his diving partner, Bora Merdsoy, background, Curtsinger swam among harp seals in their whelping grounds off Canada's Magdalen Islands. Here each year a controversial hunt for "white-coat" pups takes place. Elated with success and inflated for warmth (**right**), Bora and Bill end their adventure in ice-packed 28.5° F. seas. Their rare pictures accompany an article in this issue by Dr. David Lavigne, who reports that hunting is imperiling the harp seal species. You can share this important story with friends. Use the form below to nominate them for membership.

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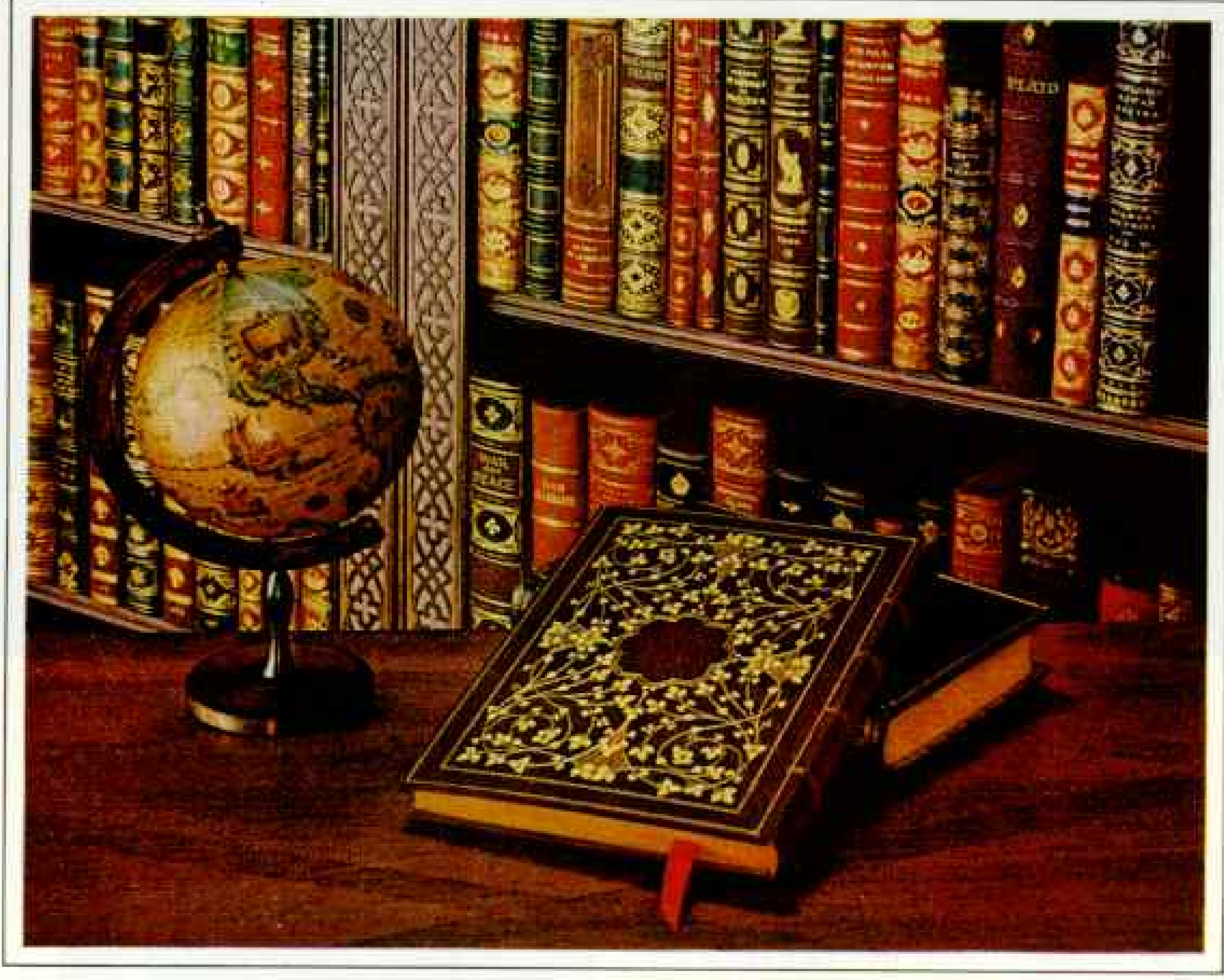

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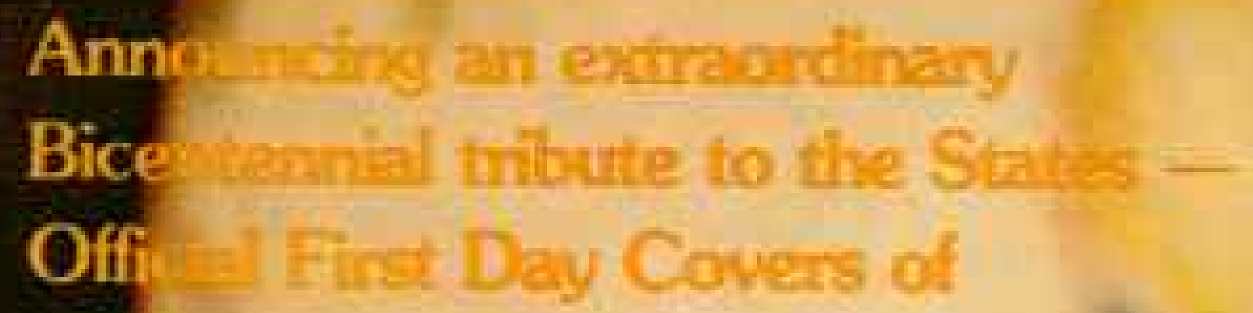

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Crafted expressly for this series, each of the fifty different cachets will pay tribute to the State's most distinguished citizen today honored in the National Statuary Hall of the United States Capitol.

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Each of the fifty Official commemorative stamps will be issued by the United States Postal Service pursuant to law. Since stamps and postmarks will be issued only on February 23, 1976, artists' concepts are used herein for illustrative purposes only.

WORLD GLOBE • RAND McNALLY

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To be assured of acceptance, your application must be postmarked not later than February 15, 1976.

Since long before the dawn of recorded history, peoples have rallied to the flags of kings, empires, and nations. For those thousands of years, flags symbolized only the mighty power of the State. Then, when courageous settlers confronted the rigors of the New World and established America's earliest colonies, they designed flags of their own.

Proud flags of a proud people

In America — for perhaps the first time — flags were banners of the *People* themselves. Symbols of *their* hopes, aspirations, and ideals. With Independence those flags became the emblems of Independent Sovereign States, deriving their powers from the consent of the people themselves. The perfect embodiment of independent spirit, traditions, determination, and sense of destiny which the Declaration of Independence proclaimed.

History remembers, for instance, that Virginia's Flag, which shows Virtue with her foot on Tyranny, was inspired in 1776 by George Mason's suggestion that his State's motto should be a defiant *Sic semper tyrranis* (thus always to tyrants). And that New Jersey's buff flag recalls the color chosen in 1779 by George Washington for the uniforms of New Jersey's regiments fighting for Independence.

Now, two centuries later, the thirteen have grown to fifty. Each flag the proud emblem of the people, the heritage, the unique strengths, and the rich diversity of the fifty States of the Union. Each intimately woven from the fabric of America's proud history.

An unprecedented philatelic event

It is more than fitting, therefore, that as a part of the Nation's Bicentennial Celebration, the United States Postal Service will issue on February 23, 1976, an unprecedented series of *fifty* different Official Commemorative stamps portraying *The Flags of the Fifty States*. This will be the *first* such series to honor *all* fifty state flags, and like all firsts, certain to command the special attention of collectors and historians everywhere.

Available to you: the First Editions

The assembled Governors of all fifty States and other leading citizens will gather in the Nation's Capital on February 23 to inaugurate the new stamps. At special ceremonies, *first editions* of the new stamps . . . First Day Covers . . . will be officially certified by the coveted, one-day-only, *First Day of Issue* postmark of our National Capital's Post Office. These Official First Day Covers will be but a *small fraction* of the total number of stamps eventually printed and available to the general public.

Appropriately, America's oldest and largest purveyor of First Day Covers has for months been making painstaking preparations for the First Day of Issue of *The Flags of the Fifty States*. World-renowned for its First Day Covers, Fleetwood will issue *The Flags of the Fifty States* in *one complete* collection of fifty individual Official First Day Covers. The first fifty collections have been reserved for the Archives of each of the fifty States in precise order of their admission to the Union, beginning with Delaware, and ending with Hawaii. Identical collections are also available now to private citizens on an advance reservation basis.

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A deluxe collector's album will display and protect your collection

Collectors who take advantage of this opportunity to acquire the Official First Day Covers of *The Flags of the Fifty States* will also receive, without additional cost, a handsomely bound collector's album, with protective dustcase. To enhance the historical and educational value of this collection, an authoritative reference guide will be provided with biographies of the citizens honored on the *cachets*. And the fascinating history and significance of each state Flag.

A single, genuinely limited, edition

The Flags of the Fifty States will be issued only *once* — on the precise First Day of Issue, and *only* as a complete collection. The total edition will thus be forever held to the exact number officially postmarked on this date. The distinctive postmark will certify to you that *The Flags of the Fifty States* can *never* be issued again. Truly, this will be a *limited*, first edition collection.

The original issue price for the complete collection of fifty Official First Day Covers is $70, and you may pay for it in its entirety now, charge it to your MasterCharge or BankAmericard Charge account, or pay for it on a convenient installment program.

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Please remember that this is the *only time* that the Official First Day Covers of *The Flags of the Fifty States* can ever be issued. To take advantage of your opportunity to acquire this collection, your order should be postmarked no later than February 15, 1976 — the last date on which Fleetwood can guarantee acceptance of your order. Applications should be sent directly to The Fleetwood Company, 1 Unicover Center, Cheyenne, Wyoming 82008, before this deadline.

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We must have minerals. It's hard to imagine modern life without them. But we must also have an inhabitable environment. To have both requires an aware, informed, realistic public attitude toward mining. We need to encourage mineral development in ways that balance economic and environmental priorities.
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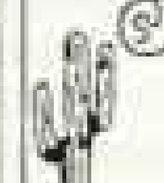

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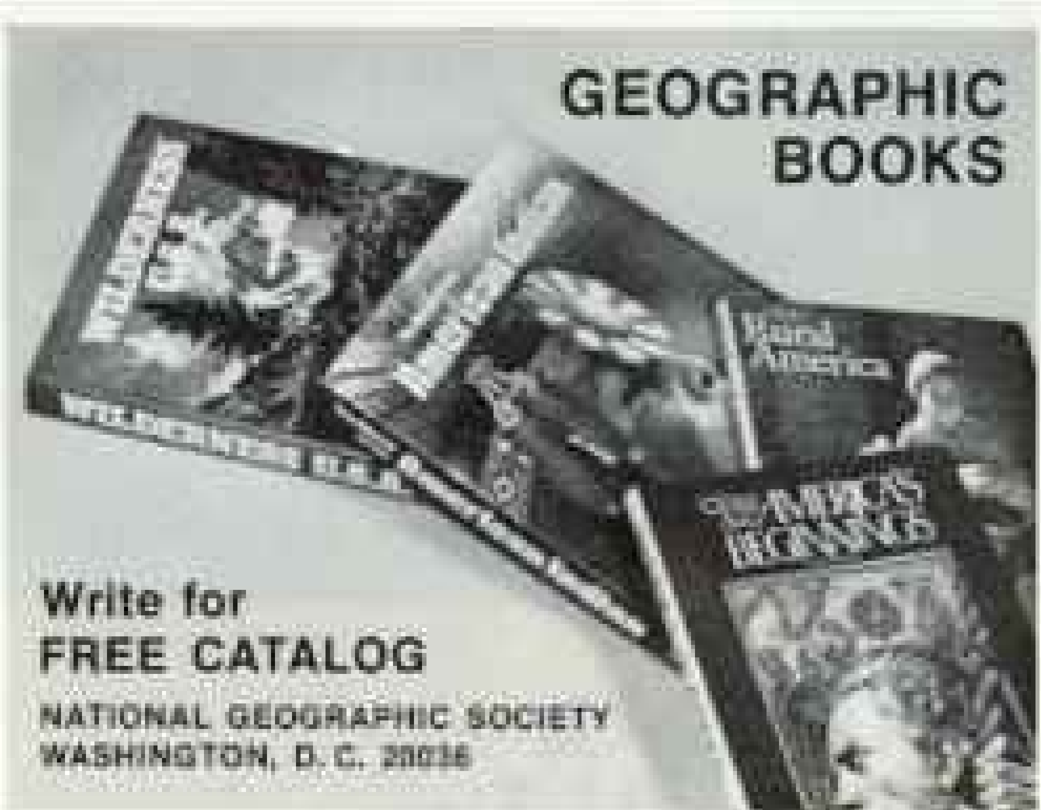

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