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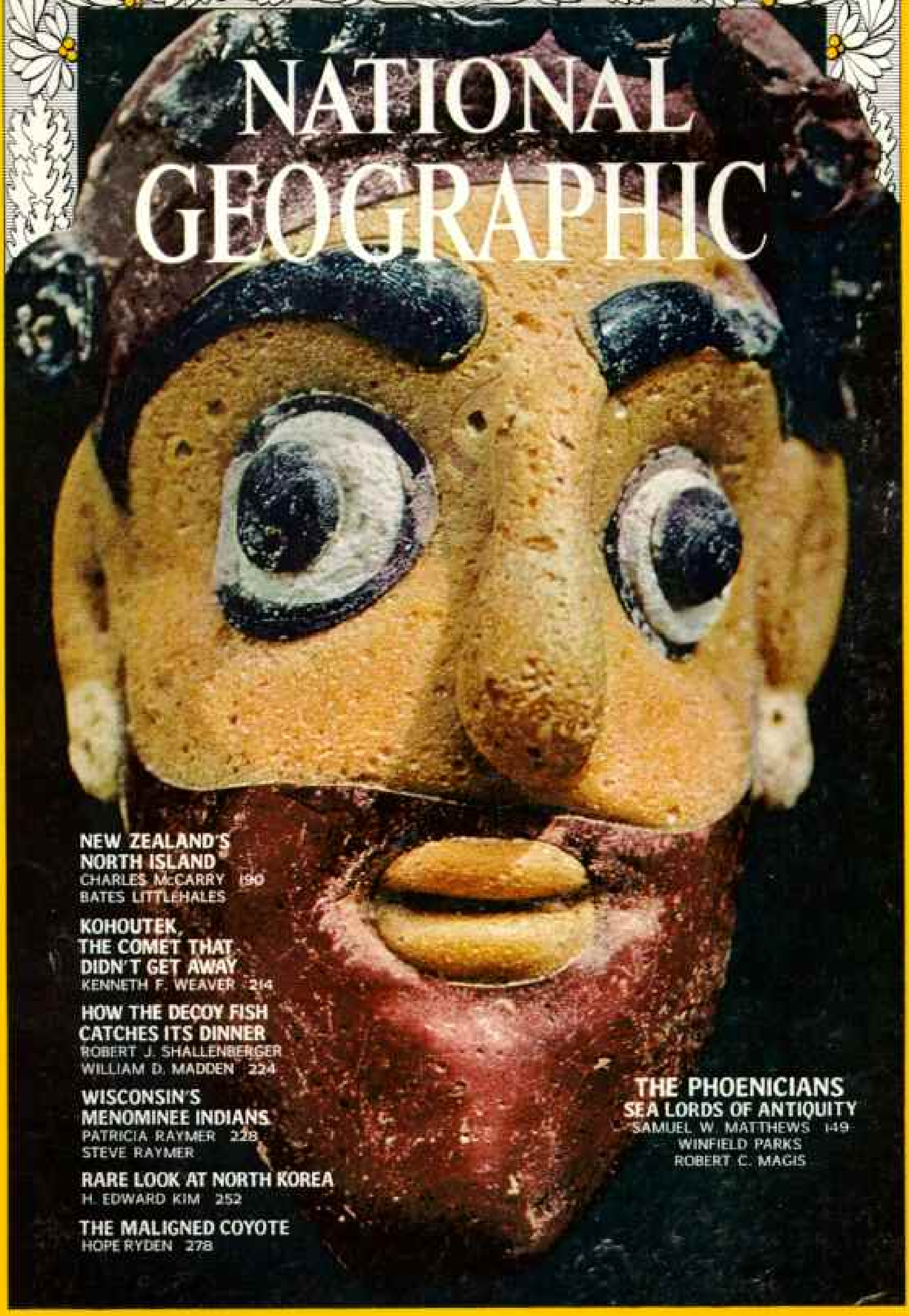

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NATIONAL GEOGRAPHIC

August 1974

THE PHOENICIANS

SEA LORDS OF ANTIQUITY

IN DAPPLED SHADE of fishnets we sat talking, three archeologists and I, beside the harbor of ancient Tyre in southern Lebanon. Wooden boats with high-curving prows lay motionless at their moorings under the Mediterranean sun.

"The fishermen here chant '*El* . . . EEE . . . *sa*, *El* . . . EEE . . . *sa*' as they haul their nets. If you ask why, they cannot tell you—they just do it," said young Patricia Cecil Bikai, born in California, married now to a Lebanese, Pierre Bikai, chief of excavation work at Tyre.

"Elissa . . . Princess of Tyre . . . Virgil's Dido," said the third archeologist, Dr. James B. Pritchard, a lanky, gray-haired Biblical scholar from the University of Pennsylvania Museum. Puffing on a pipe, he spoke as if thinking aloud: "She was Jezebel's grandniece. Her brother, the king, murdered her husband, Tyre's high priest. She fled, first to Cyprus, then to North Africa, and founded Carthage."

That all happened, tradition has it, nearly

Priceless bequest from the past, a gold plate bears Phoenician letters—forerunners of our own alphabet. Unearthed at Pyrgi, Italy, in 1964, the 7½-inch-high plaque dedicates a shrine to the goddess Astarte. It proves that Phoenicians were trading with the Etruscans by 500 B.C., before the rise of Rome.

NATIONAL MUSEUM OF THE VILLA GIULIA, ROME

By SAMUEL W. MATTHEWS
ASSISTANT EDITOR

Photographs by WINFIELD PARKS
Paintings by ROBERT C. MAGIS
BOTH NATIONAL GEOGRAPHIC STAFF

3,000 years ago, more than 800 years before Christ was born in the hills to the south. It happened in the golden age of an astonishing people who roved the Mediterranean from end to end, who taught the Hebrews how to build temples, the Greeks to write with phonetic characters, the Romans to fight at sea.

Elissa was a Phoenician princess. Perhaps her story was real, perhaps not. But the Phoenicians were very real indeed. They were the greatest seafarers of the ancient world, the greatest explorers. Homer sang of them, as did Isaiah and Ezekiel. They were merchants and manufacturers, colonizers and civilizers. They developed and spread the alphabet, the symbols by which I write this account.

From a handful of tiny city-kingdoms along the eastern Mediterranean—Tyre, Sidon, Beirut, Byblos—the Phoenicians sailed and rowed the most advanced ships of their day to the limits of the known world, and beyond.

They grew rich on commerce, on hewing the timber that covered their home mountains, on skillful working of bronze and iron and glass, gold and ivory, on dyeing cloth purple with an extract of sea snails. They traded with Egypt's pharaohs, brought King Solomon's gold from Ophir, fought for Xerxes against the Greeks, were besieged by Nebuchadnezzar and Alexander the Great, and from Carthage, their greatest colony, sent Hannibal to beset the Romans in their own land.

From about 1200 B.C. to the razing of Carthage in 146 B.C., the Phoenicians wrote into history and legend a thousand years of daring voyages, of tireless productivity, of sure genius in trade and diplomacy. Then they fell, submerged by more militant empires.

Today, two thousand years later, even scholars cannot be sure just how far the Phoenicians roamed, or when. Some historians believe they sailed as far as India and England, circled Africa, and even reached America 2,000 years before Columbus. Others regard them more as seagoing peddlers, pliant vassals, copiers of other peoples' art, cruel men who burned children in sacrifice, unprincipled middlemen of their time.

One great difficulty is that virtually no histories or literature of the Phoenicians survive. "What is known of them comes from others, chiefly their enemies," Dr. Pritchard told me. "You can see what's left of some Phoenician cities, and you can go where they sailed. But don't look for written records."

For four years Dr. Pritchard, with support from the National Geographic Society, has been excavating one of those home cities—a long-buried place in Lebanon called Sarepta. With his guidance, and that of other scholars and texts of the dim past, I set out to track the Phoenicians and try to learn who they were.

It was a journey to ruins and tombs and quiet museums, to remote headlands and ship-crowded harbors. Here and there I found ghosts, and always more than a few guesses.

OF CITIES the Phoenicians founded, the one most spectacularly still there, still trading beside the Mediterranean, is Beirut. I came to it on a modern Phoenician ship, a Lebanese airliner, as the westering sun bathed the city and steep-lifting hills behind it in the gold of late afternoon.

Beirut is horn blaring, brash, money powered. New high-rise hotels, apartments, and office buildings jam the shoreline or face the sea from hillside boulevards. The whole Arab world appears to invest in Beirut real estate, do its international banking there, ship and receive its goods through the crowded port, and relax beside St. Georges Bay on holiday.

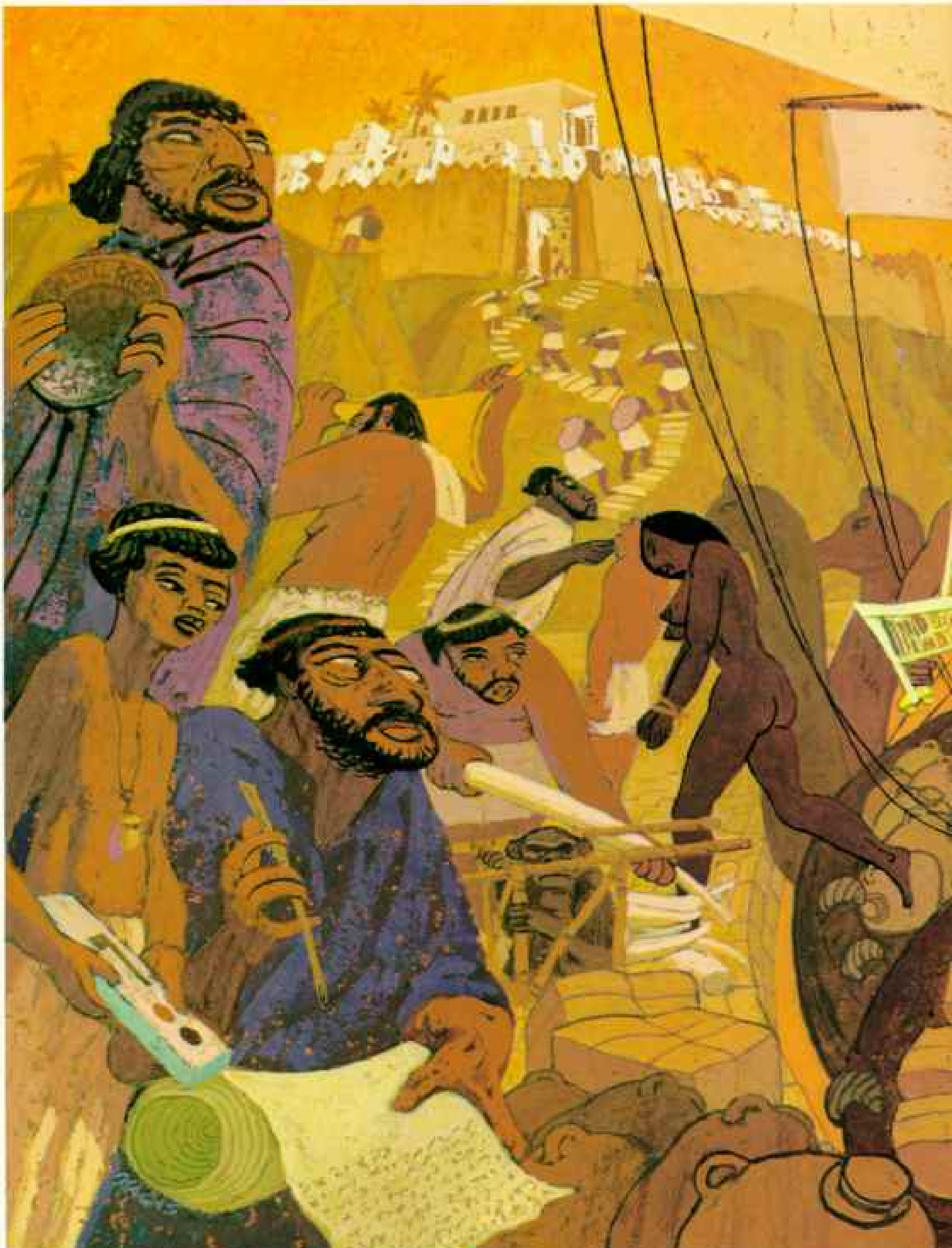
Beirut is older than Rome, older perhaps than Athens. It was listed among cities of the Levant by Egyptian scribes of the 15th and 14th centuries B.C., and must be older than that. But today nothing whatever can be seen of the Phoenician city. Its outline, its very stones, lie somewhere beneath French, Ottoman, Mameluke, Saracen, Crusader, Byzantine, Roman, and Greek levels.

In Lebanon's National Museum, however, the past comes back to life. There, in high, echoing galleries and dark basement crypts, I came face-to-face with the Phoenicians:

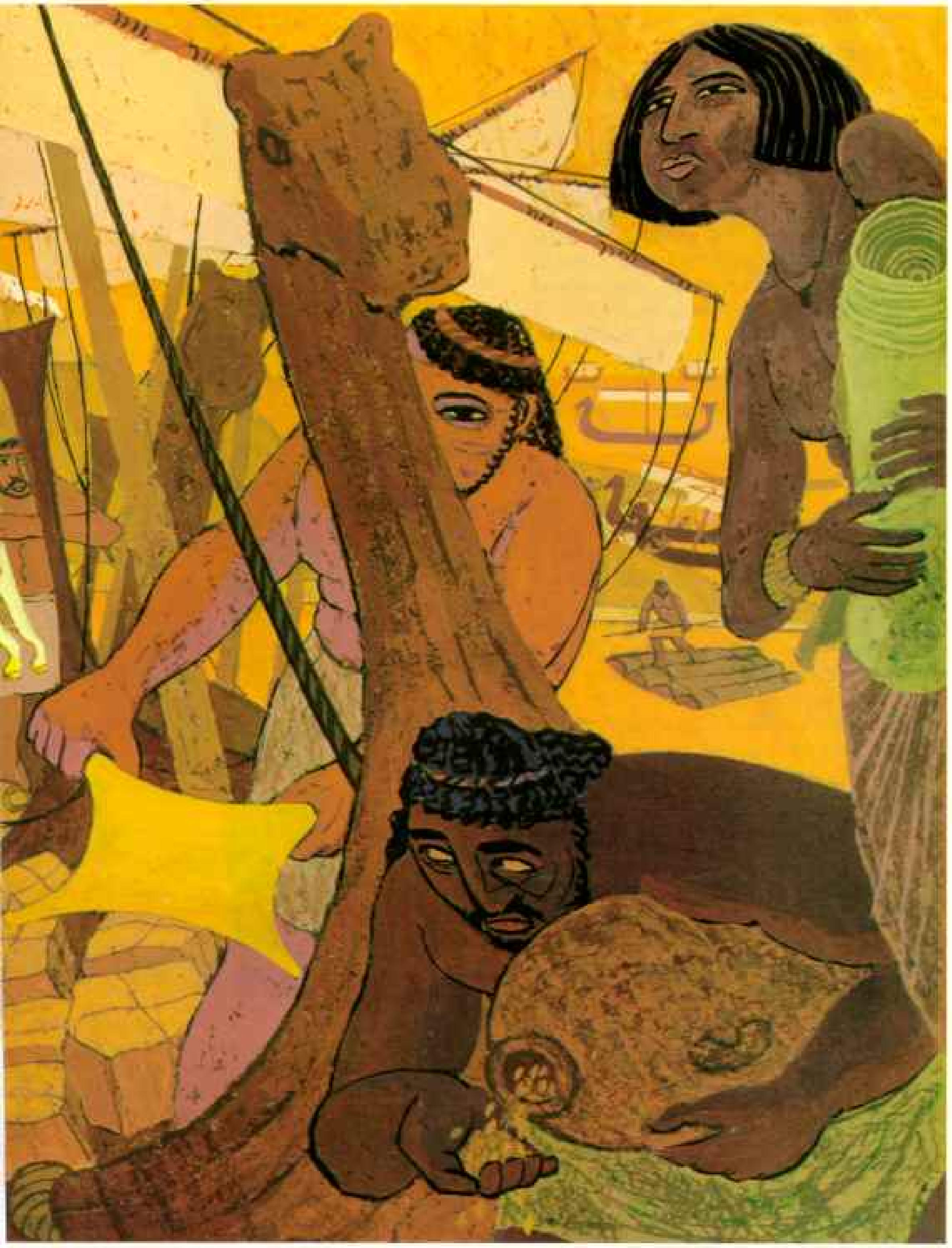
Gold-leafed bronze figurines (right). Gold necklaces and bronze spearheads and carved-ivory ornaments of kings. Alabaster jars, and

Time has flayed the golden skins from these bronze men, offerings to the gods in a temple at Byblos. By 1500 B.C. the already ancient city-kingdom on the coast of modern Lebanon was the richest home port of Canaanite seafarers, whom the Greeks later called Phoenicians. For centuries their wily trading, canny diplomacy, and far-ranging explorations made the Mediterranean a Phoenician lake.

NATIONAL MUSEUM, BEIRUT; CLOSE TO ACTUAL SIZE



Trucks of the sea, Phoenician horse-headed ships unload at Byblos, where a merchant tallies the day's imports on a roll of Egyptian papyrus. From Cyprus come ingots of copper, shaped like stretched hides. Egypt, a major trading partner in the second millennium B.C., sends Nubian slaves, jars of grain and wine, bales of



linen, an ivory-inlaid chair, a pet monkey, and elephant tusks. Porters carry the goods up to the walled city, dominated by its Temple of Baalat Gebal. The city in return shipped out the fabled cedars of Lebanon, here ready for rafting along the coast. Byblos gave its name to the papyrus it traded, and hence to the Bible.

pottery animals, and shallow saucers with pinched edges that were early oil lamps.

Monumental marble coffins, some with lids carved in likeness of their occupants. One, much older than the others, bears one of the earliest known inscriptions in the Phoenician alphabet, dating from nearly a thousand years before Christ: . . . AHIRAM, KING OF BYBLOS . . . HIS ABODE IN ETERNITY. . . .

Four lions crouch at the corners, as if holding the sarcophagus on their backs. A line of courtiers comes before the king, who is seated on a throne flanked by winged sphinxes. A twisted rope and a line of lotus flowers run around the limestone box (opposite).

And on the rim of the lid, the chicken-scratch lettering. It seems vaguely Greek, but it is older than Greek. It is Phoenician.

EMIR MAURICE CHEHAB, Director General of Antiquities of Lebanon, received me in his top-floor office behind the museum. Its windows look down on a turn of Beirut's racetrack. Genial, effusive, nearly as articulate in English as he is in French and his native Arabic, the venerable emir talked about the Phoenicians.

"They didn't call themselves that," he said. "They went by the names of their cities —Sidonians, Tyrians, Giblites [for Gebal, as Byblos was earlier known]. They were among the Canaanites of the Bible—*Kinanu*, in Akkadian. It was the Greeks who later used the name *Phoenikes*."

Apparently both words referred to a color —dark red, or purplish brown, perhaps for their swarthy skin, more likely for the rich purple-reds they dyed their clothing. Much later the Romans, taking the Greek word, were to call the Carthaginians Poeni, or Punic.

The emir talked about the first Phoenician city, Byblos. "From early times it called itself the oldest city in the world," he said. "That, who can say? Jericho, Damascus, Ur? But Byblos was very important, the most important place on this coast in the third and second millenniums B.C. At Byblos we can follow our history back as far as 7,000 years."

The first people there were Stone Age farmers and fishermen, about 5000 B.C. Their successors were a Semitic people who came very early, perhaps by 3200 B.C., from who knows where. It was the dawn of the Bronze Age. With flat axes the Giblites cut timber from the mountains behind their walled town.

"That was the heart of our history," said

NATIONAL MUSEUM, PALERMO (ABOVE) AND NATIONAL MUSEUM, BEIRUT

Graven images, denounced in the Bible, rode ships to protect against gales, whirlpools, and hostile strangers. Found off Sicily, this 13th-century B.C. Phoenician god suggests eastern traders sailing far to the west by that time.

"His abode in eternity," proclaims the tenth-century B.C. Phoenician inscription—one of the oldest known—chiseled on the sarcophagus of King Ahiram of Byblos (**right**). Supplicants approach the ruler with hands raised. Phoenicians early learned to placate the powerful. When armies advanced on their wealthy but weak cities, envoys went out to strike a bargain: annual tribute in exchange for a degree of independence and freedom to trade.

"**Glory of Lebanon,**" Isaiah called its tall cedars, foundation of Phoenician prosperity. Only about 400 aged monarchs endure in this grove east of Byblos. Once heavily forested with cedar, pine, and cypress, Lebanon now must import lumber (**lower**).

In the harbor of Beirut, the freewheeling trade system of the Phoenicians continues to this day. "We buy anything, anytime, anywhere," the Lebanese say, "and we will sell it anytime, anywhere, often sight unseen, but always at a profit."

the emir. "Timber. The cedar of Lebanon. It made ships, and columns for houses and temples. Neither Egypt nor Mesopotamia had good wood. Memphis and Thebes to the south, Nineveh and Babylon to the east, looked to Byblos for its timber."

By 3000 B.C., ships were carrying or towing logs south along the coast from Byblos to Egypt. Pharaoh Snefru's scribes left a description of 40 such ships arriving about 2650 B.C.

The same ships carried the gold of Nubia back to Byblos. They freighted ingots of raw copper from Cyprus. Caravans from the east brought grain and precious stones, wool and hides, spices and incense.

All too soon, the riches brought conquerors as well. Countless invasions and waves of destruction have swept across this land in all the centuries since.

The emir spoke of some of them: the fierce Amorites, probably those who burned Byblos to the ground about 2100 B.C.; the Hyksos, who won rule of the lower kingdom of Egypt; the Hittites, cruel invaders from the north.

"Then, about 1200 B.C.," the emir said, "the mysterious 'Peoples of the Sea' arrived. No one yet knows just who they were. They came probably from the Aegean. They toppled the Hittites, destroyed Ugarit on the Syrian coast, and swept south until stopped by Ramesses III, pharaoh of a waning Egypt. But they could not take all the rich wall-and-sea-guarded Canaanite city-kingdoms. In places such as Aradus and Sidon and Tyre, freed from vassalage to Egypt, not yet under the heel of Assyria, this was the beginning of the golden age."

The Phoenicians were the mixture of all these peoples; they became a people on their own. It was a time of independence and energy, of the new form of writing, of long voyages and colonies established as far away as Spain.

From then until Alexander of Macedon marched into Asia in 334 B.C. and the Romans rose to rule the west—despite conquests by Assyrians and Babylonians and Persians who came down on the cities of the Levant like wolves on the fold—the Phoenicians prospered and expanded the world's boundaries.

The emir, having told me what he could, said, "Now you should go to see Byblos."

Twenty-five miles north on the coast road, forsaking good sense by driving alone in a Volkswagen against the horn-blowing knights-errant of Lebanese traffic, I ventured on a Sunday to Byblos, and stepped far back in time.

From the top of a Crusader watchtower, I looked down across a line of Roman columns to the shadowy tomb pits of Giblite kings. The other way, within the stone ramparts of 2500 B.C., lay the outlines of temples. In those tombs and temples, under obelisks to the gods of Byblos, diggers found gifts from the early pharaohs of Egypt. I had seen them in the National Museum, gold and ebony and alabaster, from the age when Egypt, said a guidebook, was "a glorious sun that shed the light of civilization on Phoenicia."

AT BYBLOS excavation has gone on for more than fifty years. But still not much is to be seen—no buildings intact, no monumental arches or columned Parthenons. Foundation walls lie amid weeds and grass, paths wander here and there. Beyond fences, the coastal town of Jubayl crowds close, and highway noise jars the air.

Yet here charcoal-smudged metalsmiths beat out copper and bronze and iron weapons. Haughty ship captains strode along galley-lined quays. Kings in their palaces, guarded by archers and walls, trembled at the coming of chariot-borne conquerors.

How can one grasp, comprehend, a city that has been inhabited for 70 centuries? New York, after all, can count scarcely three and a half. I went down to the harbor, sat on the stone terrace of a café, looked out at the sea, and read the slim guidebook again.

I read it in symbols the Phoenicians used to write the sounds of their ancient Semitic tongue. Exactly where that alphabet was invented is still uncertain. But those early Phoenician letters were far simpler than either the countless picture signs, the hieroglyphs, of the Egyptians, or the wedge-shaped cuneiform characters from Mesopotamia.

There were 22 Phoenician symbols, each standing for a distinctive sound, rather than a word, a thought, a phrase. There were no vowels as we now know them, even though the first symbol survives as our "A." But the system worked. It could be used in trade, taught to other peoples.

The Greeks called the new way of writing the "Phoenician letters." From such squiggles as mark King Ahiram's coffin comes our modern Western alphabet—A for aleph, alpha to the Greeks; B for beth, beta; D for daleth, delta; and so on. It was perhaps the East's greatest gift to the West.

The Phoenician script was easy to write on papyrus sheets or pieces of broken pottery. And papyrus was a main trade item sent from Egypt to Byblos in exchange for cedar—papyrus rolls for paper, papyrus rope for Phoenician ships.

So closely were papyrus and Byblos identified in Greek days that when the thunderous writings of the Hebrew prophets came to be translated into Greek, that great work was given the city's name—the Bible.

The use of papyrus, however, explains also why virtually no Phoenician writings, no history, no trading records, have come down to us. In their cities by the sea, the air and soil damp, papyrus moldered and rotted away. Thus disappeared the literature of the people who taught us all to write.

Still, we know much about their way of life. Scribes of Egypt wrote of it; artists of Nineveh depicted it.

On a cliff face beside the Nahr al Kalb, or Dog River, between Beirut and Byblos, history speaks eloquently. For more than three thousand years, passing conquerors had their visages and boastful words carved there in stone. Ramesses II, marching north out of Egypt in 1298 B.C. to battle the Hittites, left the first inscription, now all but obliterated. In 671 Esarhaddon of Assyria recorded a victory over Lower Egypt. Nebuchadnezzar of Babylon, having destroyed Jerusalem in 586 and besieged Tyre for 13 years (painting, pages 162-3), recorded his deeds at the Dog River. The parade continues down to tablets left by British and French troops after World War I, and one placed in 1946 to mark full Lebanese independence.

There are other monuments from Phoenician times still alive in Lebanon. I rode one day with a happy-go-lucky Beirut taxi driver, Fouad Mandali, to the mountaintops south of the capital. Up razor-edge ridges and switchbacks wending above deep gorges, we drove to a lonely grove of the cedars of Lebanon.

Scarcely anything remains of the forests that once cloaked the Lebanon range; they were heedlessly cut for centuries. Today a pyramidal tree emblazons Lebanon's flag, but truly ancient cedars are rare and treasured.

A soft wind sighed through gnarled, widespread branches, and an occasional bird chirped from shadowy recesses. The 6,000-foot ridgeline cut the sky just above. Incongruously, a silver dome stood there, shielding an air-defense radar antenna.

As we followed a goat track through the

Breezy city by the sea, Sarepta witnessed a Biblical miracle when Elijah restored a Phoenician boy to life. The prophet, fleeing a famine in Israel, knew the town by its Hebrew name, Zarephath. Discovered in 1970 under a wheat field, Sarepta is the only Phoenician city in Lebanon not overlain by a modern town. Four years of excavation, aided by a National Geographic Society grant, have given archeologists a detailed look at Phoenician daily life.

BOTH BY NATIONAL GEOGRAPHIC PHOTOGRAPHER OTIS IMBODEN

With the stone cylinders and basin, lower right, Sareptans crushed olives for cooking oil. Under the staircases at upper center, further digging revealed a one-room temple. On its cool cement-plastered benches worshipers once presented offerings before an altar to Baal.

A half-inch glass amulet, possibly worn in a ring, bears the symbol of Tanit (**left**), chief goddess of Carthage, the major Phoenician metropolis in North Africa.

cedars, a soldier cradling an automatic rifle stepped into view, eyed us without saying a word, and as abruptly disappeared.

"Eeagh," snorted Fouad. "Trouble. There's always been trouble around Lebanon."

And, indeed, more trouble was to come. Later that year warfare would erupt again between Syria and Egypt on one side and Israel on the other. But even while I was in Lebanon, bloody fighting flared between its own armed forces and Palestinian guerrillas.

FROM PHILADELPHIA Dr. Pritchard had come to Lebanon again to work on his Sarepta findings. He and I went south along the coast road to Sidon, Sayda as it is known now in Lebanon.

Younger than Byblos, Sidon was famed in Homer's time. In the *Iliad* he called the Phoenicians Sidonians, "well skilled in deft handiwork." He described a silver bowl they made as "the goodliest in all the earth." Later, in the *Odyssey*, he is less friendly: "Thither came Phoenicians," he relates, "men famed for their ships, greedy knaves, bringing countless trinkets."

Sidon, where the secret of glassblowing may have been discovered in the first century before Christ, still crowds its rocky promontory jutting into the Mediterranean. But its two ancient harbors are all but gone, silted up. Even its tombs, which yielded dramatically carved coffins of kings a century ago, have been obliterated. There remains little more than a 300-foot-long mound of murex shells, the trumpet-shaped marine snails from which came the famed Phoenician purple dye.

And in the foothills above today's Arab town stands the Temple of Eshmun, Phoenician god of healing. A massive stone complex now being excavated and rebuilt, it is the pride of a bald septuagenarian named Maurice Dunand. Monsieur Dunand has dug at Byblos since 1925, and at Eshmun nearly as long. He is the grand old man of Lebanese archeology, and he is still going strong.

He is also going deaf. In French, he and Dr. Pritchard bellowed details of Phoenician architecture as we walked amid ancient walls and watercourses and temple basins, and I envisaged long-robed priests ministering there to the ill and the infirm.

Eight miles south of Sidon, outside the town of As Sarafand, lies the site of Phoenician Sarepta (above). Nothing remained visible when James Pritchard began digging. It

AN EMPIRE BUILT

Mightier than the sword, the cargoes of Phoenicia's traveling salesmen revolutionized the lives of foreigners they met, perhaps more than any invading army. Their deep-laden "round ships" brought fresh ideas, ingenious wares, and a new alphabet that has served the world ever since.

In Phoenician script each letter represented a single sound, rather than an idea or word. Letters on the pillar at left, called the Nora stone, speak of a temple on a cape in Sardinia.

Tyre's fleets sailed under many flags. For Israel's King Solomon, ships of Tyre coasted to Ophir—perhaps modern India. Later, about 600 B.C., the Greek historian Herodotus tells us, Phoenicians in the pay of Pharaoh Necho II circled Africa (**right**), a voyage unmatched for the next 20 centuries.

One party of pioneers led by Princess Elissa,

ON TRADE

an ancient tradition says, fled Tyre to found Carthage. Soon the "New City" surpassed the old in power, controlling an international cartel of its own colonies across the western Mediterranean.

In the fifth century B.C. Carthage launched a series of explorations beyond Gibraltar. One, on the trail of tin, may have reached the British Isles. Another, laden with colonists, sailed south, perhaps as far as the Gulf of Guinea.

Eventually, Phoenicians met their match. In the east the Greeks outbid them in trade and outfought them on the sea. In the west the Romans copied Carthaginian vessels to build their own navy and finally wipe out Phoenician power in Africa. Yet even today Lebanese descendants of the Phoenicians carry on as entrepreneurs in practically every capital of the world.

was known chiefly from Egyptian, Assyrian, and Greek references—and from the Bible. It was at Sarepta, or Zarephath, that Elijah performed two miracles for the widow who gave him hospitality, feeding her and raising her son from the dead (I Kings 17:8-24).

Now two sunbaked pits lie open to the sky. Active digging was not going on at the time we were there; we were the only inhabitants of the long-lost city, other than a curious cow looking at us over a fence.

The two rectangular holes, together covering an area scarcely 20 by 40 yards, seemed scant return for four seasons of hard, painstaking labor, by crews of as many as a hundred diggers. But I soon learned otherwise.

"We have uncovered at least nine different cities, representing more than a thousand years of Phoenician history," Dr. Pritchard said. "Every inch, every bit—600,000 fragments of pottery—has been measured and charted and recorded."

The end result will be a matchless record of Phoenician life through all the centuries of its greatest influence. Sarepta represents the best of scientific archeology, a careful peeling back of the past.

THE QUEEN CITY of Phoenicia, Tyre, lies some 14 miles south of Sarepta, beyond the Litani River. To reach it, we had to pass scrutiny at an armored sentry

Who is the victor? Fierce King Nebuchadnezzar of Babylon, far right, wonders as he withdraws his men in 572 B.C. after a 13-year siege of Tyre.

Earlier, the Babylonians overwhelmed Jerusalem and sent its people into exile. Turning to Tyre, Nebuchadnezzar rammed down walls of the mainland part of the city; his chariots trampled citizens underfoot. But without a fleet, he is denied the island citadel itself, a tantalizing half mile offshore. Here Phoenician ships keep defenders supplied.

Only after Tyre sends nobles ashore as hostages in nominal surrender are the Babylonians pacified and start for home. "Every head was made bald" from wearing helmets so long, and "every shoulder was peeled" from carrying weapons, says the Bible.

Some 240 years later Alexander the Great built a causeway and took the island by storm. In the centuries since, drifting sand has built up, making Tyre a peninsula.

point; Lebanon's frontier with Israel, closed and heavily armed, is not far beyond.

But any trip to Tyre, today's Sur, is worth whatever the trouble. Excavated intensively since 1947, Tyre again stands forth as one of the noblest cities of the ancient world.

Ezekiel, in exile in Babylon, described Tyre as it was before Nebuchadnezzar camped in front of it in 585 B.C. (Ezekiel 27:1-25):

"Thy borders are in the midst of the seas, thy builders have perfected thy beauty.... all the ships of the sea with their mariners were in thee to occupy thy merchandise....

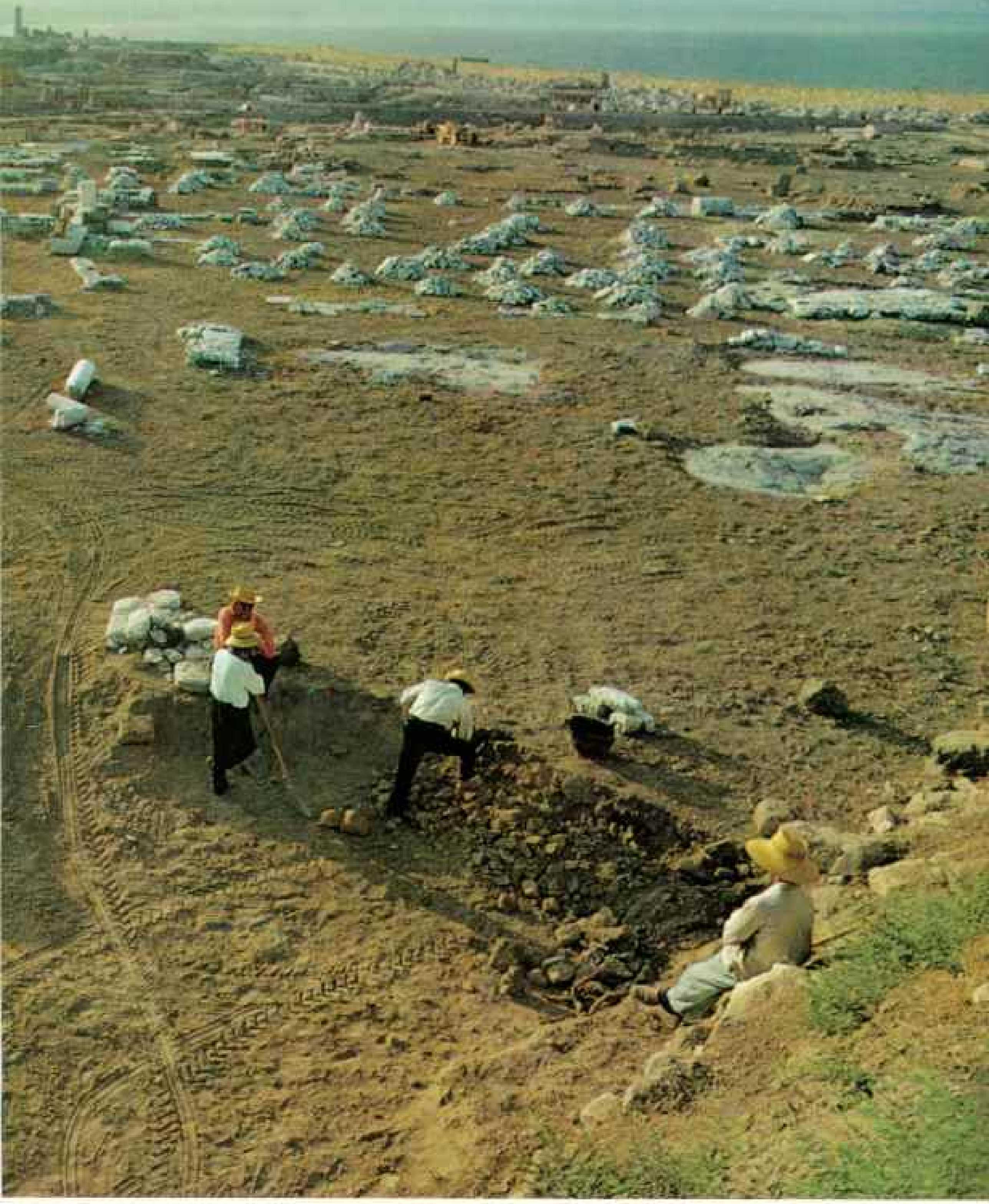
"Tarshish was thy merchant by reason of the multitude of all kind of riches; with silver, iron, tin, and lead, they traded.... many isles were the merchandise of thine hand: they brought thee... horns of ivory and ebony.... emeralds... fine linen.... honey, and oil, and balm.... wine... and white wool.... precious stones, and gold."

Four centuries earlier, about 950 B.C., Tyre's greatest king, Hiram I, had joined two islands and built on them an all but impregnable city in the sea. He enlarged its harbors, one to the north, the other to the south.

And from Tyre he sent to his friend David, King of Israel, and later to David's son Solomon, the cedar and pine and cypress, the carpenters and stonemasons, to build the palaces and first great temple at Jerusalem.

The First Book *(Continued on page 172)*

"**The crowning city,**" sang Isaiah about Tyre, whose "merchants are princes" and "whose traffickers are the honourable of the earth." The city's factories transformed sea snails into purple dye coveted by royalty everywhere. Tyre's comely princesses—



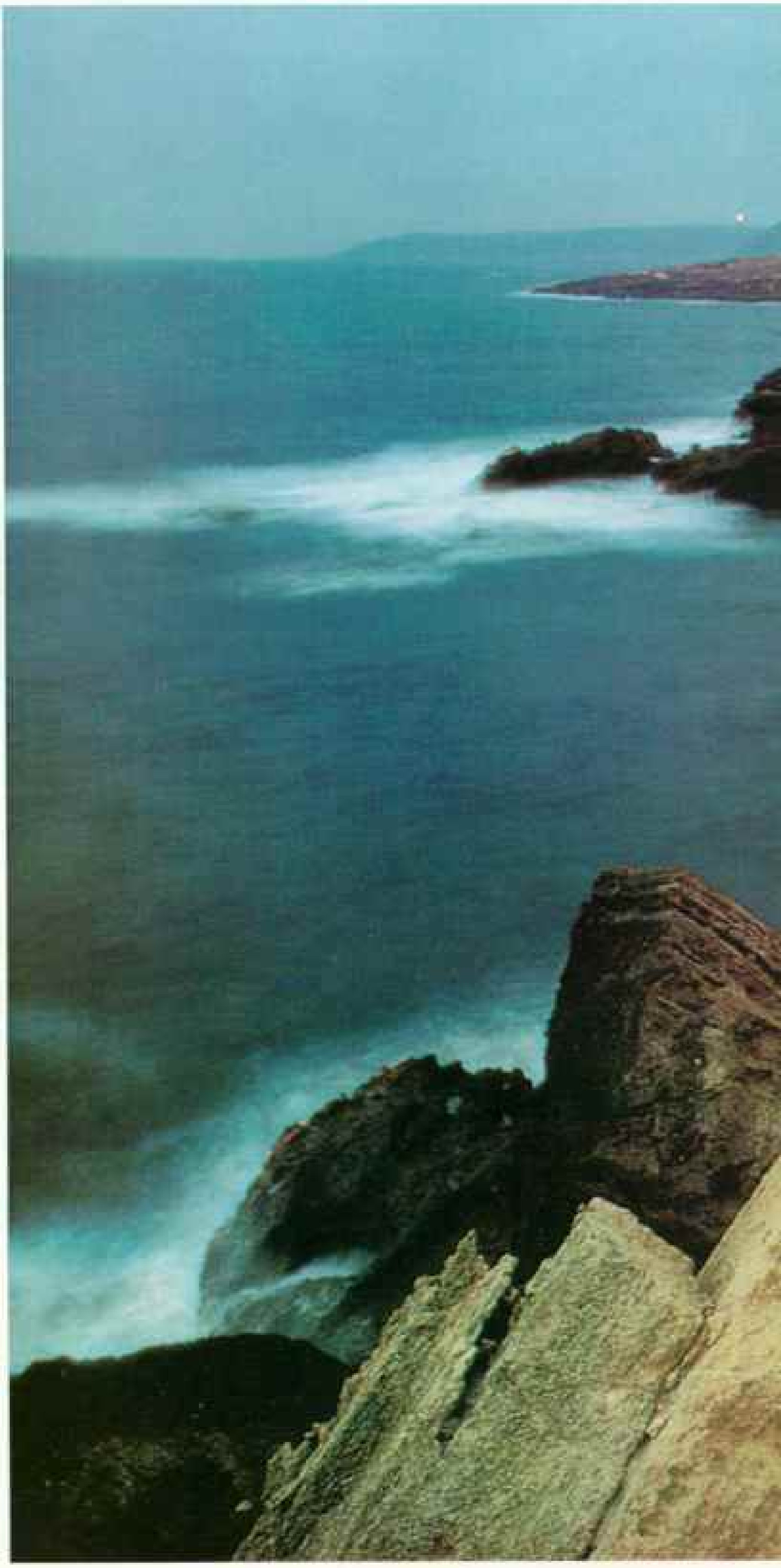
such as Jezebel of Biblical infamy—won the hearts of foreign kings. But today the Phoenicians' Tyre lies buried beneath these paving stones and columns of a Roman metropolis. Only a small dig reaches down to the lost world of the Phoenicians.

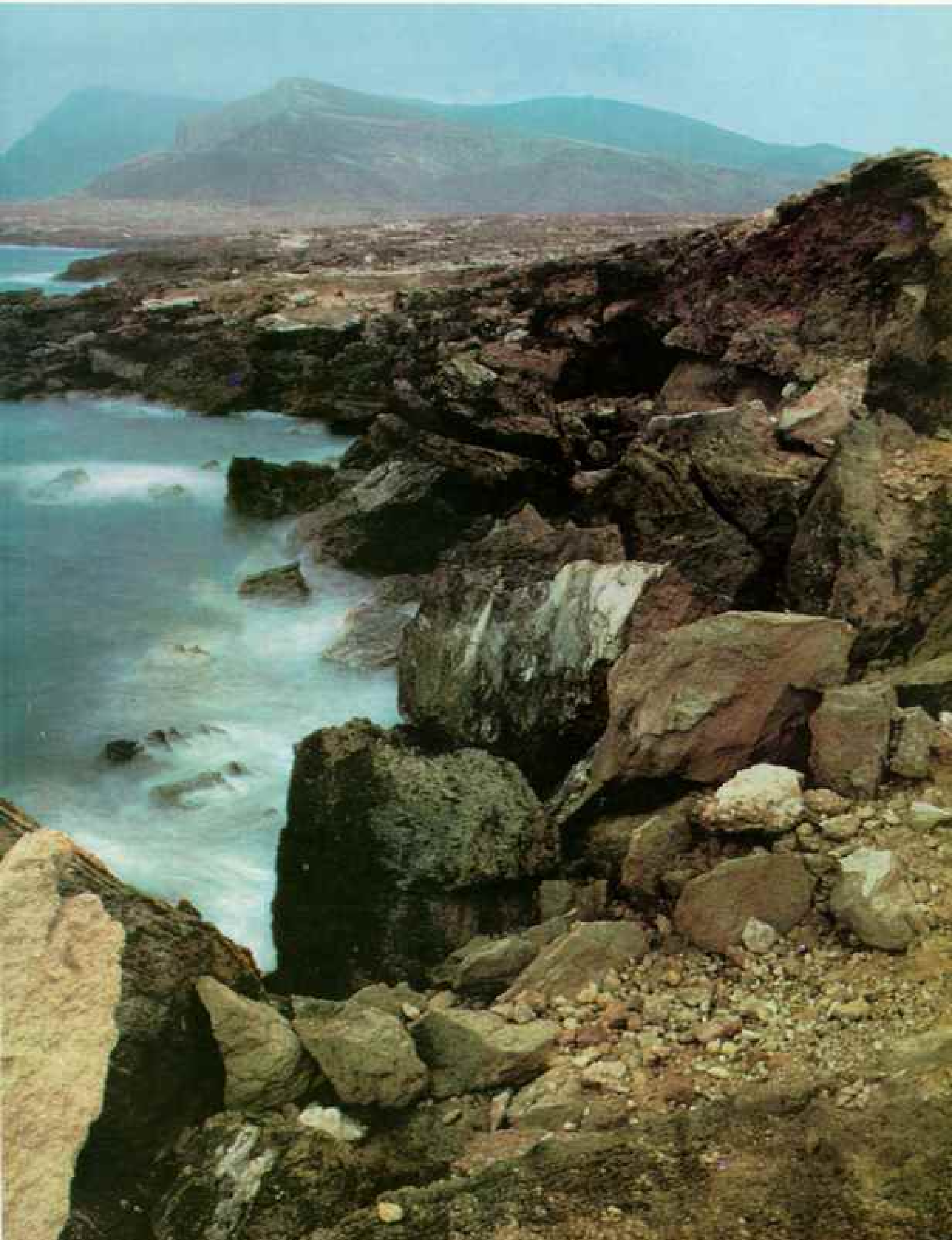
TO APPEASE THE GODS, THE MOST PRECIOUS POSSESSIONS

Firstborn sons and daughters were offered by Carthaginian parents as living sacrifices in times of great calamities—war, famine, drought, and plague. On a moonlit night, ancient writers say, a priest placed a child, mercifully killed moments earlier, on the outstretched arms of a statue of Baal. As the infant's body rolled into a flaming pit—entering the company of the gods—flutes, tambourines, and lyres drowned out the parents' cries. Later the ashes and bones were collected in a small urn and placed with thousands of others in the sacrificial precinct, or tophet, of the goddess Tanit at Carthage (**right**). The gravestone (**above**) commemorates a young child. Archeologists have found evidence of human sacrifice also in Sardinia and Sicily, but not yet in the Phoenician homeland.

THE SEA BECKONED AND PHOENICIANS ANSWERED

Landmark of the ancient mariners, distant Cape Bon, Tunisia, topped by the wink of a lighthouse, guards the strait between North Africa and Sicily. Through this strategic throat flowed most of the traffic between eastern and western Mediterranean. Phoenicians in pursuit of trade usually hugged the coasts, choosing landing places on easily defended islands or peninsulas. During major crossings they steered by sun and stars. With favorable winds they might make four to six knots and cover more than 100 miles in 24 hours. Once ashore, the traders spread out purple cloth, glass trinkets, and perfumed ointments. Then they withdrew until inhabitants brought enough gold or other valuables. The best trading points eventually became Phoenician settlements.





IVORY AND SILVER REFLECT A CULTURE

Gifted borrowers, the Phoenicians adapted artistic styles from others. Yet many of their works were masterpieces. Homer praised one of their silver bowls as "the goodliest in all the earth." Temptress in a window (**left**), wearing an Egyptian wig, recalls the temple harlots who served Astarte, goddess of love and fertility. The eighth-century B.C. ivory carving once decorated a piece of palace furniture in Nimrud, capital of Assyria, 500 miles east of Byblos. In another ivory decorated with gold, lapis lazuli, and carnelian, a lioness mauls an African amid lotus and papyrus blossoms, perhaps symbolizing Egypt subduing Nubia.

At Carthago Nova (Cartagena, Spain) in the third century B.C., coins were minted in Greek style. This portrait, once thought to be Hannibal, more recently has been identified as Melqart, chief god of Tyre. The horse and palm tree on the reverse were emblems of Carthage.

ABOUT ACTUAL SIZE (ABOVE); COINS 1 1/2 TIMES; WOMAN IN WINDOW THREE TIMES ACTUAL SIZE (OPPOSITE); ALL IN BRITISH MUSEUM

of Kings describes in detail the building of Solomon's Temple. It must have been modeled after the temple to Baal Melqart at Tyre, which Herodotus wrote of as having two huge pillars standing in front, "one of pure gold, the other of emerald."

"There are still columns and building stones to be seen underwater out there," Tyre's digging superintendent, young Pierre Bikai, said. "The fishermen believe one of the columns is made of gold. But nothing yet has been found of the temple of Melqart, either there or on land. Someday we'll find it."

"And written records of Tyre! There must still be inscriptions of the Phoenicians here somewhere," added his American wife, Patricia. "Records of the city's history, of its trade. We'll find them—I know it!"

The enthusiastic young couple showed me the carefully marked-off area where, for the first time in Tyre's excavation, digging is now going below the Roman and Greek levels into the Phoenician city below.

They opened a storeroom jammed with boxes of nothing but pottery jug handles—from wine, oil, and water jars. Many bore their makers' marks stamped in the clay. "See, there . . . and there!" exclaimed Patricia. "The Rose of Rhodes. Those jars were made and shipped from the isle of Rhodes."

NOT ONLY WEST across the Mediterranean went Tyre's ships, to Rhodes and beyond. They sailed east as well. At a port called Ezion-geber at the head of the Gulf of Aqaba, King Hiram built a fleet of "ships of Tarshish" for King Solomon, the Bible relates, and sent Phoenicians to man them. This Red Sea fleet brought Solomon gold from Ophir, sandalwood, ivory, and peacocks, among many things, and "so king Solomon exceeded all the kings of the earth for riches" (I Kings 10:23).

Archeologists accept this account, though they do not know where Ophir was: perhaps Africa, the land of Ham; perhaps southern Arabia, land of Sheba. But most likely—there are those peacocks—Ophir lay in India, far across the Arabian Sea.

"Tarshish" perhaps meant a type of ship, long, broad of beam, a heavy cargo carrier. It may also have meant a place. Tarshish, most classical scholars believe, lay 2,500 miles away in southwestern Spain—Tartessos, rich in silver and lead, iron and tin, a land beyond the Pillars of Melqart, or Heracles as the Greeks were to call him, at the other end of the Phoenicians' home sea.

Long before King Hiram's time, Phoenician ships must have voyaged regularly to Cyprus. It lies scarcely 100 miles from Byblos. They sailed as well to the Aegean, to Crete, perhaps even to Malta.

Now, from Egypt, they coast-hopped westward to trade with the North Africans, whom the Greeks called Libyans. The Phoenicians founded an outpost, Utica, in what is now Tunisia. They landed on Sicily, on Sardinia. And, say Greek historians writing much later, they reached the open Atlantic. In the territory of the Tartessians they established a colony called Gadir, or Gades—modern Cádiz.

Following this historic path, I journeyed first to Cyprus, to the earliest known Phoenician settlement outside their homeland. At Larnaca, on the southern coast, I stood in the ruins of ancient Kition, being unearthed by Professor Vassos Karageorghis, Director of Antiquities of Cyprus.

"Here," he said with quiet pride, "we have found an early temple to Astarte."

Astarte, goddess of Byblos and Sidon and Tyre, Ashtoreth of the Bible. Elissa's goddess, who in Carthage would be called Tanit. Goddess of life and love and fertility, holding her hands to her breasts, giving milk to men. Her likeness in clay and bronze and ivory has been found from one end of the Mediterranean to the other.

On the north coast of Cyprus, at Kyrenia, another link with Phoenician times stands in a medieval castle by the harbor. There the oldest ship yet raised from the sea has been put back together by archeologist Michael L. Katzev, with National Geographic support (page 175). Identified as Greek from its cargo of wine jars from Rhodes, it went down in a storm near the end of the fourth century B.C. It could just as easily have been Phoenician, trading at the same time and ports.

Not only such "round ships," tubby freighters under one square sail, but also sleek fighting galleys, their sharp beaks clad in bronze for ramming, came from Phoenician shipyards, greatest of their time.

Scenes carved in bas-relief in Egypt and Assyria, or painted on Greek pottery, trace the development of Mediterranean ships. Many of the major advances were Phoenician. They built heavy ships, 100 feet long or more, strong enough to sail open seas; galleys with two banks of oars, as in Homer's time, about

"**Behold, I purpose to build an house** unto the name of the Lord my God," declared the Hebrews' King Solomon. But his people—former nomads—lacked experience with monumental architecture, so he turned to an ally, the master builder King Hiram of Tyre. During the next seven years a Phoenician-style temple rose in Jerusalem, as legions of workmen, countless loads of finely cut stone, cedar and other timbers, and draperies of purple linen poured in. A renowned Tyrian metalworker cast two great pillars of bronze for the entrance. Solomon's payment of wheat and olive oil, 20 cities in Galilee, and 120 talents of gold strained the Jewish treasury; it helped weaken the kingdom, which eventually split apart. Four centuries later Nebuchadnezzar razed Solomon's Temple. Today the Wailing Wall survives from a later temple built by Herod on the same site.

700 B.C.; then three banks in the trireme.

Phoenician ships roamed the eastern Mediterranean from 1200 B.C. on. After the fall of Nineveh to the Babylonians in 612, and then of Babylon in 539 to the Persians, Phoenician warships fought for Darius and Xerxes against the Greeks.

The greatest sea battle of ancient times took place at Salamis, near Athens, in 480 B.C., a century and a half before the Kyrenia ship sank. Phoenician squadrons formed the heart of Xerxes' fleet; the king of Sidon was among his admirals. The Persians, caught in constricted waters, were defeated by the outnumbered Greeks, but not for want of Phoenician skill or bravery. The Greek triremes outmaneuvered and trapped their adversaries and turned the battle into a Persian rout (painting, pages 176-7).

THE TRADITIONAL DATE for the establishment of Carthage is 814-13 B.C. It may have been as much as a century and a half later, some archeologists now hold. But the romantic story of Elissa of Tyre may well be true—that having fled from her murderous brother, King Pygmalion, and accompanied by priests and temple maidens of Astarte, she sailed west from Cyprus to the Gulf of Tunis and there, on a hilltop now called the Byrsa, founded the city of Carthage.

Byrsa means "oxhide." The story has it that Elissa, offered as much land as a hide would cover, cut it into thin strips, tied them end to end, and marked off the whole hilltop.

I stood on the Byrsa one sunlit day, just above the mansion of the President of Tunisia, and looked down at the two Carthaginian harbors, the stone-lined *cothons*, that still indent the shoreline. I visualized swarthy sailors coming ashore there, talking of their homes in Tyre, of voyages a thousand miles farther west to Tartessos.

Later, in a deep crypt called the Precinct of Tanit, darker thoughts rose to haunt my sleep for days. Before me stood urns that held the ashes and charred bones of children (page 167); here the blackest and most horrible rite of the Carthaginians, inherited possibly from the homeland Phoenicians, was practiced for centuries. They sacrificed living children; priests cut the throats of babies before throwing them into a blazing fire.

The Phoenicians of the east, if indeed they ever practiced infant sacrifice, gave it up very early. But as the tophet, the sacrificial site at Carthage, proved when excavated in the 1920's, it persisted there to the final assault on the city by the Romans in 146 B.C. It added to the Romans' abiding hatred of the Carthaginians. In the end the Romans vowed to burn Carthage to the ground, plow under every trace, and sow salt in the furrows.

"The Carthaginians reputedly gave up their children with an outward show of joyfulness," said a Tunisian scholar, Dr. Mhamed Fantar, when I talked with him in the crowded old Medina, the suq of Tunis. "I admit that's hard to believe. But their religion was very strong. The earliest trace we have of Carthage is a sailors' chapel. The city's last defenders burned themselves to death in the Temple of Eshmun" (painting, pages 182-3).

He shrugged. "It is too bad that so much of what we have of Carthage is of death. If you would take away something happier, take a coin. After all, the city was established and grew rich and powerful on trade."

So I found a reputable dealer in Carthage, and bought a bronze coin smaller than a dime. Surprisingly, it cost only a few dollars.

"It is genuine," the dealer assured me.

NATIONAL GEOGRAPHIC PHOTOGRAPHER JONATHAN BLAIR

Skeletons from the sea's closet offer clues to ancient shipbuilding. At Kyrenia, Cyprus, restorer Robin Piercy reassembles ribs of a Greek merchantman of the fourth century B.C., the oldest ship ever raised; it trafficked the same routes that Phoenician ships sailed.

Still golden, esparto-grass rope and wood (**above**) of a Carthaginian wreck date from the third century B.C. Sunk off Sicily, it is probably a warship, the oldest yet found.

"True Carthaginian coins are common here. They turn up whenever any bit of digging is done. There's nothing special about this one."

There is to me. One side bears the profile of a woman—Tanit, said the dealer—the other a horse standing before a palm tree. Horse and palm are distinctively Punic, I learned. I carried this talisman during the rest of my voyaging after the Phoenicians.

DIRECTLY ACROSS from Cape Bon in Tunisia, at the tip of Sicily, Carthage founded a city at a place known now as Motya. It was a typical Phoenician site—a small island close offshore, secure from the land, affording a quiet anchorage. Motya may even have had a stone-sided inner harbor, or cothon, like those at Carthage.

Early in this century the islet, little more than a barren sandbar, was bought and excavated by a British wine merchant, Joseph Whitaker. His villa there now holds a small museum; around it the extent of the Phoenician settlement is clear to see.

I prowled Motya one April day with two friendly Sicilians, nephews of the museum's caretaker, who help tend the island's vineyards and guard its ruins. Francesco Pugliese and Vincenzo Arini, both in their 30's, have lived on Motya since they were boys.

"Is it very lonely here?" I asked them. "Do you ever feel the presence of the ancients?"

They told me of apparitions, bearded figures in strange garb, that had appeared "many times" at the ancient cemetery of Motya, where children's burial urns have been unearthed from a sacrificial tophet.

"I do not believe in ghosts of the ancients, you understand," Francesco said firmly. "But our donkeys, they have been frightened by them. They have gone galloping off full speed, and we have had to chase them."

Another ghost from vanished Carthage has indeed emerged from the open sea near Motya in the past three years.

In 1969 an industrial dredge sucking sand from offshore shallows began chewing through the planks and ribs of an ancient shipwreck. The dredge stopped, and eventually a British undersea archeologist named Honor Frost, an expert in Phoenician harbors and ship anchors, came to have a look.

She discovered that there were many wrecks embedded in the bottom. The stern post of one protruded from the sand only eight feet down. Carefully uncovered and

"**Ship dashed her brazen beak** against ship . . . the sea was no longer to behold, filled as it was, with wrecks and the slaughter of men." An eyewitness tells how Phoenician ships, sailing in a

Persian war fleet against Greece, met defeat at the battle of Salamis in 480 B.C. The Greek triremes, painted with guardian eyes, wisely waited in a narrow passage near Athens for their foes. From his mountaintop lookout, Persia's King Xerxes "shrieked aloud" as hand-to-hand fighting ended his dream of conquest. The battle foretold the end of Phoenician sea power.

lifted piece by piece, it is proving to be one of the most historic ships yet found.

"We know it is Punic," Honor Frost told me. "We think it was a warship that sank on its maiden voyage during the First Punic War with Rome, about 250 B.C.

"Not only is the ship complete to its end post—which no other ancient shipwreck yet found has had—but the hull timbers were newly cut and fitted," she said. "Shipwrights' marks in Punic characters are still visible on the wood when it first comes up.

"The wood, and lengths of rope we found under planks [page 174], are still yellow when the sand covering them is removed. We've found fresh carpenters' chips in the bilge, and branches, used to cushion ballast stones, with leaves that were still green!

"The ship was obviously new. It carried no cargo, but was weighted with ballast stones. It went down with an entire squadron, either in a storm or in battle."

PUNIC POTTERY found in the wreck, as well as carbon dating of the timber, show the ship was built near the middle of the third century B.C. In 261 Rome, which had no navy to match the Carthaginians, captured a Punic quinquereme; in two months, copying it plank for plank, Roman carpenters built a hundred like it. In pitched battles off Sicily, the Roman fleet eventually bested the Carthaginians and turned the course of history.

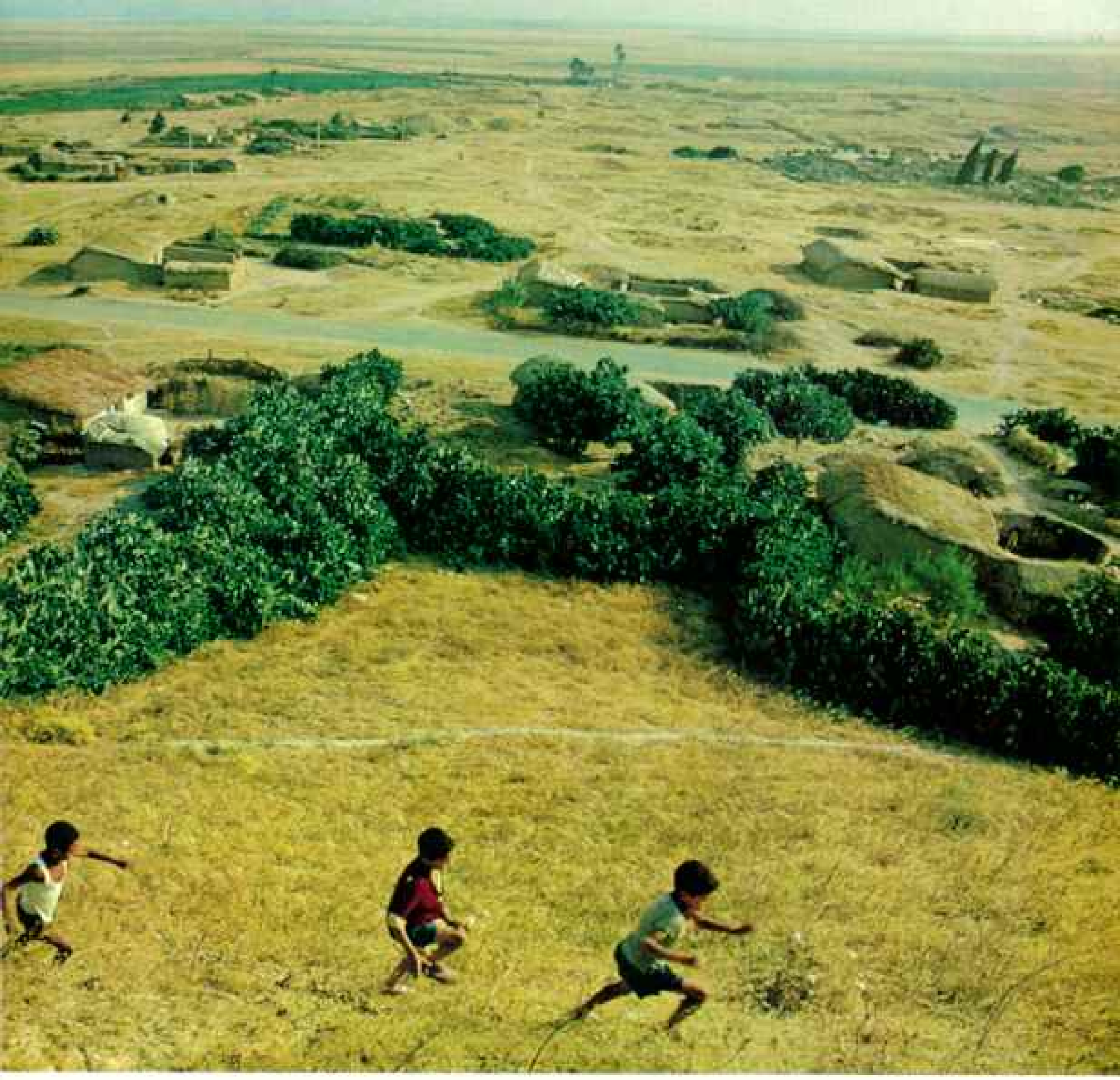
"Ours may turn out not to be a warship; we don't yet have any sure evidence, such as weapons," Honor Frost said. "But the wreck fills an important gap in maritime history. It is the only Phoenician ship yet raised. Already it has provided important clues to shipbuilding in Roman times."

Uncovering and lifting the ship from its sandy grave still goes on, supported by a National Geographic research-and-exploration grant. The long slow process of preservation and eventual reconstruction of the timbers has begun. The pieces rest now in freshwater tanks at the archeological museum at Palermo, under the care of Vincenzo Tusa, Superintendent of Antiquities of Western Sicily.

Professor Tusa showed me the wood, blackened and fragile, which may someday take shape again as a ship. He showed me also a Phoenician treasure of the Palermo museum that may be a thousand years older than the Punic vessel.

Where sailors once docked, farm boys play. Utica—in Phoenician times a spit of land protruding into the Gulf of Tunis—today lies landlocked five miles from the sea, victim of river silt. Once this fertile land yielded abundant grain for Carthage and for Rome, a sometime friend to North Africa's Phoenicians.

Yet the sea still provides. At dawn fishermen bring their night's catch to the Tunisian port of Kelibia. From the peninsula beyond, Carthaginians defended their shores against invading Romans.



It is a 15-inch-high statue of a walking Phoenician god, wearing an Egyptian-style headdress (page 154). It was dredged from the sea bottom off southern Sicily in 1958; experts have dated it as early as the 13th century B.C. Its discovery that far west, Professor Tusa told me, supports historians who argue that seafarers from the eastern Mediterranean—perhaps Mycenaeans, perhaps Phoenicians—must have been voyaging west long before Carthage was founded.

FARTHER WEST STILL, Phoenician traders or Carthaginian colonists landed very early in the south of Sardinia. There I wandered amid the houses and temples of a city named Nora, built typically on a promontory. A stone inscribed in archaic script (page 160) puts the Phoenicians there perhaps as early as the 800's B.C., though scholars dispute the stone's true age.

At Ibiza in the Balearic Islands, at waystops such as Alicante, Cartagena, and Málaga on the long slant of the Spanish coast leading southwest to Gibraltar, the Phoenicians and Carthaginians built other fortified stations, usually on high headlands.

A fortress-topped hill in today's town of Ibiza is honeycombed with chamber tombs that Punic colonists cut into the soft chalky rock. There they interred their dead with golden jewelry and painted pottery figurines of Tanit and popeyed, bearded Carthaginian gods (cover and opposite).

There is no doubt that Phoenicians reached Cádiz, beyond the huge gate stone of Gibraltar. Treasures of gold jewelry found in excavations near Cádiz and Seville, up the mineral-rich Guadalquivir River valley, show unmistakable Phoenician artistry. A statuette of Astarte, unearthed near Seville, bears an inscription in Phoenician letters. It has been dated to the 8th century B.C.

Opposite Cádiz on the Moroccan coast stood other Phoenician outposts on the Atlantic: Tingis, today's Tangier; Lixus, 40 miles southwest; the gaunt islet of Mogador 350 miles farther (page 184).

The Greek historian Herodotus in the fifth century B.C. told of Carthaginian trade with the Libyans. The mariners would arrive at a village, unload their wares, and lay them out on a beach. Then they would go back on their ships and raise a smoke signal.

The Libyans would come down to the shore, lay out the amount of gold they thought the goods were worth, and draw back to a distance. The Carthaginians would come ashore and take a look. If there was enough gold, they took it and left; if not, they went back aboard ship and waited. The Libyans would add gold until the sellers were satisfied.

"Neither side," relates Herodotus, "cheats. The Carthaginians don't touch the gold until it equals the value of the goods, nor the natives the goods till the shipmen have taken the gold."

Traders thus reached regularly west and south beyond the Pillars of Heracles. In another direction, says Herodotus again, Phoenician explorers went farther still: About 600 B.C. they sailed completely around Africa, clockwise (map, page 161).

This incredible voyage, many scholars believe, really happened. It was ordered by the Egyptian Pharaoh Necho II, who ruled between 609 and 593. Assuming that Libya, as Homer said, was a fairly small island surrounded by the River Ocean, Necho recruited the finest mariners he could get and sent them south from the Red Sea.

"The Phoenicians . . . sailed the southern sea," Herodotus wrote; "whenever autumn came they would put in and sow the land . . . then, having gathered in the crop, they sailed on, so that after two years had passed, it was in the third that they rounded the Pillars of Heracles and came to Egypt. There they said (what some may believe, though I do not) that in sailing round Libya *they had the sun on their right hand.*"

The italics are mine. The one thing that the Greek did not accept—that the sun would cross the sky to the mariners' right—is the reason his story may be true. No others by Herodotus's time had been so far south, beyond the Equator. There the sun indeed crosses the sky in the north—to the right of ships heading west around Africa.

Sometime after Herodotus's day—for he does not mention them—two more seagoing expeditions sailed out of the Mediterranean, west from Carthage.

One, under a leader named Hanno, was recorded in the Temple of Baal Hammon; the account was later copied by a visiting Greek. Hanno set out with 60 ships and 30,000 colonists to found new cities, so his *Periplus* relates; the numbers are surely exaggerated, since even 50-oared ships could scarcely carry 500 people each. But he must have reached the westernmost bulge of Africa,

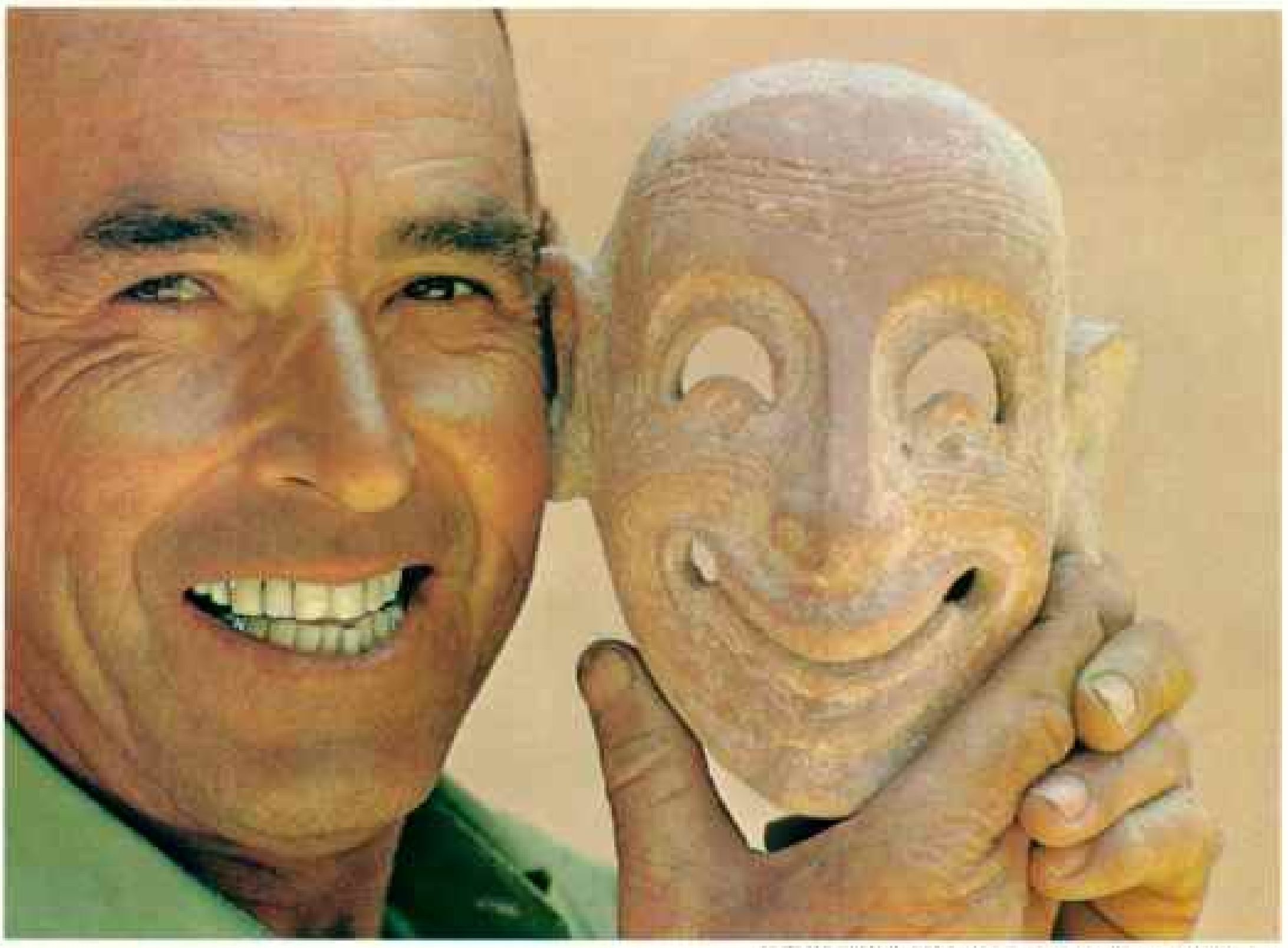
from the evidence in his log; possibly he rounded the hump entirely, sailing east again into the Gulf of Guinea. He wrote of seeing crocodiles, hippopotamuses, and "women with shaggy bodies . . . called Gorillas"—the explorers skinned three of them.

The other venturer, Himilco, was reported by the Roman Festus Avienus to have gone north around Iberia and reached England, the Insula Albionum of the tin trade.

Though history ever since has talked of regular Phoenician voyages to the Tin Isles, no archeological evidence has yet been found in England to prove it. Tin from Cornwall, the Scilly Isles, and Brittany probably went overland, across Gaul to Iberia or to Greek colonies in southern France, says Dr. Donald B. Harden, former Director of the London Museum and a noted Phoenician historian.

"A few Carthaginian coins have been found in Britain," he told me, "but they could have been taken there by the Romans."

Whatever the extent of other Phoenician voyages, they went well beyond Gibraltar into the unknown of the open Atlantic. At Tangier, by the rock tombs of ancient Tingis,

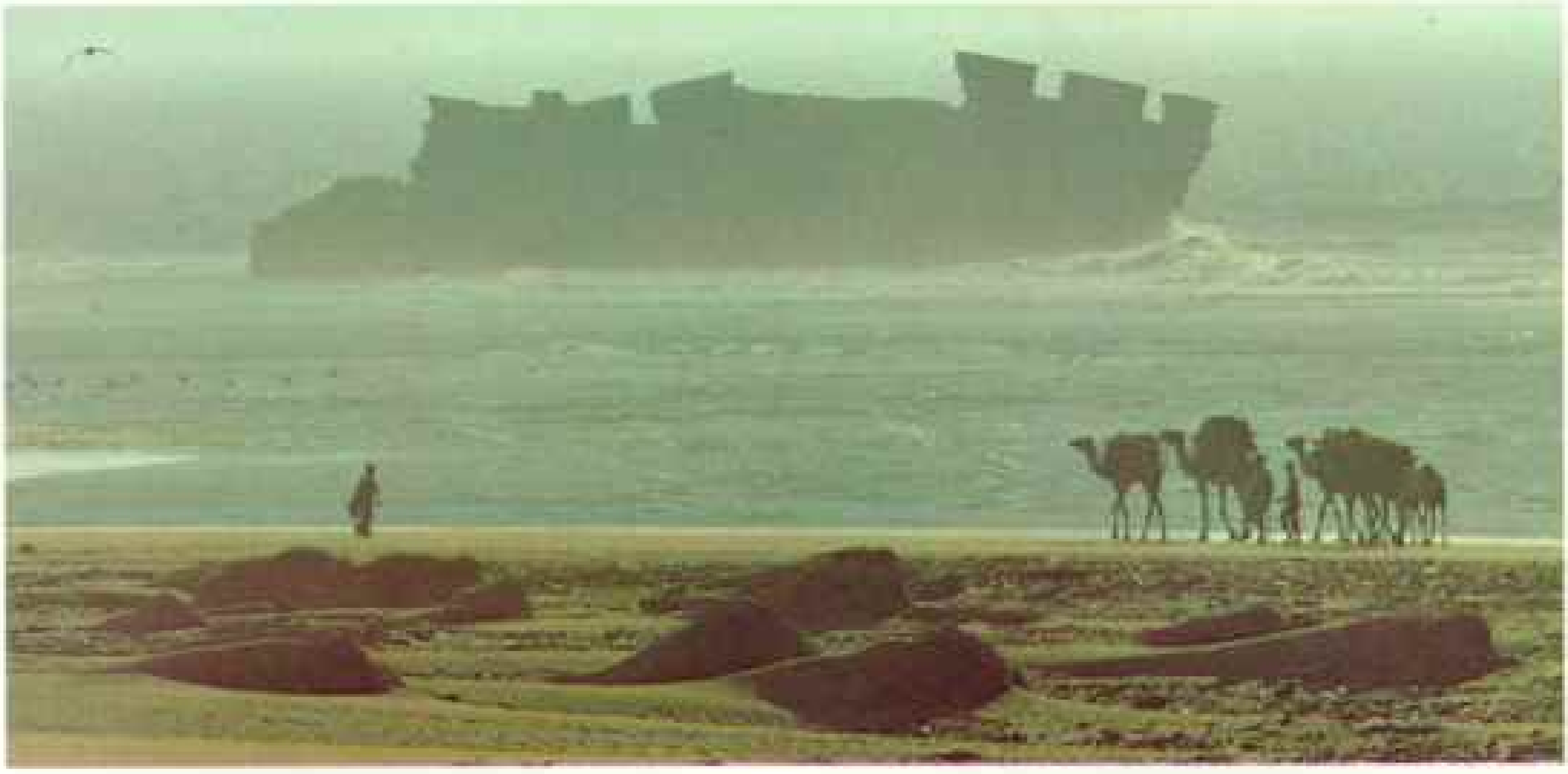


BRITISH MUSEUM, MOTYA (ABOVE); PUIG DES MOLINS MUSEUM, IBIZA

Grin to please a god animates a 2,500-year-old terra-cotta mask, held by equally jovial Vincenzo Pugliese on Motya. Once under Carthage's sway, the tiny island on the west coast of Sicily has yielded a trove of relics. Phoenicians put masks in tombs as offerings and perhaps wore them in temple dances to ward off evil.

Amulet of colored glass may represent the Phoenician god Bes. The popeyed pendant (**left** and cover picture), here shown close to actual size, was found on the island of Ibiza in the Balearics.

Trapped in a holocaust, white-clad Carthaginians in 146 B.C. fight to the death against Romans (**next pages**). "Carthage must be destroyed," Cato the Elder had repeatedly urged his fellow senators. Rather than surrender, the wife of the city's ruler threw herself into the flaming Temple of Eshmun. Romans sold survivors into slavery and razed the rival city.



Ghosts of Phoenician seamen haunt Morocco's Atlantic coast, where ruins of a sultan's fort ride the islet of Mogador, farthest Phoenician outpost from the homeland yet discovered by archeologists.

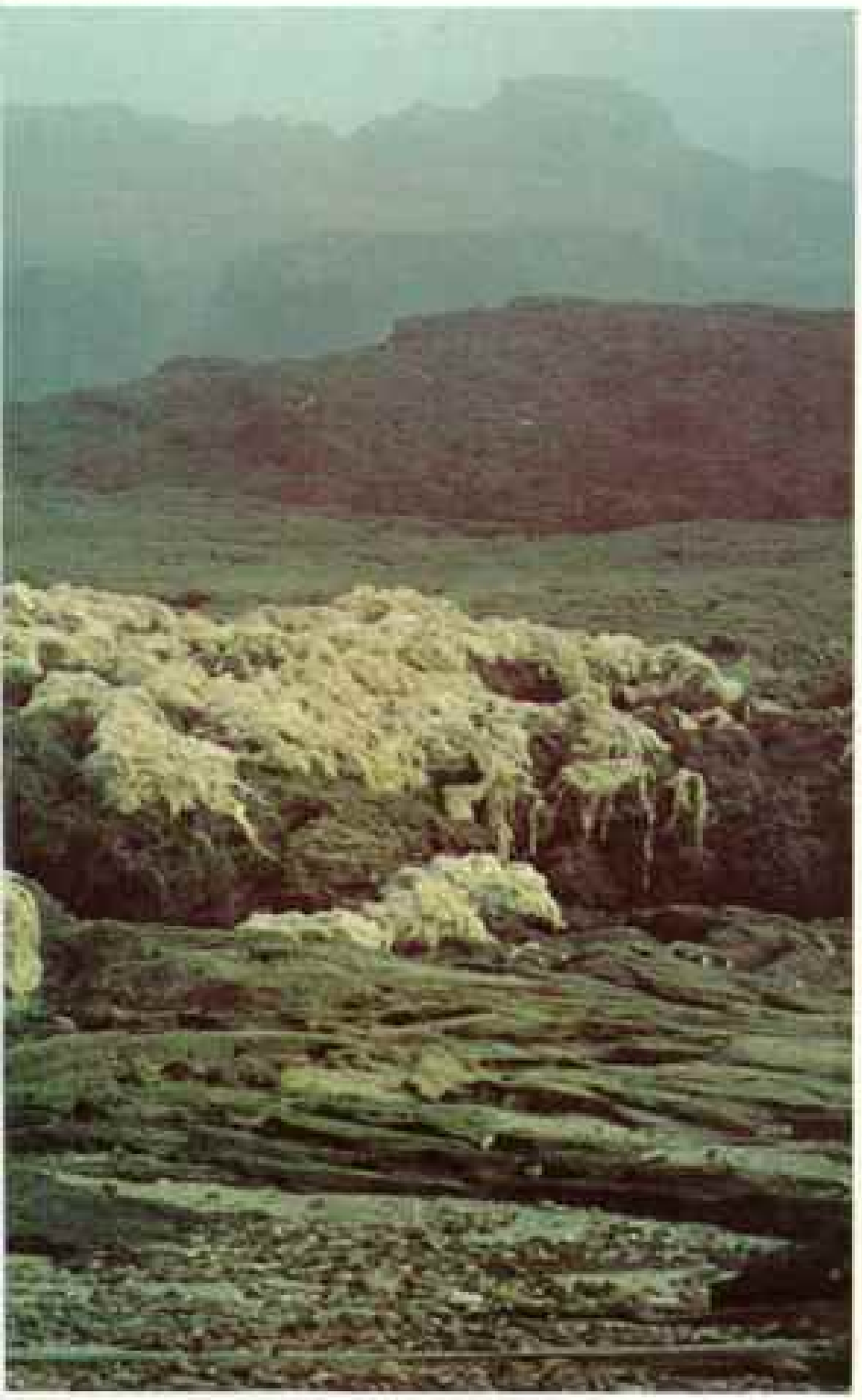
On the mainland shore the tide repeats a timeless task of washing wool and leaving it to dry. In Roman days local peoples operated a dye works here, perpetuating Phoenician methods.

I stood for a long time looking out at the ocean, wondering just how far they got.

They could have easily reached the Canary Islands and Madeira, lying close off Africa, but there is no archeological evidence they put colonies there. They may have gotten to the Azores; Punic coins of the fourth and third centuries B.C. were reputedly found in 1749 on the island of Corvo.

Beyond that lies only speculation: Could the Phoenicians have reached the Americas, accidentally or by regular voyages?

Diodorus of Sicily, writing in the first century B.C., described "in the deep off Libya [Africa] an island of considerable size . . . fruitful, much of it mountainous. . . . Through it flow navigable rivers. . . ." The Phoenicians, he said, had discovered it by chance, after they had "planted many colonies throughout Libya . . . amassed great wealth and essayed to voyage beyond the Pillars of Heracles into the sea that men call the ocean."



Neither the Canaries nor Madeira have any navigable rivers. The Azores lie too far north. The first lands west of Africa with such mountains and rivers are South America and the islands of the Antilles.

Other ancient writers, both Greek and Roman, give similar accounts of bountiful lands lying far to the west. Some modern archeologists and scholars strongly believe that ancient mariners—perhaps Egyptians, perhaps Phoenicians—reached those lands. Others scoff, denying any possible contact.

Let me simply mention some of the strange and inexplicable facts of pre-Columbian America that have long intrigued historians and laymen alike.

The Mayas and their shadowy forebears, the Olmecs, wrote in hieroglyphic symbols still being deciphered, reckoned by bar-and-dot number systems, kept a calendar, predicted motion of the stars. They built flat-topped pyramids, virtually identical to Mesopotamian ziggurats. Their carvings and figurines include aristocratic Mediterranean-looking priests or kings with high-bridged noses, full beards, conical helmets, and pointed, upturned shoes—remarkably akin to Phoenician figures on Assyrian bas-reliefs.

In several National Geographic Society–Smithsonian expeditions to Olmec sites in Mexico before World War II, archeologist Matthew W. Stirling found a series of great stone heads. Their features, he reported, "are bold and amazingly Negroid in character."

Dr. Stirling's description, though later qualified, was startling. How could Negroes, Africans, have gotten to the New World before Columbus?

In a plaza at La Venta, later carbon dated to between 800 and 400 B.C., Stirling found an altar suggesting infant sacrifice.

Coincidences? Perhaps. Who can say?

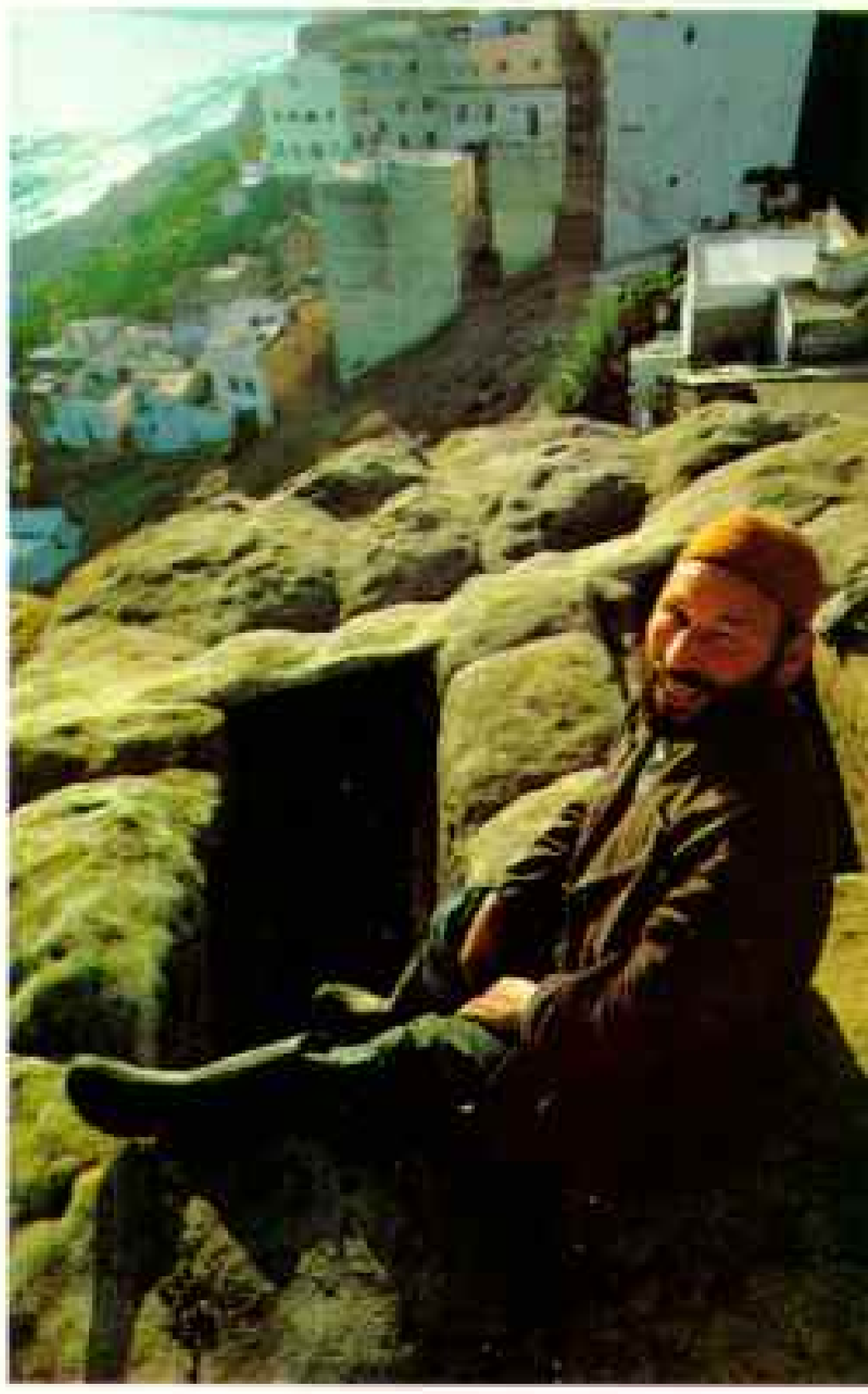
WHETHER OR NOT they reached America, the Phoenicians wrote a chapter in history that is fabulous enough. They were a people by no means as mysterious as they have been regarded, a people who rightly can be placed beside the Greeks and Romans as the "builders of our world."

In the 19th century the British historian George Rawlinson characterized the Phoenicians as "the great pioneers of civilization," who "by their boldness, their intrepidity, and their manual dexterity, prepared the way. . . .

Luxuries of a lost life: Baths, running water, mosaic floors, and courtyards shaded by pomegranate and olive trees created a demi-paradise at Kerkouane on Cape Bon. Excavator Mhamed Fantar sits in a slipper-shaped bathtub that received hot and cold water through lead pipes.

Though small, these dwellings of the third century B.C. sheltered a people made wealthy by a dye industry attested by vats and mounds of snail shells. The three-room houses cluster around small courtyards, common in the Tunisian countryside today. Mosaic floors glimmer with limestone, shells, colored stones, and glass. Some homeowners embedded Tanit's symbol (**upper right**) in floors to ward off evil.

Another Phoenician settlement stood below this ancient necropolis (**right**) at Tangier. Coins found in the modern city bear its ancient name, Tingis, spelled in the Phoenician manner without any vowels—*tng*. Containers of food and drink, toiletries, cosmetics, lamps, jewelry, and ritual objects often accompanied the deceased, buried in tombs similar to this.



BRITISH MUSEUM

Gateway to the unknown, the Rock of Gibraltar—one of the Pillars of Heracles—once stood at the edge of the world. Greek mythology credits Heracles, a deity the Phoenicians called Melqart, with setting up the great headlands at the Mediterranean's mouth. Carthaginian mariners regularly ventured beyond.

Phoenicians still sail on in bronze (**left**), as oarsmen of Tyre ferry tribute to Assyria's King Shalmaneser III. The scene unfolds on an ornamented band from the gates of Balawat, near Nimrud.

They adventured . . . where none had ever gone before. . . . Active, energetic, persevering, ingenious, inventive, dexterous, not much troubled with scruples, they had all the qualities which ensure a nation, in the long run, commercial prosperity and the wealth which flows from it. . . ."

In the end, they had to submit: Assyria, Babylonia, and Persia took their tribute and leveled their cities time and again; Alexander in the east, and the Romans in the west, finally submerged them as an independent nation, though Hannibal of Carthage came within a single victory of conquering Rome itself.

But as a people the Phoenicians have never disappeared, never been totally submerged. They added other contributions to civilization: Zeno, a Phoenician from Kition on Cyprus, founded the school of Stoicism in Athens. Beirut, in Roman times, held one of the world's most renowned schools of law.

PHOENICIAN—today we call them Lebanese—merchant traders have flourished through most of the centuries since then, and flourish still in such far-distant cities as Paris, London, New York, São Paulo, Singapore, and Sydney. In today's oft-violent confrontations between Arab and Israeli, capitalism and socialism, East and West, Lebanon—modern Phoenicia—still stands as a buffer, a middle ground, a meeting place, a bridge.

I talked of these things one quiet spring evening in the hills above Beirut, sitting on a terrace with Dr. Charles Malik, a distinguished Lebanese diplomat who helped write the United Nations Charter, served as President of the General Assembly, and now teaches philosophy at the American University of Beirut.

"The Phoenicians have always been consummate diplomats," he said. "They were forced by history to develop finesse and patience and persuasion—and the ability above all of making a deal mutually advantageous to both sides—qualities that are the essence of diplomacy.

"Look down there," he gestured to the sunlit rim of the sea that curved from Beirut in the south to Byblos in the north. "That may be the most significant stretch of coast, the most historic road, in the world!

"Consider what has happened right there: The greatest empires of the past, the Egyptians, the Mesopotamians, the Romans, all sent their armies marching along that road. Trade has flowed in and out of St. Georges Bay since the dawn of history.

"Those old empires, the civilizations founded on force, all fell and disappeared. Egypt, Assyria, Babylon, Rome, Byzantium, are gone. But the Phoenicians, who stood between them, are still there, trading beside the same road, sending their ships abroad over the same sea. They have retained their identity.

"They have survived." □

NEW ZEALAND'S NORTH ISLAND

The Contented Land

By CHARLES McCARRY

Photographs by
BATES LITTLEHALES
NATIONAL GEOGRAPHIC PHOTOGRAPHER

Block-busting swing cleaves a pine log at a chopping contest in Waikanae. The winning time: less than a minute. Outdoor activities flourish in the North Island's moderate climate, as does a national pride as determined as the expression on this axman's face.

BEFORE THE MAORI HORSEMAN shouted at me, I thought I must have been the first human in New Zealand's North Island to see the sunrise. In the last muted moments between darkness and daylight, I watched dawn wash away the pallid southern stars, then illuminate the blunt summit of Hikurangi, the great mountain that greets the morning light in the easternmost part of the island.

"Hey, boy!" cried the Maori in a powerful bass. "Who said you could sleep on my land?" He kicked his horse toward me over the slanting mountainside; behind him the enormous disk of the sun set fire to a war fleet of cirrus clouds on the rim of the Pacific.

I explained that I'd been caught by darkness on the treacherous road that skirts the North Island's wild East Coast, and decided to sleep in the open rather than risk an accident in my car. As I spoke, the big horseman's glower changed into a broad smile.

"You're a ruddy Yank!" he cried. I nodded. "You'll be right, then," he said happily, using the New Zealander's all-purpose phrase of reassurance and approval. "I knew a lot of Yanks at Monte Cassino. Best chaps in the world." He wrung my hand. "My name's John," he added.

I introduced myself, and offered him some of the fruit I'd been having for breakfast. "Not for me, Charles," he said, "but the horse might like an apple. What I want to know is this: How do you like New Zealand?"

I hadn't been in the North Island long when I ran into John, but I'd been there long enough to know that any New Zealander, whether you meet him on a mountainside or in the halls of Parliament, will be calling you by your first name within 30 seconds. Before the minute is gone, he'll want to know how you like New Zealand—and wait confidently for you to confirm that his native land is God's own country.

The more I saw of the North Island—farms neat as putting greens, volcanoes steaming through fields of snow, and shores radiant beneath a sky dazzled by sea-reflected sunlight—the more I understood why its people have such a high opinion of their homeland. The island, shaped like a boot on a dancer's kicking foot, lies between the 34th and 42d parallels of south latitude, where Christmas comes in summer and winter stays where it

belongs—2,000 miles south in Antarctica.

The island is warm enough for a man to go coatless, and cool enough to keep him moving, all year round. Moisture-laden winds sweeping over the Tasman Sea between the island and Australia, 1,200 miles away, bring showers 150 days of the year. In terms of territory, the North Island comprises slightly less than half of New Zealand, whose other part is the breathtakingly beautiful but thinly populated South Island.*

By almost every other measure—history, population, wealth, industry, agriculture—the North Island constitutes, in the words of a man I met in an Auckland pub, "rather more than most of the whole blessed country." Some 70 percent of New Zealand's three million people live in the North Island; more than two-thirds of manufacturing takes place there, and its farmers own 93 percent of the nation's dairy cattle, 77 percent of its beef cattle, and more than half its sheep.

Before I was properly welcomed to the North Island (a statement I'll explain in a moment), I saw and admired many of the things man had done there: Auckland with a crescent of factories on its outskirts like grime under the fingernails of an honest mechanic; Wellington, the genteel capital, snubbing the rude winds and seas that blunder through Cook Strait; shadeless provincial towns with their Spartan frontier architecture and their bluff and busy people. And, above all, the fat pastureland, as green as Ireland and as steep as Switzerland, where 32 million sheep and nearly 8 million cattle form a national treasury on the hoof.

'Orses Provide a Pronounced Diversion

I had even begun to understand the dialect a little, remembering to call a New Zealander a Kiwi, a white man a *pakeha* (a Maori word meaning "colorless"), a dairy farmer a "cow cocky," and to "grizzle" instead of complain. When I asked a cheery girl behind the counter of a dairy in Thames, on the Coromandel

*Peter Benchley wrote of the South Island in the January 1972 NATIONAL GEOGRAPHIC.

Evening sprinkles Wellington with jewels. A spacious protected harbor invites shipping to the capital, as it drew English settlers who founded the city at mid-19th

Peninsula east of Auckland, what people did in her town, she replied, "Rice." I wondered why they'd try to grow that crop in such rugged country, and was about to ask, when she added: "Yes, everyone in Thames is cryzy about the 'orse rices."

It was Tom Johnson, a Maori architect from Wellington, who advised me to seek out another, and to his people a more important, aspect of the land. Tom pointed me toward the North Island's bushy East Coast, stronghold of the Maori farmer and, according to John the horseman, "the last place in New Zealand where a chap can be a Maori."

Tom and his friend Jock McEwen, secretary of the New Zealand Department of Maori and Island Affairs, arranged my real welcome to their country. This took place at the Ma-wai-hakona Maori Club near Wellington, where Maori singers sang to me of their mountains, and of how their rivers were named, all in the lovely harmonies of Polynesia. There were several speeches in Maori, and after each speech a song.

"We call the music the 'relish,'" Tom explained. "After each speech there has to be a song to wash down the oratory."

Until the songs and speeches were over, and I had made a speech of my own, no one acknowledged my presence. Then Jock McEwen and others I had met earlier came over and shook hands. "Sorry to ignore you at first," said Jock, "but you see, you weren't here until you'd been properly welcomed."

Later, over midnight tea, Tom Johnson and his wife, Amiria, chatted with me about the Maori way of life and the sense of brotherhood that has grown up between Maori and Englishman—those two great seafaring peoples blown together in these islands at the edge of the world. I asked if there weren't some points of friction between the races.

"Not friction," Tom replied, "but perhaps a different way of looking at things. We Maoris like things to be natural—we don't marry a woman to change her, or have a child to make him into something he wasn't born to be. We've been on this land longer, and while

century. Urban sprawl climbs the surrounding hills. Of New Zealand's two landmasses (**map**), the North Island claims the centers of both population and commerce.

we don't love it any better than the pakeha, we see it through different eyes."

A week later, when I woke on the flank of Hikurangi, I thought I understood what Tom meant. Watching the sun rise out of the Pacific, I imagined that I glimpsed the land as the earliest Polynesians had known it. It was a world white with mist, bursting with life-forms I had never seen anywhere else: The nightmare tree called rata, which begins as an innocent-seeming vine and, in the end, strangles the tree to which it attaches itself; the pukeko, a bird with a scarlet beak and a shield growing over its forehead like a knight's visor; ti trees in summer flower marching on the horizon like windblown harpies bearing gifts to the mountain.

Wilderness Gone, but Nature Survives

That unique wilderness is all but gone, put to the ax and the torch by the impatient pakeha. Yet the North Island remains one of the most gloriously natural places on earth. If the old slow-growing forests have been cut down for sailing masts or merely to make way for flocks and herds, they have often been replaced by vast tracts of European and American trees. The native birds have become scarce, but the sky is filled with clouds of sparrows and finches, larks and thrushes that came with the British. The flowers of England bloom in dooryards in the Taranaki and Wairarapa regions with a passion they never knew in Kent or Surrey.

The bush teems with foreign game, the rivers and lakes with fish from Britain and California. "It's quite astounding how famously all species—plant, animal, or human—seem to get on and improve in this country," Dr. R. K. Dell, director of the National Museum of New Zealand in Wellington, told me.

The transformation of the North Island did not begin with the white man. The first Polynesians came from somewhere in the central Pacific about 1,200 years ago. They found a land in which almost no blood had ever been spilled. Apart from a few species of predatory birds, man was the first killer to come ashore. No mammals except for small bats

Velvety fingers reach for the sea along the island's northeastern coast. Grassland now covers a region that loggers nearly denuded a century ago. No other nation has so quickly converted so much of its wilderness to productive pastures.

and no reptiles except for lizards and the lizardlike tuatara inhabited New Zealand after the land broke away from the rib cage of Australia and drifted across the prehistoric sea. But wondrous birds developed, including no fewer than 20 species of an ungainly grass-eating creature called the moa. The largest of the moas, *Dinornis*, grew as tall as the African elephant; another, *Euryapterix gravis*, was about the height of a man.

The moa, knowing no enemies, was flightless. The Polynesians found these ostrichlike birds easy to kill and a marvelous source of food and clothing and bone tools; within 20 human lifetimes they exterminated the moa, and perhaps other species that occurred nowhere else on the planet. The men who hunted *Dinornis* and its smaller cousins, a peaceable people who engaged in little agriculture and left virtually no trace of their religion, were called by later Polynesians *tangata whenua*, "people of the land." But the name by which they are commonly known in English is the more appropriate one: moa-hunters.

Tom Johnson has no connection with those earliest people. He, like all modern Maoris, claims descent from the warriors of one of the legendary seven canoes that came from Hawaiki, the mother-island of the east Polynesians, around A.D. 1350. If the starting point was Tahiti, as some scholars believe, the voyage covered 2,400 miles. With only legends for sailing directions, the "people of the canoes" made landfall on the precipitous coast of *Aotearoa*—"long bright world." There they planted their crops and their gods, absorbed the simpler population of moa-hunters (as often by cannibalism as by interbreeding), and multiplied into the fighting tribes that were afterward collectively called Maori.

Sailing Dutchman Claims Discovery

When the Dutchman Abel Janszoon Tasman, the European discoverer of New Zealand, arrived in 1642, he found the shore teeming with this fearless, fancifully tattooed people. In 1769-70 Capt. James Cook charted the coasts of both islands.*

The Crown of England was not eager to annex this savage territory lying 14,000 miles from the home ports of the Royal Navy. But British adventurers, thirsty to kill whales

*The September 1971 GEOGRAPHIC featured "Captain Cook: The Man Who Mapped the Pacific."

and cut forests of knotless kauri trees, and British missionaries, enthusiastic to harvest souls, took matters out of the king's hands. The Christian Gospel was first preached in the North Island on Christmas Day 1814. By then white men had seeded themselves along the coasts, introducing trade, disease, rum, prostitution. In 1840 a group of Maori chiefs signed the Treaty of Waitangi, which granted sovereignty over all New Zealand to Queen Victoria, but guaranteed to the Maoris land they wished to retain. One of the Maori chiefs remarked that "the shadow of the land goes to Queen Victoria, but the substance remains with us." In that same year the New Zealand Company planted the first organized English settlement near Cook Strait.

Land-hungry colonists flooded into the islands, and in 1860 a festering argument over land ownership provoked the Maori wars—or, as the Maoris called the conflict, *"te riri pakeha*—the white man's anger." In ten years of battle with British regulars and New Zealand territorials, the Maoris lost 2,000 killed. After their defeat they lost three million acres of land, confiscated from peaceful and warlike tribes alike.

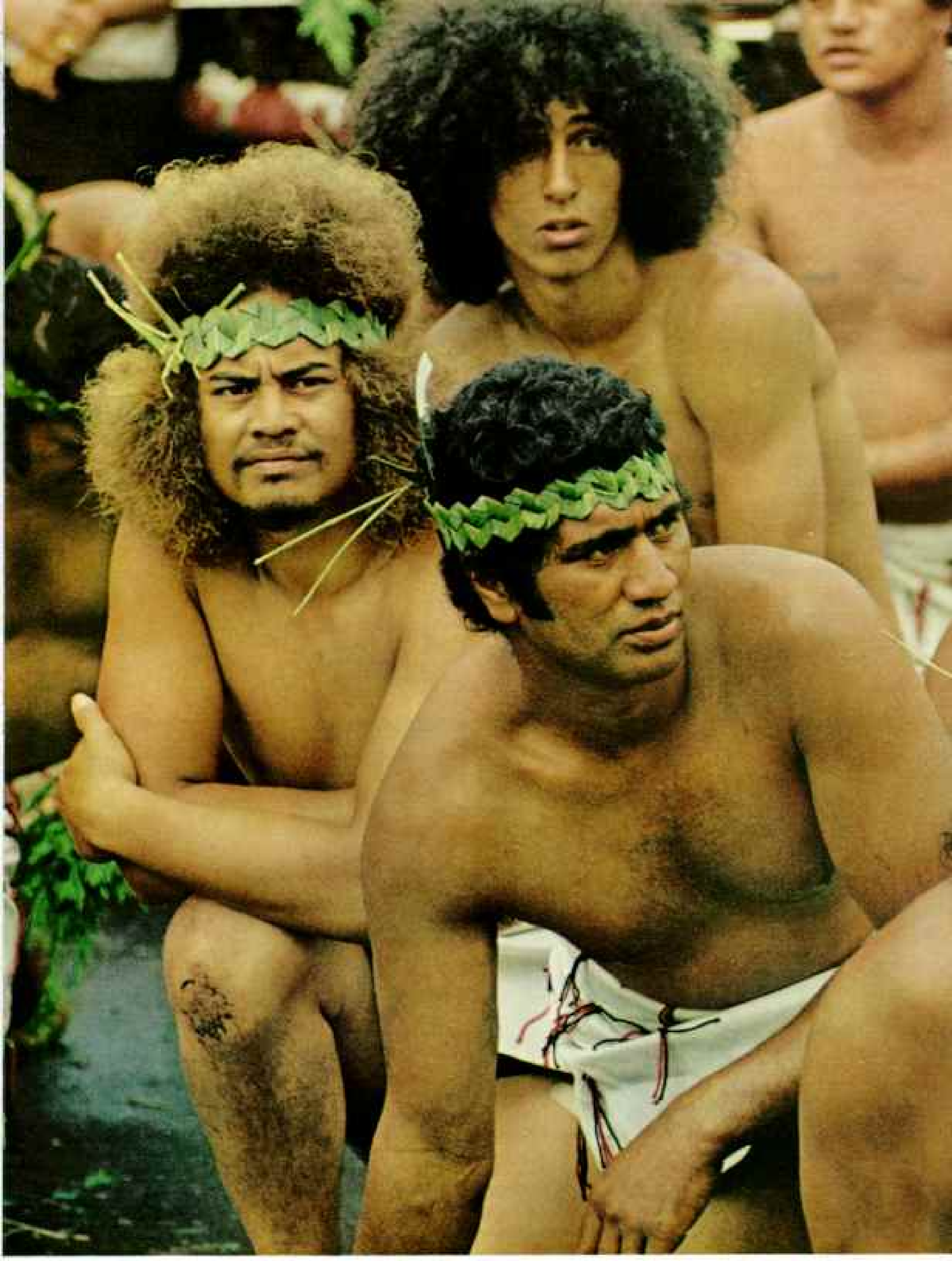
The Maori wars left wounds that were a long time healing. Maori culture and language languished; the common cold, measles, and other diseases—brought in by foreigners—devastated the race. The Maoris were largely left out of the noisy adventure of nation building. Yet everywhere I went in the North Island I met pakehas who were wide awake to past injustices, and determined to help the Maoris enter the mainstream of employment and opportunity.

Maori and Pakeha Seek Understanding

"We learned by necessity to see into the pakeha mind," said Graham Anderson, secretary of the New Zealand Maori Council. "Now they seem to want to understand the Maori mind. That's a hopeful thing."

I encountered the Venerable G. A. Butt, Archdeacon of Taranaki (where the Maori wars began) and vicar of St. Mary's Anglican Church in New Plymouth, at evensong on a Friday. While Archdeacon Butt read from the Book of Common Prayer, birds sang in St. Mary's nave, and the westering sun brightened the narrow stained-glass windows. Around the gray stone walls of this peaceful

War club and nose rub recall the checkered history of violence and friendship between *pakehas*, or Europeans, and Maoris. Reenacting the traditional challenge to strangers, a tribesman advances on unruffled Governor-General Sir Denis Blundell at ceremonies marking the anniversary of official British rule in 1840. In a warmer moment, Sir Denis, representative of the British Crown in this independent Commonwealth nation, adopts Maori manners to greet a tribal elder.



Weekend warriors shed trousers and shirts to launch a newly carved Maori canoe at Tauranga. Government programs encourage revival of Maori customs and language, which declined following the foreign influx of the 19th century. Intertribal wars,

European diseases, and fierce fighting with the British decimated the islanders. Their numbers have quintupled since 1901.

place marched the many-hued hatchments of British and New Zealand regiments that fought in the Maori wars.

Archdeacon Butt, a tall spare man who even in a cassock looks like the fighter pilot he used to be, was not surprised that I should be curious about this display of military badges in a place of Christian worship. During the Maori wars, he explained, the church had been used to quarter troops. "At one time, the nave was used as an ammunition store," he said. "I don't know what the vicar was thinking about, but there you are."

He led me to the back of the church, where a handsome group of carvings surrounded a plaque covered with writing in the Maori language. The plaque told of the siege of a Maori *pa*, or fort, an incident that occurred during the tribal warfare of the first half of the 18th century—a century before the Maoris, with the pakehas' firearms, would slaughter perhaps 80,000 of their own.

"The besieged pa's water was cut off," Archdeacon Butt related, "and the attacking chief's son, Takarangi, a splendid warrior, went up under the walls with a calabash of water for his thirsty enemies. Takarangi's eye fell on the beautiful daughter of the enemy chief, and the inevitable happened. They wed, and through their love peace fell on their two peoples. I think the parable is rather plain for modern New Zealand."

Pioneer Spirit Alive Today

New Zealand was built less by force of arms than by force of character on the part of both races. If the Maori clung to his old idea of the universal spirit of nature, the pakeha clung to the Anglo-Saxon concept that work will make a home in any wilderness.

A visit to a sheep-and-cattle station in the hill country of the Wairarapa, which lies on the coast northeast of Wellington, gave me some feeling for what those early Englishmen faced, and what they accomplished. There I met Jim and Airini Pottinger, owners of 1,300 acres of emerald pastureland near the little town of Tinui. Jim, his cheerful face burned and bitten by the easterlies that howl off the Pacific, is as much a pioneer as any yeoman who came out from England's West Country in the last century. Today 5,000 Romney sheep, grown for wool and mutton, and 600 head of crossbred beef cattle fatten on the ryegrass and white clover that cover the dizzy slopes of the Pottingers' upland farm.

Jim left his premedical studies at Wellington's Victoria University in 1947 and bought a tract of the cheap land, overgrown with scrub, that the government was offering to veterans. "When I first saw it," says Jim, "I thought it was a jolly good place to raise moas. There wasn't a road in sight, or a neighbor. There's no underground water—we water stock with the rain we can catch, and drink it, too. 'Well,' I said, standing in scrub higher than my head, 'best get to work, Pottinger.' "

Jim batched it for 18 months, chopping and burning the scrub, spreading fertilizer, scattering seed. On steep slopes, North Island farmers seldom puncture their easily eroded soil with a plow; it's only necessary to cut away the scrub and throw down seed in order to have pasture. "Grass will strangle scrub every time," says Jim with satisfaction.

With sheep in five paddocks and the future before him, Jim married Airini. They spent four years in a Nissen hut, where Airini bore the first two of seven children, before moving into the comfortable house where they now live, served by a telephone, a gravel road, and a postman who comes by twice a week. Side by side, Jim and Airini pushed back the wild country.

"It's been hard sometimes," Airini said, "but I was taught that effort brings happiness. Our work has given us a farm—and the farm has given us everything."

Speeding the Plow—Modern Style

In Wellington I heard a surprising explanation for the success of farmers like Jim Pottinger. "It's the airplane," said Dr. Alan Tutton Johns, director-general of the Ministry of Agriculture and Fisheries.

"After World War II, there were a lot of surplus Tiger Moth aircraft. It was discovered that fertilizer and seed could be spread from low-flying planes very cheaply—and a good deal more easily than by the old method of tramping up and down hills with a bag over one shoulder."

Until recently the North Island grew little grain, but plantings are expanding, partly to meet the taste for grain-fed beef abroad, partly because new hybrid grain varieties have now made possible increased production. Most sheep and cattle, however, eat grass, with an occasional handout of hay and silage. Good pasture will support ten sheep or two cows to the acre, and there is no need for barns. The 30 to 100 inches of annual rain descends in small doses; it doesn't bother the animals in a climate that ranges from near-subtropical to temperate, and it keeps grass and clover and the rest of the vegetable kingdom on a chronic bender of growth.

Agriculture is far and away New Zealand's leading industry. Export value of farm products, in a country that lives by its overseas markets, runs nearly two billion U. S. dollars annually. By contrast, manufacturing exports amount to 355 million dollars—and that represents a fivefold increase since New Zealand began to vitalize its nonfarm export industries during the past decade.

Far From the Bleating Fold

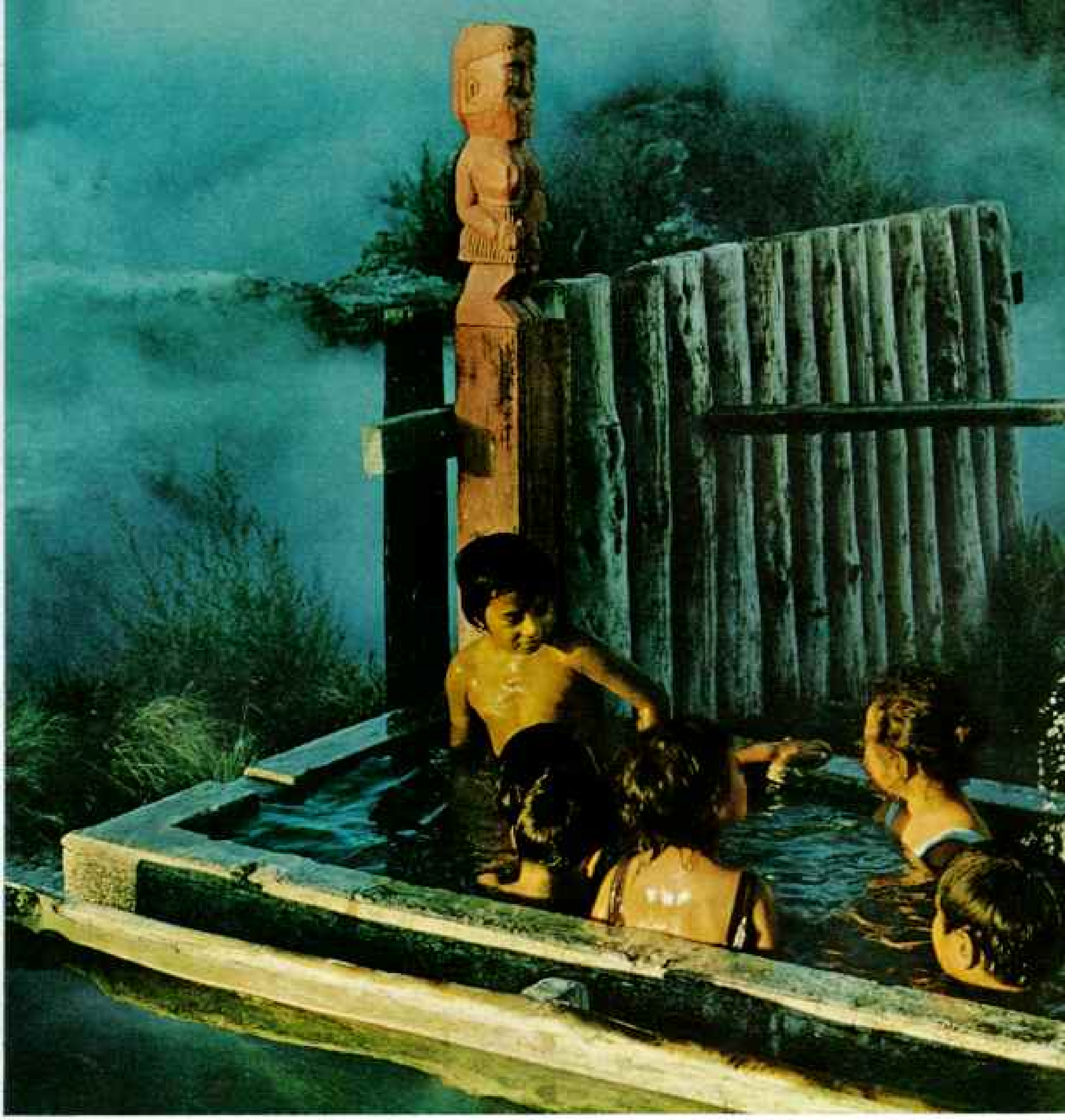
Enthusiasm for the agricultural life is obviously not universal in New Zealand, though sheep outnumber people by twenty to one. There is a steady migration of islanders from countryside to city, and Auckland, its population exceeding 700,000, is as gaudy and as traffic-loud as any metropolis anywhere.

One November morning, while climbing through a snowfield on Ruapehu (9,175 feet), I came across a Kiwi who was an unmistakable refugee from rural life. He was sprawled in the spring sunshine beside the bubbling waters of Crater Lake. The lake, hemmed in on all sides by perpetual snow, is heated by the volcano, and its surface gives off dense clouds of steam.

The Kiwi, who had the flowing yellow beard of a Viking, rose at my approach and handed me one of the North Island's sweet and juicy oranges. Then he indicated the horizon with a sweep of his arm. It was a crystalline day, and we could see Mount Egmont, eighty miles away on the west coast of the island (page 207).

"Bloody marvelous, ain't it?" said the fellow. "Not a sheep in sight, and no chance one of the woolly buggers will follow you up here. Only place in New Zealand you can

Gingerbread trim of Tudor Towers, a bathhouse turned restaurant and museum, overlooks lawn bowlers at Rotorua. Capt. James Cook's landing on the North Island in 1769 opened the way for colonists, who by 1858 outnumbered the Maoris. Though descendants of the settlers bow to no one in their pride in New Zealand, they remain distinctly British in speech and manner.

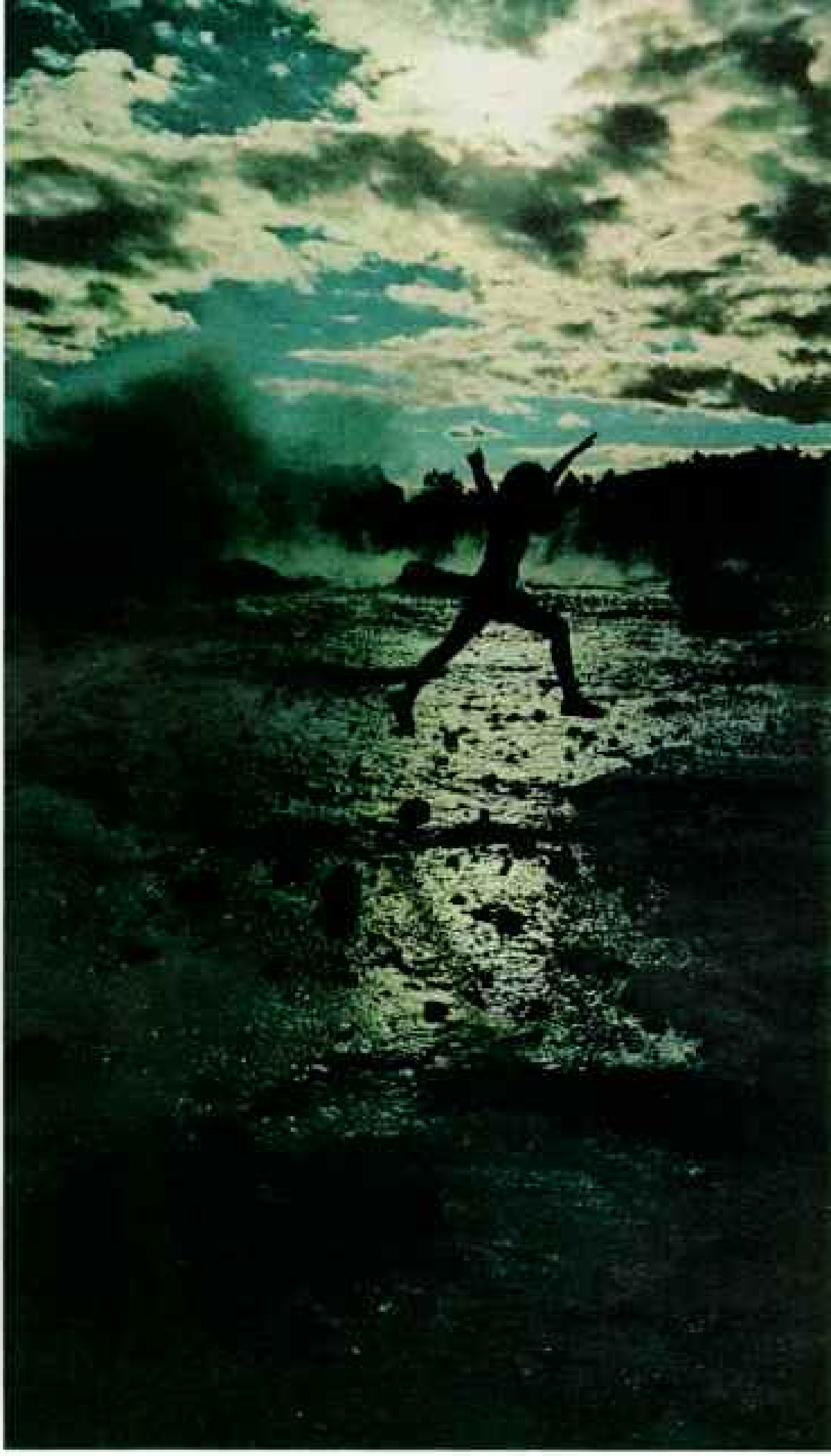


safely make that statement." And with that, he set off over the snow, singing "Jerusalem."

It has often been remarked that no people on earth, including the English, love England better than the New Zealanders. When a Kiwi over fifty speaks of "Home," clearly enunciating the capital "H," you know he's talking about the Sceptered Isle.

For a long time, New Zealand proudly styled itself "the larder of Britain." It was an apt phrase when the United Kingdom still consumed a lion's share of the meat, butter, cheese, and wool exported by its erstwhile colony. Since the end of World War II, New Zealand's interests have been less intertwined with Britain's. Her defense alliances are with Australia and the United States; for trade she looks to the other nations of the Pacific basin. Before the war, Britain bought 80 percent and more of everything New Zealand sold abroad; in 1973 the figure was 27 percent, and falling.

"Britain cut the apron strings for fair when she entered the Common Market," observed my young friend James McGehan, who is learning how to manage hotels in Auckland.



"And a jolly good thing it was for us, too. 'Oh, what to do?' cried the old folks. 'Get on with it—New Zealand will be right!' said the rest of us. We're a young country, filled with young people. There's nothing wrong with having the whole future in front of us."

Geoffrey Datson, deputy secretary of the New Zealand Department of Trade and Industry, heartily agrees. The government's master policy, he explained, is to keep what is strong about agriculture while seeking new markets, from Japan to Latin America, for forest and industrial products. No one expects

Youth in a young land leaps a stream warmed by geysers in the geothermal reserve near Rotorua. Subterranean heat also warms a bath where Maoris splash. Countless hot springs and mud pools bubble in the North Island's thermal belt. Here the unstable crust leaks volcanism from earth's molten interior, and tremors frequently jar the land.

Creating its own clouds, a low-flying plane spreads fertilizer and scatters cattle at a farm in the Rotorua area. Roller-coaster terrain challenges pilot Bill Pentecost, who gained his maneuvering skills during World War II. A flat field nearby serves as landing strip for frequent reloadings (**below**).

The North Island's grasslands, enriched by superphosphates, support a total of 40 million sheep, beef cattle, and dairy cows —roughly 20 head for every resident.

there will ever be an adequate home market for all the things produced by this island nation. New Zealand has fewer people today than the city of Chicago. Datson said, "We will be supporting more people than we now have, but I hope the population never goes above five million. We hope to get on as a happy, nonpolluted society."

Faith in the future is epitomized in the sun-splashed twin cities of Napier and Hastings on the east coast. Their combined population of 94,500 go-getters shear and slaughter a large part of the island's sheep, and grow, can, freeze, preserve, and pickle the bulk of its fruit and vegetables. These lucky and energetic towns lie along Hawke Bay, in a fertile plain filled with truck gardens and fruit trees, vineyards and sheep stations.

"Prettiest Town" Recalls Tragic Past

I thought Napier, with its houses white as eggshell spread over a hillside above a blue bay, the prettiest town in the North Island. Along the waterfront I found peaceful gardens filled with flowers I had always known —asters, begonias, tulips, hibiscus—blooming together under a benevolent sun that freed them of their seasons.

The gardens and much of the rest of Napier were built on the broken rubble of an old town that once stood where this bustling, spanking-clean new community now exists. I heard about the great earthquake from a man who had seen the old town fall in the space of three minutes on February 3, 1931. H. K. (Jock) Stevenson, Napier's public relations director, told me: "In Napier we've had to create our own beauty. Without that earthquake, I hate to think what Napier would be like today—why, it might be a dowdy provincial town!"

On earthquake day, Jock Stevenson, then 13, was in his first day at high school. "There was a slight tremor, then a tremendous hard shock," he recalls. "One boy cried out, 'Earthquake, sir!' I saw the mountains rising behind the town, and the land rolled like a rough sea. I think it was in everyone's mind that it was the end of the world."

The land rose seven feet, and the receding sea uncovered 8,000 acres of new land. The quake, occurring in midmorning, overturned coal stoves in homes and restaurants, and soon most of Napier was in flames. Afterward the people of Napier rolled up their sleeves to rebuild their town. Out of their

awful experience, they created what Jock Stevenson calls the "spirit of Napier."

"On earthquake day," he said, "everyone was on one level—the rich man was one with the dustman. Napier learned that all the money in the world won't buy you a single pannikin of fresh water—but that human beings, when they set out to help each other, can accomplish anything. That's an idea worth keeping alive."

There are some North Island experiences less dramatic than an earthquake but just as good for the soul. Among these I include drinking the island's white wines. More than five million gallons of table wines, port, and sherry are produced in the North Island in an average year. When I think about wine making, I think romantically of cobwebs and cool cellars and candlelight picking up the color in a glass of claret. Therefore I visited not the biggest but one of the oldest vineyards—Te Mata, 26 acres of vines on a sunny hillside, three modest buildings with stone cellars filled with stacks of oak barrels in which body and bouquet were being born.

At one with the land, a tot samples both soil and harvest at Te Mata Vineyards near Havelock North. More than 90 percent of New Zealand's 320 commercial vineyards thrive in the North Island.

A tree-threaded carpet, lush fare for dairy cattle, spreads over the volcanic effluent of Mount Egmont (**facing page**).

A young Cornishman, David Smale, operates Te Mata Vineyards with his father, William. Some of their vines, planted in crooked green rows like the signature of civilization, are nearly a hundred years old.

David Smale and his youthful wine maker, Colin Reay, are justly proud of the dry white wine they ferment from Pinot Gris grapes—and positively boastful of two dry red wines, one made from Pinot Meunier grapes and the other from Cabernet.

"If we take the time," Reay asserted, "we can do as well here as anyone in the world. And sometimes we do—taste this!" He handed me a glass of nutty-flavored port, and I had to agree he had a point.

From the Sublime to the Sulphurous

The fragrance of Te Mata's wines was soon driven from my nostrils by a more characteristic North Island odor—the sulphurous breath of the earth's steamy bowels. From the vineyard I drove northwest to the center of the island. There lies Rotorua, most famous of North Island resorts, on the shores of a shallow blue lake. The soil of Rotorua is alive not with crops but with spitting volcanic mud, seams of raw sulphur, boiling pools of acid water, vents of steam.

The best way to see the tumultuous earth around Rotorua is from an airplane, and I was taken aloft by Capt. Fred Ladd, a veteran pilot who moves a little stiffly as a result of landings he has walked away from. It was a brilliant day. Below us grass lay like a velvet coverlet over the humped bodies of sleeping volcanoes. "Looks like somebody's been smoking in bed," said Fred when I tried out this poetic phrase on him.

He steered the plane to a chasm 700 feet deep on Mount Tarawera, glided by the steaming cliffs that tower on the shores of

Lake Rotomahana, and droned south over steaming rivers and hot lakes of turquoise and silver, amber and aquamarine. Steam rising from the cone of Ngauruhoe was parted by our wing tips, and we inspected the sleeping mouth of Tongariro, where ash and cold lava soiled the snows.

I was awed. More practical men than I have tried to harness the earth's energy—with mixed results. At Wairakei, some 35 miles south of Rotorua, I visited the earthquake created in 1960 when technicians, boring for underground steam, triggered an uncontrollable eruption that continued until last October. Their mistake delighted the band of schoolchildren who, on the day of my visit, were giggling on the shuddering earth like popcorn in a hot pan.

If Rotorua's tourist industry has put what Fred Ladd calls "the shaky country" to good commercial use, so has the New Zealand Government and the Maori Council in another way. At Whakarewarewa, on Rotorua's southern outskirts, stands the Maori Arts and Crafts Institute. Beyond its tidy modern buildings is a 130-acre steaming thermal field, which was handed over to the institute in 1965 by the government. The institute charges admission to 200,000 tourists who visit the thermal area each year, and uses the proceeds to finance the teaching of Maori carving, weaving, and other arts.

Urbanization Threatens Maori Traditions

Stuart Harris, assistant to the institute's director, explained the reasoning behind the government's action. "Maori art wasn't dying out," he said, "but with urbanization and the Maori mixing with the pakeha, there was some danger that the younger generation would pay less attention to it." To counteract that possibility, the institute trains young Maoris in an apprentice-carver program, to produce the stylized, antic portraits of ancestors that grimace from the walls of every Maori meetinghouse. The institute also keeps alive the traditional crafts of Maori women.

Mrs. Emily Schuster, supervisor of women's

work, showed me how her girls put together a *kakahu*, the magnificent feathered cape for ceremonial occasions. The work is done without looms, without needles, without tools of any kind except flying Maori fingers. I asked if all kakahu were made in the same traditional pattern. "Never!" replied Mrs. Schuster with evident shock. "You cannot say to us, 'I want this or I want that on my kakahu.' That's not creative, that's not Maori!"

In the carving room a dozen boys searched with adz and chisel for the tattooed faces of dead chiefs that awaited them in the *totara* logs from which most Maori carvings are made. Walking among the boys, wearing a scowl that befitted the descendant of his ferocious models, was the master carver, John Taiapa. "In Maori tradition, we'd never see any of this," Stuart Harris said. "It was forbidden to see the carvings before they were finished and consecrated. Of course, it's still impossible in a way, because everything comes out of the mind of the master carver."

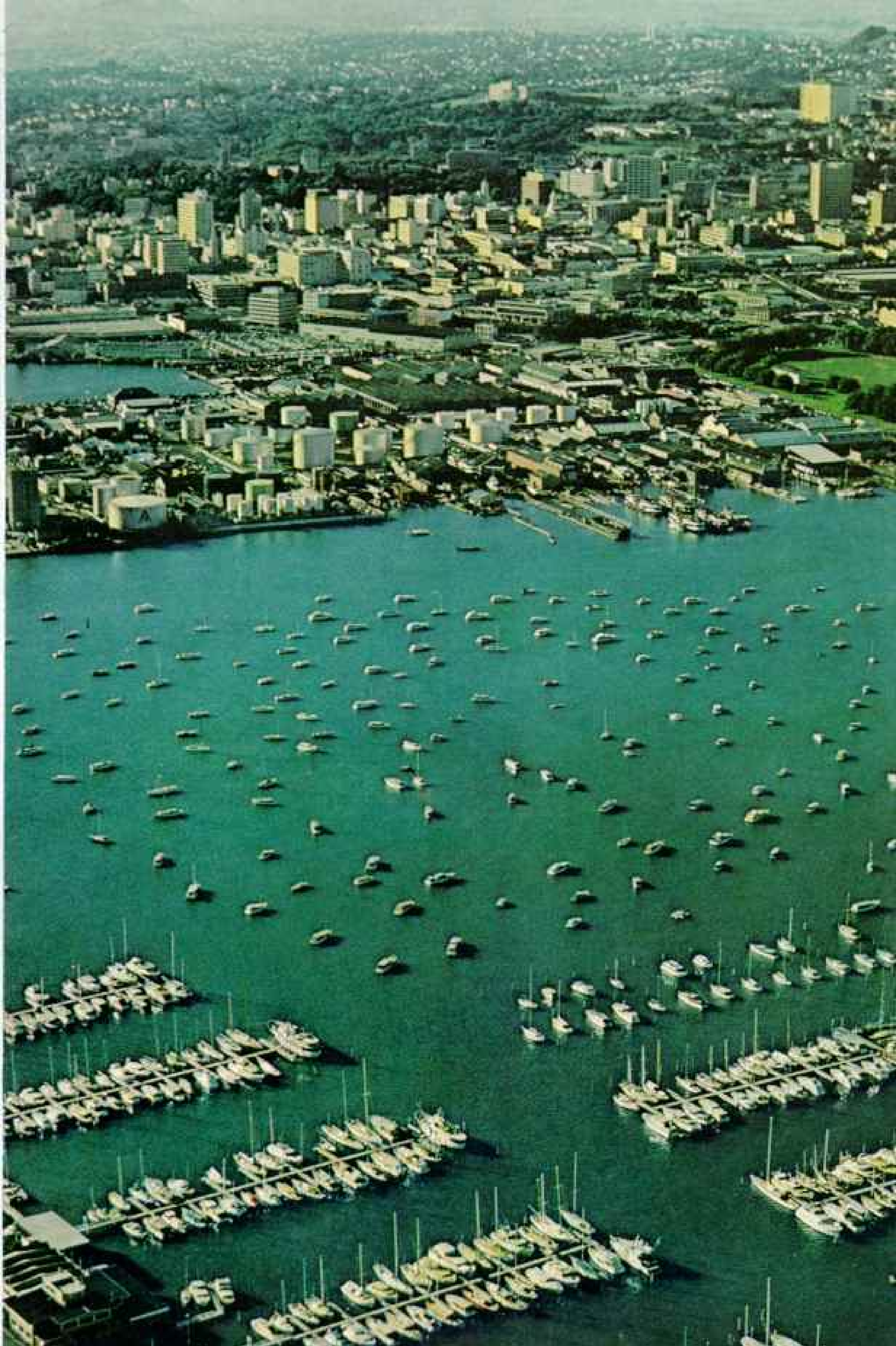
I asked Taiapa why the figures in Maori carvings usually have their tongues sticking out. "Aaaaaargh!" he cried. "There are 42 answers to that sort of bloody stupid question! He's a warrior! In olden days that sort of distortion was a sign of beauty. Maoris stuck out their tongues to scare their enemies or impress their girls—it's the way they were! It's like nature provides birds with antics to fly upside down, and sing, and flutter about. Everything has a logical answer—and my answer to your question is, 'It's four-thirty, and I'm through for the day, and good-bye!' "

Journey Ends at Historic Headland

It seemed fitting to end my visit to the North Island with a pilgrimage to the Northland—the place where New Zealand's modern history began. I stood on a headland at the place where the Treaty of Waitangi was signed, and wondered how the Maori could have borne to share his country. Below me lay the Bay of Islands, thrusting surfy fingers, knuckled with verdant islands, into the bosom of the land.

Tamed geysers at Wairakei produce 8 percent of the nation's electricity. Here technician George Benfell, his ears muffled against the roar of steam, opens a valve on one of 60 active bores drilled to depths ranging from 567 to 4,000 feet.

Giant pillows—bales of scoured wool—await inspection by buyers in a 7½-acre warehouse at Napier (**left**). In world trade, New Zealand ranks second only to Australia in wool, while leading in the sale of lamb and mutton.



Harnessing the wind, a sloop's crew wrestles with its spinnaker during the Anniversary Regatta at Auckland. More than a thousand boats annually commemorate the founding of the city in 1840. In that year half a dozen whaleboats, gigs, and Maori canoes raced for prizes of gold sovereigns.

Pleasure flotilla fills a marine basin at Auckland (**left**), familiar sight in a land where no one lives more than 80 miles from the sea. New Zealand's largest city served as its capital until 1865, when the government moved to more centrally located Wellington.

Packed like sardines, Maoris paddle to the cadence of a coxswain in the bow. In larger canoes, lashed together in pairs, Polynesians first voyaged to the North Island 1,200 years ago. Their descendants were overwhelmed by the Maoris—also from Polynesia—who arrived perhaps six centuries later.

Northward lay fabled Cape Reinga, where the spirits of the Maoris took one final look at the long bright world before returning to the paradise they called Hawaiki. Here in the Northland the first whalers had anchored, and in a cemetery at Russell I found the grave of a drowned Massachusetts man with the same last name as one of my grandmothers. I'd take the thought of him back to Massachusetts. My mood was melancholy.

I was moved by the North Island's beauty, and pleased that I might have a cousin sleeping in its gentle earth. But even after covering 5,000 miles of road, climbing the highest mountain, and gazing at a breathtaking galaxy of glowworms in the Waitomo Caves,* I was haunted by the feeling that I did not understand this subtle country. Perhaps, I thought, it is still too young to be understood —the pakeha hasn't been here long enough to join with the land, and the landscape by which the Maori defined himself has been erased by the pakeha. What the island had been was lost in the mist of legend; what it will become was not yet certain.

Jeff Clears Up the Whole Thing

It took a young American named Jeff Swanson to shake me out of those gloomy ruminations. I ran into Jeff at Cape Reinga, where the North Island throws one last dauntless shoulder of rock into the sea. We watched the

*Paul A. Zahl described these glowworm caves in the July 1971 NATIONAL GEOGRAPHIC.

After waxing fat and woolly on rich meadows, a flock heads for pens in the North Island's rugged interior. Farmers like sturdy Ray La Roche, walking with his daughter Rachelle, continue to wrest pastures from the bush with the pioneering spirit that pervades the whole nation.

heaving water far below, where the Tasman Sea and the South Pacific meet with a long growl and a white line of surf. Jeff, a 20-year-old from Seattle, told me that he was seeing the Pacific and New Zealand on a dollar a day, with knapsack and sleeping bag.

He confessed to being pleasantly hungry. The day before, he had blown $2.50 on the collected works of Shakespeare, and as a result was living off the country. He had dined and breakfasted on chowder made from clams dug on the beach, where he had slept under the stars. "Nothing in the finest hotel could compare with that chowder," Jeff assured me.

We strolled on Ninety Mile Beach, a spectacular stretch of sand and surf that lies along the western coast of Northland. We walked over a pavement of shells, under a parasol of garrulous shorebirds. Except for our footprints, there was no sign of man. Jeff scaled a vivid seashell into the wind and watched it sail and turn like a boomerang. Then he explained it all—why men had been drawn over the seas to these islands, and were content to lay their bones in them.

"Wow," Jeff said, "what it must have been like for the first guy who saw all this! To have this ocean, and to know that the mountains and rivers and everything were there. What a thing—to sail as far as a man can, and know you had found this terrific place, all clean and waiting for you. You'd know that you could begin everything again—and maybe make it all come out right this time." □

What You Didn't See in Kohoutek

By KENNETH F. WEAVER
ASSISTANT EDITOR

Shy traveler, Kohoutek streaks the night sky in a four-minute exposure. Its flowing tail gleams faintly at center against the wheeling stars above Kitt Peak National Observatory in Arizona. Billed as the "comet of the century," the celestial visitor proved too pale for most observers to see through earth's atmosphere, but new facts gleaned from it delighted scientists.

CHARLES O'NEAR

Indeed it is good, though wronged by my over great expectations.

—SAMUEL PEPYS, "DIARY"

UNWELCOME CLOUDS played tag across the late-afternoon sky as I entered the observatory dome. Inside, an infrared astronomer was punching out instructions on the console that controls the big telescope. In smooth response, the instrument poked its nose gracefully toward the southwest. Was the comet there? The astronomer shook his head worriedly. For a solid week, he lamented, bad weather and clouds had blocked his efforts, although previously his luck had been good.

I had come to the Kitt Peak National Observatory near Tucson, Arizona, for a glimpse of the elusive Kohoutek, the most widely publicized comet of all time. Like millions of other disappointed sky-watchers, I had been frustrated earlier by smog, city lights, clouds, and the unaccountable dimness of the comet itself. In the clear air of 6,900-foot Kitt Peak I hoped to do better.

The scientists, certainly, had been doing very well. For them Kohoutek had already provided a bonanza of information about comets, and even some hints about the early solar system.

With nearly ten months' warning, astronomers at every important observatory in the world had closely followed the fuzzy blob in its swift flight toward the sun. They had seen the head and tail develop as the sun's radiation vaporized the comet's icy surface and then blew away dust and vaporized material in streams stretching millions of miles. From these studies will come better understanding of the solar wind—the flood of atomic particles that escapes the sun at high velocity.

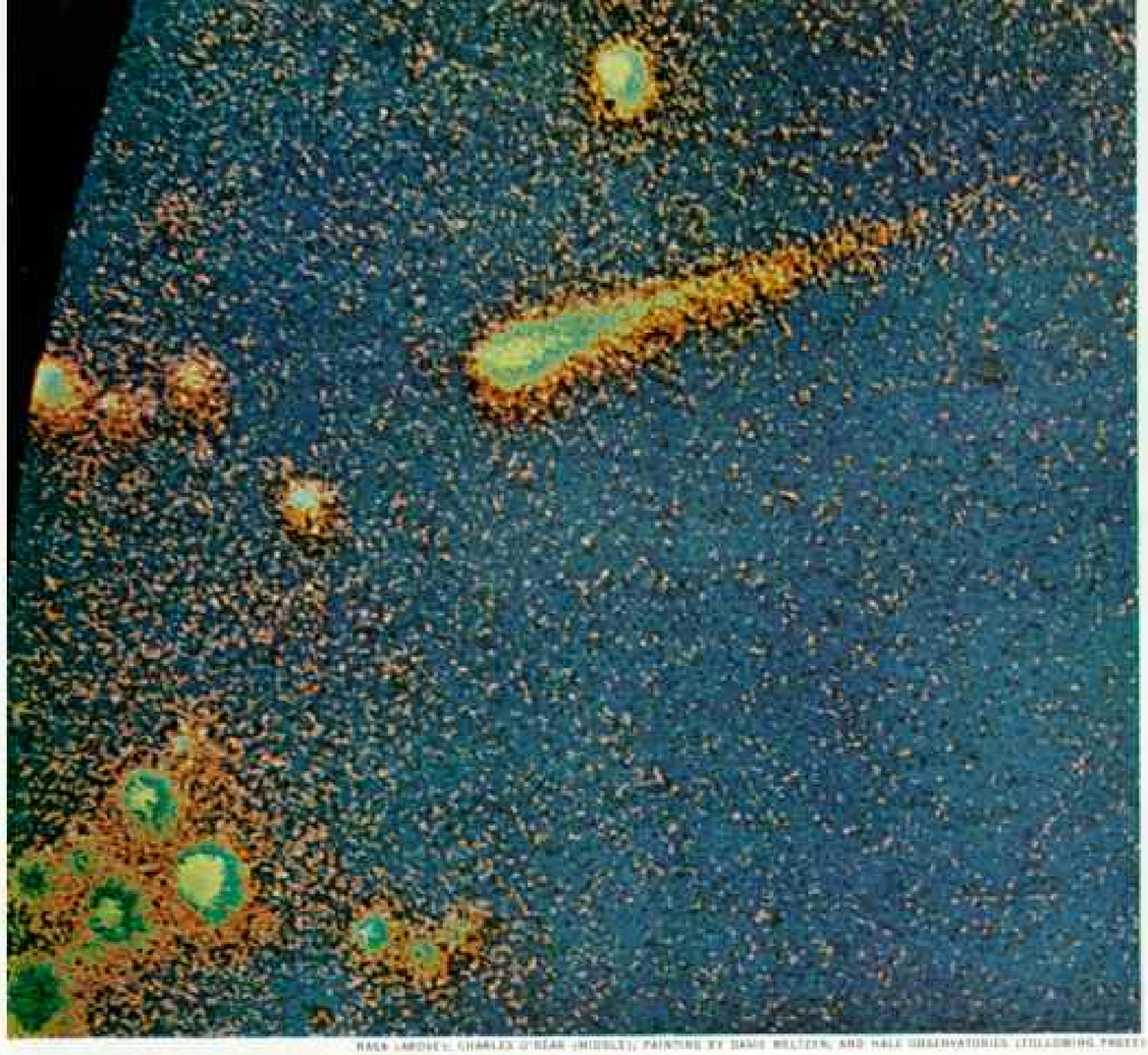
Both rockets and spacecraft had made observations of Kohoutek outside earth's obstructing atmosphere. Skylab astronauts had taken unique pictures, some of them even showing the comet as it whipped around the sun at 250,000 miles an hour. Also, they had made ultraviolet photographs of the immense hydrogen cloud, invisible in ordinary light, that envelops a comet. The Mariner 10 spacecraft, coursing toward Venus and Mercury, had measured the cloud as sixty times larger than the comet's true head, known as the coma.

In addition, scientists had found the first direct proof of water, measured carbon in amounts suggesting that carbon monoxide is also a major component, and detected an ice-grain halo around the nucleus.

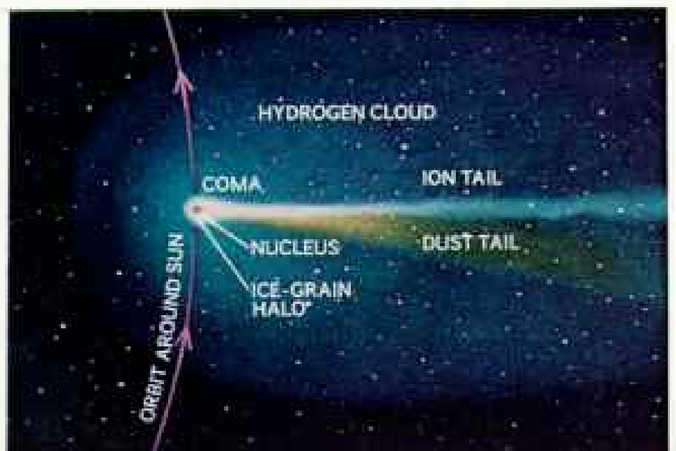
Perhaps the most significant discovery had been made by radio astronomers, who for the first time had successfully examined a comet. They had identified two important compounds—methyl cyanide and hydrogen cyanide—never before seen in comets, but found in the reaches of space where new stars are being born.

Not only does this discovery give a better understanding of the makeup of comets, but it also helps solve the riddle of their origin. Most astronomers agree that comets are primordial remnants from the formation of the solar system, but whether they were born between Jupiter and Neptune or much farther out toward interstellar space has been the subject of much debate. If compounds no more complex than ammonia and methane, key components of Jupiter, were seen in comets, it would suggest that they formed within the planetary orbits. But more complex

(Continued on page 222)



RAES (ABOVE); CHARLES O'REAR (MIDDLE); PAINTING BY DAVE WILCOX, AND HALE OBSERVATORIES (FOLLOWING PAGES)



Flare of color depicts Kohoutek's ultraviolet light in a specially tinted Skylab photograph (**above**). Yellow records the brightest intensity at the comet's center, green less vivid light, and orange the weak glint of the tail.

In another portrait made by a radio telescope, contours outline the stream of dust particles from the comet's nucleus for Dr. Noël Coron (**left**).

Nearing the sun, the surface of Kohoutek's frozen nucleus warms up, throwing off gases and dust, and ice grains that form a halo (**bottom**). Dust and ion-gas tails stream from the coma within an invisible sea of hydrogen.

Visitor from the silent realm beyond the planets, Kohoutek stretches some thirty million miles across the heavens (**following pages**), its mysteriously "knotted" tail ending in a faint wisp at left. The gravitational effect of a passing star probably forced the comet into this swing—its first—through the inner solar system.

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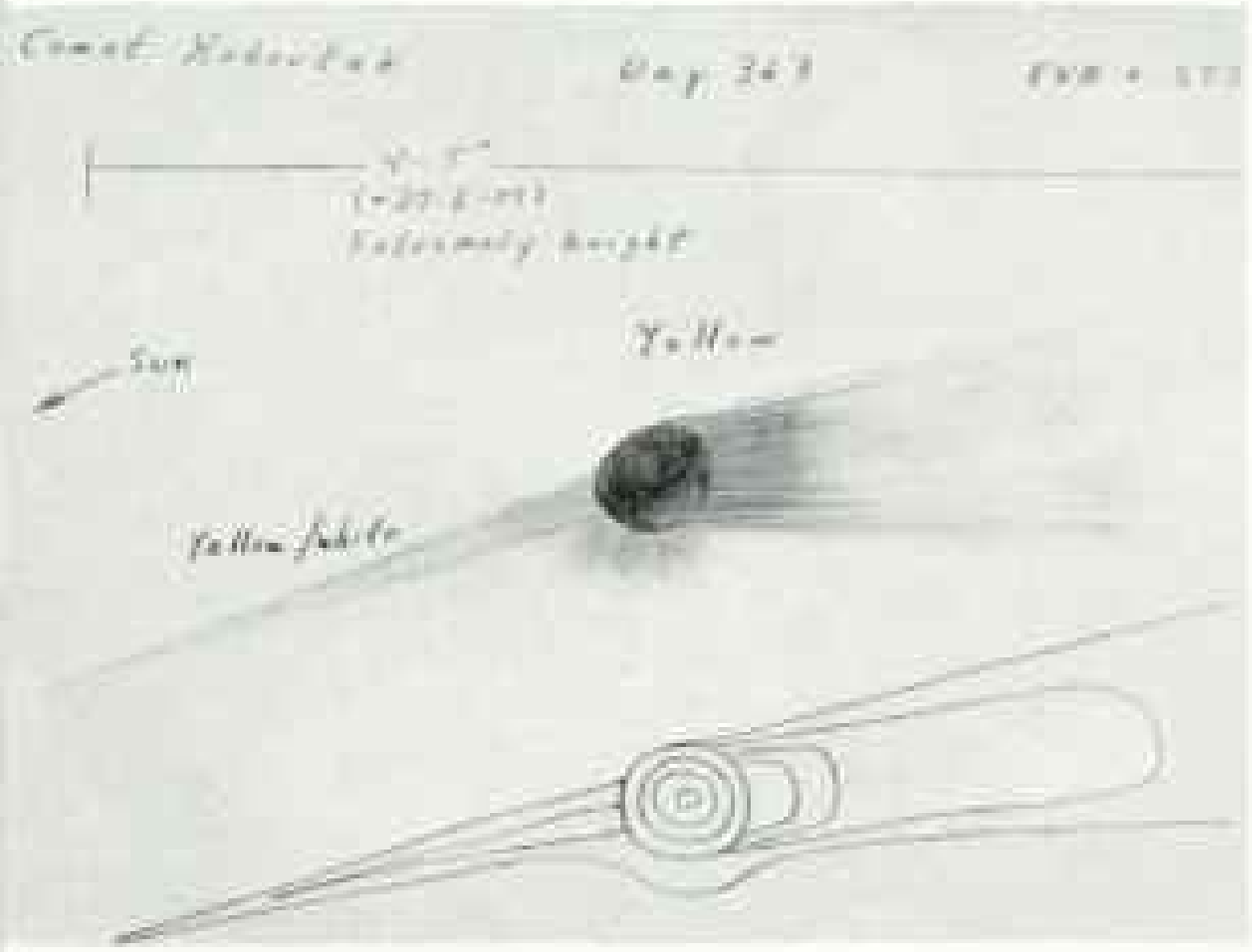
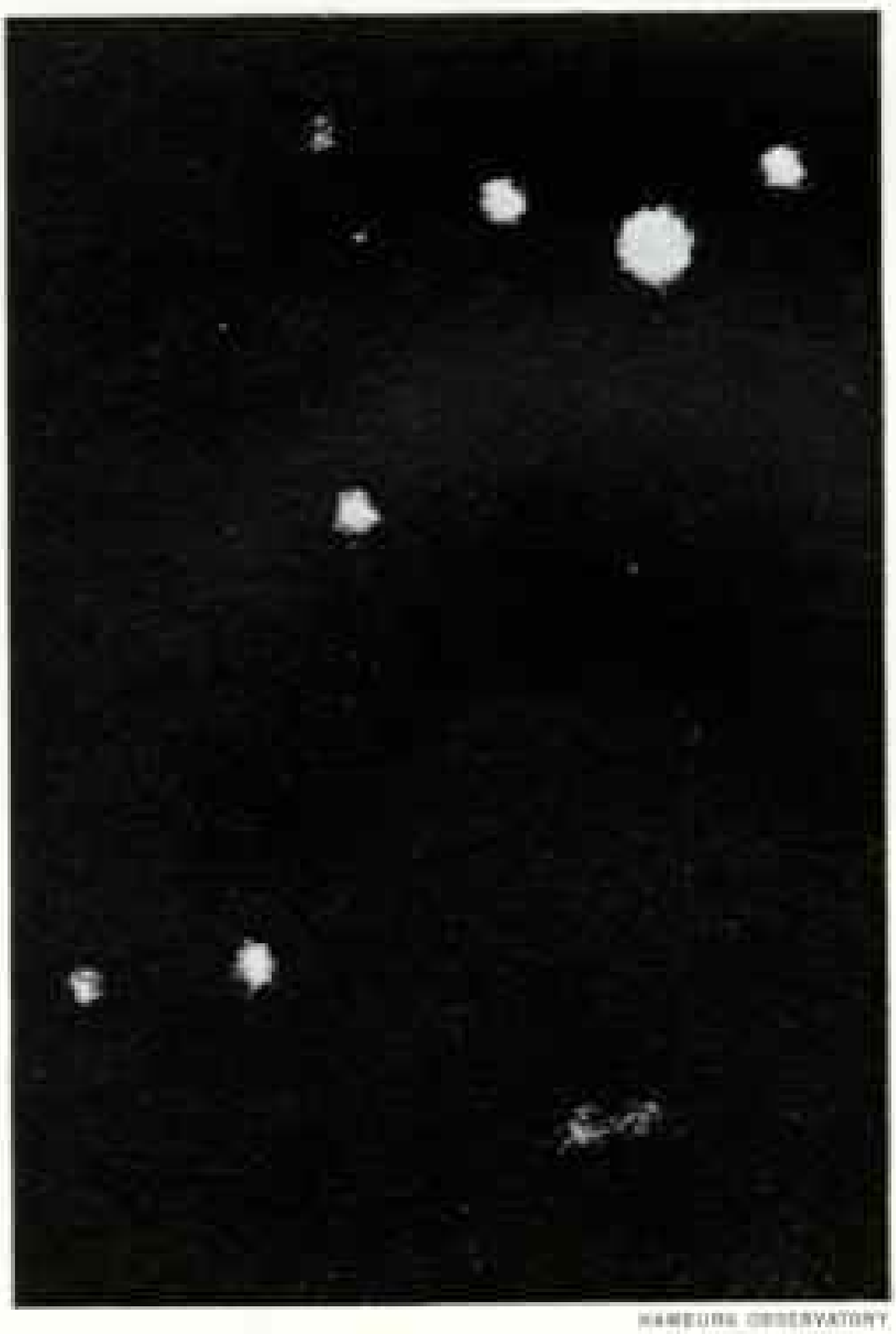


Quirks of a comet's tail: Streamers of light finger the sky (**above**) as gas is blown away by solar wind—a barrage of atomic particles from the sun. In November, Kohoutek's dust tail (**top left**) exhibits a strangely irregular shape; in January, the tail divides (**middle left**). From his perch in space, Skylab III Astronaut Edward G. Gibson sketched a curious "anti-tail" (**bottom left**). Scientists believe it is made of relatively large particles whose trajectories lag significantly behind the comet's, and because of perspective appear to be on the sunward side.

"Origin of the tears of many mothers," wrote a monk in 1066 of Halley's comet. It was depicted in the Bayeux Tapestry (**right**) as an omen of the impending Norman invasion of England. Last seen in 1910, Halley's comet will return in 1986.

HALE OBSERVATORIES (ABOVE AND TOP LEFT); LICK OBSERVATORY (MIDDLE); NASA (BOTTOM LEFT); AND WILTON A. FORD AND WILTON A. SORRELL, JR., NATIONAL GEOGRAPHIC STAFF (BELOW)

NATIONAL GEOGRAPHIC PHOTOGRAPHER JAMES P. BLAIR



HAMBURG OBSERVATORY

Searching the sky for asteroids on March 7, 1973, Dr. Luboš Kohoutek (**upper**) made two exposures on the same plate (**above**), hoping to spot moving objects that would show up twice. Result, at lower right: The first fuzzy view of comet Kohoutek, then 370,000,000 miles away from the earth.

compounds, such as methyl cyanide, point to formation far beyond the planets; there the deep freeze of space has kept them unchanged.

So increasing numbers of astronomers are coming to believe that the comets—billions of them—are circling in huge orbits as much as a fifth of the way from the sun to the nearest star. Since the stars of the galaxy are constantly in motion, slowly changing their positions, it happens now and then that a star will come so close that its gravitational effect will send a comet plunging in an elongated orbit to the heart of the solar system.

All this was fine for science, but would I be able to tell my grandchildren that I had seen the great Kohoutek?* As dusk fell on Kitt Peak, prospects improved. The clouds vanished, and in the cold, clear January evening the stars glittered with uncommon brilliance.

For a better vantage point I climbed to the top of the huge McMath solar telescope. Ice on the roof numbed my feet and a chill wind kept me shivering, but I waited patiently as the darkness deepened.

One moment it was not there, the next moment it appeared. To the naked eye, it seemed as though a giant paintbrush, dipped in whitewash, had been drawn swiftly across the black wall of heaven, leaving a long, ghostly swath above a gently glowing blob.

No spectacular lighting of the sky; no radiant display such as early predictions had led us to expect. Yet it was all the more mysterious and awesome for its phantom qualities, this celestial apparition whose long journey toward the sun began in the icy realm beyond the planets two million years ago.

What Went Wrong With Kohoutek?

Why was comet Kohoutek not as bright as many people expected? When the comet was discovered, some 370,000,000 miles away, it was 10,000 times fainter than the faintest naked-eye object. Predictions at such an enormous distance are extremely difficult. Nevertheless, Kohoutek did seem to be like comet Bennett, a bright and dusty comet that appeared in 1970. If so, Kohoutek might become as bright as the quarter moon.

Later it became clear that Kohoutek's nucleus, a "dirty snowball" of ice and earthy material perhaps ten miles in diameter, was not giving off as much dust as expected. It is dust—reflecting the sunlight—that makes a comet's tail bright. (Another tail, of electrified

*See the January 1974 NATIONAL GEOGRAPHIC.

particles, or ions, glows faintly blue and is barely visible.) So predictions were revised to suggest that Kohoutek might become as bright as Venus. Some astronomers believe that the comet may have been nearly that bright on December 28, at perihelion, its closest approach to the sun. But at that point it was lost in the sun's glare.

Comet Dwindles in Sun's Domain

As this article reaches you, Kohoutek has passed the orbit of Mars, rushing headlong back toward the fringes of the solar system. The nucleus, stripped to a depth of possibly 40 feet, is far from the sun's heat and now gives off little material. The bright coma of dust and fluorescing gases, once perhaps a third of a million miles across, and the tails that reached thirty million miles and more, have largely dissipated.

A tiny band of astronomers whose lifework is comets followed Kohoutek until it was temporarily lost behind the sun last spring. They hope to pick it up again in September, when it may be visible in the largest telescopes.

One of these dedicated students of comets is Dr. Elizabeth Roemer of the University of Arizona. When I visited her office, I learned that Kohoutek was by no means the only comet in the sky. Dr. Roemer showed me a list of 16 that she was tracking and photographing regularly.

I learned also of an official catalog of comet appearances, starting with the famous Halley's in 87 B.C. Of the 611 known comets, 513 are long period—they do not return for 200 years or more, if at all. The remaining 98 are short period—less than 200 years between visits; 65 have been seen more than once.

Most frequent visitor is Encke, first seen in 1786. So short is its period—3.3 years—that it has returned 57 times since then. If plans being considered by NASA work out, a Buck Rogerish spaceship propelled by mercury ions will rendezvous with Encke in 1984, passing slowly through its coma and tail to make scientific measurements.

When will Kohoutek return? Not for 75,000 years, astronomers say. Meanwhile Halley's, so brilliant a spectacle in 1910, is due again 12 years from now.

But the increase of air pollution and city lights leads one astronomer to predict: "If you think Kohoutek was a bust, wait until 1986 when no one in the Northern Hemisphere will be able to see Halley's!" □

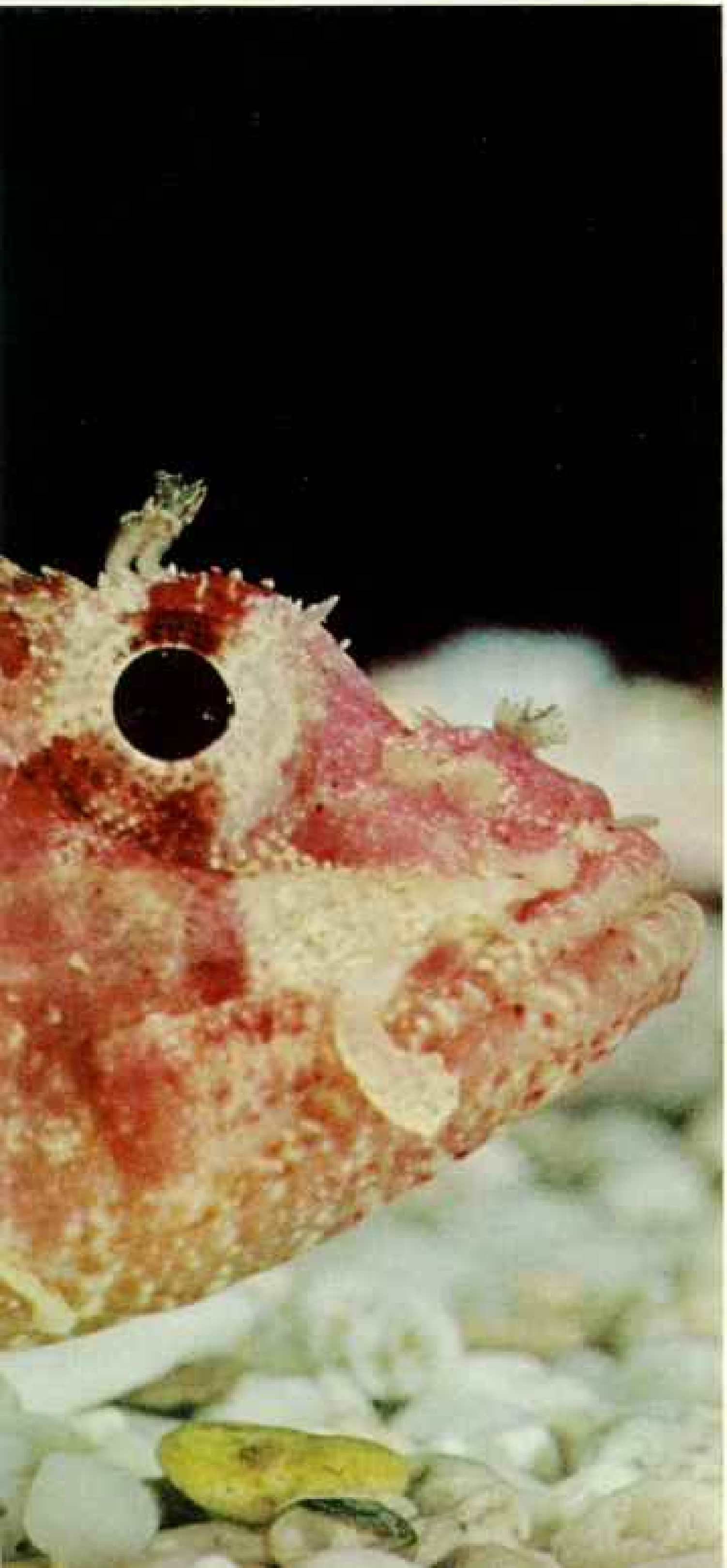
Veiling the stars with trailing gas and dust, Kohoutek travels outward on its orbit, not to be seen again for an estimated 75,000 years. Comets, journeying from the frigid regions far beyond the orbits of planets, probably consist of material preserved unchanged since the birth of the solar system.

Something's Fishy

PHOTOGRAPHS BY ROBERT J. SHALLENBERGER, Ph.D.,

About That Fin!

AND WILLIAM D. MADDEN



AS TREASURE SHIPS go, it didn't seem promising. A U. S. Navy salvage vessel had sunk in heavy seas off the east coast of Oahu, Hawaii. Four months later it was raised from some 200 feet of water. No pieces of eight materialized, but inside the hull, where men and machines had once toiled, lurked the rare decoy fish, *Iracundus signifer*—the first specimens ever seen alive.

That Latin name means "irritable sign-bearer," but these were no cranky protest marchers. They were a species of scorpionfish endowed with the unique ability to turn the dorsal fin into an imitation of a smaller fish, complete with "mouth" and "eye."

Distinctive fins give the scorpionfish family its name, but for quite a different reason. Most, including the decoy fish, carry venom in their fin spines. One group, the stonefishes, produces a toxin often fatal to man. Yet only the decoy fish is known to turn its best defense into its best offense. With prey in view, up goes the dorsal fin to resemble an artificial lure any sporting-goods store would be happy to stock. When the victim investigates, it becomes a dinner instead of a diner.

Other animals use lures. The alligator snapping turtle wiggles a wormlike appendage on its tongue. And projecting from every anglerfish's head is a stalk that dangles a fleshy blob. These lures work well enough. But for artistry, none can touch our decoy fish.

BAIT. WAIT. STRIKE. These first color photographs of the decoy fish in action show a master of the fine art of bait fishing.

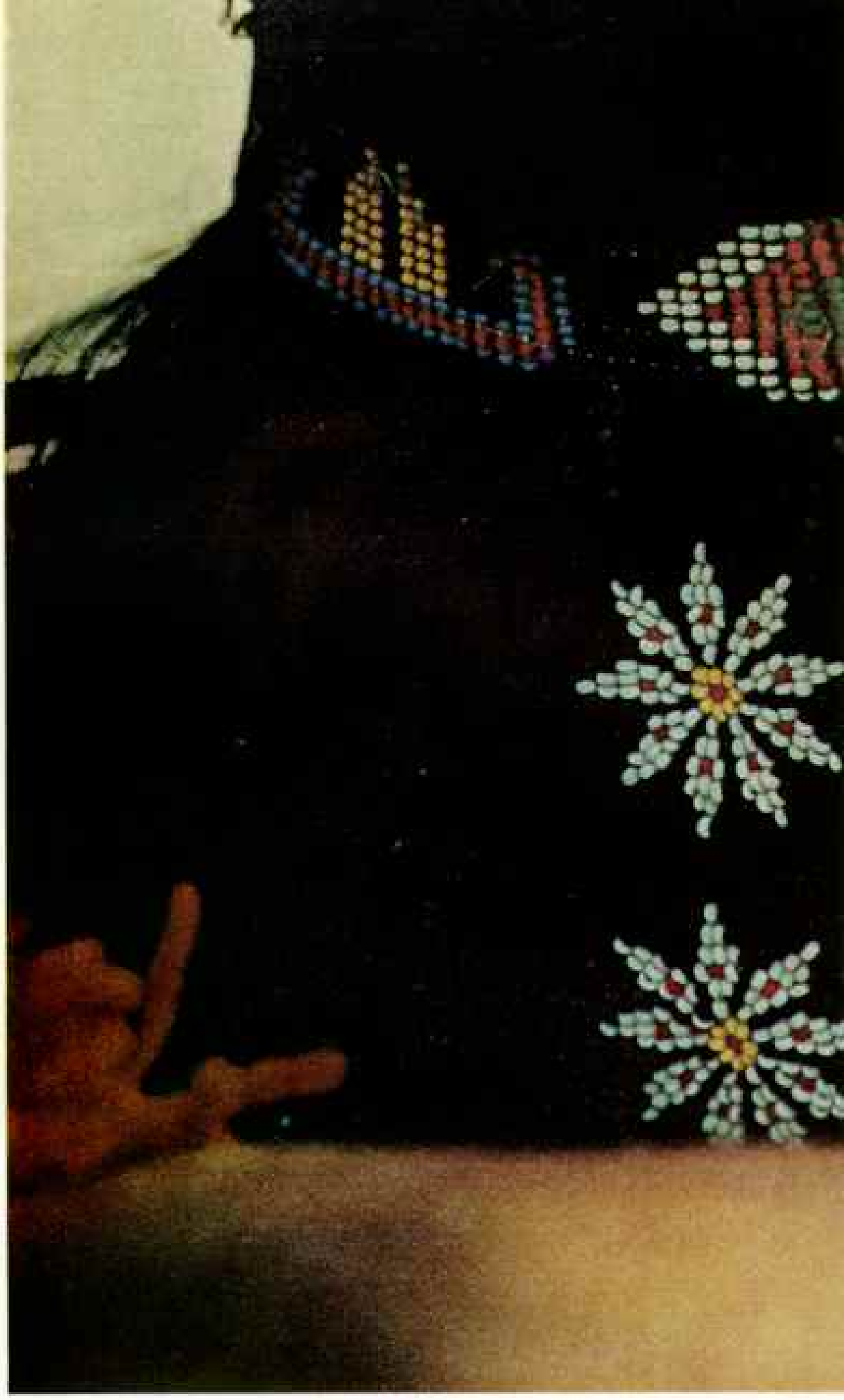
When the scorpionfish spots potential prey, in this case a cardinalfish, it begins a series of ploys. Turning to face the prey, it raises its dorsal fin. At the same time, it increases the natural camouflage of its mottled body. Gill flaps stop moving; breathing seems to stop.

As the body becomes less conspicuous, the dorsal fin becomes more so. It flushes a deep red, especially between the first and fourth spines. Below this display runs a transparent band that visually separates the lure from the scorpionfish.

Carrying the deception further, the black spot between the second and third spines enlarges into an eye, while between the first and second spines a notch in the fin membrane becomes a mouth.

All that would seem enough, but the decoy fish has yet another trick. It snaps the lure from side to side, seen here in a head-on view (**upper left**), causing the mouth to open and shut. Fooled, the victim approaches (**upper right**). Wham! In a tenth of a second it's over (**right**). With a meal in its gullet, the decoy fish has no more use for the lure, which fades in color and is folded back.

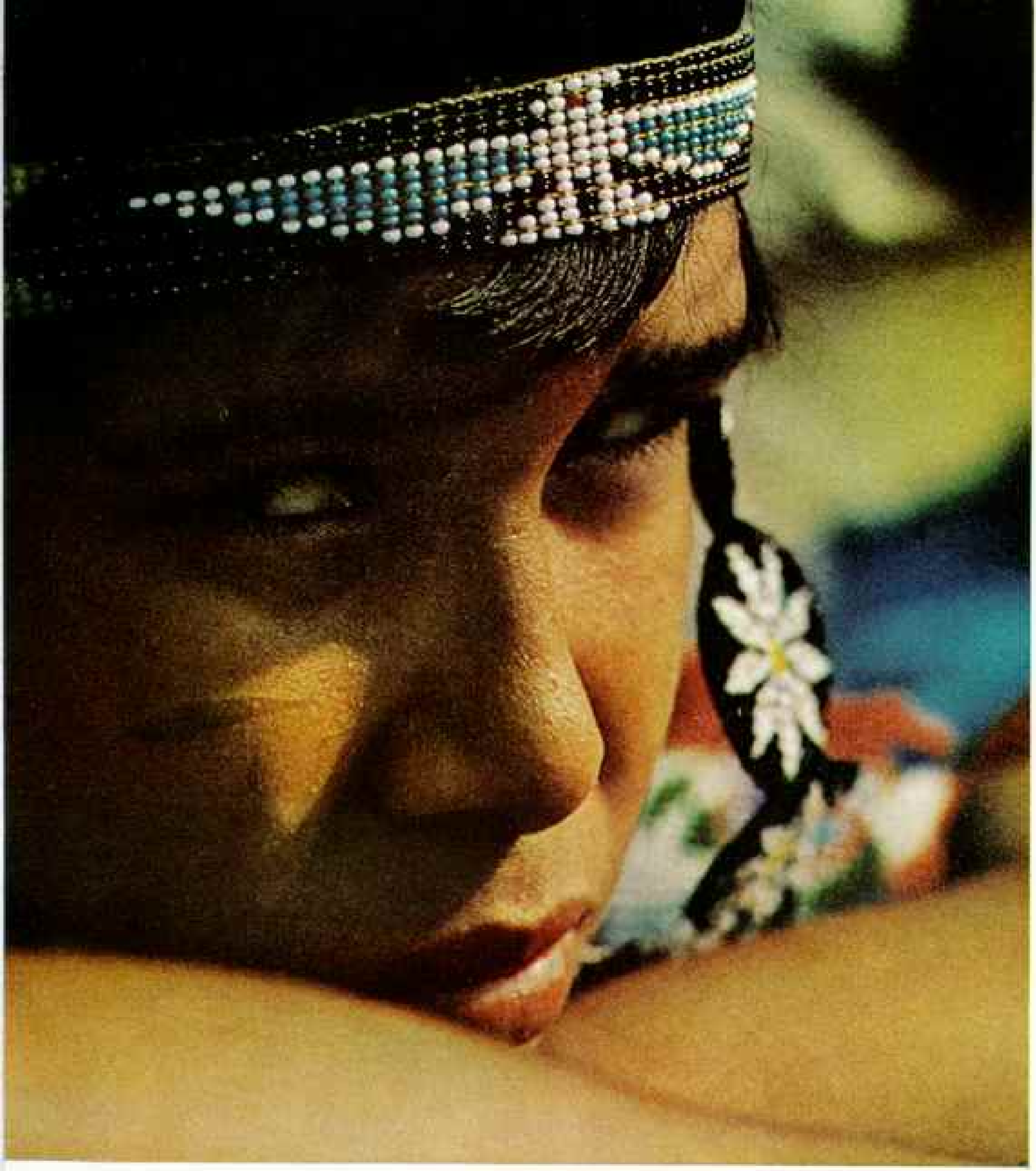
What, exactly, has attracted the prey? That's the kind of question human fishermen argue about over an open tackle box. One claims color and shape are most important. Another cites action or realism. When it comes to our scorpionfish, neither anglers nor scientists know for sure. Of course, the decoy fish doesn't think about such problems at all. And there's no need for "the-one-that-got-away" stories. It rarely misses. □



Watchful and wary, a Menominee dancer at the annual fair in Keshena, Wisconsin, peers suspiciously from beneath his beaded thunderbird. For more than a decade his tribe languished under an ill-advised social experiment called "termination," in which the Federal Government withdrew supervision and aid. No longer Indians in the "official" sense, unable to cope with sudden taxes and pressures, the Menominees floundered into economic and cultural chaos. Frustration spawned protests and lobbying, and, in December 1973, legislation restored federal protection to their Wisconsin homeland. From the bitter termination experience emerged a simple awareness: The Menominees want to stay a tribe, with its traditional unity. They do not want to stop being Indians.

WISCONSIN'S MENOMINEES:

Indians on a Seesaw



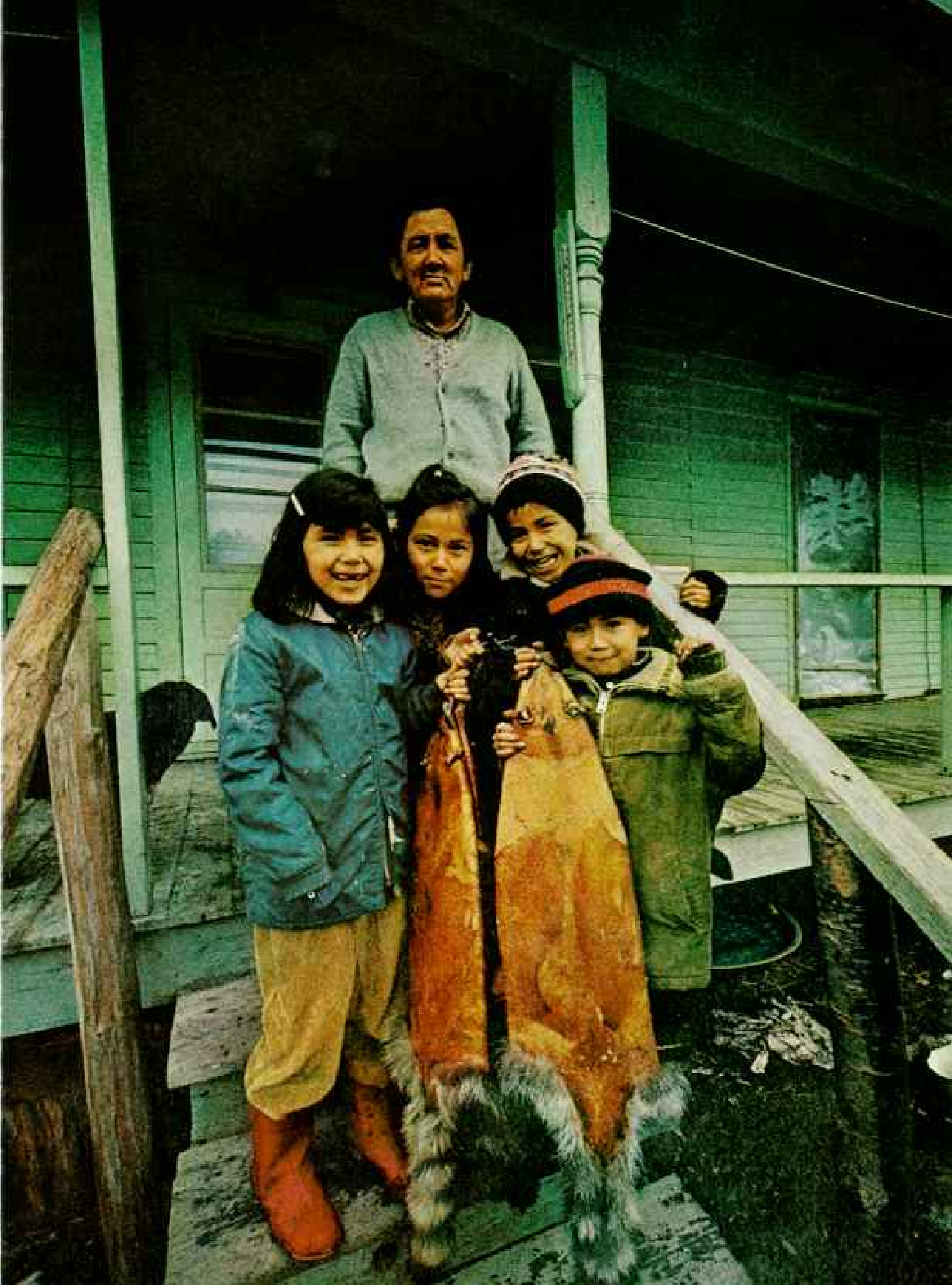
THE LATE-AUGUST SUN peered between darkening thunderclouds above the great green Wisconsin woods. My husband, Steve, and I heard the muted morning sounds and felt the wet earth beneath our boots. We sensed it in our bones—today, we were certain, would be *the* day. For the fourth misty morning in a row we waded into the woods with our Indian friends Sanome Sanapaw, his son, Joey, and Dude Valliere, to trap the black bear.

Sanome, stout and barrel-chested, set the pace as he lumbered through the ancient unaxed forest. Like his father before him, the 59-year-old Menominee had taught his sons all they needed to know about setting bear traps, tracing deer tracks, and hauling in a sturgeon bigger than a man.

By PATRICIA RAYMER

Photographs by STEVE RAYMER

NATIONAL GEOGRAPHIC STAFF



August, we learned, was early for bear trapping. Winter-born cubs, only half-grown, were not yet meaty. But it was a lean summer on the wild Wolf River, long a source of trout and northern pike for the Menominees. Inflation hurt too, in this land of hard work and low incomes. And for the big Sanapaw family, summer supplies had run low.

As we hiked through pine and hemlock toward the traps, we nibbled on wild blackberries, plump as grapes, growing in the lush forest clearings, and wondered whether Mercilene Sanapaw's offering to Manitou, the Great Spirit, had been accepted. In the tradition of her great-great-great-grandfather, Menominee Chief Ah-Kenepoway, Mercilene —Sanome's wife—had ceremoniously made a tobacco offering near one of the traps the night before.

I followed the men through the waist-high ferns at a distance, because I sensed it went against tradition for a woman to join in the hunt. Almost before I knew it, they had reached a trap site, and from the whooping and hollering, I knew they had bagged a bear.

The Sanapaws, their relatives, and friends would eat well tonight. One swift shot from Joey's rifle and the animal was dead. As Joey hoisted the 75-pound carcass over his shoulder, I saw pride in his eyes. But I was sad, knowing that, like the bear, the Menominees were caught in a trap.

"Freedom" Takes Its Toll

Lured by the promise of independence, the Menominees had surrendered their official status as Indians, and since 1961 had been struggling to survive without the economic support of the Federal Government. Now, deep in poverty, their culture eroding, they were fighting for a return to their old status. Neither they nor I realized last August that victory was only months away.

For the Sanapaws, as for most Menominees, the big problem last summer was not the white man's broken promises or forgotten treaties but the immediate practical one of getting food. The bear had solved the problem for that day—our last with them—and as the men readied it for dinner, I wandered off alone to gather blackberries for dessert.

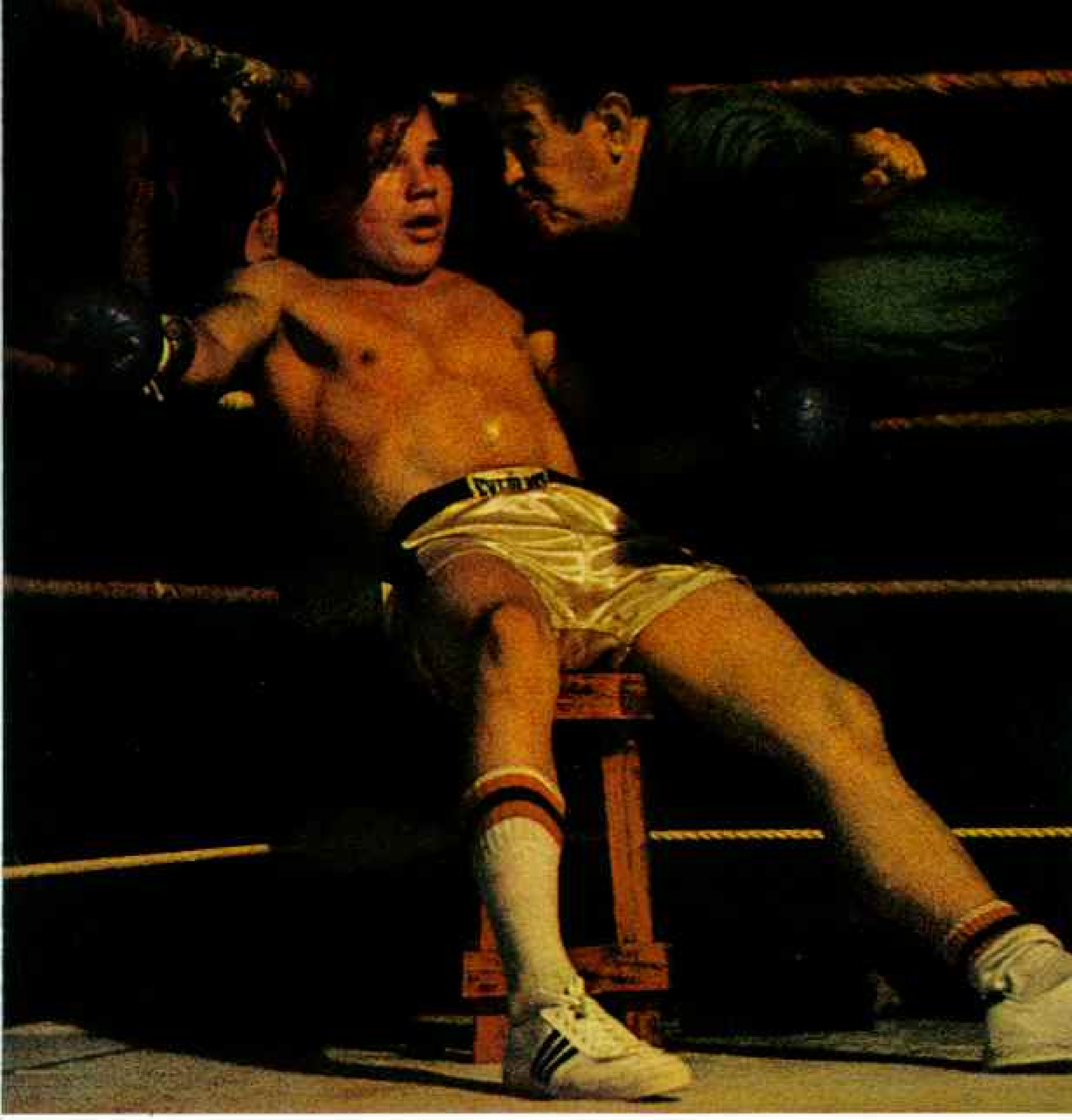
As I plucked the ripe berries, I thought of

Fur-bearing urchins grin mischievously on the front stoop of their Keshena home, holding pelts of raccoons trapped by their father, Carl Maskewit, standing behind them (**left**). Souvenir sales provided extra cash for a dour-faced Menominee and his wife (**right**), standing by their bark hut in a 1908 photograph. Menominees once controlled nine and a half million acres in Michigan and Wisconsin. An 1854 treaty left them only a small fragment of their original homeland (**below**).

SMITHSONIAN INSTITUTION, NATIONAL ANTHROPOLOGICAL ARCHIVES

The Menominee kills so he can provide—a primordial communion with the earth sanctified by the Great Spirit. In the forest west of the Wolf River, Dude Vallière shoulders the carcass of a 75-pound yearling black bear he helped trap. On the borderline of poverty, many Menominees still depend on hunting and fishing, traditionally sharing their catch with friends, the sick, and the elderly. On their reservation, Menominees may fish and hunt in any manner and at any time without regard to state and federal laws.

Land is sacred to the Menominees, the focus of tribal identity. During termination, the reservation became a county of Wisconsin, and land was controlled by a tribal corporation in which each Menominee was a stockholder. Pressed for funds, the corporation sold bits of lakefront property to whites, encountering a tribal backlash that may have solidified Menominee support for the return of their 230,000 acres to reservation status.



our Menominee friends—the teachers, the sturdy millworkers, the quiet-eyed children with their ever-present ponies, the tribal elder too blind to weave any more sugar-scented sweet-grass baskets. They taught us the Indian way of life—and showed us they could not, would not, be absorbed into a white culture. Above all, the Menominees taught us that Indian land goes hand in hand with Indian culture, that it stands for the tribe, their tradition, their fundamental Indian rights, and that it cannot be shaved away without endangering their survival.

Within an hour I'd picked enough berries for two tartly luscious pies and a batch of fresh jam to spread on Sanome's homemade fry bread. Shedding my mackinaw, I began the long hike back toward the Sanapaw home.

Oshkosh Treaty Shrank Domain

It had been a wet, chilly spring day when we first met the Sanapaws. Mercilene, Sanome, and their son Jerry were taking an elementary school class on a field trip. It was May, a time for gathering herbs and wading in the icy Wolf River.

Glazed with exhaustion, Marvin Pamonicutt absorbs strategy from coach Alex Askenette (**far left**) during a boxing match at the annual fair. Marvin won the bout against a white youth, preserving the reputation of the Menominees as first-rate boxers.

A spunky pitcher winds it up for the Keshena Cubs Little League team (**left**), but teammate Mike Peters has to muster a loser's smile and a handshake for a competitor (**below**) from Red River, a neighboring white community.

Rambling along in a battered school bus, we came to Keshena Falls on the Wolf, where in 1854 Chiefs Oshkosh and Keshena had a fateful meeting with federal Indian agents. There, in the last of several major treaties that had already whittled away most of their aboriginal homeland—nine and a half million acres of dense forest stretching from Lake Michigan to central Wisconsin (map, page 231)—the Menominees agreed to retain only 275,000 acres. One final cession, in 1856, reduced the reservation by another 40,000 acres. As part of the settlement for their once-vast domain, which the Menominees called Weesechosek, "A Good Place to Live," the chiefs and their followers were promised eternal government protection.

In 1954 Congress voted to withdraw that eternal protection and support, and in 1961 the vote became reality. The Menominees, then numbering 3,270, became partners in a dubious federal experiment in Indian self-government. They, together with several smaller tribes in the South and West, were officially "terminated"—reservation lands were turned over to the tribe to run without federal help

Savage torrents of the Wolf River howl past fog-shrouded hardwoods in a sudden spring thaw at Keshena Falls (**left**). On this site in 1854 the Menominees signed their last major treaty with the U. S. Government in exchange for the promise of eternal protection.

Tempering the wilderness with beauty, Indian paintbrush glows in a meadow (**right**). A gentle legend is spun around these wild flowers, whose essence is said to contain a powerful love charm. Sprinkle it on your sweetheart and love will flourish forever.

or interference. Land that had been exempt from taxation became taxable; the Bureau of Indian Affairs discontinued all services.

Today the Menominees insist—and BIA officials agree—that the tribe never freely consented to termination. The consent vote, in which only 5 percent of the tribe took part, was tied to an eight-and-a-half-million-dollar claim against the Federal Government for mismanagement of their forest and mill. In short, Menominees believed they had to accept termination to receive their money.

Upon termination, the Menominee Reservation became the only Indian-run county east of the Mississippi. It remains—at least for the moment—Wisconsin's newest, smallest, and poorest county.

Love for the Land Made the Difference

The Menominees faced a new and frightening way of life, involved with stocks, bonds, and corporate business deals. Because officials of the BIA had always handled the tribe's finances, few Menominees were equipped to take on the job of running their community. The tribal council was dissolved and replaced with a board of directors. Each Menominee became a stockholder in a corporation formed to manage tribal assets. The Menominees were no longer Indians in the eyes of the government.

In one respect at least, the Menominees looked after themselves prudently. Though financial headaches forced the other terminated tribes to sell virtually all their lands, the Menominees held fast to their territory. They knew the one thing that kept the tribe together was the land, and they meant to hang onto it. Last December Congress finally made their tiny county a reservation again.

It is a land full of meaning and mysteries. On that May bus ride with Mercilene, I tumbled out with her rambunctious group of seventh graders and we gathered round a worn brown rock surrounded by a log fence.

Mercilene spoke softly. "This rock, Spirit Rock," she began, "once stood six feet high. For years the Menominee people have come here to offer their tobacco to the spirits in hopes that they would look upon our tribe with kindness. The legend says that when the rock disintegrates, it will mark the end of the Menominee people."

Although the rock, a poor-quality granite, probably will crumble before long, I doubt that the spirit of the Menominees will die.

Jerry Sanapaw offered to take Steve and me to a sacred Menominee burial ground while the schoolchildren ran off to gather roots and herbs. We rode in his beat-up beige jalopy, traveling along a narrow, tree-canopied highway. Jerry's car slowed as it approached the old sawmill town of Neopit, one of only three communities in Menominee County. Children romped with a yapping mongrel along the road. We were through in a few minutes and into the woods again.

I remarked about the tough-guy reputation of Neopit's sawmill hands. Jerry felt it did not reflect true Menominee character. "We have always been a peaceful people. We have seldom been involved in wars with other tribes, because we always believed you could talk things out."

Jerry went on to explain that the Sanapaws, like their ancestors, are leisurely

Dinner for twenty? It's routine at the Sanome Sanapaw house (**left**), headquarters for a large but resourceful family that still lives partially off the forest. Clan leader Sanome, flanked by a daughter, Leona, and his wife, Mercilene, savors the conversation after a dinner of bear steak, wild rice, and fry bread (**above**). In March the Sanapaws collect as much as 200 pails of maple sap. They remain one of the last Menominee families to harvest wild rice. The tribal staple, called *manomen*, gave the Menominees their name.

people. The land knows no eight-hour day or five-day week. Harvest and hunting become social times. Life is lived day by day, and each moment cherished for its own.

"We're a content people, content with our Indian ways, with the woods, with being close to nature," Jerry said.

Yet I sensed that uneasiness lurked behind his words. At 26 he does not seem content. Jerry fought in Viet Nam, like dozens of other young Menominees. Unlike many of his friends, though, he is a high-school graduate and has tried college studies.

Jerry is different in another way, too. Of the county's 2,600 inhabitants, most are either below the age of 18 or above 60. Many young people leave tribal lands for the promise of more opportunity in Milwaukee, Chicago, or Minneapolis. And why not?

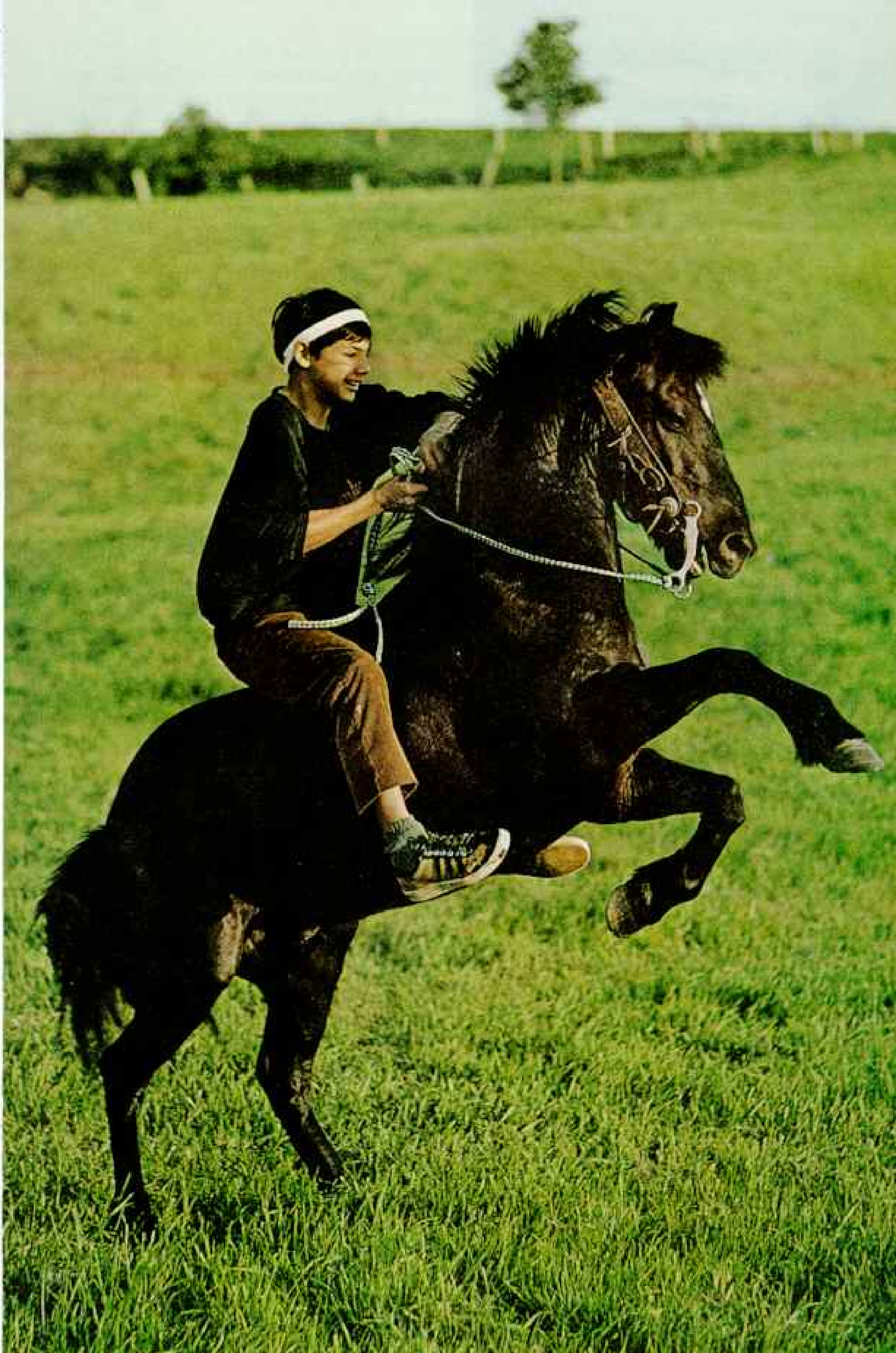
The tribe's one source of employment is a 66-year-old, financially pinched lumber mill —one of the largest sawmill operations in the Midwest States. The outdated, steam-powered mill employs about 200 Menominees, and is the county's chief economic asset. Though profits are up, the tribal corporation, Menominee Enterprises, Inc., has borne a heavy tax burden, which gobbled up meager earnings during the period of termination. Instead of looking for work in the mill, Jerry helps an older brother with his private tree-trimming firm in a neighboring community.

Old Burial Rites Live on

Jerry, dark-eyed and muscular, wants to remain with his people. But he is superstitious about being too successful among them. "You know, my brother LeRoy, he died a year ago," Jerry recalled. "His bad luck came, I know, because he was better than the rest. He was an Indian dancer, winning awards, ribbons, recognition all over. When you're a Menominee you can't stand out, you can't be better off than your brothers."

We arrived at the small burial plot, its grass thick with wood ticks. Instead of gravestone markers, I saw long, low wooden huts covering the graves. I learned later of other burial grounds scattered in the high grass off the back roads.

"When an Indian dies," Jerry told me, "one of the family builds the hut. Then the body is carried out through the west window of the family home. The drums beat all night long as the family gathers to tell of all the good things the dead person did while alive. You



know the spirits are listening and that the person is on the way to heaven, the place we Indians call the happy hunting ground."

In this land of the Menominees, where 90 percent of the tribe is nominally Catholic, Jerry's story seemed incredible. People had told me of the old medicine-lodge religion, and these huts in the thorny brush were proof that it had not died.

"For four days after a death," Jerry continued, pointing to an opening in the hut, "the family brings offerings and puts them through this window, so the dead person doesn't get hungry on the journey."

At dusk, we returned to the Sanapaw home along the Wolf. Children played around the battered homestead. Some teased a caged pet coyote while others took turns riding the family pony.

Inside, Sanome prepared his specialties, fry bread and boiled Indian coffee.

"Survival, that's how we live," Sanome said. "It's been tough, very tough, since termination. When the Menominees were terminated, we had to buy our family land. Like others in the tribe we owned the home we built, but the land. . . ." He was silent. "The land"—quietly now—"the land belonged to everyone in common. This is the Indian way."

After termination the Sanapaws had to buy their property from the newly established tribal corporation at about $300 an acre, and then pay taxes on it. But Sanome said, "We just can't afford it."

A World War II veteran, Sanome supports his family with a pension plus earnings from a tourist-concession stand he runs.

"Over the years, I've worked about every job around," he told me. It wasn't hard to see in Sanome's ruddy face a strong millworker, a pulp-cutting woodsman, or a tough highway-construction laborer.

One of the nine Sanapaw children still lives at home, as do about a dozen of 35 grandchildren and some assorted relatives. Their wood-frame home, like half the homes in the county, has electricity, but the family must haul water from a hand-dug well nearby. Sleeping and eating space is at a premium.

Family Clings to Wild-Rice Tradition

We sat down to dinner with about twenty members of the Sanapaw family. Because there were guests, Mercilene served up hearty portions of venison and wild rice to complement the usual dinner of boiled potatoes, grease, and fry bread.

"We harvested this rice last fall on the Wolf," Jerry said, waving toward a hand-fashioned rice boat in the backyard.

Custer, here we come! A spirited pony and rider caper at Thunderbird Ranch (**left**), a foster home where Menominee boys regain motivation and self-respect. Aimlessness and lawlessness still fester among the reservation youth. Educational self-help programs have gained momentum, but with jobs scarce, talent drains to the cities. Frustrated and bored, hangers-on drift to Keshena's youth center (**above**) to do nothing.

The Sanapaws are one of the few Menominee families still wild-ricing. Only a scattering of rice beds remains along the west branch of the Wolf. (Menominee means "people of the wild rice" in the old Algonquian tongue.)

In the past the Menominees believed that the Great Spirit had granted the tribe two foods to be their own forever—wild rice and maple sugar. But the Sanapaws are the only family still tapping sugar maples in the spring.

Over dinner, Mercilene talked of how she and Sanome tried to hand down the precious remnants of Menominee heritage to their youngsters. "You know, it's ironic," Mercilene said, looking much younger than her 61 years. "When I was five, I was sent off to a boarding school run by the BIA, not knowing a word of English, just Menominee. But they wouldn't let us speak Menominee. At night girls would huddle together and repeat the legends we knew, in Menominee, and when the teachers found us, they'd punish us."

She laughed, but the humor never reached her voice. "Well, today I'm paid to teach Menominee traditions in the schools, to teach beadwork, and to take children on field trips, as we did today."

Secret of Tribal Medicine: Believe

The colorful assortment of roots, herbs, leaves, and tree barks bundled in a corner of the kitchen spoke for the success of the day's harvest. There was crinkleroot, which could be preserved and used like horseradish to flavor meats and vegetables; blackberry root, to be made into a tea to treat diarrhea; and catnip, for babies' colic.

According to Mercilene, these remedies have no medicinal effect unless the user believes in their powers. In days gone by, herb doctors, or medicine men, learned from the Great Spirit the specific qualities of each plant, and only after offering tobacco to the spirits could they treat their patients.

Talk of the Great Spirit filled my mind as we left the Sanapaws that night. The forest seemed alive with legends, warriors in moccasins, medicine men praying over the campfires. But like the Menominees themselves, I could not forget the bitter realities of high taxes, poor health, and soaring unemployment that ate at the soul of this community.

What reassured me was that unlike many Indian tribes that have few natural resources, the Menominees have their woods. Ninety percent of their land is forest—pine, hemlock, maple, birch, and oak. "The trees are thick as hair on a dog's back," Menominee Enterprises forester Jim Heinz told us. "The tribe works the woods on a sustained-yield setup, cutting only the mature timber."

In his office overlooking the mill, Heinz mapped out a 15-year cutting plan with all the flash of a Pentagon general. "As long as we manage the woods intelligently," Heinz said, "the Menominees will have enough timber here for their grandchildren's grandchildren, and beyond."

Yet, ironically, it was the Menominees' success as woodsmen that led to most of their present-day problems. The Menominees were terminated because, by Indian standards, they were financially well off. Before 1961 the Menominee lumber-mill profits paid the

Chief lobbyist Ada Deer ponders the future beside a poster of top-hatted Chief Oshkosh. Each guided the Menominees through critical times. Ms. Deer championed "de-termination"; Oshkosh negotiated treaties with the white man in the 1800's. Presented the hat by Wisconsin Governor Henry Dodge, the chief asked his people, "Don't I look awful? This is the way the white man's law fits the Indian."

One of tomorrow's leaders in the tough mill town of Neopit, community organizer Glen Miller (**right**) works with a dedicated nucleus of educated young Menominees who are staying to help their people.

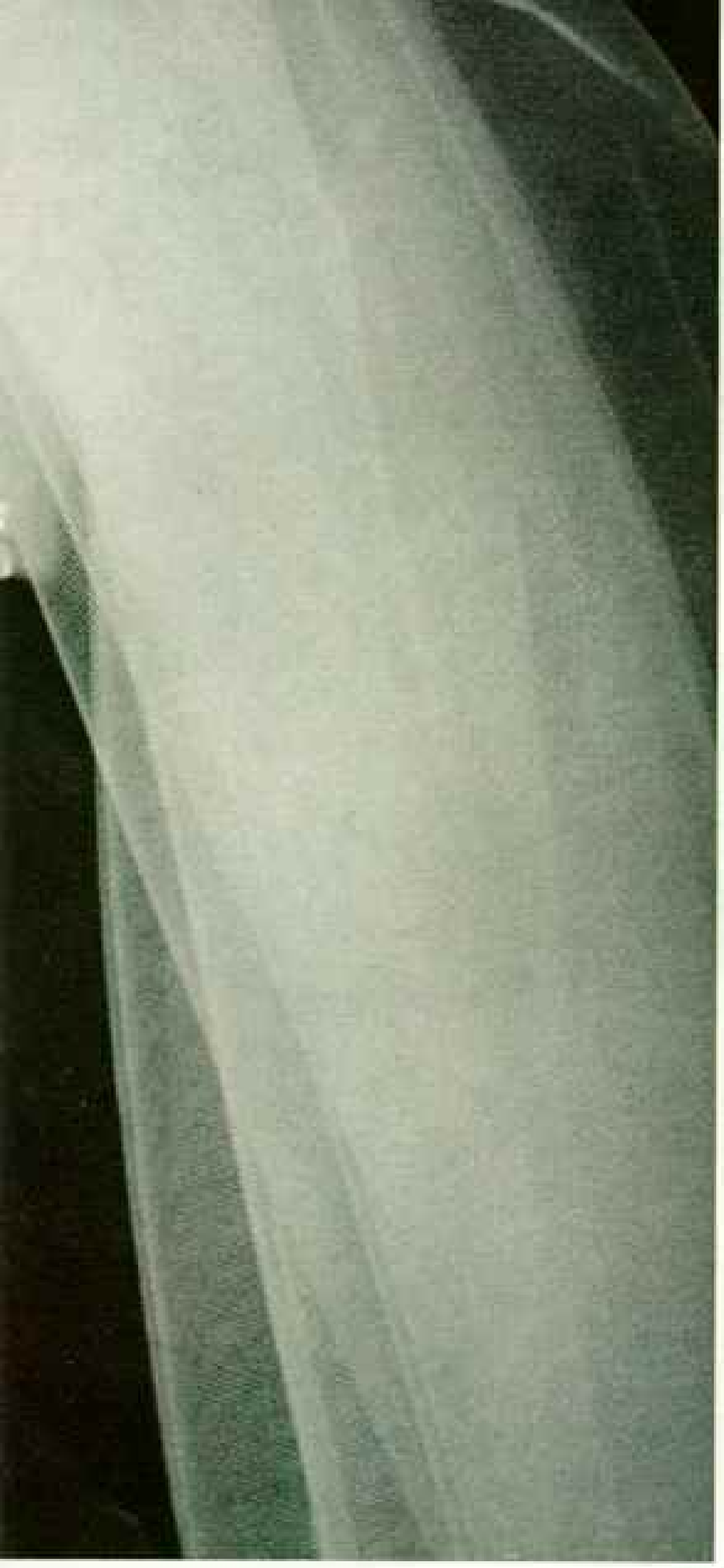
government for most of the services of the Bureau of Indian Affairs—a hospital, schools, highways, and power plant. During most years federal aid to the Menominees was the lowest of any tribe in the nation.

Bank Balance Tumbled After Termination

But with self-government, the Menominees' fortunes plunged. By 1972 the tribe's bank account had sunk from some $10,000,000 to $59,000. Where did it all go? Shortly after the termination act was passed in 1954, the Menominees elected to distribute nearly $5,000,000 in $1,500 payments to each of the 3,270 members of the tribe. That money was part of an $8,500,000 judgment granted the Menominees in 1951 for government mismanagement of their forest land. Legal fees took $900,000 of the award.

In 1955 more than $2,260,000 was distributed in $750 payments when the Bureau of Indian Affairs discovered that for 13 years it had erroneously been assigning to the tribe's general account certain funds that should have gone to individual Menominees for timber cut.

The $1,840,000 left in the account was eaten up by the financial burdens of getting

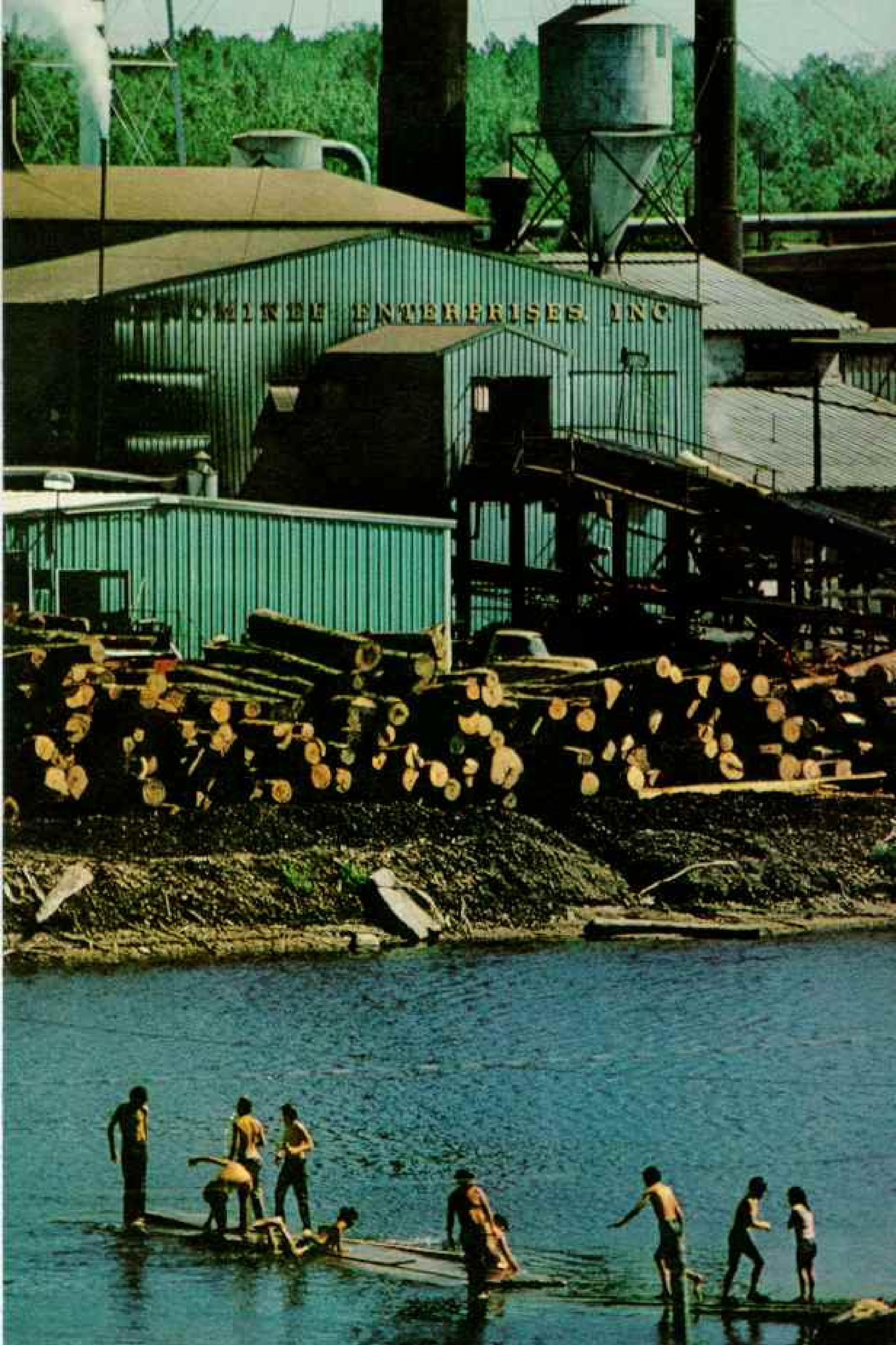


a new county on its feet. Standards that had been good enough for a BIA sawmill were not good enough for the State of Wisconsin. The tribe had to spend $1,500,000 upgrading the old mill. Much of the rest went to revamp the tribe's electrical-power plant.

Worst of all, there was the new tax burden. Although the mill was clearing more than $500,000 most years, the bulk of it was used to pay property taxes on the tribe's forest land. Left without expansion capital, the Menominees were unable to increase mill profits or to diversify their business.

The Menominees were broke, but they

Soft reflections of fragile dreams shine from the eyes of a Menominee bride, Mary Dick (**left**), married in Keshena a year ago to Michael "Mackey" Pamonicutt. Celebrities for a day, the newlyweds bid farewell to guests (**top**). The groom holds money received as gifts. Mary comforts Marty Pamonicutt (**above**), who had wanted to go riding with the couple. Mackey now works in the reservation sawmill, about the only employment option short of migration to the big cities.


MINDE ENTERPRISES INC

Bulwark of economic power, the tribal sawmill steams above frolicking youngsters on the west branch of the Wolf River in Neopit (**left**). The reservation's biggest employer, its raw lumber will form the base for new industries.

The original Americans, often estranged from the country's mainstream, take pride in their military service, dating from the Civil War. Keshena's American Legion Post marches through town on Memorial Day (**above**).

refused to give up. Ada Deer made sure they didn't. A tough, aggressive, determined, and optimistic woman (page 242), this 37-year-old Menominee social worker and community organizer led the movement to make the Menominees Indians again.

One of a handful of Menominees to go from log cabin to college classroom to the "white man's world," Ada acts as the tribe's lobbyist, carrying the message of the Menominees not only to government officials but also to the nation on whirlwind speaking tours. Officially, she is the elected chairwoman of the Menominee stockholders.

Victory at Last for a Modern Warrior

Beginning in June 1972 Ada camped out in Washington, D. C., determined to convince members of Congress that they should reverse the 1954 termination decision. By December 1973 she had won the battle. Under the congressional bill formulated by the Menominees and lawmakers, the services of the Bureau of Indian Affairs are being restored to the Menominees as the land—their precious link with the past and their hope for the future—returns to federal-trust status. Tribal land will again be tax-exempt, but the tribe will continue to control its government, mill, and forest. Those Menominees who paid for their acreage may give it back to the tribe to avoid taxation.

Termination was supposed to give Indians power over their lives and land, but it forced them to sell their property to make ends meet. Even the land-proud Menominees had to yield to a degree. To add much-needed tax dollars to the county treasury, the Menominees sold 5,000 acres of lakefront property to whites in search of a summer playground.

Today those white landowners live in a separate world. Ada and I drove past a summer-home development, with its man-made swimming beaches and electric hook-ups for camper trailers. "Selling this land was like selling your furniture to make house payments," Ada said. "Or like burning down your house to keep warm in a blizzard."

In the end tribal leaders realized that land sales would only prolong their financial woes. The economic situation continued to worsen, until nearly half the tribe was collecting welfare and 40 percent of the families had incomes below the federal poverty level.

Headsets and tail feathers abound at reservation primary schools. Brian Peters ponders a reading problem at St. Anthony's in Neopit (**above**). Indian culture gets increasing emphasis at St. Joseph's in Keshena (**right**), where Kenneth Dodge dances for delighted classmates.

I asked Ada why the Menominees felt they must again seek aid from the Bureau of Indian Affairs—the often-criticized government agency that since 1834 has dominated every aspect of U. S. Indian life.

"Because there is no alternative, no other way to hold on to our land."

A former official of the Bureau of Indian Affairs seconded Ada's view: "The only thing worse than being an Indian under BIA control is being an Indian not under BIA control."

The Menominees think restoration can work, and the congressionally authorized Menominee Restoration Committee is now working out the details.

And the Menominees had President Nixon behind them. Signing the restoration bill, he said: "By restoring the Menominee Indian

tribe to federal-trust status, the United States has at last made a clear reversal of a policy which was wrong, the policy of forcibly terminating Indian tribal status."

Termination Taught Some Lessons

There are Menominees who still have doubts about a return to the fold. "All my life BIA has been the fly in the ointment, and it's one thing I question about restoration," said Delores Boyd, director of the Child Development Center. "I certainly wouldn't want youngsters today to grow up feeling the Menominees are just getting handouts from the government. But is there any other way to save our land? Though termination was wrong, it did have some good effects. Ten years ago we believed whatever the white man told us. Termination made people a bit more demanding of their rights."

Mrs. Boyd took me on a tour of the rambling old Bureau of Indian Affairs school that the Menominees had turned into a child-care center. Eying the 90 children in her charge, she said: "I hope we can give our children the pride they need. The real aim of our program is to make the kids Indians, and to do something about the major health problems that can hold them back all their lives."

The old bureau hospital is closed now—turned into a courthouse after failing to meet modern standards. Two community-health nurses and a part-time National Health Service doctor bring medical care to the Menominees. Anemia, tuberculosis, and alcoholism are the major problems.

Far from the clamor of politics, on the tracks of the sawmill railroad, old-timer Joe Deer steals a sunbeam or two from the eternal summer of boyhood. Restoration may not solve everything, yet it rekindles hope for survival of a proud people who choose to remain Indians.

Indian teachers like Mrs. Boyd are being recruited and Indian culture is being emphasized in the primary grades, but the effort is dissipated further along. High-school students are bused to a neighboring county that has no Indian teachers and no Indians on its school board. Racial tensions have flared, and federal investigators have found discrimination. Under such conditions, more than 75 percent of the Menominees fail to graduate from high school and fewer than 4 percent see the inside of a college classroom.

Carol Dodge has helped organize a community school for high-school dropouts as the first step in gaining local control of all Menominee schools.

"Our public-school children just aren't given adequate backgrounds in the primary level," she complained. "They leave fifth grade two years below their level, and, well, they just can't compete."

Miss Dodge, a Menominee with a graduate degree in education, sees the community school as a stopgap measure, but a beginning. "We have to spend too much time re-teaching the basic skills," she told me. "In a few years these young people will be looking for jobs, and they can't even read or add."

Troubled Boys Get Another Chance

One day Steve and I drove to Thunderbird Ranch, a rolling 40-acre farm 20 miles outside Menominee County, to see another social and educational program in action. For three years Thunderbird Ranch has been home to several dozen Menominee boys who, because of school and family problems, are branded "delinquents" and taken over as wards of the County Welfare Department.

Lou Hawpetoss, the director of the ranch, greeted us. "*Posa*," he said, which means both hello and good-bye in Menominee, depending on the accent. In the fields half a dozen energetic 13-year-olds were riding bareback (page 240) as the sun set behind the gleaming, whitewashed farmhouse.

"These boys were at rock bottom," Lou said. "Most have records that could put them in jail for a long time. Many have only one parent, often an alcoholic. They'd all been kicked out of school in Shawano, and something had to be done."

Lou, 33, is a huge, robust, good-natured man in braids, with a beaded headband. He hardly cuts the figure of the Chicago advertising executive he was before returning to "do something for my people." Today he is tutor, father figure, pal, and official guardian.

Adjusting his floppy felt hat, Lou told us the boys' success story.

"We put them in a different school, away from the racial problems of Shawano. Here, they aren't automatically expected to fail, and they're developing a new self-image. Now most are getting B and C grades and learning a bit about small-scale farming at the same time. I wouldn't be surprised if one day—maybe 15 years from now—these kids were

running a ranch for boys like themselves."

There are many Menominees like Hawpetoss, those who left the reservation in search of a better life, but were drawn back to their people by a sense of responsibility and a deep longing for home roots. Ted Boyd, 33-year-old vice-president of the Menominee corporation, spent 11 years in Milwaukee studying accounting and working as an accountant.

"I always wanted to come back here some day," Boyd said, "and I was lucky. My people needed someone with business experience. Many educated Menominees would like to come back, but there isn't much opportunity."

A New Era Dawns for Menominees

As vice-president for financial affairs, Boyd has seen the Menominee economy seesaw. Corporation profits rose during the years Menominees sold the lakefront parcels of land. When land sales were halted in 1972, corporation net profit fell to zero. But by March 1973 profits were up, chiefly because of the lumber operation, and Boyd now detects a trend toward "recovery and improvement."

He told me, "I think our workers' attitude has improved because we are returning to reservation status. Now people really care and want to make it work."

My talk with Ted Boyd filled me with hope for our friends. As Steve and I took a final late-night walk through their land, our heads throbbed to the drums of an Indian powwow. The drums seemed to be saying that the fighting Menominee spirit and binding tribal ties would not be weakened.

At the county's edge, I looked back and saw a sign I had casually passed many times before. Somehow, tonight, it meant much more. Its message was simple. Shining in the moonlight, it read: "Land of the Menominees —We'll make it!" □

ARTICLE AND PHOTOGRAPHS BY H. EDWARD KIM NATIONAL GEOGRAPHIC STAFF

Rare Look

IT IS ONE O'CLOCK in the morning. Lying awake in the strange bed, I can scarcely make out Kim Il Sung's portrait on the wall. I am tired after the long trip, but my mind will not rest. All is so quiet. Only the rustle of leaves in the autumn wind touches the stillness of the night.

I smile in silent congratulation. At last I am here in North Korea, the first American photojournalist to gain entry into a country cloistered from the non-Communist world for a quarter of a century.

Only 12 hours ago my plane, an Aeroflot Ilyushin 18 from Moscow, landed at Pyongyang in front of the first of many portraits of President Kim Il Sung. A welcome sight, after all I had gone through to get here.

Two men in dark-gray suits—my official hosts—greeted me cordially, took care of documents, and went to claim my baggage. I stepped outside. The October sun was warm, the air clear. A tree-lined road cut through harvested grainfields and paddies resting under a crystal-blue sky. Tiny farmhouses with tiled roofs clustered at the foot of a low green mountain. It was a familiar scene.

I was born and raised in Seoul. I left 14 years ago for college in the United States, had not been back, and had never been north of the 38th parallel while growing up in South Korea. But I knew I was home.

An hour-and-a-half drive from the airport brought us to this lovely villa about thirty miles outside the capital. We're by ourselves here, my official guide Park O-Tae, the housekeeping staff, and myself.

That first evening three visitors arrived—all dressed in charcoal gray. The biggest, who mingled affability with a tone of authority,

Children of a new order, North Korean schoolgirls learn they can help their land achieve *juche*—political and economic self-reliance. Wearing the red neckerchiefs of Young Pioneers, a Communist youth corps, they drill in their schoolyard near Pyongyang. The group wears achievement medals, and badges portraying North Korean President Kim Il Sung.

at North Korea

Everything's up-to-date in Pyongyang, the capital, where all but two buildings were destroyed during the Korean War. Resurrected from rubble, the city now boasts tree-lined

was deputy commissioner of the Peace Unification Commission. Why had I left Korea? Would I come back? Peace was so difficult to achieve, he said. If only the United States would ease tensions by removing its troops from South Korea, the Koreans themselves could decide what to do with their unnaturally divided land.

He voiced his concerns, I expressed mine. Would I be permitted to photograph these places? I gave him a three-page itinerary that covered the entire country. I said I'd need six to eight weeks.

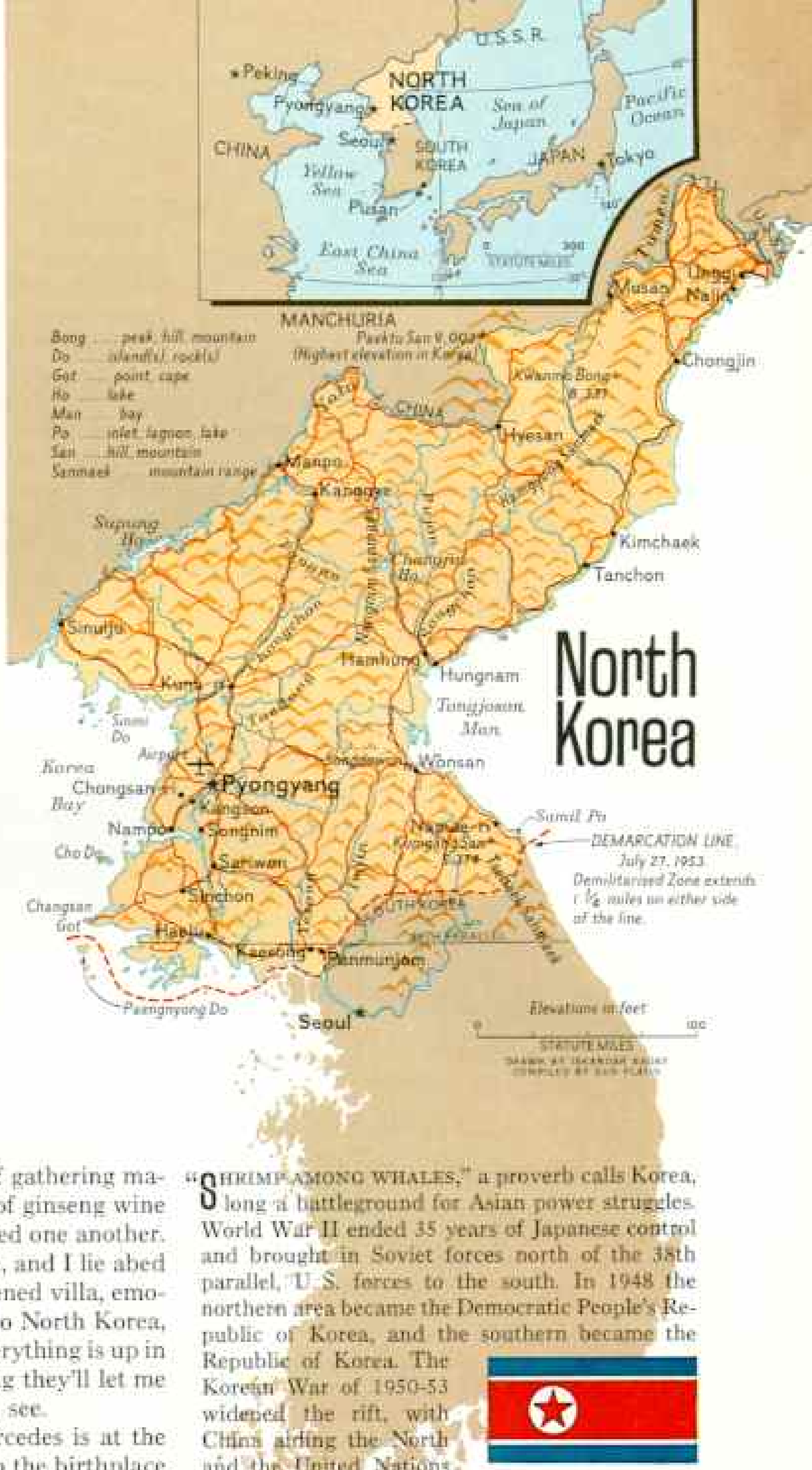
The deputy commissioner could give no assurances. "It is rather inconvenient at this time to extend the full cooperation you requested in your letters. We wanted you to postpone your trip, but you had already arrived in Moscow. We tried to explain the situation through our embassy people there." He reached for a cigarette and chuckled a little.

"We did not think anybody would be stubborn enough to come here in spite of our discouragement."

Another of the officials, silent all evening, suddenly spoke. "Since you are Korean, even though you have become a U. S. citizen, we felt you could understand our nation better than other Western journalists. But we must guard against any unfair publicity that might be used as propaganda against us." He straightened in his chair, then concluded: "Since you are here, we will cooperate with you—but, understandably, there will be restrictions. We hope you understand our position."

There was a moment of silence. I realized

boulevards, blocks of high-rise apartments, and acres of parks.



that at least I had a chance of gathering material for an article. A bottle of ginseng wine was brought in, and we toasted one another.

Now the officials have gone, and I lie abed in my suite in the night-darkened villa, emotions mixed. I have gotten into North Korea, and that is a triumph. But everything is up in the air. I don't know how long they'll let me stay, how much they'll let me see.

Next morning a black Mercedes is at the door. Park and I are driven to the birthplace of President Kim Il Sung, "Respected and Beloved Leader" of the ruling party. The home is preserved in a park on the other side of Pyongyang. The traditional mud-walled farmhouse with thatched roof has two bedrooms and a kitchen with underfloor flues providing the world's oldest form of radiant heating. Pots and pans, portraits of relatives

"SHRIMP AMONG WHALES," a proverb calls Korea, long a battleground for Asian power struggles. World War II ended 35 years of Japanese control and brought in Soviet forces north of the 38th parallel, U.S. forces to the south. In 1948 the northern area became the Democratic People's Republic of Korea, and the southern became the Republic of Korea. The Korean War of 1950-53 widened the rift, with China aiding the North and the United Nations the South. Today North Korea sides with neither of its quarreling benefactors, China and the U.S.S.R., preferring an independent course.

AREA: 46,540 square miles. **GOVERNMENT:** Socialist republic. **POPULATION:** 15,000,000. **LANGUAGE:** Korean. **ECONOMY:** Mining, metallurgy, machinery, chemicals, textiles, agriculture. **CAPITAL:** Pyongyang, 1,000,000. **CLIMATE:** Severe winters; warm, rainy summers.

who were also honored figures in the revolutionary movement—each family memento is invested with an aura of sanctity.

On the wall I read a poem by the president's father, "Pine Trees on Namsan," with its line known to all North Koreans, "I will be unyielding while restoring the country, though I am torn to pieces."

I am struck by the contrast between this humble abode where Kim Il Sung was born in 1912 and the gargantuan Museum of the Korean Revolution in Pyongyang, which devotes 95 monumental rooms to his career; before it he stands in bronze 60 feet tall.

Indeed, the importance of Kim Il Sung to North Korea's development cannot be denied; nor can the worship accorded him as head of state. There is hardly a song or work of art or literature that does not mention or allude to the ideology of Kim Il Sung. He is the very spirit behind North Korea, responsible for its philosophy, industrialization, and self-sufficient economy.

In the plaza of the Museum of the Korean Revolution I recognize an imposing statue of Chollima (page 258). This legendary winged horse, which I knew from my childhood storybooks, sped great distances in a day and performed heroic feats in Korea's time of need. In 1958 Kim Il Sung enlisted the winged horse to motivate the people to strive for excellence in all aspects of life.

Park takes me to the Industrial and Agricultural Exhibit, which chronicles the giant strides toward industrial self-reliance under the stimulus of the Chollima movement.

Officials come to the guesthouse to reinforce the visual impressions. Kim Chul Min, from the Department of Social Science, says Korea's past is a key to understanding the

Medicine on the house . . . groceries close to home. As part of North Korea's program of free health care, a staff nurse on a collective farm examines a toddler; mother and sister await their turns (**above**). This two-room workers' home has books, radio, and fresh flowers. City dwellers enjoy another amenity—stores located within their apartment complexes (**right**). Here, Pyongyang shoppers survey an array of fresh vegetables. The selection does not include imported foods, but the supply is plentiful and hunger is unknown in North Korea.


남새

Programmed enthusiasm of 10,000 workers and students welcomes a Bulgarian delegation to Pyongyang. The distant statue depicts Chollima, winged horse of Korean legend, whose heroic feats and

present. A thumb of land squeezed in the pincers of China, the Soviet Union, and Japan (map, page 255), home of an ethnically united people proud of their 5,000-year past, the Korean Peninsula has been a buffer between powerful neighbors, suffering the blows of their conflicts.

I mention to Kim that I am familiar with Korean history, but he goes on methodically. The ancient Chinese invaded and ruled the northwest for more than 400 years, influencing Korean culture. Mongols invaded the country in the 13th century, Japanese in the 16th, Manchus in the 17th. Fear of foreigners fostered isolationism, and Korea became the "Hermit Kingdom," closing its doors to all but the Chinese. Around the turn of the century, Japan fought China, then Russia over Korea, finally annexing it in 1910. Then followed 35 bitter years of Japanese colonialism.

"The Korean working class suffered under the feudal system," Kim went on. "Only a few lived in comfort. Today we are taught to sacrifice to achieve a more productive economy benefiting every member of society."

THE NEW REGIME of which he spoke with such pride rose after World War II. When the Japanese surrendered in 1945, Russian soldiers entered Korea north of the 38th parallel, the Americans south of it. Temporary division hardened into permanence

great speed have been harnessed by the government. The "Chollima movement" motivates the people to build a stronger nation. Beyond the avenue, a theater crowns a wooded hill called Moran Bong.

as reunification through diplomacy failed.

In 1948 Kim Il Sung, blooded in anti-Japanese guerrilla actions on the Korean-Manchurian border in the 1930's, became premier of the Democratic People's Republic of Korea. The South had already held elections under United Nations supervision, and Syngman Rhee became the first president of the Republic of Korea.

Later that year the Soviet Union announced the evacuation of its troops from the North, and six months later the United States occupation forces withdrew from South Korea, except for a 500-man military advisory group.

Reviewing Korean history with Kim rouses my memories of what came next.

It was June 25, 1950—a Sunday, I recall. I was playing with my sisters on the street in front of our house in Seoul. Suddenly a siren started to wail. Loudspeakers blared, "All military personnel report to your posts immediately. This is an emergency!" I was 10 years old and didn't know what was going on. People began running. The police told us to get inside. My father later explained to me that we were at war with the Communists of the North.

That evening I heard gunfire, and windows shattering. The sky was red, streaked with smoke, as if the whole city was burning.

I'll never forget the evacuation of Seoul and the flight southward—roads clogged

with vehicles, families separated in the confusion, children crying, women screaming; the hunger, the exhaustion, the terror. We were lucky. We made it together, my father and mother, six sisters, and I, to the southern port of Pusan, jammed in the back of a truck with several other families.

Many a day and night we spent in a cellar, listening to the thud of guns around the defense perimeter, the whine and crash of shells and bombs around us. Boyish curiosity at times overcame prudence, and I'd poke my head out to watch dogfights overhead.

When the United Nations forces finally broke out of Pusan and moved northward, we were able to return home. We found Seoul devastated, our house burned, my father's publishing business destroyed.

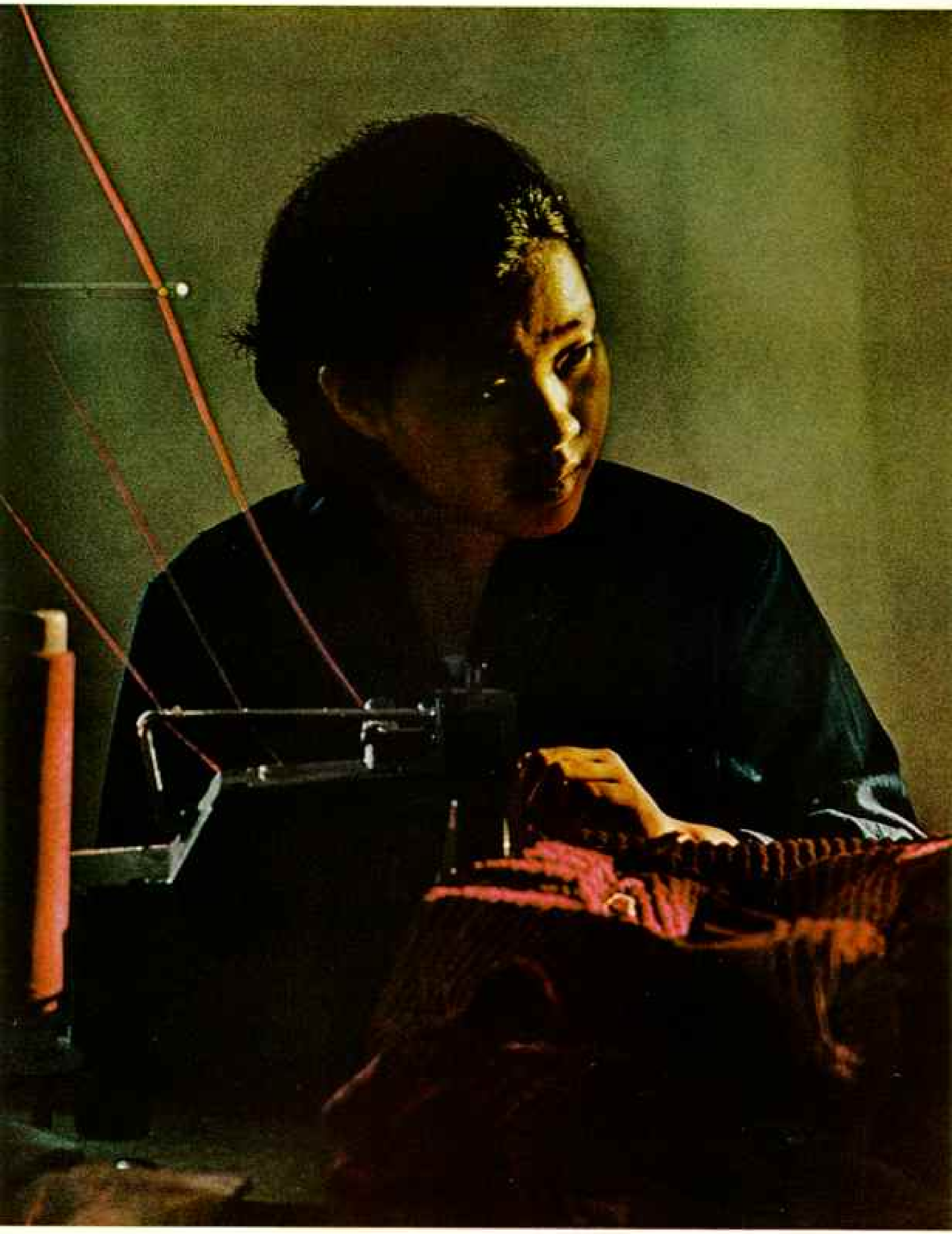
Pyongyang suffered even more. A *New York Times* correspondent described the city in October 1950: "The besieged capital of North Korea looks from the air like an empty citadel where death is king. It seems no longer to be a city at all. It is more like a blackened community of the dead. . . ." By the time of the armistice in 1953, only two buildings were left standing in all Pyongyang.

TODAY THE CITY is a proud symbol of North Korea's achievements. Totally rebuilt, Pyongyang has developed into an attractive center with a population of one million. Modern office buildings and high-rise apartments flank broad avenues lined with willows and interspersed with flower beds and monuments. A 22-story building at Kim Il Sung University (page 274), the 13-story tower of the Children's Palace, the Grand Theater, and a 600-foot concrete television tower mark the skyline. A pavilion with traditional wing-tipped tiled roof graces Moran Bong, a hill overlooking the Taedong River and its three bridges.

Directly below the hill the sports stadium seats 70,000 for soccer, track events, and mass gymnastics. On state occasions tens of thousands of students and workers with colored cards create tableaus the length of two football fields. They depict such scenes as Kim Il Sung's birthplace, armed forces repelling "U. S. aggressors," and smiling workers holding aloft hammers and sickles.

I encounter no traffic snarls. Working hours are staggered to ease rush-hour pressure on the buses. Government offices, open early and late, close three hours at midday.

Sun-spangled cotton feeds a sewing



machine in a Pyongyang garment factory; the operator stitches a child's corduroy jacket.

There are a few private cars, of Russian make, owned by managers and university professors, plus many chauffeur-driven black Mercedes for officials, and Korean-built trucks and jeeps.

Among the passersby I glimpse the yellow epaulets of army officers; little boys in bold bright colors, marching two by two; red-kerchiefed girls with pigtails gaily swaying; adults somberly clad.

Workers, soldiers, students sometimes bow or raise their right arms to salute as we drive by. This is a sign of respect for officials. Traditionally the Korean people honor those in positions of authority.

BUT I HAVE COME TO SEE more than a guided tour of Pyongyang. I have only been inside museums and exhibition halls, heard only the party line, spouted by guides and official tutors. I tell Park I have to talk with people and see where they live and work; I can't do a story looking at displays. He asks me to be patient; he will do his best.

Next day we visit Pyongyang's four-story Number 2 department store.

"You cannot compare what we have here to other nations with 200 years of industrial history," Park prepares me. "We have been a nation only 25 years, and have just begun to work on improving our living standards. We expect great changes for the people by the end of our Six-Year Plan, in 1976. This will go much faster, of course, if tension between North and South declines and we can reduce our military spending."

The department store is busy, and seems filled with everything from hand soap to toys to electric rice cookers to pianos. The manager, a plump middle-aged woman, comes over to talk with me.

"All the merchandise is domestically produced," she says proudly. "The quality may not always match that of other countries, but within a few years we'll produce as fine an item as anywhere."

Superproducers of the week are honored by a reception at the Kum Sung tractor factory near Kangson. A small band accompanies the presentation of paper-flower bouquets (**left and bottom**). Women lathe operators (**below**) labor toward the factory's 1976 goal of 30,000 tractors. Here, as in other plants, loudspeakers and posters constantly exhort workers to produce, produce, produce in the name of patriotism. Cash bonuses sweeten the hard work, a trend spurred by an increasing desire for consumer goods.

I check price tags: a 40-watt electric light bulb costs 40 cents; fine silk material, $4.50 a yard; a pair of shoes, $1 to $13, depending on quality; men's suits range from $10 to $30; wool blankets from $9 to $45; a child's bicycle is $10; a sewing machine, $100. Because privately owned stores do not exist, both city families and farm families buy identical national products at uniform prices.

As we pass a high-rise apartment complex later that day, Park asks if I would like to go in. Most people are away at work, but perhaps we can find someone at home. We meet a woman coming out of one of the buildings. She is rather attractive, in her thirties, and is wearing a blue *chima*, the traditional high-waisted flowing skirt, with matching short jacket, a *chogari*. Park asks if we may look at her apartment. It is not tidy, she says, and she's on her way grocery shopping. But Park persuades her to show me how she lives. We take the elevator.

Mrs. Choi Sung Nam's apartment looks

comfortable, with its two bedrooms, kitchen, and bathroom. Few personal belongings are in evidence, but the apartment has a small refrigerator, a sewing machine, and a black-and-white television set.

A ticket seller at a movie house, Mrs. Choi lives here with her husband, a factory worker, and 7-year-old daughter. They pay a rent of two *won* (about one U. S. dollar) a month during the summer and $2 in winter, to cover the cost of heating. Living expenses usually total $25 to $35—only about a third of their monthly income of $75 to $80.

"Our basic expenses are low because the government has given priority to food, housing, and clothing needs—and provides everyone with free school, free medical care, and old-age and disability pensions," Mrs. Choi explains. She and her husband help pare maintenance costs by performing chores assigned by an apartment captain.

I ask what she spends her savings on.

"On visiting our families in the country and on extras like the television set. It cost 160 won," Mrs. Choi replies.

Was this impromptu visit prearranged? I don't think so. During my stay I will see other apartments and hear other living costs much like this.

IF PARK IS ABLE TO OPEN one door, perhaps he can open another. Day after day I am given meals in the seclusion of the villa. I want to see the inside of a restaurant.

Park treats me to lunch. The restaurant, single story with large windows, is spacious and pleasant. It has a large dining area and small side rooms with a single table in each. We are seated near a group of men in business suits and a couple with two small children, perhaps on their month of annual vacation. Young waitresses serve us swiftly and politely. We have a Pyongyang specialty, *nang myon:* buckwheat noodles in a chilled beef soup, garnished with sliced boiled egg, pear, pork, pickled vegetables, and pine nuts. It lives up to its reputation.

Park even takes me to a movie. Unlike Seoul, which has wide-open night life, Pyongyang offers little entertainment. The theater is packed for the one early-evening showing (school and factory groups have special shows at other times). The movie is wide-screen, Korean-made, technically excellent. It tells a story of the Korean War; how a family in the mountains heroically fought invaders.

I find the same fare on the television set in the villa. "Sea of Blood," portraying a Korean family's struggle against the Japanese, was written by the president himself. On the one channel, evenings only, I also tune in a panel of professors discussing how to implement North Korea's economic program (remarkably little difference of opinion); a lecture on how to avoid catching a cold; advice on airing bedding in the sun and beating it with sticks.

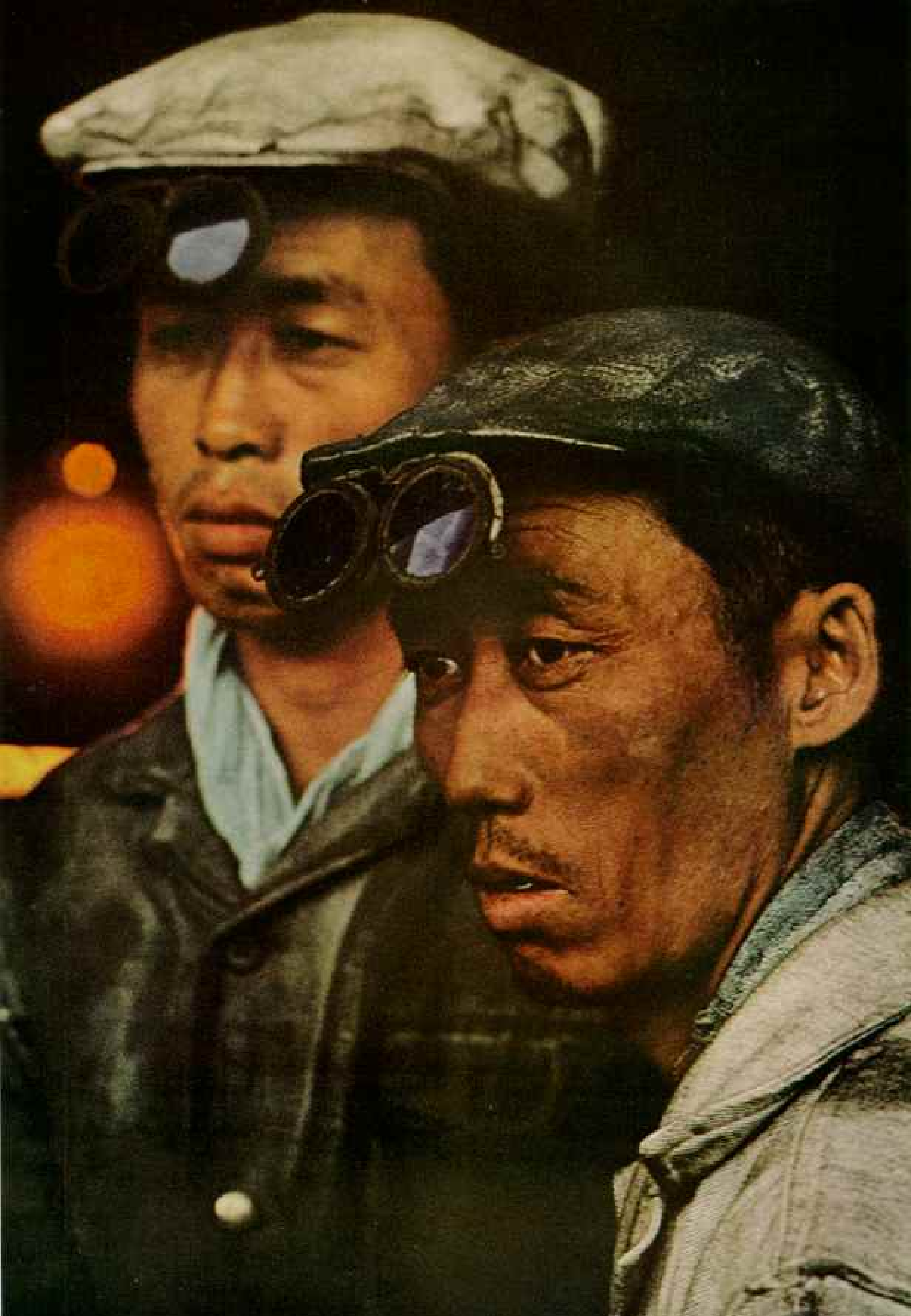
BY NOW THE VILLA has lost its charm. I know the marble steps, the red carpets, each picture, each shelf of books by or about Kim Il Sung. Every morning I find two newspapers on the living-room table, exactly the same except for the makeup. I read of the worldwide oil shortage. Any U. S. news? Certainly. A Florida millionaire dies, leaving his money to his pet dogs. Comment: In that great country humans serve dogs.

Precious days are slipping away and still no word about my itinerary. I've seen the capital, but there are 14 million more North Koreans and a lot of country to see. I pace the garden. There is no fence; just a ring of trees and open farmland beyond. But I feel thwarted, trapped. I let Park know that I am getting restless. In his mid-forties, Park O-Tae is serious minded and responsible, a reasonable man trying to do his job, just as I am trying to do mine. But I tell him I must get going. I want to go to Wonsan, a port city on the east coast. And I'd like a daytime train so I can see the countryside.

That evening Park spends much time on the telephone. Yes, we can take a daytime train. But we leave at midnight.

I awake early to try to glimpse the scenery from the sleeping car. Park still sleeps. Through the dawn fog, I see the outline of a mountain range and the tiny figures of farm workers going out to work the fields. How

Industrial miracle makers, these workers at Songnim helped produce more than a million tons of steel last year. The plant was devastated in 1945 by fleeing Japanese, restored, destroyed in the Korean War, and again rebuilt. Ironically, Japan's exploitation of northern Korea's rich mineral resources created the framework for today's industry.



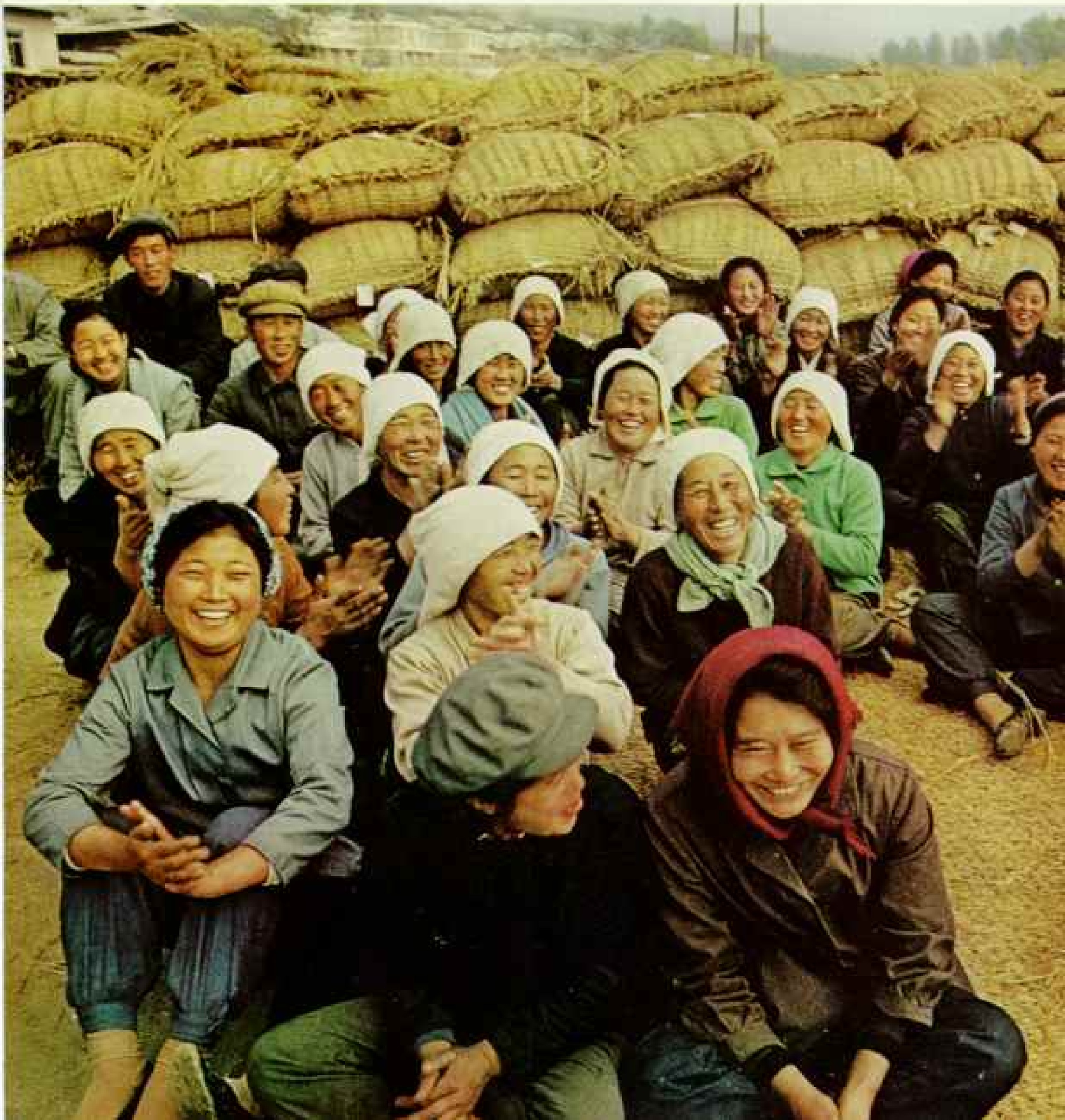
serene and beautiful! The scene reminds me of old Korean paintings. But the platoons of soldiers with machine guns we pass at a station don't fit this peaceful landscape.

Wonsan, destroyed by wartime bombing and naval bombardment, today wears a clean, modern face. Its tall buildings look over the harbor to the East Sea, as Koreans call the Sea of Japan. Park gets us on a patrol boat for a harbor tour.

Under way, an officer points to two rocks about a mile and a half to seaward. It was beyond those rocks, he says, in January 1968 that North Koreans captured the American spy ship *Pueblo*. I ask where the *Pueblo* is being kept. A military secret, he replies. A MIG-21 whistles overhead and circles the harbor. "We must keep constantly on the lookout for aggressors."

Near Wonsan spreads a beach with pure white sand and crystal water. A beautiful place, Songdowon, with gnarled pine trees bending toward the East Sea. The strand is deserted except for a few children.

Strolling along the beach, enjoying the fresh sea breezes, I come to a sign, "Men," then farther on another, "Women." Park explains that the beach is divided into two sections because "the people prefer it this way." Then, full of curiosity, he asks, "Is it true



there are places in America where men and women do not wear any clothes?"

I laugh. "You mean nudist camps."

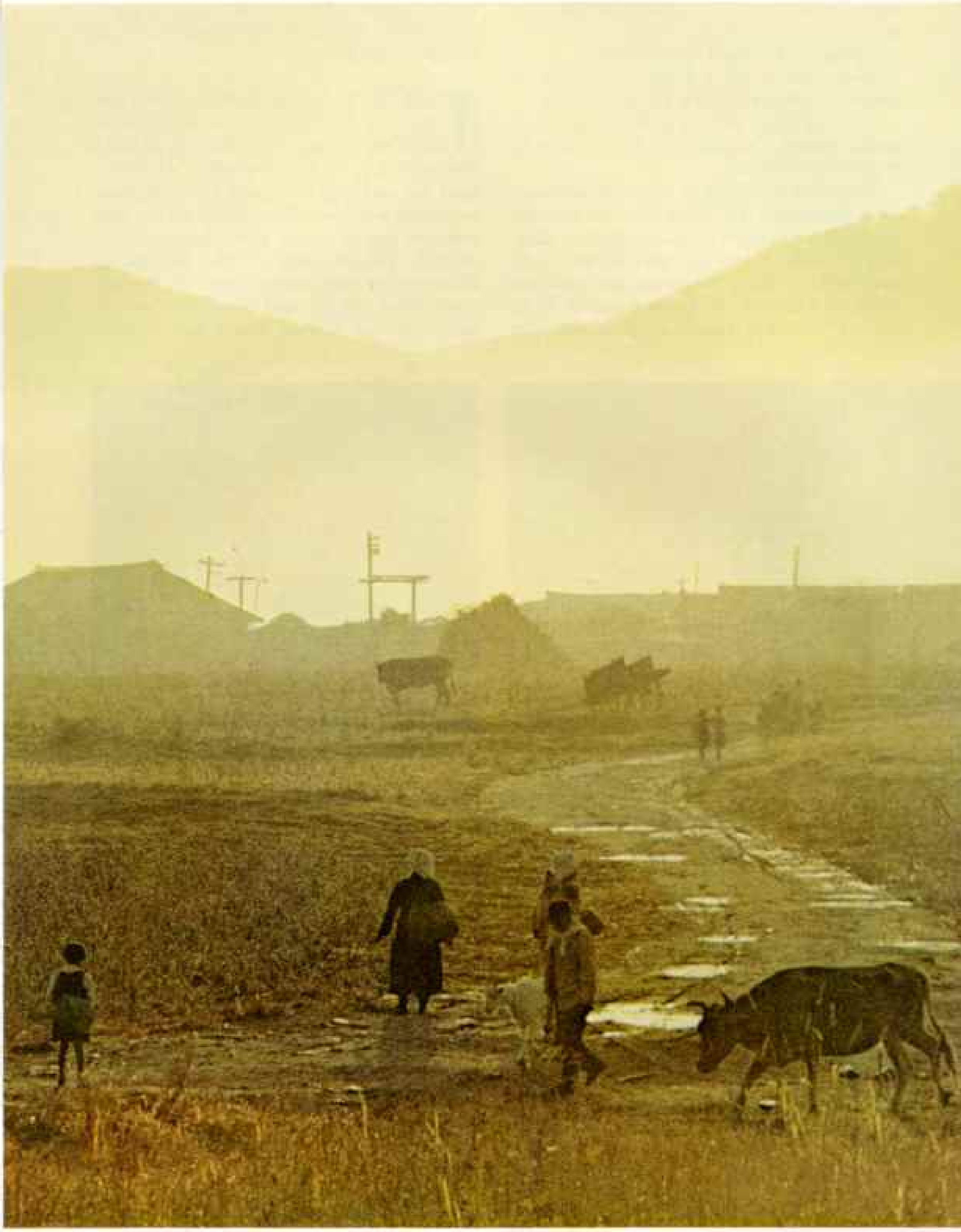
"How can it be possible for grown-up people to behave in such a manner?"

I assure him very few Americans join nudist camps. I'm glad that I don't have to explain streaking.

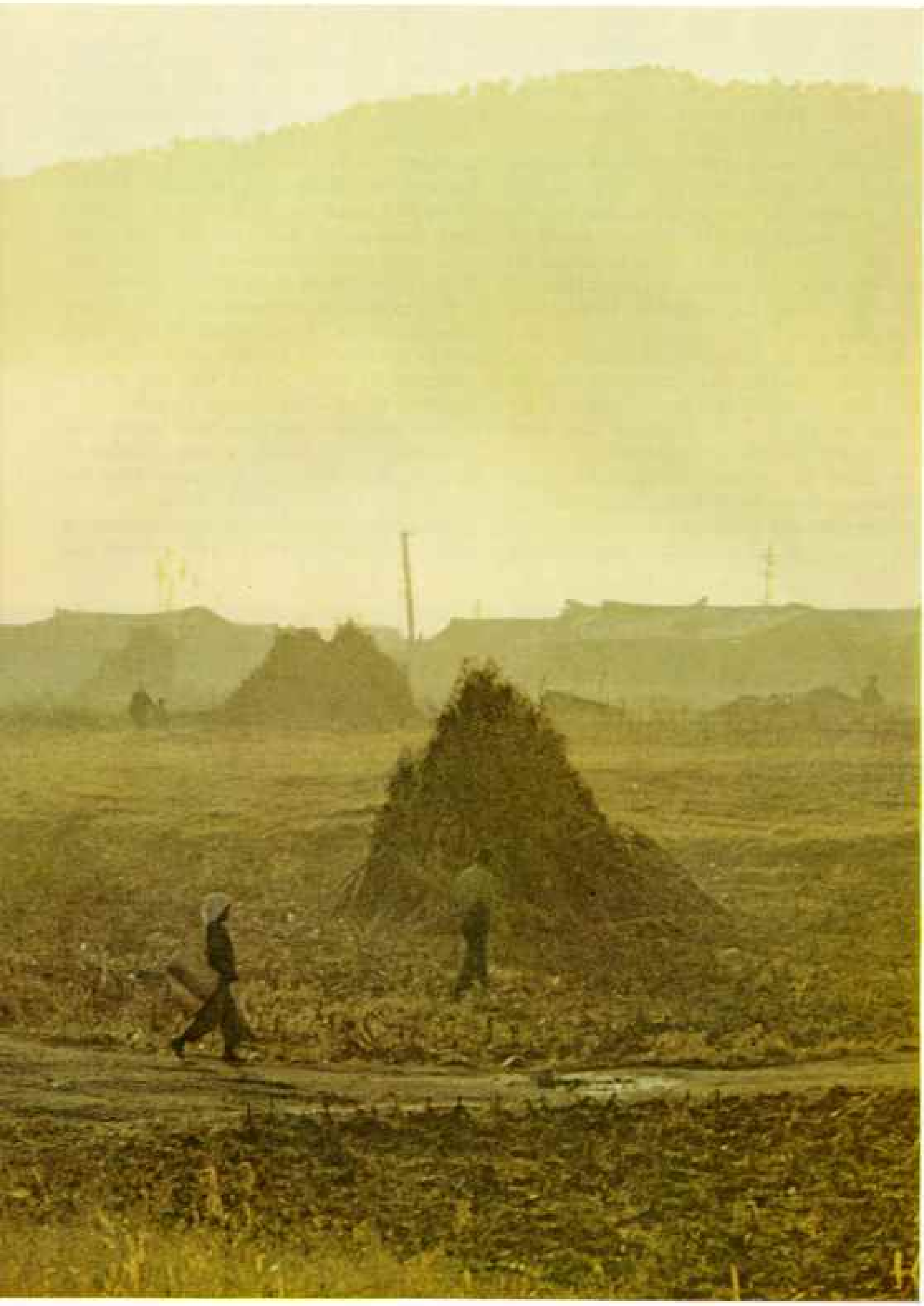
The "new morality" of the West has made little impression on North Korea's younger generation. I seldom see expressions of affection in public. Social activities for the young are mostly in organized groups, and marriage before the age of 25 is discouraged. Even when I was a boy, family-arranged marriage was common in Korea. Now young adults in North Korea find mates through work, social, and study programs.

REFRESHED by the sparkling sand and water of Songdowon, we head north. Again we have a chauffeur-driven black Mercedes. It is not long before the skies overhead are darkened by smoke billowing from seemingly hundreds of smokestacks. We have come to one of Asia's most impressive industrial concentrations. The Hamhung-Hungnam complex manufactures bulldozers, small ships, electric and diesel locomotives, and 6,000-ton presses. North Korea sends

Grinning gallery of field hands applauds its own song during a work break at Chongsan-ri, a model collective farm. Behind them, sacks of rice await transport. In the nation's southwest, a woman picks apples (**above**). Mountainous terrain restricts farming in the northern half of the peninsula, which once depended on the southern for food. Today, mechanization, irrigation, and fertilizers enable North Korea to feed itself.



Brushed with harvest hues, the "Land of Morning Calm" stirs to life in an early October dawn.



Villagers and livestock make their way to fields south of Pyongyang. Such rustic scenes are increasingly rare in North Korea, where 3,800 collective farms bristle with tractors and other machinery.

locomotives to the Soviet Union, synthetics to China, machine tools to Europe, farm machinery and chemical fertilizers to Africa and Latin America. In the all-out drive for production, pollution has not been a concern. It may soon become one.

Billions of tons of coal and two billion tons of iron ore can be mined to feed and fuel heavy industries. North Korea has 80 percent of the peninsula's known wealth in minerals, some 300 kinds. It ranks among the world's top 12 nations in production of graphite, magnesite, tungsten, barite, lead, zinc, and gold.

One resource it lacks—petroleum. So railroads and waterways are used more than the two-lane concrete highways, which I see empty of all but a few official cars, farm equipment, and military vehicles.

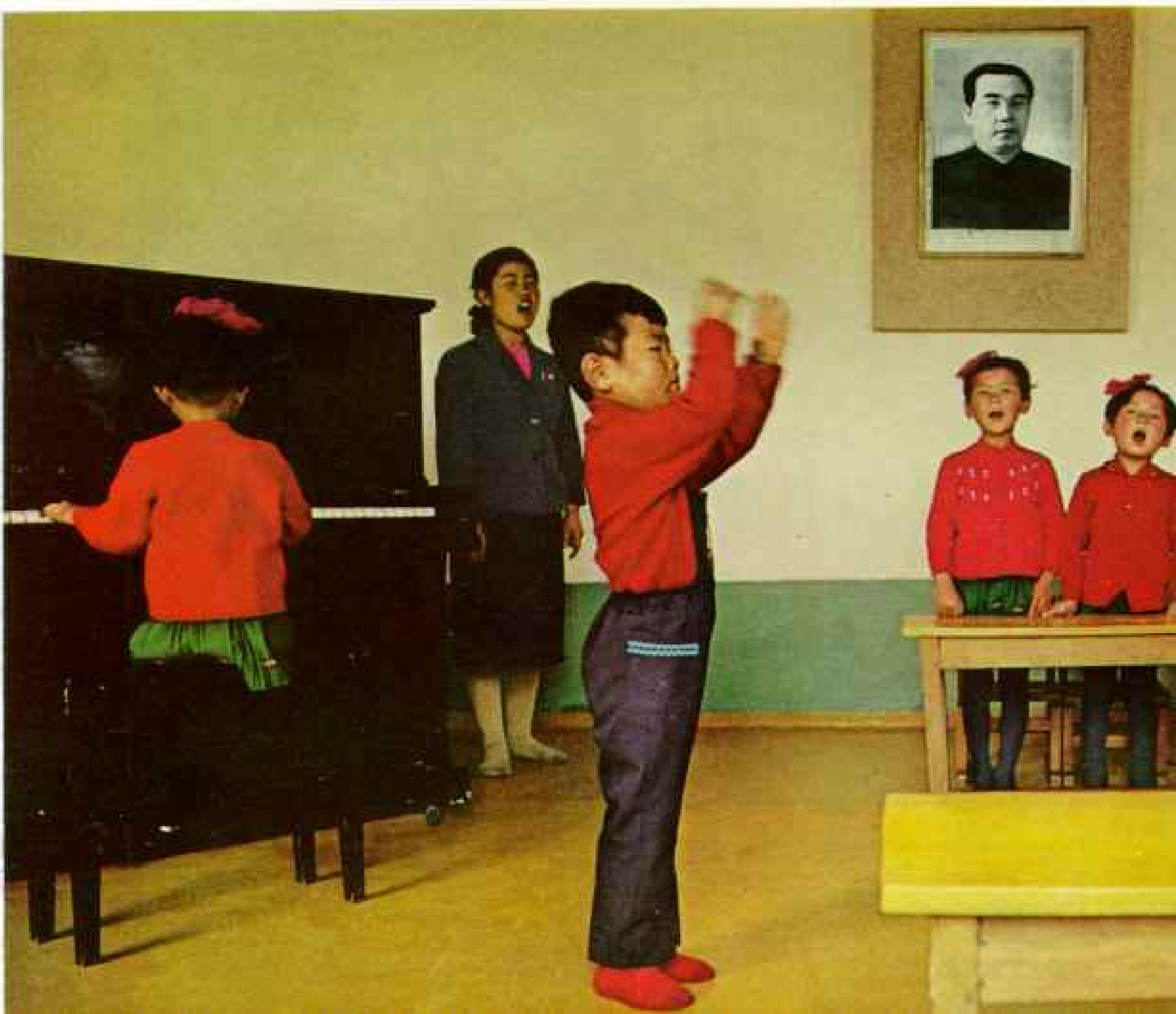
Cutting oil and other imports to a bare minimum keeps North Korea from being dependent on any other country. *Juche*—self-reliance—is an official slogan. Exemplifying it, a Korean scientist, Lee Sung Gi, has been acclaimed for his discovery of Vinalon, a synthetic produced from native limestone. Since clothing can be made from Vinalon, North Korea no longer needs to import cotton.

Sometimes the push for self-sufficiency has amusing results. At the Kum Sung tractor factory near Kangson, production director Hong Ju Sae tells me the story of the nation's first domestically built tractor. The plant made only agricultural tools. But in 1958 Kim Il Sung directed it to manufacture tractors.

"We tried to get construction manuals from other countries," Hong recalls. "They would sell us tractors, but not give us plans. So we struggled 35 days to put our first tractor together. It ran—but only backward."

Two years later the Kum Sung factory was producing 3,000 tractors a year, capable of going both forward and in reverse. Now the production goal is 30,000 by 1976.

Touring the plant, I hear slogans and march music over loudspeakers. "Let us build our



socialist society with sweat and blood," read big-lettered signs. Photographs of outstanding workers, production graphs, posters urging higher output are displayed. I witness the weekly ceremony honoring the best producers (pages 262-3). A small brass band plays as fellow workers present artificial flowers to their "heroes."

THE JAPANESE, exploiting North Korea's mineral resources, built large industrial plants. When they left in 1945, they destroyed the steel mill at Songnim, saying the Koreans could never rebuild it in a hundred years. It took three years. Again destroyed in the Korean War, the mill swiftly began to rise once more. Park tells me that just three days after the ceasefire he came from the front line to join in the reconstruction.

"There was nothing left standing but a couple of smokestacks. We pitched tents nearby and worked day and night. Several years later I returned for the opening ceremony. When I saw the red glow of the molten steel, tears came to my eyes. Now look at it! It produces more than a million tons a year."

Songnim's Chollima Hwanghae steel mill employs 8,000 people, each earning from 75 to 200 won a month. It has its own hospital, provides a clinic for each of its eight divisions, and offers a day-care center and weekly medical checkups. Workers doing heavy labor get extra eggs and meat and a six-hour instead of an eight-hour day. The work week, of course, remains the standard six days, with "voluntary" Sunday projects.

Like other industrial towns, and farming villages too, this town follows Kim Il Sung's educative blueprint by providing a nursery school. The "baby palace" they call it. In President Kim's words, "Children are kings, and they should have nothing but the best."

I recall my own upbringing as strict but loving. South Koreans favor large families; the father is dominant, the mother passive and home-centered; grandparents, aunts and

Sing a song of Kim Il Sung. A solemn conductor leads kindergartners in patriotic songs (**left**), many of which laud their president. His portrait hangs on the wall, as in every home and factory. At a day-care center in Songnim (**above**), a grim poster depicts patriotic tots shooting a "U. S. imperialist monster."

Every school, as well as each village and city district, has a library and study hall, where children and their parents learn the precepts of the president and check out books for self-education. Children enter day-care centers at three months, freeing mothers for jobs. They go to kindergarten at age 5, then receive ten years of compulsory schooling.

Trained in stagemanship at An Hac Junior High School on Pyongyang's outskirts, 10-year-old accordionists smile through a song called "We Are the Happiest Children in the World." To balance out his education, each student masters a musical instrument, as well as a utilitarian skill such as sewing or lathe operation.

uncles also play important roles in a youngster's life, instilling traditional values.

Here in North Korea maternal and grandparental influence seems weakened. Day-care centers and nursery schools give an early socialist indoctrination, and free women to join the labor force. Women make up a third of the industrial workers, and more than half of all farm workers. Military service falls equally on both sexes.

We visit Songnim's four-story baby palace, housing 2,000 children under six. I see wading pools, skylighted playrooms where youngsters are riding miniature trains and airplanes; I chat with some of the 300 teachers and 100 part-time helpers.

BUT OUR TOUR is not all factories and baby palaces. I have long wanted to see the fabled Kumgang San—the Diamond Mountains—celebrated in Korean theater and song (page 276). Everyone wished to see them before he died, I remember hearing.

For four hours, with Park puffing along, I climb steep rocky slopes, half the way by steel ladders. At last I reach a legendary beauty spot—eight rock-cradled, jade-green pools in which eight fairies once slid down a rainbow to bathe. I am exhausted but enchanted, my wish fulfilled.

Traveling north along the east coast, Park and I come upon the village of Namae-ri, nestled between rocky, pine-clad headlands along a scallop of sand. The day is cloudy and the scene quiet: a few men cleaning nets and an artist capturing the gray sea on white canvas. An old-timer with deeply furrowed face and gnarled hands is tying his boat at the pier. How's the fishing? I ask.

"Too much wind," he says. "I caught only a few codfish." I admire his catch.

Park explains who I am. "We don't have many visitors here," the fisherman says. "If you are not in any hurry, I'll be happy to cook you some of my fish."

The lunch is a feast. Never have I had so much seafood served in so many ways. Codfish soup, raw octopus, broiled salted flatfish, pickled herring—except for rice, everything on the table came from the sea. The 300 villagers fish only to supplement their farm income, I learn. But elsewhere on the east coast, fishing is a large industry. The presence of both warm and cold currents in the East Sea makes for variety.

The fisherman's warmth and hospitality

remind me of the times I stayed in village homes while traveling about South Korea taking pictures during my early days as a photographer. This terrain, however, I find more mountainous, with farming largely concentrated in the coastal plains and river valleys. Terraced hillsides attest that every possible bit of land is cultivated.

The agricultural south historically provided rice for the north. But when the peninsula was divided, the North Koreans modernized their agriculture and now claim self-sufficiency. I am surprised to see so much farm machinery, irrigation channels lacing the fields, and sprinkler systems watering the vegetable crops. Farms have been collectivized into some 3,800 cooperatives.

At the Chongsan-ri cooperative farm, 20 miles west of Pyongyang, 650 families cultivate 3,000 acres of land. They plant 1,600 in rice, 500 in fruit, and grow vegetables and other crops on the rest. They harvest bumper yields that provide family incomes ranging from 3,500 won ($1,750) to 8,000 won ($4,000), plus 7 to 10 tons of grain, depending on how many family members work. Living conditions in their well-run village strike me as better than in other co-ops I have visited—for example, the one near Kunu-ri, where family income averages 2,500 won ($1,250) and 5 tons of rice a year. But Chongsan-ri is the pacesetter for the nation. Exhibits record that President Kim has visited this model farm 62 times since 1960.

MY HOSTS naturally try to show me the best, and despite the controls on my movements, I feel I am getting somewhere. Park O-Tae also has become quite interested in the success of my story.

At first he couldn't get over his amazement at the 14 pieces of baggage I arrived with at Pyongyang. Fourteen pieces? How could anyone need that much for a short visit? Now he knows, and he's endlessly curious about the photographic gear I carry. He helps set up the lights for interior shots and gets up in the predawn chill so I can make early-morning pictures. Park himself enjoys taking pictures of his college-age son and high-school daughter. "She is very beautiful," he confides, parental pride suffusing his usually impassive features. He asks about the health of my elderly parents in Seoul. I like Park—even when he asserts his official side.

Take the time a little boy dashed out of a house naked, with his sister chasing after him. As I tried to capture the village scene, the children running and laughing in the early-evening light, Park "accidentally" got in my way. Apologetically, he explained: "Such a photograph might be used as propaganda depicting North Korean children as so poor they run around the streets without clothes."

Our car halts at a checkpoint. Two soldiers with searchlights check the papers of the truck in front of us. Every North Korean carries an identity card. Park gets out to show his. We must be near Pyongyang, as all roads leading into cities have armed roadblocks. Soon we are back at the villa, and some of its charm seems to have returned.

NOT THAT I AM EVER FREE of surveillance. A barber arrives at the guesthouse one day. I feel annoyed because I haven't asked for a barber. I don't need a haircut. But compared to the short haircuts about me, my hair length, barely touching the ears, must vex officials. I turn conformist and allow myself to be shorn. Hair grows back.

The barber, Lim Hyun Je, 56, is well-educated, judging by the way he speaks.

Lim was born in South Korea and, like most Koreans who grew up during the Japanese occupation, did not finish grade school. Few schools were available, and most Korean children were too poor to attend.

As he snips away my offending locks, he tells me: "For 15 years I have studied two hours every weekday and three on Sunday. Our respected and beloved President Kim Il Sung asks everyone to study two hours a day. When the program started, I couldn't see why a barber should study all the time. But everybody else was, so I too started reading books."

"What kind do you read?" I ask.

"Almost any subject I can get hold of, as long as it is informative and constructive. I am reading a book on electronics now."

"Where do you get these books?" I ask.

"Study halls," he replies. "Every village and city district has President Kim Il Sung Historical Revolutionary Movement Study Halls. They are also cultural centers where we attend meetings and lectures."

North Korea's schools are clean, spacious, well-equipped. Under the compulsory education program, children attend six days a week for ten years. Stress is placed on group singing, gymnastics, and dance, and such individual skills as wireless communication, automotive

repair, and sewing. Everyone learns to play a musical instrument.

Students also make extracurricular tours to museums, factories, and farms. I often see them in their red neckerchiefs marching to and from such activities. On Sunday mornings, with shovels slung over their shoulders, groups set out together to help farmers or work on building projects.

At An Hac Junior High School, on the outskirts of Pyongyang, a music class of 10- to 12-year-olds performs just for me. They enthusiastically sing "We Wish Marshal Kim Il Sung a Long Life and Good Health," accompanied by a 30-piece student orchestra. In another number, "We Are the Happiest Children in the World," a dozen smiling 10-year-old girls in their floral-patterned national dresses sing and play the accordion, a popular instrument among Koreans (page 272).

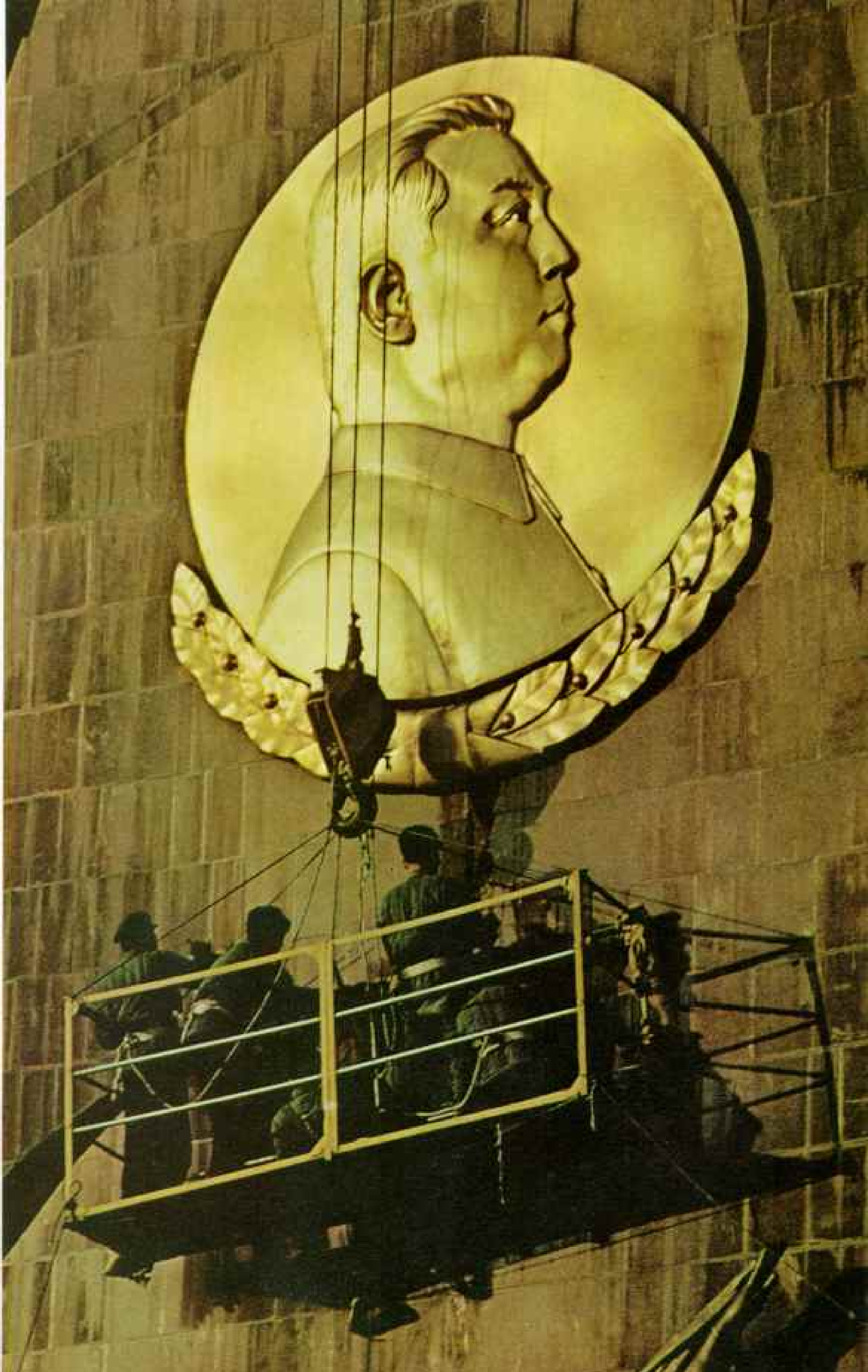
"Really cute, aren't they?" remarks Principal Cho Hac Suk, a satisfied smile on his weathered face. They are mostly the children of miners, he tells me. His school has one teacher for every 17 students, who are organized in study groups of five, each under a captain who supervises their homework and group activities. "This year we will graduate about 140. Six out of ten will go on to colleges and technical schools after their customary three or four years of military service."

"Do students get to choose their colleges and subjects of study?" I ask.

"Of course. But we do have a committee that evaluates a student's qualifications and talents and offers proper guidance."

A COMMITTEE apparently considers my education incomplete. They have Park take me on a two-hour drive south to the Museum of American Imperialist Atrocities at Sinchon. I have already seen more than enough anti-American displays—even in Songnim's baby palace, a poster of Korean toddlers shooting a monster labeled "U.S.A." (page 271). Nothing, however, has prepared me for this.

"**Sun of the nation,**" Kim Il Sung shines from a golden medallion on a Pyongyang monument, here undergoing a cleanup (**right**). Another presidential monument in the capital is the 15,000-student Kim Il Sung University (**left**). Uniformed girls march beneath a 22-story campus building.



For nearly three hours I am subjected to the savagery of war—photographs of mutilated bodies and other "evidence" of American "atrocities," including the annihilation of 35,383 inhabitants of Sinchon. An attractive guide with delicate features recites each fiendish story in sickening detail.

When I finally escape from the "House of Horrors," it is dark and raining. The cold raindrops and somber setting reflect my mood. As we drive through the wet countryside, I am disappointed and saddened by the thought of a new generation learning to regard the American people as aggressors.

Park interrupts my thoughts. "During the war the American soldiers destroyed our homes, our land, our people. Even after the armistice was signed, the United States has continued its aggressions—the *Pueblo* incident, and other spy activities since. This puts us in a tense situation."

I glance at my companion searchingly in the light from a passing car. I see the mask of the official. "As our beloved President Kim Il Sung teaches, if we don't educate our people to hate our enemies, we will not be able to defeat them, since they have technological superiority. That is why we educate our younger generation against the American imperialists —so they will not forget their enemy."

The windshield wipers beat monotonously, sloshing a hole in the tunnel of darkness. An occasional farmhouse comes into view, lighted against shadowy valley walls. Smoke issues from the chimneys. The homes look warm and inviting.

"Please understand," Park adds, "we oppose the policies of the American Government, but not the American people."

A BEAUTIFUL LAKE, Samil Po, lies at the foot of a high cliff in the mountains along the east coast, just a few miles from the Demilitarized Zone. It is a lovely spot. The water is deep and very cold. The cliffs are covered with pine trees, rooted deeply in the stony soil. A pavilion, perched atop the highest cliff, overlooks the lake and the docks where I lie soaking up the late-October sun. Park has gotten a rod and some worms and is enjoying himself fishing.

As I take in the tranquility, I have much to ponder. My visit will soon end. Instead of the six to eight weeks I have requested, I am granted 20 days. Instead of a three-page list of places throughout the country, I get to tour only the southern half.

BUT I HAVE SEEN MUCH, and I have learned what is foremost in every North Korean's mind. Unification. It is a theme expressed in kindergartners' songs and dances, in the slogans of officials, in the conversations of students, workers, and farmers. Reunification of the peninsula, they say, would mean a single force of fifty million people, nourished by a deep-rooted national heritage, contributing to the economic and intellectual development of East Asia.

One after another, the North Koreans I have met express willingness to spend their life savings on reunification. When I seem skeptical, a farmer asks, "Wouldn't you give your savings to free your brothers and sisters from hunger and poverty? We think people in the South are our brothers and sisters."

Relaxing now at lakeside, I become aware of the sound of singing. I look up toward the pavilion and see uniforms. I cannot see the faces but, from the sound of their voices, these soldiers seem no older than 17 or 18. They are singing patriotic songs, one with a line something like, "We will be happy to die to protect our country against foreign invaders." Martial songs—but the singing has a strange quality to it; it sounds sad and hollow. I wonder if the youngsters are homesick.

How sad to think that these faceless young soldiers may have to sacrifice themselves if something should disturb the tenuous balance of peace. Too many tears and too much blood have already been shed by one people over a conflict in ideologies. I fervently hope these young men will never again have to fight their brothers.

On a hill not far from here a young captain fought and died, a boy of 18.

My brother. □

Gargoyles of granite decorate the mountain architecture of Kumgang San, near the Demarcation Line that separates North and South. With one of the highest per-capita defense budgets in Asia, North Korea lives in the atmosphere of a besieged fortress. Yet Koreans, North and South, consider themselves one people. The chances for peaceful reunification, dim for two decades, may now brighten as access to North Korea widens.

The "Lone" Coyote

By HOPE RYDEN

Photographs by the author and DAVID HISER

Likes Family Life

DAVID HISER

THE DOGLIKE FORM disappearing into the night carried something limp in its mouth.

"She's moving her pups," I thought. I longed to follow her, for I had gone to much trouble to find and stake out her present den. But I dared not move for fear of panicking the entire family. I could only wait while she relocated her nine pups in a new home, somewhere out there on Wyoming's vast National Elk Refuge.

Only those who have searched for coyote dens know how difficult such a task can be. With the help of retired government trapper Vernon E. Dorn and rancher Lloyd Tillett, I had scouted Wyoming and Montana, looking for the right place to begin a field study of coyote family life. But coyotes, I discovered, were not as populous as statements by the livestock industry had led me to expect.

The coyote is the most controversial wild animal in the United States. Western sheep ranchers, who operate on a narrow economic margin, claim high losses to coyotes and have called for the government to rescind its 1972 order banning poison on public lands.

Environmentalists do not accept the woolgrowers' claims, reminding them that their loss estimates in many areas were the same or higher during the years when poison was in

Now you see him—now you don't. Legendary medicine wolf of the Indians, hated nemesis of sheepmen, and haunting tenor to the western moon, a coyote peeks cautiously over a snowdrift. Endowed with an uncanny ability to survive, he and his kind have long eluded attempts at both extermination and scientific scrutiny. After an extensive field study in Wyoming, the author concludes that the reputed loner is in fact a socially complex creature dedicated to its family and bound to its clan.

A FROLIC? *A struggle for footing in the drifts? A touch of locoweed? Arched like a porpoise, a Yellowstone Park coyote takes a curious leap in a sea of snow. For the rest of the story, see the following page.*

DAVID HUSH

HOPE RYDEN (ABOVE) AND DAVID RYDEN

Aha! A better mousetrap! Before making a leap like the one shown in the preceding photograph, a hunter cocks his ears to pinpoint the sound of scurrying (**top**). After a dive into the drift, a coyote gulps a luckless mouse (**above**) that had been wintering in an air pocket under the snow. At 20 to 40 pounds—a third or less the weight of his cousin the wolf—the coyote combines hair-trigger reflexes with superbly sensitive eyes, ears, and nose.

widespread use. Poison, they say, is a poor solution to predation, for it often kills species for which it was not intended.

The effects of past poisonings made my studies difficult. I wanted to answer two key questions about social interaction of coyotes at a den: Do coyotes form bonds with other coyotes, and, if so, do they cooperate as a pack? But where I was looking—on public lands where sheep are grazed—the coyote population had been reduced. The few coyotes we sighted were separated by vast distances, and we did not find a single active den. Even if I were to find a denning family, I began to worry that this long harassment would have so altered their behavior as to make them unsuitable subjects.

In the end, my guides advised me to look in a protected area, such as a national park. But my time on the sheep ranges had not been lost, for it taught me much about tracking coyotes, a technique fraught with problems. The coyote is small, masterful at hiding, camouflaged by a tawny coat tipped with gray and rust, and endowed with excellent hearing, sight, and sense of smell. It makes itself invisible, but misses nothing.

Finally, in the spring of 1972, I did find a den containing three pups born to a red-legged female on the National Elk Refuge in western Wyoming. A year later I returned to find the same female with a new and bigger family. Over those two seasons, even after the mother coyote moved her nine pups under my nose that dark night, I was able to complete a unique study of coyote family life.

Park a Haven for Many Species

The 23,860-acre elk refuge lies in a mountain-ringed valley and affords spectacular views of the Grand Tetons. But what made it the ideal setting for my purpose is that it gives protection not only to the 7,500 elk that winter there, but also to coyotes, eagles, sandhill cranes, trumpeter swans, badgers, and all its other wildlife. And refuge manager Don Redfearn, after approving my study, permitted me special access to areas that are off limits to casual visitors.

Many observers have assumed that the coyote is a loner because it so often is sighted by itself. They theorize that since it needs no partner to catch the rabbits and rodents that make up its normal diet, the coyote has not evolved a society. By contrast, its closest kin, the wolf, which can weigh three to five times as much, must generally hunt in packs to capture animals large enough to sustain it.

The view of the coyote as a loner is supported by a recent study in Minnesota that shows 60 percent of the study group traveling singly in winter and 40 percent with only one other coyote. And yet Westerners know that numbers of coyotes regularly assemble to howl and on rare occasions are sighted running together. Moreover, during the 19th century, explorers of the Far West described coyotes as even more sociable than wolves.

My own observations suggest a possible

reconciliation of these seemingly contradictory views. The animals I studied, though they almost always hunted alone, were similar to the wolf in forming bonds with selected members of their species. Friendly animals not only recognized and greeted one another but also cooperated in many ways. On one occasion I saw two coyotes team up to force ground squirrels from burrows. While one dug out the front entrance, the other waited at a back door with open jaws.

Mama Red Legs Has Lots of Help

During my first spring on the refuge, I identified six adult coyotes that lived in an area of roughly five square miles, including the long Miller Butte, a wide meadow, and a marsh. Any strange coyote that trespassed on this territorial claim was summarily driven off by members of my Miller Butte clan. The animals thereby assured themselves an adequate supply of mice and other rodents.

Even more interesting than their defense of territory was their cooperation in rearing three pups born to one member, which I named Mama Red Legs. Two pack members, Brownie and Harness Marks, helped Mama and her mate, Gray Dog, feed the pups.

Furthermore, the entire group of adults lavished attention on the babies, which apparently were never left untended. When Mama grew weary of her young, she emitted a long howl, which would bring in a relief shift. Usually it was Brownie who responded; an unmated female, she was devoted to the pups. But when Mama was on duty, Mama did not allow Brownie to play with them.

The pups made little distinction between their mother and other pack members; they mobbed every adult who approached. Then, after ascertaining that there was no milk, the chocolate-colored pups would crawl all over their baby-sitters, chewing their ears and tugging at their tails.

Brownie put up with more abuse than did the pups' own mother. And no maternal hormone could account for the valiant stand she made one day when a 25-pound badger tried to penetrate the den.

As the animated bulldozer began rapid excavation, Brownie sprang from the brush and, terrierlike, circled the tunneling badger with tense ferocity. Her quick dashes and lightning retreats gradually worried the bristling badger farther and farther from the den. At last the two vanished behind a hill.

Pack cooperation has obvious survival value. Should both parents be killed, the pups would assuredly be reared. This social trait helps explain why *Canis latrans* has held its own despite the traps, guns, and poisoned baits that have decimated many other species in North America.

The following figures give some idea of the extent of that devastation. During past decades, largely to protect livestock interests, the Interior Department's predator and rodent controllers introduced on millions of acres of public lands strychnine, cyanide, and the slow-to-degrade poison "1080." In a typical year in the 1960's these killed, by official count, not only 89,653 coyotes, but also 20,780 lynx and bobcats, 24,273 foxes, 19,052 skunks, 10,078 raccoons, 7,615 opossums, 6,941 badgers, 842 bears, 2,779 wolves, 294 mountain lions, and an unknown number of eagles, condors, and other birds.

And the dismal toll does not include poisoned animals never found. It *does* include two animals on the endangered-species list: the kit fox and red wolf, and two others that appear slated for that distinction, the grizzly bear and the lynx.

An Uncertain Howl in the Northeast

Some people insist that, despite such massive destruction, the coyote population has burgeoned. But studies indicate that in some states the coyote population is definitely on the decline.

Evidence that the coyote has extended its range does not support the view that its numbers are on the increase. Disturbed animals tend to migrate. Moreover, there is a question as to the true identity of the animals that have recently appeared in the Northeast. The coyote, wolf, and dog are so closely related they can interbreed and produce fertile offspring. When oversize canids were first sighted in New Hampshire, many people believed them to be coydogs. But several scientific studies have laid that theory to rest, while uncovering

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The Author: A naturalist-photographer-writer, Hope Ryden insists on "living with" an animal in the wild before she publishes. She spent four years in remote habitats for her GEOGRAPHIC article, "On the Track of the West's Wild Horses" (January 1971), and her award-winning book, *America's Last Wild Horses*. For the present article, and a book soon to be published, she spent two springs observing coyote families, learning things about their behavior that had never been known.

Glowing eyes of a hungry coyote scan the sky for circling ravens (**left**). The birds locate carrion, sparing the coyote a random search through deep snow that could leave it footsore and exhausted. Conversely, in summer ravens often depend on the coyote's leftovers. Here incongruous partners share the remains of a fallen elk (**right**). Dining mainly on carrion and small animals, the coyote never wastes energy by attacking a healthy, full-grown elk or deer. Unfortunately, it has learned that domestic lambs offer little resistance.

DAVID HISER (ABOVE) AND HOPE HISER

Hunched in suspicion at the deadly smell of man, a young coyote (**left**) sniffs at the stomach pouch of an elk discarded by poachers in Yellowstone Park. Magpies scavenge recklessly on the blood-stained snow, but the hungry coyote fears the offal; human scent means poison bait, traps, and guns to a species conditioned to danger by years of guerrilla warfare with ranchers.

Despite the protests of sheepmen, who blame coyotes for extensive slaughter, poisoning on public land was recently halted by the Federal Government because it was nonselective. Besides killing coyotes, the cyanide, strychnine, and "1080" poisons were also destroying many other animals, some on the endangered-species list. Selective trapping and shooting of coyotes that are suspected lamb predators has been effective in Kansas, Missouri, and South Dakota.

But sheepmen generally feel that only resumed poisoning in high-predation areas will save them from economic disaster. An ironic bumper sticker seen in the West says: "Eat More Lamb—20,000 Coyotes Can't Be Wrong."

No offense, fellows, just passing through. Tail tucked in a posture of fear, a coyote slinks uneasily through a herd of elk. Like grim undertakers, coyotes often linger around

evidence that the wolf has played a part in the eastern coyote's ancestry.

Controversy over the new animal in New England almost rivals that waged over the western coyote. In the East, however, hunters, not sheep ranchers, oppose the species, fearing it will reduce game-animal numbers.

Actually, a viable predator such as a wolf benefits the game animals that are its food. Since it is most apt to catch the weak and unfit, the mechanics of natural selection operate as they have since the beginning of life on earth. To a lesser degree the smaller coyote also performs this valuable task, though its slender skull, jaws, and teeth better equip it to scavenge and to prey upon small vertebrates, such as mice and rabbits.

Foes of Poisoning Take Action

Although sheepmen and some sportsmen condemn the coyote, it is by no means without friends. In 1971 two conservation groups sued the Department of the Interior for a restraining order against poison, asserting that massive and indiscriminate slaughter of wildlife on public lands was indefensible. They have long challenged the sheep ranchers' practice of running untended flocks on public lands while relying on tax-purchased poison to do the job traditionally performed by shepherds and dogs.

While the suit was pending, President Richard M. Nixon, in a surprise move, ordered all poison picked up from public lands. And a report by a panel of scientists indicated that, while individual ranchers do indeed at times sustain heavy losses to coyotes, massive poisoning produced no overall economic benefit. The evidence seemed to show that only a small number of coyotes in scattered areas were the culprits. The panel recommended that indiscriminate poisoning be replaced by selective control practices such as those used in Kansas and Missouri and parts of South Dakota, aimed at eliminating offending animals.

There, skilled trappers, by immediately responding to complaints, often are quick enough to follow a marauder's tracks and eliminate it. If not, traps with offset jaws, which do not crush bones, are set. An unwanted animal that is inadvertently caught can be let loose. The program also offers advice to sheep ranchers on ways to increase

DAVID HISER

the herds in winter, feeding on animals that fall to age or disease. Their presence causes no panic among healthy elk, who often try to chase away the meddlesome predators.

operating efficiency and prevent depredation.

Using this selective control, Kansas, with the highest density of coyotes in the country in 1972, recorded low losses to predators, whereas Wyoming, where massive killing created the lowest density of coyotes in the West, complained of ever-escalating tolls of sheep and lambs. Biologists have tried to explain this paradox by suggesting that intense pressure on the coyote may have had the effect of creating more sheep killers among them; for it is the normal scavenger coyote that is most apt to take the poisoned bait, leaving room for expansion to the more predacious individuals that eat only what they kill—which meat, of course, is uncontaminated!

Long Search for a Familiar Face

That spring of 1972 ended and I had to leave Brownie, Mama Red Legs, Gray Dog, and the others. But I came back to the refuge in the spring of 1973, looking for all of them with more than scientific curiosity.

I headed for the four burrows Mama had used the year before. One showed signs of renovation, but, like the other three, was empty. Miller Butte was depressingly quiet. No nightly howls, no dawn yaps emanated from its heights to blend with the sonorous cries of sandhill cranes rising from the meadow.

After two weeks of worried and fruitless searching, I consulted Franz Camenzind, a graduate student studying the behavior and territoriality of coyotes in the entire region. Franz was as perplexed as I. The pack with which he was most familiar had dropped out of sight just as had my Miller Butte clan.

Franz theorized that a recent epidemic of canine hepatitis might have wiped out our packs or affected their fertility. The disease had struck in February, when coyotes are in heat. It had also killed off the previous year's pup crop by as much as 90 percent.

Then, as I began to despair of locating my familiar animals, I found Mama's den. If, as the saying goes, happiness is a warm puppy, ecstasy is nine coyote whelps. Franz was with me the morning I explored the marsh at the periphery of my pack's range—an unlikely denning site. With low expectations, I headed for a strip of green that conceivably was high ground. I peered over a mound. Out of a concealed hole poked a tiny dark-brown head

with a pushed-in nose and crinkled ears. Beneath a round, high-domed brow, two milky eyes blinked up at me unseeingly. My beaming face told Franz to retreat even before I gestured to him to do so.

By midafternoon I was installed in an unconventional blind. I disguised myself as a highly conspicuous bright-yellow van, parked and presumably empty. Any attempt to hide from coyotes is, at best, a short-term possibility, and so I hoped that the coyotes would learn to tolerate this benign eyesore on their landscape. If my plan worked, for the next seven weeks I would live in the windowless back of the van, eat cold food, sleep on the floor, and view my subjects through a scope or a telephoto lens poked out a curtained door.

Gray Dog was the first to return to the burrow. My heart raced when he turned his long gray face to stare at my vehicle. Then suddenly he picked up our tracks of the morning and like a Roman candle he shot off in a curved trajectory.

Two hours passed, and I began to fear that no adult would return to the pups while my van was in view. Then, wraithlike, a female materialized out of heat halation and backlight. It was Mama Red Legs.

She approached cautiously, eyeing my van and nosing vegetation for signs of an intruder. After a time she moved uneasily to the hole and signaled to her babies. The unruly pups tumbled out one on top of the other and groped for teats along her plucked belly. As wild canids do, she nursed standing up. Then she ran off.

Noisy Invasion Thwarts a Fruitful Vigil

That night as I lay in the dark, a coyote chorus of mournful ululations reassured me that not only had Mama come back, but many more. Apparently the coyotes were tolerating my van.

But, as it happened, the next day was one of the few in the year when visitors are admitted to restricted sections of the refuge. It was antler pickup day for the Boy Scouts, and all morning trucks ground back and forth within shouting distance, dumping youngsters at intervals. By noon the boys had piled the vehicles high with antlers and departed. But Mama Red Legs did not return until late in the day, and before she approached her burrow, she spent a long time sniffing the human tracks that crisscrossed the refuge.

When at last she did go to her pups, she was too nervous to stay still. Distractedly, she dragged the nursing whelps around the burrow opening. Then she shook them off and trotted across the flats. Through my high-powered telescope, I watched her stop and excavate a hole. Was she digging a new home?

After several minutes she backed out, lay down on the mound of dirt she had created, and looked around. Then she abandoned the effort. I wondered whether the outlook had not been to her liking. In two other places, she repeated this performance. Then she ranged too far away for me to track her.

Night Veils the Moving of Nine Pups

Obviously Mama intended to move. And four hours later, as night began to deepen, I caught that unforgettable glimpse of her, so disappointing to my hopes, as she slipped away from the den with a tiny pup clenched in her teeth. Then I could see no more. But at two in the morning a soulful cadenza told me Mama Red Legs had made her final trip to a now-empty burrow.

I had observed similar behavior the previous year when she had moved her three young. Unable to count, she made return trips until confronted by a barren den.

It took me 48 hours to relocate part of the litter, in the aspen grove where Mama had whelped the previous year. But I could count only six pups. Had the others failed to survive the trip?

An adult coyote carries a pup by any convenient handle—hind leg, skin, or the middle of the body. I once watched the head of an awkwardly clasped baby bump the ground throughout transport. Distance compounded the risk. Mama must have moved her family at a brisk clip to cover at least 20 miles (two miles round trip for each of nine pups and one to the empty den) in five hours.

The pack made the new den site their central gathering place. I moved my van, and

Primal love song of a male coyote, wooing an unseen female, echoes off the snow-frosted hillsides at Yellowstone's Tower Junction. Just out of sight, the female soon joins in the ritual premating howl. Although they nearly always hunt alone, coyotes form deep bonds with mates that may last a lifetime.

Baby-sitting co-op for nine pups includes a watchful nanny, upper left, as well as parents and four other adults. Each member of this clan contributes to

now could observe four males and three females, but I could identify only Mama and Gray Dog with certainty from the spring before. Their constancy bore out rangers' observations of seeing a pair together year after year. I suspected that a male I named Rudy was Harness Marks grown sturdier and that Tippy and Tuffy, who were undeveloped and resembled each other, were surviving siblings from last year's litter of three.

Brownie, my favorite coyote, was nowhere to be seen, and I sadly speculated that she may have been one of the victims of the hepatitis epidemic. Her role as chief baby-sitter was now assumed by Jethro, a male who looked much like Gray Dog and may have been an offspring of a previous year.

While Jethro romped with the pups, Mama would withdraw into a shady patch of willow some hundred yards north. To my surprise,

HOPE RYDEN

the care and feeding of the young. One spunky pup has raced off with a ground squirrel father brought home, one of the first foods offered intact to the litter.

I discovered two days later that this vegetation concealed an auxiliary den where Mama had hidden the three missing pups.

For the week that Mama kept her litter separated, I timed her stays at each den. I was curious to learn whether she would still feel compelled to care for the pups in the north den after those in the south den had relieved the discomfort of full breasts. She proved a just mother, meting out her time almost equally between her divided family. All nine of her babies thrived.

Mama's litter of nine is uncommon, but not a record. Studies of uterine scars show females have given birth to as many as 12 pups, but 5 or 6 is an average litter. Trappers have reported digging as many as 19 from a den, though such high figures probably result from double denning by two females.

More impressive than its size was the fact

that Mama's entire litter survived. But Mama had a lot of help! When the pups were three and a half weeks old, other pack members generously supplemented her milk by regurgitations from their stomachs.

Mama did not offer her babies any regurgitated food until her milk dried up when they were six weeks old. But by that time the adults were already taking the pups on short hunting excursions. Like dog puppies, they spent much time in wild play; unlike dog puppies, they also gave long and undivided attention to the serious business of catching mice and countless insects.

While Mama was nursing and sometimes unable to hunt, Gray Dog catered especially to her. When he returned and found her absent, no amount of begging by the pups could induce him to regurgitate for them. As soon as Mama appeared, he offered her the contents of his stomach. She, of course, needed it. Counting herself, she was feeding ten.

Mama Offers Affectionate Greeting

Mama reciprocated Gray Dog's solicitude with demonstrative affection. She greeted him much as a dog welcomes its owner. Tail wagging, body waggling, she bounded back

ALL BY HOPE RYDEN

and forth puppy fashion. After thoroughly licking Gray Dog's face, she would sometimes tap him with a forepaw. Gray Dog accepted this adulation as his rightful due. He was not so demonstrative himself. As with the dominant male in a wolf pack, his high rank in the pack hierarchy may have prevented him from being so.

There seemed to be a pecking order in the pack, partially expressed in the manner of greeting. Jethro and Rudy, both males, greeted Mama in the same manner as she greeted them, and so were probably Mama's peers. Before Gray Dog, however, young Rudy and Jethro

Nip and tumble puppy play of coyotes (**above**) closely resembles the antics of domestic dog pups. Unlike dogs, however, they soon begin earnest training for life's more serious business of food gathering. Secure and reckless, the pups wandered too close to the author's observation van, bringing a worried clan member (**left**) to retrieve them. One pup nips at the elder's muzzle in a food-begging gesture. Keeping up the pretense of having food helped the adult (not a parent) lure the brood from danger.

Bug hunting prepares a pup for survival. Soon it will be on its own to face a bitter world where longevity depends on resourcefulness and a healthy fear of man.

were sometimes abject, and once I saw Gray Dog stand over Jethro and force him to lie passively on his side. One female, Tiny, seemed to be afraid of all the coyotes except Rudy, and I wondered if she were an outsider he was courting.

Harsh Winters Favor the Coyote

In the winter of 1972-73 in Yellowstone National Park, I studied coyotes living among herds of bison, mule deer, elk, bighorn sheep, and antelope.

The period from December to April is critical for coyotes, especially young ones. If the weather is mild, few herd animals die and the scavengers go hungry, weaken, and die of malnutrition and attendant diseases. By contrast, during severe winters when elk, deer, bison, antelope, and bighorn have difficulty obtaining enough to eat, these species are stricken and it is the coyotes' turn to thrive. People who see coyotes scavenging a carcass tend to conclude the feeders have made the kill, but this is rarely the case. In fact, the endemic diseases that afflict a malnourished herd are checked to a large degree by the coyote's efficient removal of contagious carcasses.

While I was studying the coyote in the wild, the controversy over poison was escalating. Western woolgrowers declared that they must be allowed the controlled use of poisons on public lands or face economic ruin from a burgeoning coyote population.

But federal control agents, through intensified trapping and by hunting from airplanes and helicopters, reported that they had actually killed 10,000 more coyotes from June 1972 to June 1973 than in the previous year when poison was still in their arsenal. And, even more recently, federal agencies have approved experimental and emergency use of a poisoning device called the M-44, shown to be relatively selective against coyotes. The future of *Canis latrans* could hardly look worse.

Bearing this in mind, I never took leave of my Miller Butte pack without a feeling of apprehension. If they should move out of the protected refuge, Gray Dog and Mama Red Legs may have raised their last litter.

At the end of my fieldwork I said good-bye twice to my familiar coyotes. After packing my gear and leaving, I felt compelled to return for a last look. Three pups were playing in a meadow of wild flowers, and on guard below them sat the grave-looking Gray Dog. I felt reassured. For the moment, at least, all was right with their world. I fixed the scene in my memory and left quickly. □

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COVER: Face on a Phoenician amulet recalls the one-time sea masters of the Mediterranean. WINFIELD PARKS

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*The mileage you get depends on many factors including how and where you drive and the condition of your vehicle.

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"Surface mining disrupts the land."

"We need all the coal we can get."

Both arguments are valid. But each seems to ignore the reality of the other.

It's time both sides, all of us, recognized the basic facts about coal and surface mining.

It's a fact that coal is our nation's most abundant source of energy. Our only abundant source. So we must depend on coal to supply more of our critical energy needs.

Deep-mining is the most ecologically desirable method of extracting coal. But deep-mining is less efficient and more costly. It's hampered by its own problems. Dangerous working conditions. Health hazards. Waste-pile pollution. Deep-mine capacity simply can't be expanded fast enough to meet our total coal requirements.

So we must surface mine or fall short of the coal we need. The question is: How?

It's a fact that in the past surface mining has left ugly scars on our land. And there are places we shouldn't allow it even today.

It's not true that surface mining has to mean permanent disruption of the land. Not any more.

By law and by choice, responsible mining companies have devised highly effective reclamation methods to restore the living landscape. And they're working on still more advanced programs to assure that mining needed elements will not reproduce the scars of the past.

Surface mining may not be the total answer. But done carefully, responsibly, it is a good way to get the coal we need.

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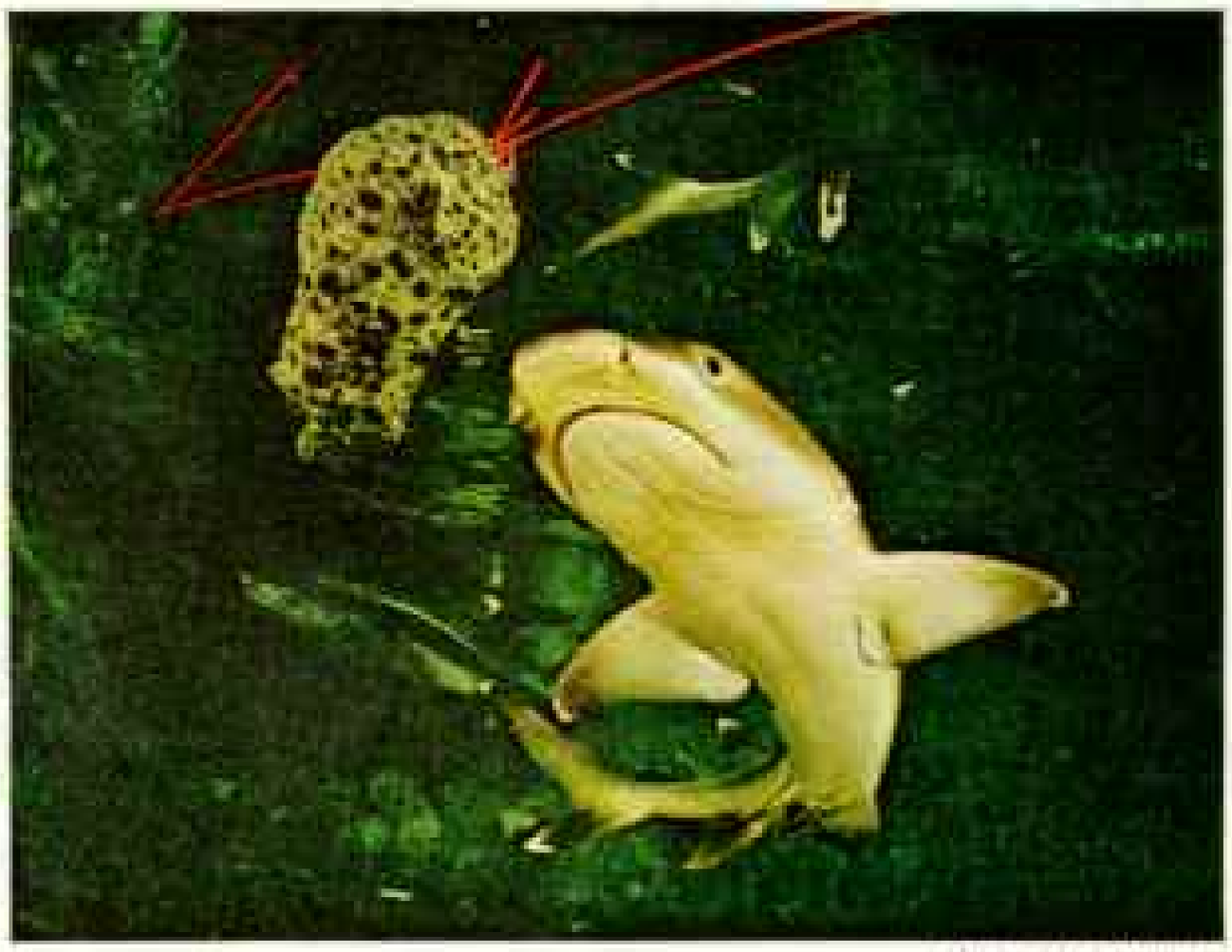
The meal that wasn't

A SIX-INCH SOLE twitches fitfully on a red plastic line that holds it fast in midwater. Spying the tempting morsel, a shark arcs toward it menacingly and opens its jaws for the kill. But, suddenly repulsed and unable to snap its mouth shut, the predator torpedoes away in a frenzy —as if from a deadly enemy.

Why? The answer was recently discovered—with the aid of a National Geographic grant—by Dr. Eugenie Clark, professor of zoology at the University of Maryland. After learning of the sole's repellent ability while doing research in the Red Sea, Dr. Clark pitted a sole *(Pardachirus marmoratus)* against two hungry reef sharks in a tank at the Heinz Steinitz Marine Biology Laboratory in Eilat, Israel.

Stringing the sole through the gills (**above**), Dr. Clark jerks the line to attract the sharks (**right**) that repeatedly approach with wonted voracity, only to retreat swiftly. The reason: a strong toxin exuded from glands in the sole and picked up by the shark's acute senses—to its obvious repugnance. Most effective chemical shark repellent known, the toxin may someday prove the salvation of many a "man overboard."

Invite your friends to take part in such important discoveries by nominating them below for membership in the National Geographic Society.



BOTH BY DAVID DOUBILET

Offshore oil

A safer, more economical way to get millions of barrels of oil from ship to shore to you.

America imports one-third of its oil. Even with energy from other sources, U.S. oil imports will increase for some years. Most of that increase will come from the Middle East. Important as that oil is, it may not arrive here nearly as efficiently as it could.

The reason? America is largely inaccessible to the biggest, most economical oil tankers in the world—*supertankers*. This is because at 200,000 tons and up, these ships require much deeper water than is found in almost any U.S. port.

The result is that America must now rely on smaller tankers to supply our energy system. For example, six 70,000-tonners are needed to deliver the same 3 million barrels of oil that a single 400,000-ton supertanker could deliver.

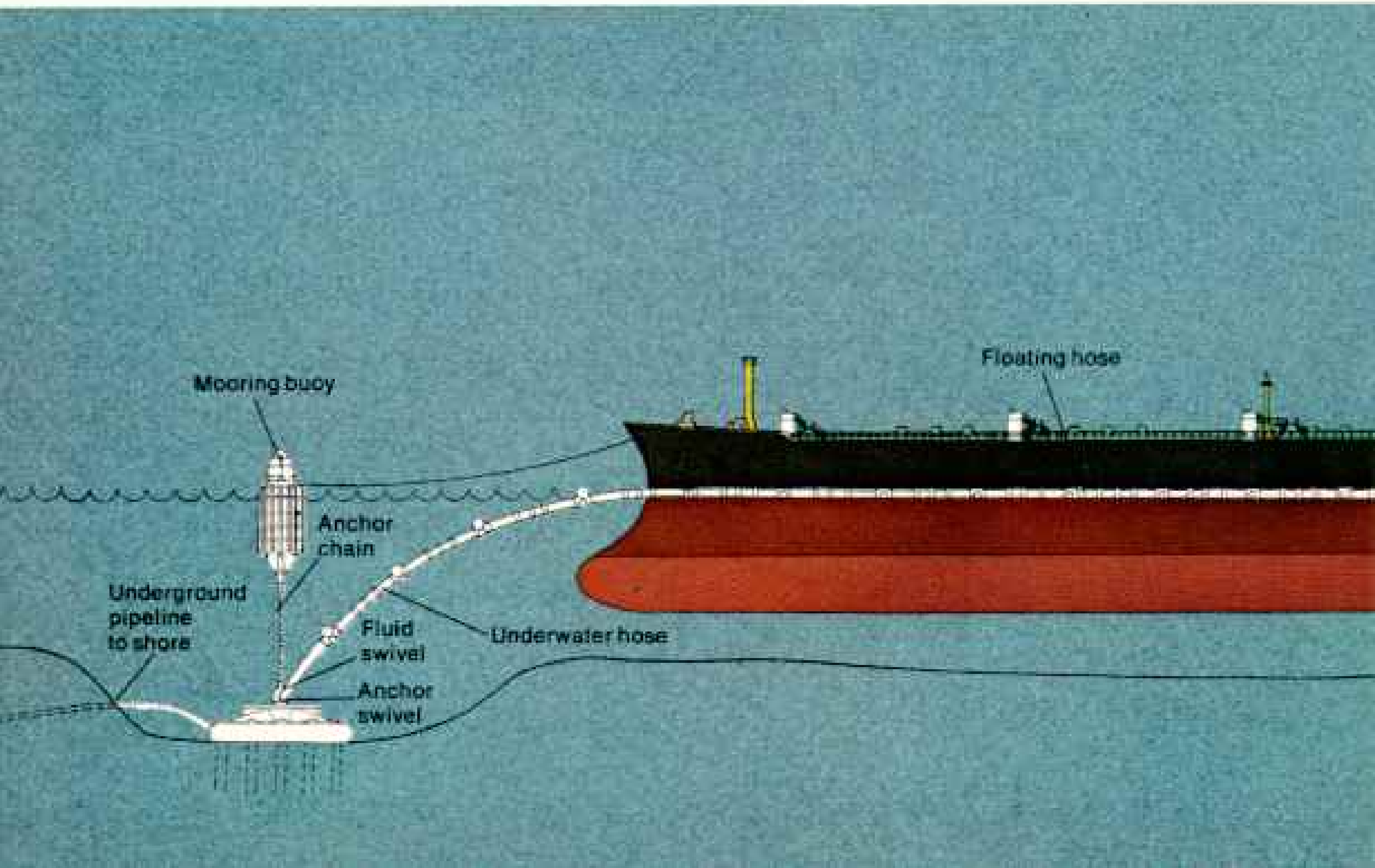
Using fewer but larger ships would reduce harbor congestion, decreasing the chances of collision and spills. Using the big ships also would improve efficiency. For example, moving crude oil from the Middle East to the United States in supertankers would require significantly less fuel than moving the same oil in medium-size tankers.

An offshore answer

One promising solution to the shortage of U.S. deepwater harbors is the single buoy mooring, or SBM. Each SBM is anchored well off shore. It is equipped with a swivel which permits the ships to "weathervane" 360 degrees to face into wind, waves and current. Supertankers simply moor to the SBM, hook up to floating cargo hoses and pump off their oil. The oil is transferred via pipelines buried beneath the sea floor—and beneath the ground on land—to storage tanks.

Compared to in-port unloading, it's fast, simple—and safer. Offshore facilities have been used successfully for years by dozens of countries throughout the world.

Now, Exxon and other companies are engaged in design and other studies for the develop-



terminals.

ment of the first deepwater offshore oil terminals for the U.S. Of course, permits will be necessary to allow construction to begin.

A giant step in the Gulf

Several offshore oil terminals have been proposed for the Gulf of Mexico. One of these is "Seadock," a facility planned for installation off the coast of Texas by Exxon and a number of other companies. Plans are to locate "Seadock" 32 miles offshore, southeast of Freeport. Conventional underground pipelines would move crude oil from "Seadock" to refineries along the Gulf Coast and in the Midwest.

Another proposed deepwater terminal called LOOP—Louisiana Offshore Oil Port—would be located 20 miles off the Louisiana coast. It would move crude oil, again via underground pipeline, to refineries in Louisiana, Mississippi and several states in the Midwest.

Both "Seadock" and LOOP would accommodate present-day and future supertankers, unloading their cargos at the rate of several million barrels a day.

Exxon and other companies also are looking into the feasibility of similar offshore oil terminals to serve the Northeast, including New York, New Jersey, Pennsylvania, Maryland and Delaware.

Should states and the cities involved desire it, offshore facilities could provide the opportunity for local industrial expansion.

What about the environment?

Offshore oil terminals greatly reduce the effect of tanker operations on the environment. Noise and visual impact would be cut a good deal because the unloading facility cannot be seen from shore and because fewer tankers would be coming to it. Storage tanks, which are needed no matter how oil is delivered, can be located so as to minimize their visual impact on the landscape. But the drop in harbor congestion would be the greatest environmental benefit because it would substantially reduce the chance of collisions and spills.

If you would like more information on oil tankers and offshore terminals, write for our free booklets, "Safer Tankers and Cleaner Seas" and "Reducing Tanker Accidents," Exxon Corporation, P.O. Box 701, Elmsford, New York 10523.

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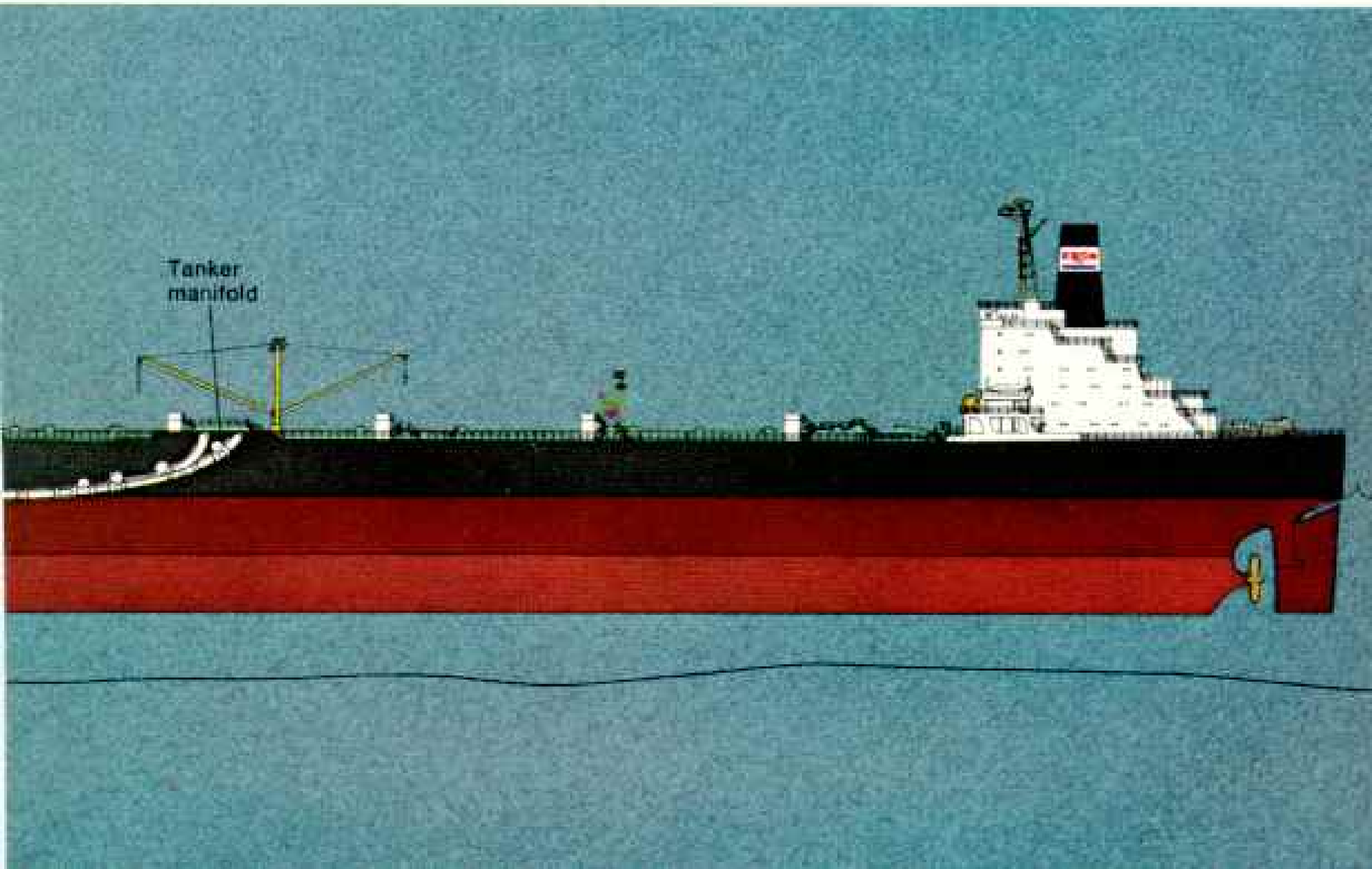

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Oleum, California, 1896. Union Oil has pioneered in petroleum chemistry since the beginning. Union hired its first chemist when we built our first refinery. He's the man farthest to the right.

Sulfur in gasoline causes pollution, so we remove 99.99% of it at the refinery. After it's removed, sulfur could still pollute the air if it were left as a powder that the wind could pick up. But instead, it helps grow fruits and vegetables, thanks to a pioneering Union Oil Company researcher, Dr. Don Young.

Dr. Young found a way to process the sulfur as soon as it's removed at the refinery and turn it into little balls that look like popcorn. They can be shipped and handled without pollution problems.

Then he had an idea about how to use Popcorn® sulfur. He thought it might make farmland out of land that was too alkaline to grow anything. He was right. Land has been reclaimed with Popcorn® sulfur in California's San Joaquin Valley and other parts of the world.

There are several oil companies bigger than Union Oil. But Union attracts more than its share of pioneers like Dr. Young.

He thinks it's because of Union's attitude toward research. "There's a lot of interaction between scientists, a lot of cross pollination. It's hard to think of a category I haven't done some work on. I have patents in oil well recovery, fuels, fertilizers... about 75 patents altogether."

That's a pretty exciting record. And it makes us even more excited about what Dr. Young will do in the future.

Union Oil Company of California.

union 76

The pioneering Spirit of 76 lives at Union Oil.

Today, the pioneering Spirit of 76 is men like Dr. Don Young helping to turn poor land into productive farm land with popcorn made of sulfur.

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Every airplane buff knows that the Wright Brothers flew 120 feet at Kittyhawk. They conquered the air with a contraption that used a customized motorcycle engine, wooden struts and a cast aluminum engine block. Even in the very early days of aviation, designers knew about the high strength-to-weight ratio of aluminum.

Subsequent planes, like Lindbergh's *Spirit of St. Louis*, were designed with more sophisticated weight-saving principles in order to make maximum use of fuel. Lindy landed in Paris with over eight hours of fuel to spare—an excess that was partly a result of aluminum's weight-saving properties.

And in commercial aviation—where every pound of weight saved in a jetliner equals a substantial savings in fuel and money—aluminum is contributing to economy of performance and increased payloads.

The properties of aluminum proved just as vital to the aerospace people who needed a strong, weight-saving metal that could endure the stresses of leaving the atmosphere. Which is why aluminum was used as the principal structure of the awesome *Saturn* booster and the *Lunar Module* and will be used on the *Space Shuttle*.

The next time you're flying, remember that aluminum in the aircraft's structure, skin and power plants is saving thousands of pounds of weight and energy. In fact, you probably wouldn't have gotten off the ground without it.

For more information on the energy-related performance of aluminum, please write for our free brochures on energy, aluminum and the automobile. Aluminum Company of America, 343-H Alcoa Building, Pittsburgh, PA 15219.

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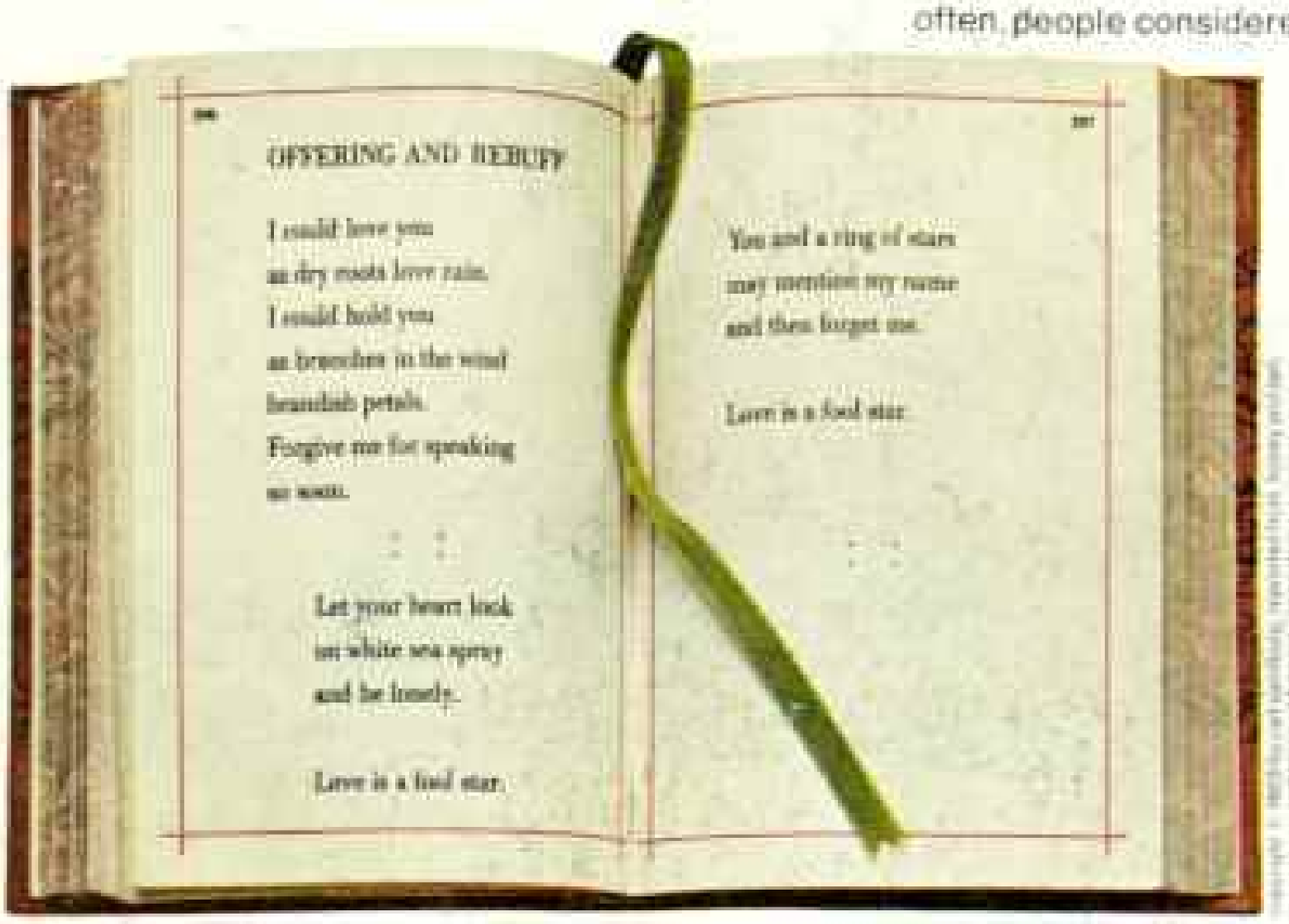
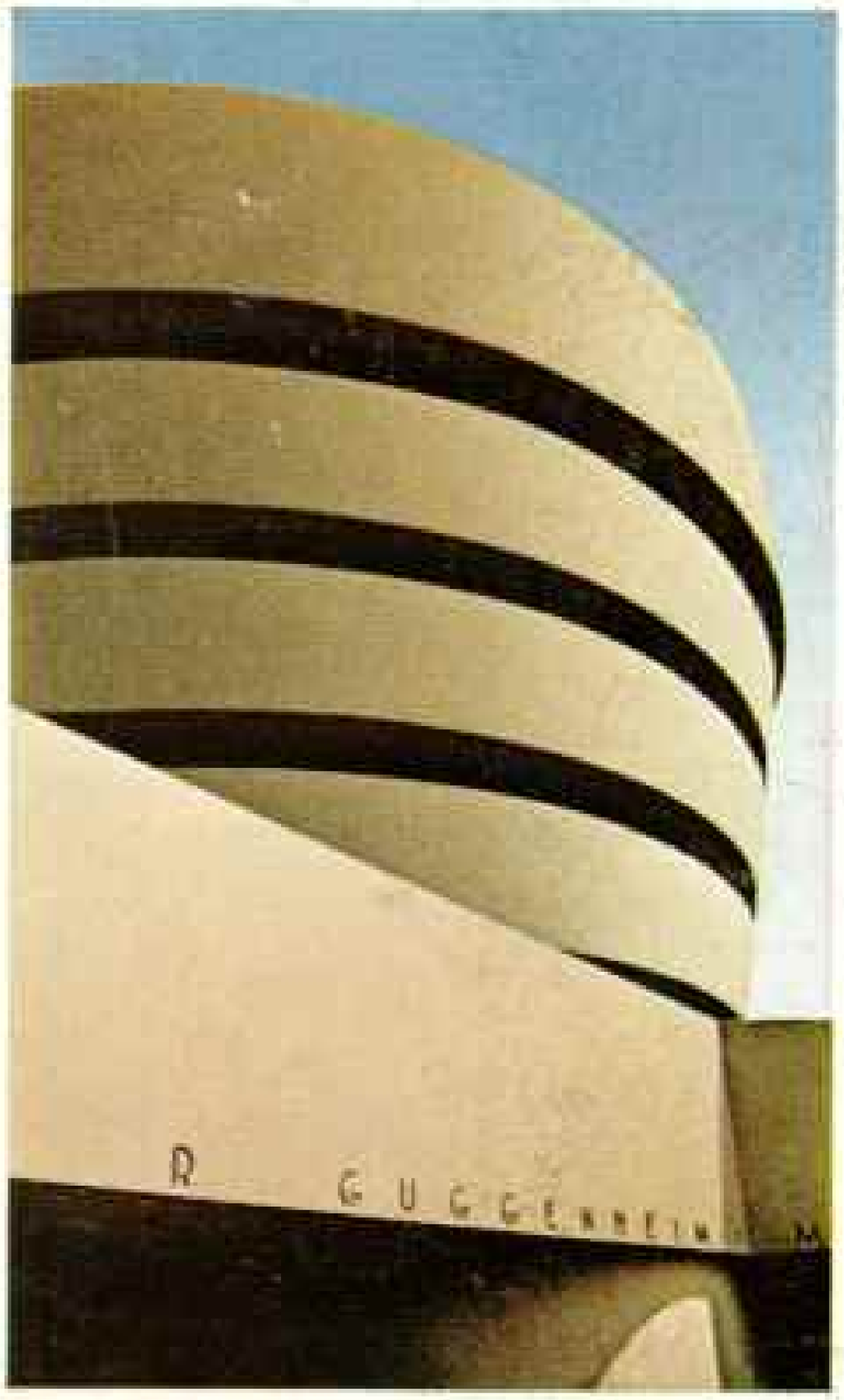
We no longer grow old gracefully. Years of experience are not always valued. Instead of using the wisdom of age to help solve our problems, we have turned the aged themselves into a problem. Our preoccupation with youth has made us forget that, often, people considered "too old" have the youngest ideas of all.



Carl Sandburg, age 85, "Offering and Rebuff."

Winston Churchill, age 77, re-elected British Prime Minister.



Frank Lloyd Wright, age 76, "Guggenheim Museum."

Grandma Moses, age 101, "The Rainbow."

Dr. Albert Schweitzer, age 88, "Nobel Peace Prize."

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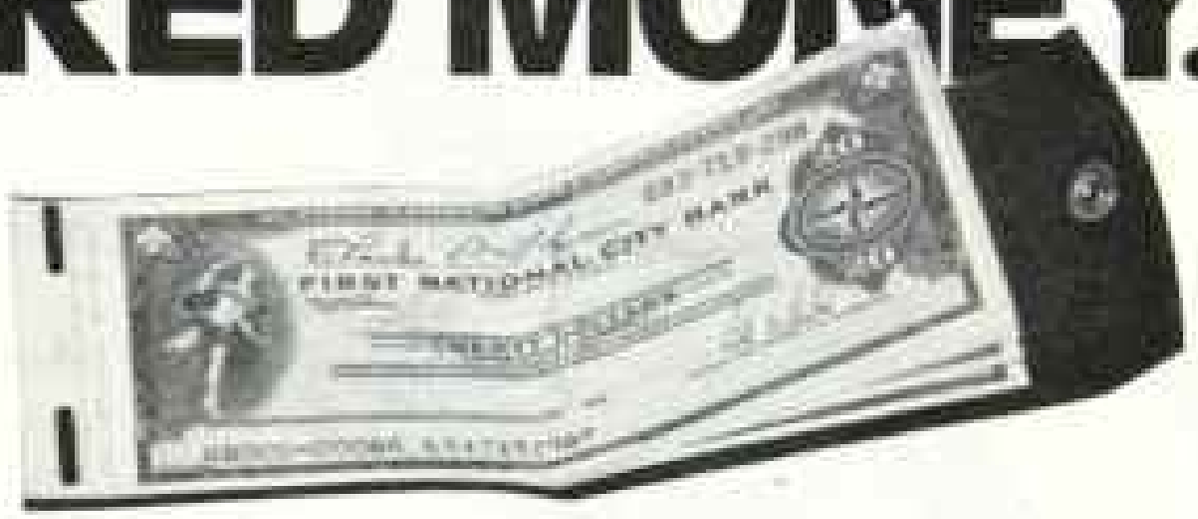

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Blue crab: main cog in an "immense protein factory"

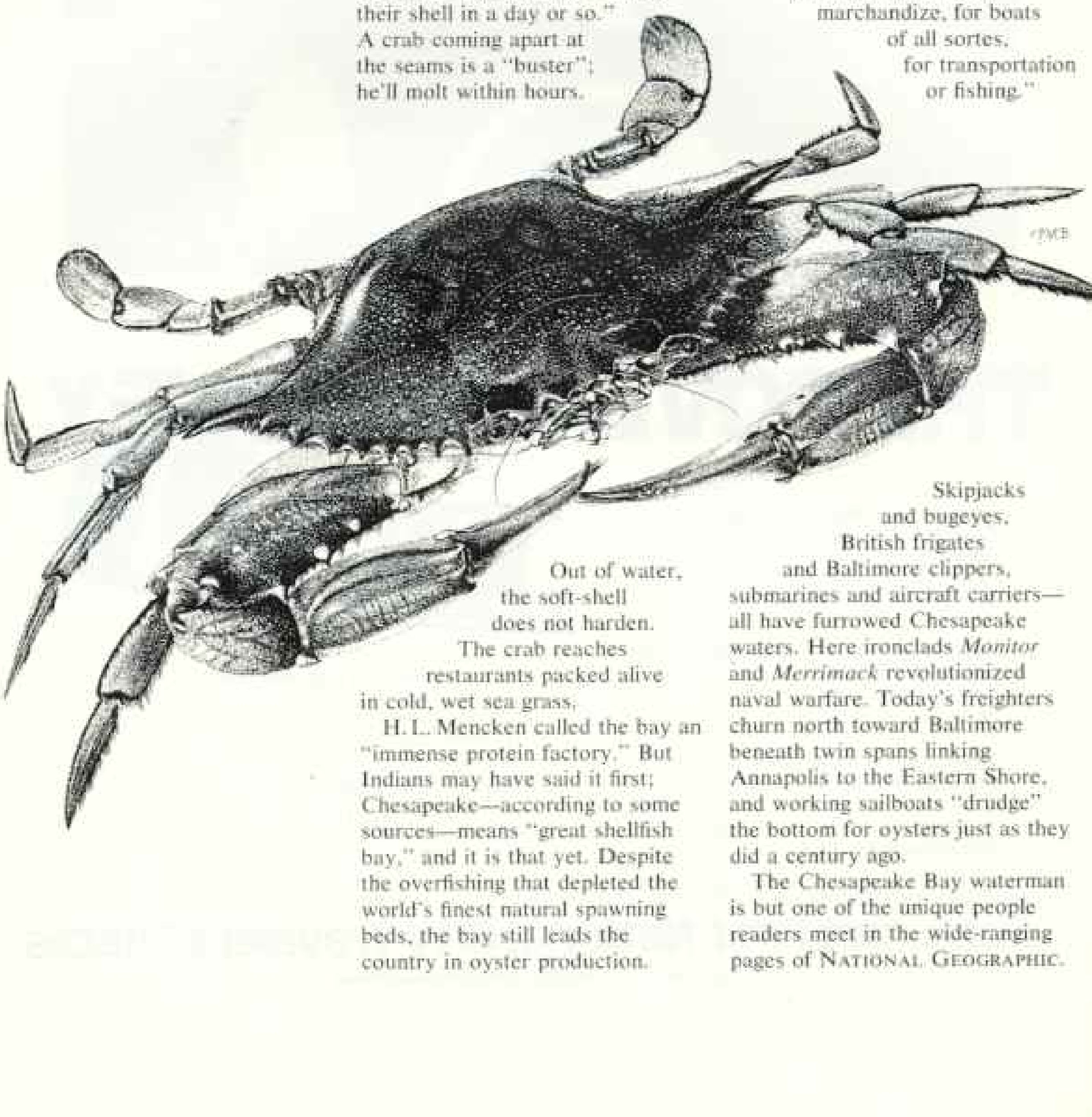
Chesapeake Bay watermen annually harvest millions of pounds of the blue crab *(Callinectes sapidus)*. The succulent crustaceans will be steamed, stuffed, deviled, shredded into salads, patted into crab cakes, and, in their soft-shell state, eaten whole.

Baymen keep a sharp eye out for crabs about to shed their exoskeletons. A Tangier Island packer can spot a peeler by its paddlelike backfin: "Crab with a white edge to his paddle, he's got about a week to go. Pink rim, he'll shed in three days. When they gets red in the paddle, they'll shuck their shell in a day or so." A crab coming apart at the seams is a "buster"; he'll molt within hours.

Clams and crabs abound. To hear a waterman talk, it's a good thing only two or three crabs survive from the million or more eggs a female carries. Otherwise, "the world'd be et up by crabs."

Some 150 rivers, branches, creeks, and sloughs bearing names such as Crab Alley, Ape Hole, and Bullbegger flow into Chesapeake Bay. From the mouth of the Susquehanna to the Virginia capes, the bay washes more than five thousand miles of shoreline.

Capt. John Smith observed in 1612: "the waters, Isles, and shoales, are full of safe harbours for ships of warre or marchandize, for boats of all sortes, for transportation or fishing."

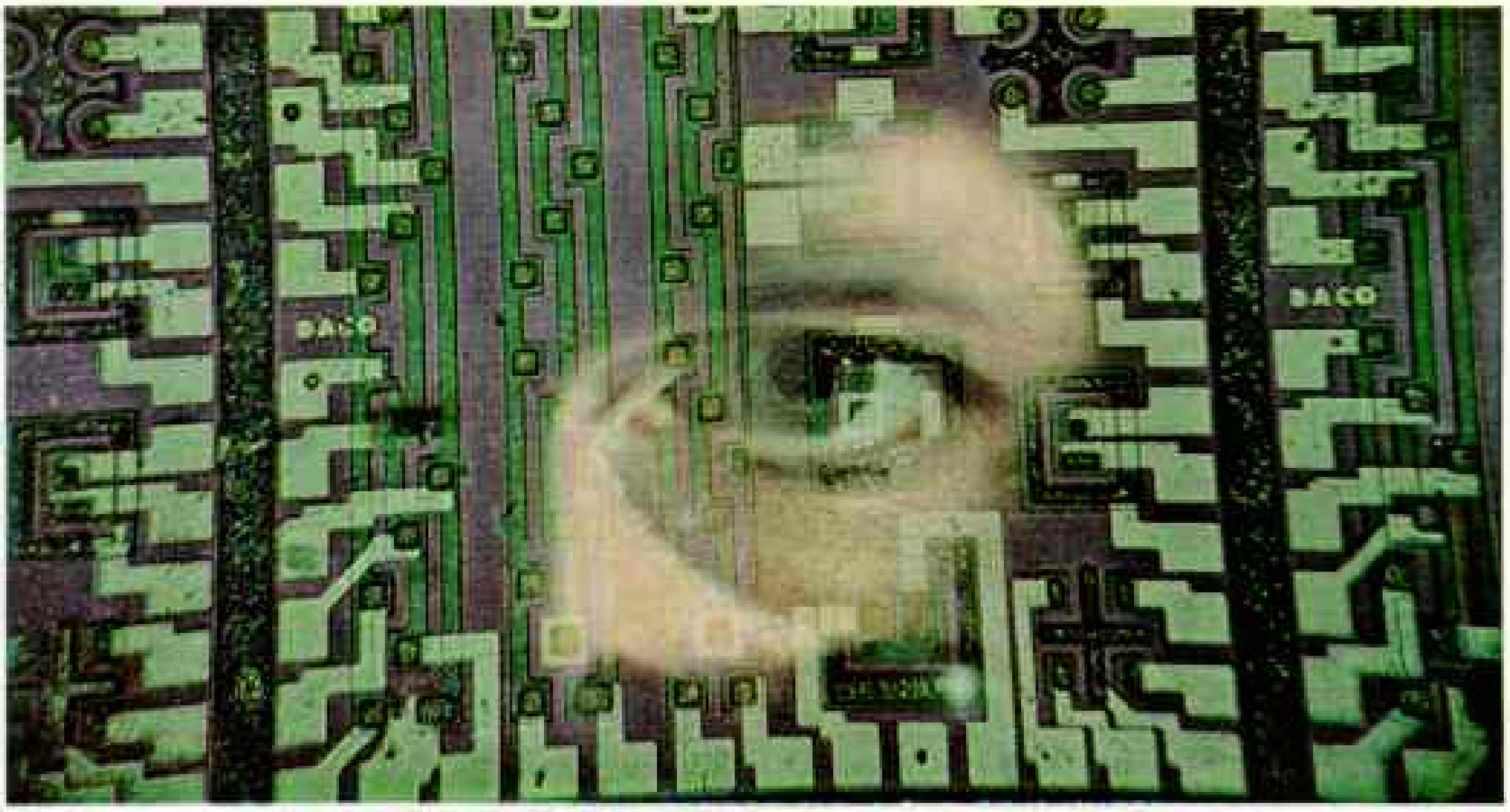


Out of water, the soft-shell does not harden. The crab reaches restaurants packed alive in cold, wet sea grass.

H. L. Mencken called the bay an "immense protein factory." But Indians may have said it first; Chesapeake—according to some sources—means "great shellfish bay," and it is that yet. Despite the overfishing that depleted the world's finest natural spawning beds, the bay still leads the country in oyster production.

Skipjacks and bugeyes, British frigates and Baltimore clippers, submarines and aircraft carriers—all have furrowed Chesapeake waters. Here ironclads *Monitor* and *Merrimack* revolutionized naval warfare. Today's freighters churn north toward Baltimore beneath twin spans linking Annapolis to the Eastern Shore, and working sailboats "dredge" the bottom for oysters just as they did a century ago.

The Chesapeake Bay waterman is but one of the unique people readers meet in the wide-ranging pages of NATIONAL GEOGRAPHIC.



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