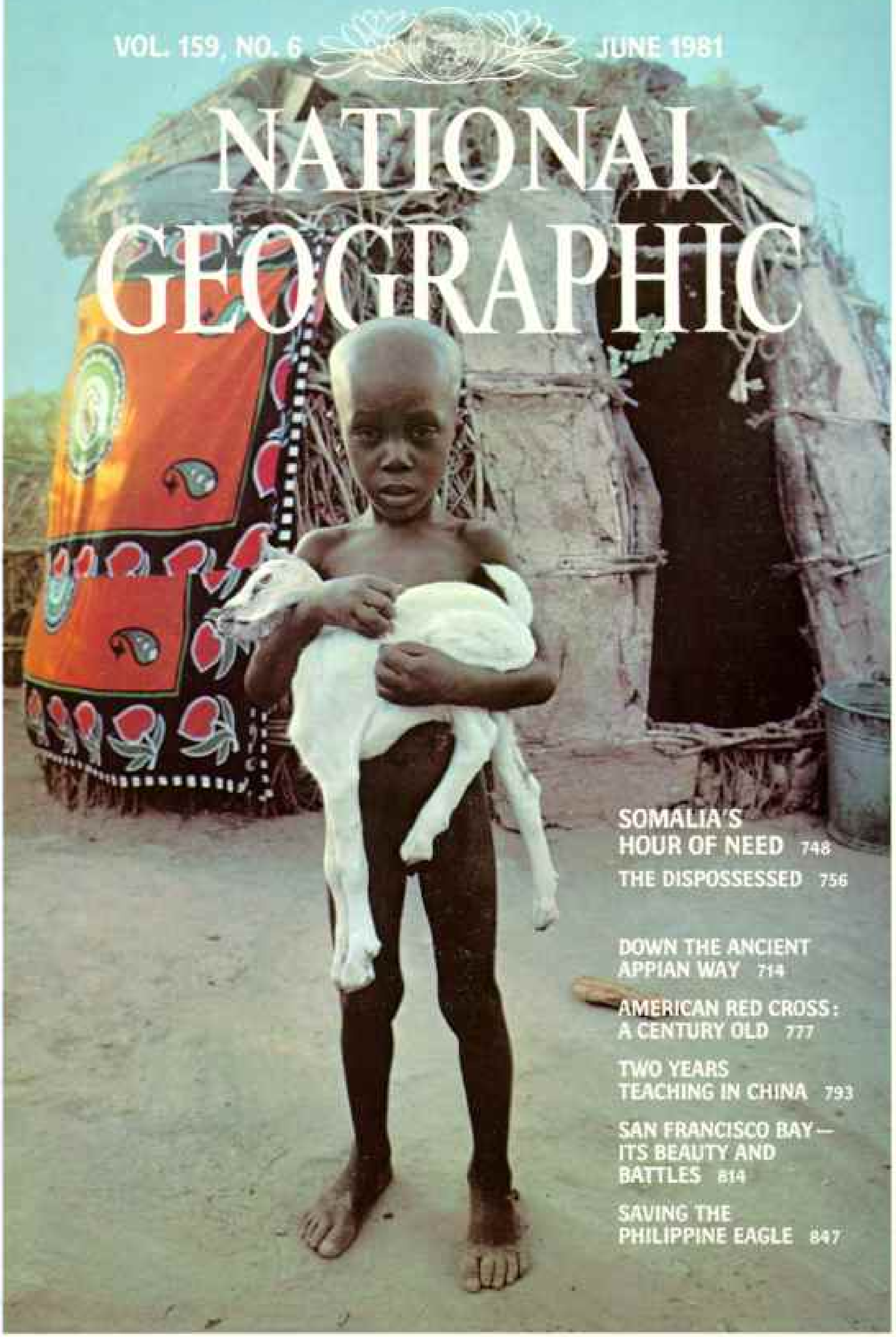
VOL. 159, NO. 6 JUNE 1981

NATIONAL GEOGRAPHIC



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

FORTUNATELY, few of us have spent a single night stranded with our families in a foreign country, friendless, with little or no food, water, or shelter, and scant hope of ever returning home.

Tonight, again, some 20 million fellow humans will endure this bleak existence. They are the world's refugees, and their numbers grow like a cancer without a cure.

Five years ago Africa alone held a million refugees; today, five million. This past winter I visited the stark, drought-burned lands of East Africa to find a region awash in modern weapons, torn by big-power conflicts as well as ancient hatreds, pulled down by anarchy and economic disaster.

In this issue we examine a classic case: Somalia, where refugees grow by thousands a day. It's a mercifully sanitized report, for it is impossible to convey the smells, sounds, and full emotional despair of a country where one person in four is a refugee.

The only hope of most uprooted people lies with the United Nations High Commissioner for Refugees and the dozens of humanitarian groups whose work he coordinates. In five years his budget has grown fivefold, to half a billion dollars in 1981, a fourth of it paid by the U. S. government. Individual Americans last year contributed more than a billion to refugee relief.

"There will always be refugees," High Commissioner Poul Hartling told me not long ago. In recent years, as strife in their homelands subsided, hundreds of thousands returned to Burma, Nicaragua, and Zimbabwe—while close to 1.7 million newly uprooted Afghans have fled to Pakistan.

"At least," said Commissioner Hartling with the optimism his job requires, "they're not the same people year after year."

He points out that refugees often enrich the haven they find. Of the 190,000 Vietnamese boat people taken in by the U. S., 80 percent now support themselves, pay taxes, and contribute to the economy of their adopted land. A poster in his office reminded me that Albert Einstein was a refugee.

Such happy endings are the exception. For most refugees survival itself is the only hope. That too would fade without the time and money contributed by caring people who—let it be hoped—will never suffer the horrors of refugee life themselves.

Wilbur E. Garrett

EDITOR

NATIONAL GEOGRAPHIC

THE NATIONAL GEOGRAPHIC MAGAZINE VOL. 159, NO. 6

June 1981

COVER: *A young Somali cradles a baby goat outside his nomad family's hut in a refugee camp called Crash. Photograph by Kevin Fleming.*

Down the Ancient

The road that led to empire, *the ancient Appian Way became the first of the great thoroughfares that gave Rome military and commercial power over conquered lands. The parade of chariots, wagons, horsemen, and pedestrians was so incessant that citizens, seeking to perpetuate their names, built their*

Appian Way

By JAMES CERRUTI
SENIOR ASSISTANT EDITOR

Photographs by
O. LOUIS MAZZATENTA
SENIOR ASSISTANT EDITOR

tombs at roadside. Some of these monuments still survive, silent witnesses to a young couple enjoying a peaceful carriage ride along this haunt of history.

I THOUGHT HORACE was a sniveler. I mean Quintus Horatius Flaccus, the great Roman poet. What gave me this impression was a satire he wrote about his trip down the Via Appia 2,018 years ago. The Appia was the first and the most famous of Rome's long-distance military-commercial highways, by which she bound her conquests to her, and it was 275 years old when Horace took his tour in 37 B.C. The Romans called it the Queen of Roads, but it is just a l'il ole road by modern standards. Only 380 Roman miles (360 of ours), it extended from Roma to Brundisium on the Adriatic, and Horace cry-babied all the way.

The mosquitoes are fearless, he wrote, the innkeepers sharp, road rough, water foul, tourists hot-tempered, dust eye-inflaming, bureaucrats pompous, hills sirocco-scorched, bread bad, rain wearying, and natives baffling.

I have now taken this trip myself. My respect for Horace as a reporter has risen. In an age when travel for pleasure had only begun, he was a pioneer tourist. The peccadilloes of tourism he recounted are eternal, as I can verify, but they are still as welcome to tourists as they really were to Horace. Without them, how could he—or we—have an amusing traveler's tale to tell?

Horace, all in all, seemed to think the Appian game well worth the candle. So did I. The amazing people we both met made it an unforgettable experience. Horace sang of "delightful" friends and their hospitality, which he strained to the utmost, as did I. But I had a further pleasure he unfortunately missed: all those fascinating ruins, which were just plain uninteresting buildings when Horace passed by.

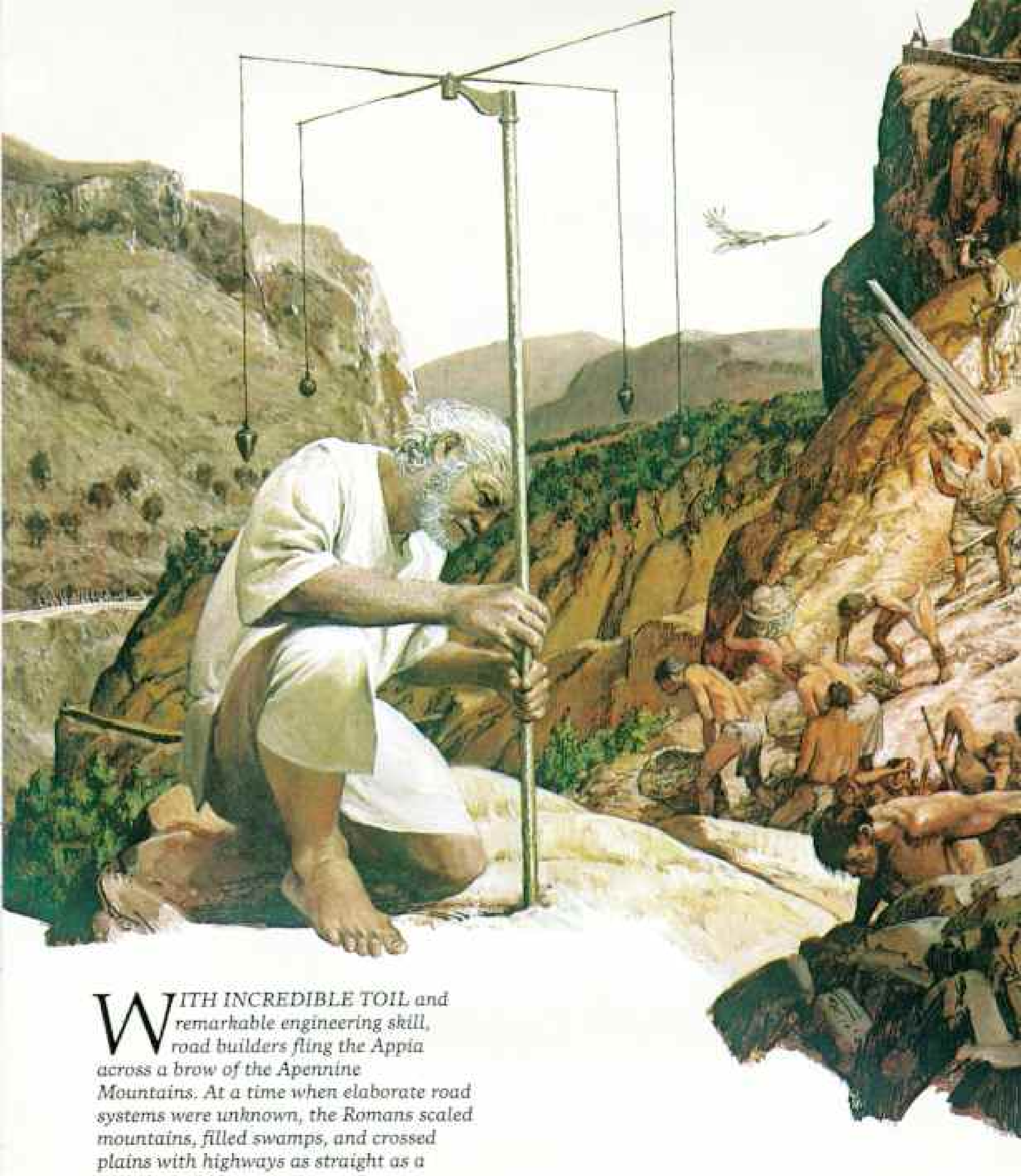
I started from Rome, like Horace, but I started with the ruins of what for him must have been the most grandiose avenue in all Italy. It is ten straight miles of the Via Appia

The Queen of Roads, *conceived in 312 B.C. by Appius Claudius, begins near the Colosseum (**above**). Beyond the grand arena, amid the remnants of the Forum, is a portion of the base of the Milliarium Aureum (**right**), the "golden milestone." Raised in 20 B.C. by Augustus, the first emperor, the gilded bronze column listed the mileage between Rome and her principal cities.*

Hundreds of roads led to

Rome by the beginning of the second century A.D. But no route achieved the lasting fame of the Via Appia, whose stones have felt the tread of Hannibal and St. Paul, Charlemagne, Lord Byron, and Mark Twain.

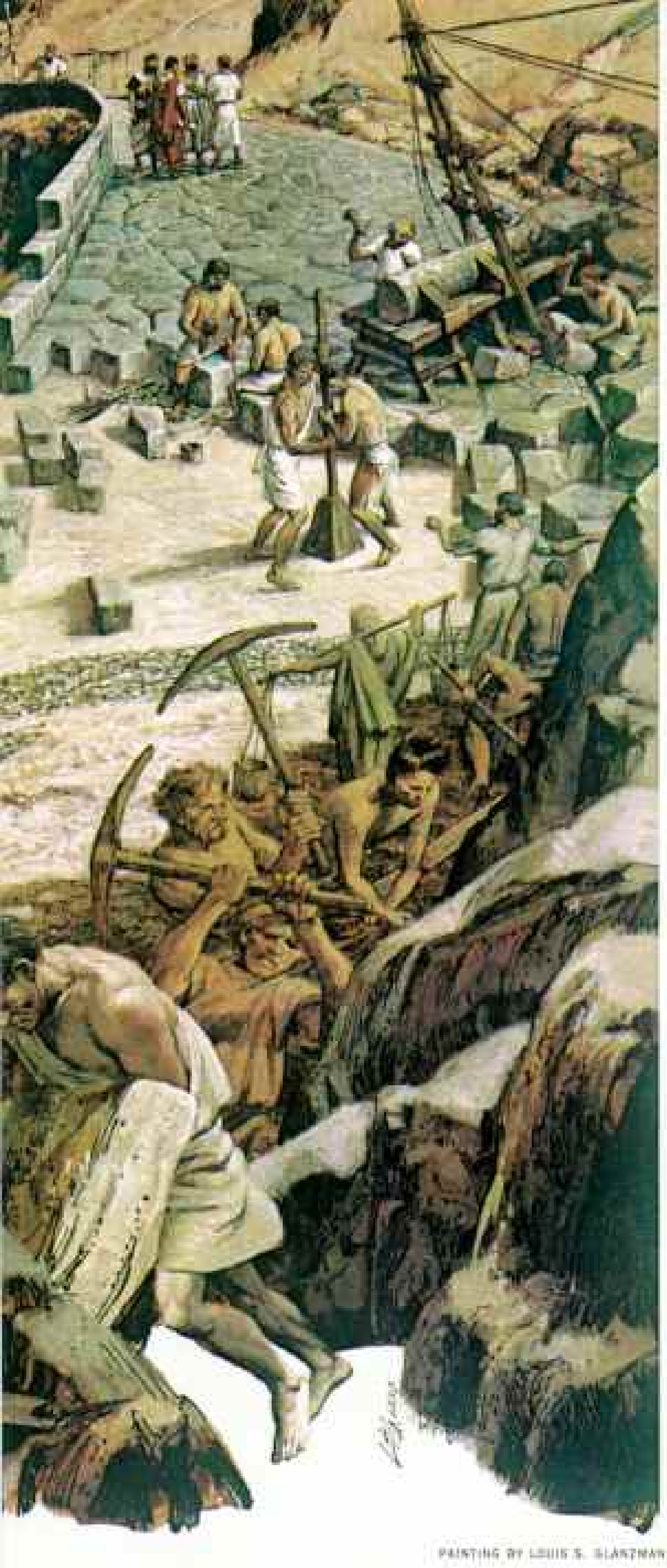
Down the Ancient Appian Way



WITH INCREDIBLE TOIL and remarkable engineering skill, road builders fling the Appia across a brow of the Apennine Mountains. At a time when elaborate road systems were unknown, the Romans scaled mountains, filled swamps, and crossed plains with highways as straight as a stretched ribbon.

Here a surveyor uses an instrument called a groma to sight the most direct course. Slaves, convicts, and soldiers cut and level the roadbed, pound it smooth, and raise a wall. Huge volcanic paving blocks are fitted together without mortar. A crane, upper right, straddles a milestone. By decree, Roman roads were built to last forever. And the record is good, as those in use today testify.

Antica, or "Ancient Appian Way," that run south from Rome's ancient boundary at the Porta Capena toward the town of Albano. Today 4.5 of these miles are within Rome's city limits. Along the Way you can still ride or walk on patches of the huge green-gray volcanic *selce* stones that Romans paved with. Ruins of Roman tombs line the Appia because rich Romans coveted burial where



PAINTING BY LOUIS S. GLANZMAN

multitudes of travelers reading their names would give them a kind of immortality.

Poor Christians of the Roman period also wanted the honor of burial on the Appia but couldn't afford the real estate. So they went underground there, cramming hundreds of thousands of their dead into tiered loculi (coffinlike niches) cut into soft rock catacombs. The two most renowned of Appian catacombs, San Sebastiano and San Callisto, stretch through ten miles of corridors. Chiefly used in the first four centuries A.D., the catacombs held not only commonfolk, but, in San Callisto, six of the early popes.

Today, few funerals on the Appia, but many marriages. The big cachet is to be wed on the Appia Antica in the "Pope's church," the Church of San Cesareo in Palatio, near the head of the Way. Every cardinal has a "Roman seat," and this was Cardinal Wojtyla's before he became Pope John Paul II.

In excellent Appian restaurants near the Pope's church occur the huge wedding parties Italians favor. My wife, Hannah, and I dropped in on the Quo Vadis for lunch one Sunday as 200 wedding guests—coatless and tieless in the October heat—were roaring toasts of "*Bacio, bacio!*—Kiss, kiss!" Bride and groom stood and responded with deep, serious, very Italianate kisses.

ASIDE FROM WEDDINGS, it was the many other Christian aspects of the urban Appia that most riveted me. The strip is, of course, also littered with provocative Roman ruins—and with provoking Roman litter. The Italian government and the city of Rome own different Roman monuments here, but neither has the money to restore or maintain them properly. By contrast, the Vatican owns and beautifully maintains all Christian monuments, such as the Appian catacombs.

In the little church of Domine Quo Vadis, I saw with my own eyes the *footprints of Christ*. Well, they were a marble copy made in 1830 of *purported* footprints of Christ in a selce block of Appian pavement near the church. The feet are very narrow and flat.

The legend behind these prints is this: St. Peter, already first pope, escaped from Rome's Mamertine Prison, and was leaving his flock behind in the grip of the ferociously antichristian Emperor Nero. The Lord appeared, and Peter asked, "*Domine, quo vadis?*—Lord, whither goest?"

"I *come* to Rome, to be crucified again."

Then, Peter knew: *he* must go back to Rome, to crucifixion and martyrdom.

The Lord vanished, and in vanishing left the prints of His feet.

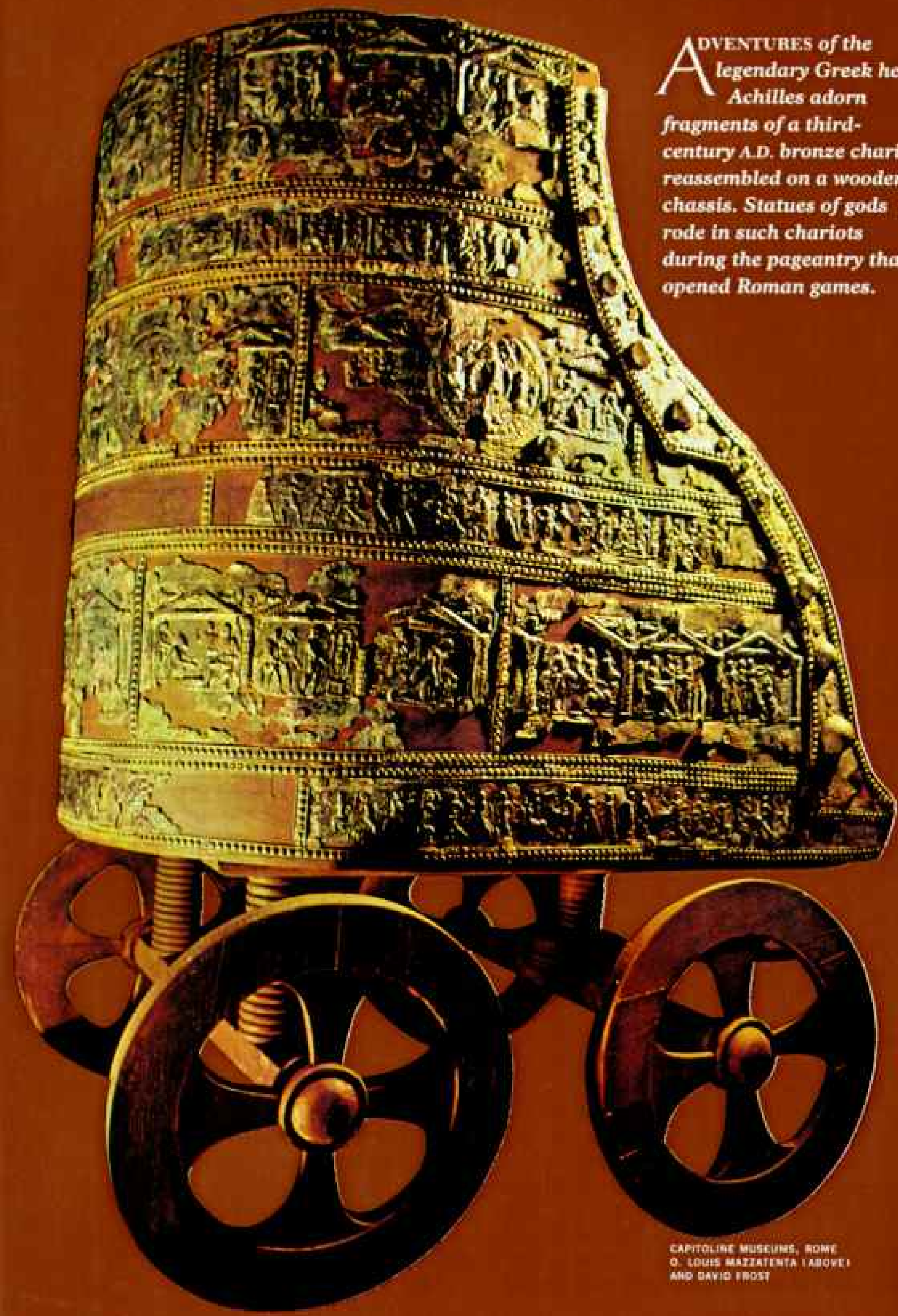
The urban Appia was a noisy stretch in Peter's day, and the wonder is he could hear

BRITISH MUSEUM
HEIGHT: 7.75 INCHES

HOOVES THUNDERED *in the imagination of a child of first or second century A.D. Rome who may have used this racing-chariot model, now minus one steed, as a toy.*

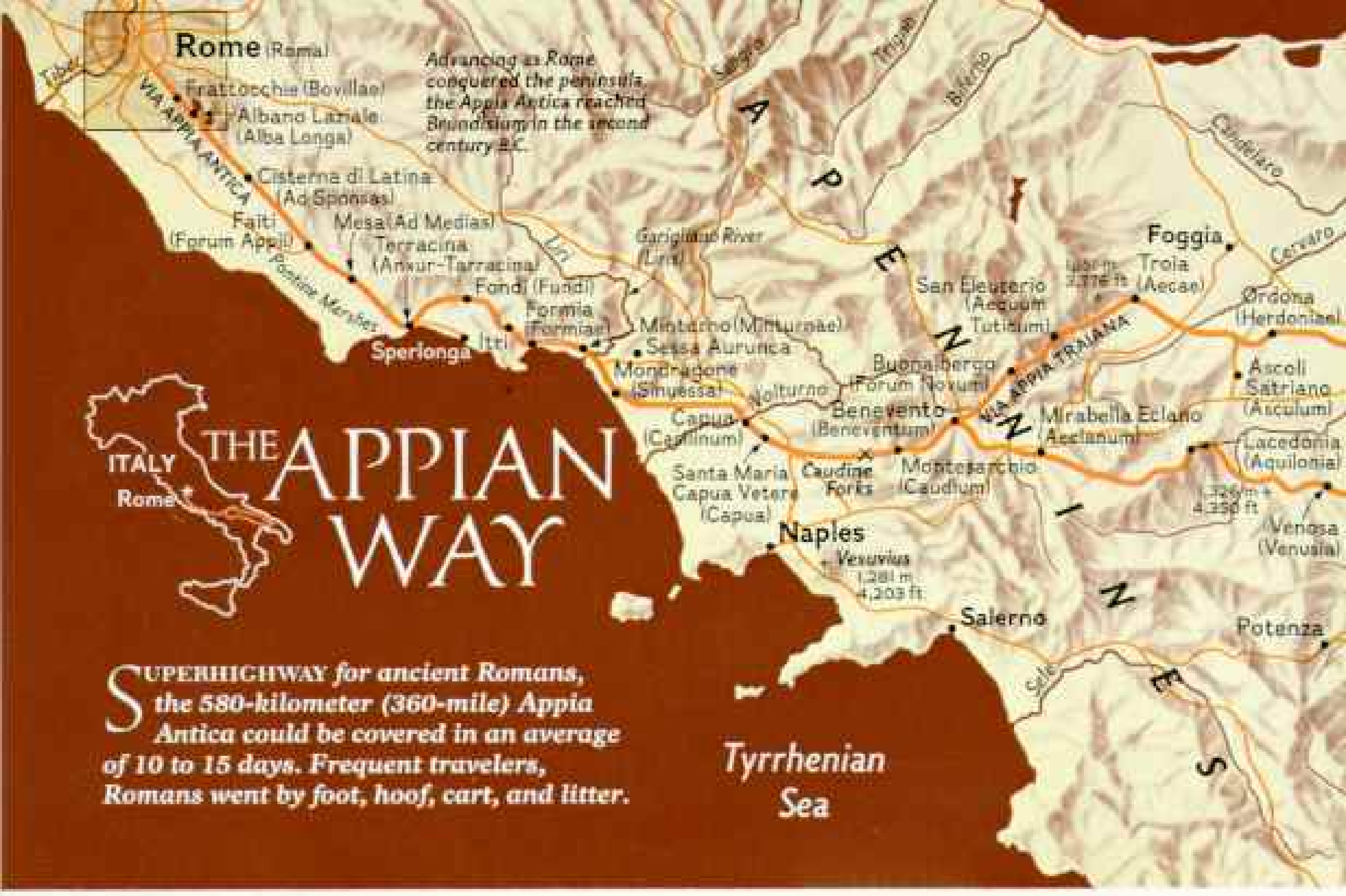
BRITISH MUSEUM
FINIAL HEIGHT: 4 INCHES
MUZZLE HEIGHT: 8.25 INCHES

HORN-BLOWING *Triton finial of bronze (above) capped the wheel axle or harness pole of a second-century A.D. vehicle. The mythical griffin decorates a first-century A.D. bronze horse muzzle (right).*



ADVENTURES *of the legendary Greek hero Achilles adorn fragments of a third-century* A.D. *bronze chariot reassembled on a wooden chassis. Statues of gods rode in such chariots during the pageantry that opened Roman games.*

CAPITOLINE MUSEUMS, ROME
© LOUIS MAZZATENTA (ABOVE)
AND DAVID FROST



the Lord at all. Today he wouldn't have a prayer. The traffic and din are horrendous. The Appia has only two and one-eighth lanes, and Roman drivers fantasize it has three. As the would-be passers try to get round into that illusionary third lane, they beep endlessly on shrill horns.

It is no atmosphere for viewing the moody marvels of antiquity, but since the average Italian thinks ruins are to be used or abused, not viewed, little mood remains. Renaissance men built houses atop the Tomb of the Scipioni and the so-called Tomb of Cotta, or Casal Rotondo, and both are still lived in. Farmers are currently plowing up the Villa of the Quintilii brothers, a place once so luxurious that Emperor Commodus had the brothers murdered to get it. Trash dumpers ceaselessly swamp the tomb of a lovely lady, Cecilia Metella, who once knew Julius Caesar. (Dumpers engulf ruins in a weirdly specialized way: Cecilia attracts almost exclusively dumpers of old tires and defunct medical supplies.) Cars beat up what little ancient polygonal pavement remains, and their exhaust erodes the monuments. Vandals have whisked away even 300-pound selce polygons, to be sold on the "block" market for quaint driveways.

In spite of all this, the urban Appia is one of the most expensive residential districts in Rome. Prince Borghese, Gina Lollobrigida, and many other celebrities have villas there. But now some are moving out because burglars and kidnappers know exactly where they live, and at night the Appia is a lonesome, even loathsome road. When former Prime Minister Aldo Moro was kidnapped in 1978 (later found murdered), one of the first places the police scoured was the Appian Way near the city's border. There bandits, killers, and prostitutes lurk, and the most innocent occupation is the dumping of builders' trash.

Because it is more visible than the Appia's other blights, I had trash on my mind the evening I interviewed Dr. Baldassare Conticello at his Rome apartment. "Baldo" is the vice-superintendent of archaeology for Rome, a state office, and has charge of Appian archaeology out to the city's border.

"Why don't you buy some trash cans for the Appia?" I asked.

"Ha!" he replied, with a grimace. "The

only thing impossible in this country is to forbid Italians to throw garbage in the streets. If you put a trash can for Italians, they throw just a little before but not inside!"

Baldo grew even more animated as he took a run at the Parco dell' Appia Antica project, which aims to turn the urban Appia into a public park. It has been on the drawing board a century and just lies there. Baldo poured me a drink, his black eyes snapping behind black-rimmed glasses, black mustache twitching, hawklike Sicilian features tensed to strike. "I am in charge of this project now and, ha! I am drinking beer because we have here an ad that says he who drinks beer lives a hundred years. But I will not live to see this park. The state and city of Rome must pay expenses. How? Our superintendency has only a limited amount of lire to spend on all of Rome. The city is trillions of lire in debt.

"Too many people meddle with this park," Baldo continued. "This lobby that writes against us in the papers—these idealists. As they are not in the state, they can ask everything. If you want everything, you get nothing. Italia Nostra!"

The way he expectorated the name, I thought this must be a branch of Cosa Nostra. Searching it out, I was referred, alarmingly, to Consigliere (!) Lorenzo Quilici. But he is simply the "counselor" for a private environmental-protection organization. To him a big green strip in almost parkless Rome is as important as monuments. He proposes that control of Baldo's strip, and all state funds appertaining thereto, be taken from the superintendency and vested in an independent commission.

We were talking in the library of Rome's American Academy, and at this point librarian Lucilla Marino raised eyebrows and said, "When too many roosters sing in the morning, the daylight never comes."

WHEN CENSOR Appius Claudius began his road in 312 B.C., he had no such aesthetics in mind. Rome was in process of conquering the Samnites, who held the territory around Capua and Beneventum. Censors were responsible for roads as well as censuses, censoring, and censuring, and Appius Claudius wanted to get a military road down to Capua, 132 miles

away, to tie the conquered Samnites into the republic and create a springboard for further conquests.

This became a Roman policy: the road following the legions, until a great network of super-roads laced together a Roman Empire extending from Asia to Africa to the British Isles. By no coincidence, three centuries later the earliest emperors, following Augustus, were mainly descendants of Appius Claudius, and are known to history as the Julio-Claudian emperors.

Appius's road was extended south and east, after his death, to Brundisium, now Brindisi, touching three seas in its passage: the Tyrrhenian, Ionian, and Adriatic. Arriving in the second century B.C., the road transformed that easternmost Adriatic port into Rome's chief gateway to Greece, the Near East, and all their rich trade.

In A.D. 109 the Via Appia cloned. The emperor Trajan, deciding to bypass a slow, hard-to-maintain section through the Apennines, built the Via Appia Traiana. It ran some 120 miles from Beneventum to Barium (Benevento and Bari now), then 70 more miles down the Adriatic to Brundisium. It saved Roma-to-Brundisium travelers a day

This path of glory, *suffused here in rare tranquillity* ***(left)****, often led to an early grave for gladiators who trudged the Appia to the Colosseum. Slaves with athletic prowess, sold into training for the games, fought one another or wild animals—usually to the death. The sculpture of a Samnite gladiator* ***(below)*** *was found in Benevento, site of a gladiator school.*

out of the 10 to 15 days the trip along the Antica took. The emperor's couriers, working in relays, did it in six. A good politician, Trajan had his masons carve on the milestones the message that he had built the road for the people "at his own expense."

Both ancient Appias today are only tatters of a road—snippets of original pavement scores of miles apart, the old bed asphalted over or crumbling to dirt in a Horatian eye-inflaming and joltingly *dissestata* state ("deranged," as road signs cogently warn).

But there is still a *third* Appia, SS (State Highway) 7, the Appia Nuova, and this one is drivable. It runs atop the Antica, or near it, to just beyond Benevento, 125 miles from Rome. There it veers off, not to return to the Appian track till near Taranto.

The Antica and Nuova first join near Frattocchie, outside Rome, and from there, the old with the new on top, run dead straight to Terracina, because straight is how Romans built roads whenever they could. The most interesting part of this leg runs from Cisterna di Latina to Terracina, 30 hypnotic miles through the Pontine Marshes. The road becomes *la fettuccia*, the ribbon, its straightness almost paralyzing, with

PAINTING BY LOUIS S. GLANZMAN

REBELLION ended in agony for 6,000 slaves crucified on the Appia in 71 B.C. Led by the slave-gladiator Spartacus, an army of 100,000 runaways outfought Roman forces for nearly three years. Legionaries and their slaves strung the captured along the 132-mile route between Rome and Capua—and left them to rot.

limitless avenues of lofty umbrella pines locking the eye into tunnel vision. Humped white mountains march on the left. The Pontine drainage canal slides to the right.

To spare himself a day's jolting, Horace boated down the ancestor of this made-by-Mussolini canal and was kept awake all night by mosquitoes, resonant frogs, and cursing boatmen.

After the Romans had drained part of the Pontine, they hammered piles into the marshes, filled in around them with stone rubble, and laid the Appia's layered bed on this—a tremendous engineering feat. Few other ancient people had known how to make roadbeds at all, let alone in swamps.

When we came to Mesa, I was on the qui vive, for this had been the major Pontine posting stage that the Romans called Ad Medias. At posting stages the emperors had manned *mutationes*, for such "mutations" as changing couriers' horses or flat wheels. They also provided bed and board in *mansiones*, which were "mansions" indeed compared to other inns.

The only things Roman we saw were two displaced Appian milestones, but at the edge of Mesa we came on a bright red house with white trim on which was painted:

SS NO. 7
VIA APPIA
KM. 80
CASA CANTONIERA

"A *mutatio* for sure!" I cried to Hannah as I leaped off our 90 Fiat horses. I was greeted by Silvano and Carmela Roma, a pleasant middle-aged couple. Silvano admitted he was employed by the state to tend the Appia. But they were reluctant to tell me exactly what he did. I suspected they thought I was an undercover agent of the tax police, which every Italian dreads and confounds.

When I presented my bona fides, Silvano smiled and said he mowed and tidied four kilometers of Appia, for which he got a salary and free rent of half the casa. But, no, he didn't fix flat wheels.

BALDO CONTICELLO came down to show us the region round Terracina (Anxur-Tarracina to the Romans), where he had been state archaeologist for 20 years. He took us to Trajan's Cut, deepest on the Appia, another engineering wonder.

For four centuries Appian travelers had to climb half a day out of Tarracina to negotiate the sheer promontory on which now stand the ruins of the first-century B.C. temple of Jupiter Anxur. The outcrop dropped 121 feet (125 Roman) into the Tyrrhenian Sea. Trajan's legionaries worked with only pick and chisel to cut a passage through it, and we could still see their marks, as well as the numerals they had incised every ten feet, down to CXX. "For bookkeeping," Baldo said jokingly, "to pay the soldiers by piecework."

Baldo drove us to view the bypassed oldest Appia inching along an escarpment. Then he drove higher to show us the stunning panorama of Terracina and the Tyrrhenian Sea. Unfortunately, the best view was on the way down, but Baldo was not fazed. He pulled over into the middle of the wrong lane, overlooking an abyss, and parked. When I urged him to move on, he explained in a masterly piece of tail-eating Italian logic: "Not to worry. The man in this lane is always looking for a man in the wrong lane. You can get quicker killed if you are always in the right lane and not watching for someone coming in the wrong lane." When Baldo saw my pained expression, he riposted, "You must not expect Italians to drive like you. We are artists!"

With artistry then, Baldo returned us, half dead, to the right side of the road and proceeded via the coast road to Sperlonga, a few miles off the Appia on the Tyrrhenian. The museum there, which was formerly in Baldo's charge, bore the sign: "So-called Cave of Tiberius and Excavation of Sperlonga." I asked Baldo about those weasel words. Wasn't he positive that these were indeed the seaside villa and cave of Tiberius (emperor A.D. 14-37)? I could tell by the way

Hazardous with the traffic of Rome, *today as then, the narrow two-lane Appia barely accommodates unconcerned bicyclists challenging an oncoming bus. Fighting congestion in 45 B.C., Julius Caesar banned most daytime wheeled traffic, a move that made the nights so clamorous that one sleepless resident complained, "Rome is at our very bedside."*

JAMES CERRAUTI

Bigger than life, *in marble and myth, the Cyclops Polyphemus suffers anew an attack by the Greek hero Odysseus (Ulysses to Romans) and his crew in a plaster model (**above**) of a second-century B.C. Greek sculpture. The original adorned a Tyrrhenian Sea grotto near the Appia that the emperor Tiberius kept for summer entertaining.*

*The masterpiece, depicting the one-eyed giant helplessly drugged as a fiery spear is poised to blind him, was discovered broken into bits, part of a trove of 7,000 marble fragments (**top right**) found in 1957 in the grotto near Sperlonga.*

*Slowly restorers identified the head of Odysseus (**top center**) and the legs of the Cyclops (**right**), here dwarfing former restoration director Baldassare Conticello.*

Excavators intended to study the fragments in Rome, but Sperlonga residents halted their removal with a roadblock and built the museum that now houses the treasures.

Bridging centuries of use, *the massive 21-arch viaduct—Ponte degli Aurunci—carries a road that linked the Appia to Sessa Aurunca. Ancient paving withstood World War II tanks and still bears traffic. The open arch harbors chickens; a walled-up*

span shelters pigs and cows. Use of antiquities is illegal, but if damage is minor, enforcement is lax.

he grimaced that the sign wasn't his idea.

"No one can say for sure, but they are! In Suetonius and Tacitus, they say Tiberius was once eating with friends in a grotto in between the Auruncan Mountains and the Gulf of Amyclae. The only place that corresponds is here. They say an earthquake killed a lot of them—but not Tiberius. The cave was always called Tiberius's Cave. It was so important this whole town was named for it. Sperlonga is from the Latin *spelunca*, cave."

WE WALKED DOWN to the edge of the sea to look at the cave, 30 meters wide, with fishponds for the emperor's dinner in front. Around us spread the ruins of an immense villa. "There is five times as much unexcavated," Baldo said.

Who other than Tiberius could have owned such a palace and the sculpture found in the cave in 1957? Baldo declared, "This is the most important find of the Hellenistic period since the 'Laocoön' group, the snakes killing the priest and his sons, was found on the Esquiline Hill in 1506."

The masterworks from the cave are still in a jillion pieces; an auditorium-size room is filled with them. But enough has been put together to determine that the two most powerful of four groups were made by the same three Rhodian sculptors who did the "Laocoön," or are marvelous copies. Their names are cut into the marble of the group called "Scylla and the Boat of Ulysses," and in the second group, their style unmistakably imbues the agony of a colossal Cyclops being blinded by Ulysses and his men.

How did everything get so smashed up? "This area outside the cave has always been called Cyclops' Vineyard," Baldo said. "No one knew why till now. After Rome fell, a peasant made a vineyard here, and he needed to fill in the ponds. He broke up the statues, throwing big pieces, like Cyclops' legs, to the bottom. That's why we have them. He smashed the rest to bits, tamping them into layers—good drainage for grapes."

Hannah and I stayed on in Sperlonga, making Appian sorties and being fearlessly bitten by descendants of the same Pontine mosquitoes that fearlessly bit Horace. We sallied forth to follow the Appia southward through Fondi, Itri, and Formia.

In Fondi the ancient Way has become Corso Appio Claudio, the main shopping street as of old. Here, I was told, the famous Caecuban wine that Roman poets praised is still sold. I asked for it in every wine store on the Corso and discovered that Fondians yearn to be helpful. If they do not have the facts, they will always give you their best guess. Every storekeeper confidently directed me to the next store down, and when I came to the sixth and last, that storekeeper directed me back to the first store up.

BETWEEN FONDI AND ITRI, Appia Nuova veers left, but a rustic and potentially lovely reach of the Antica, about two miles long, appears on the right, showing some intact Roman pavement. I recognized it by the "tall, ugly concrete telephone poles," now wireless, placed down the middle by "some idiotic bureaucrat"—proving, by Horace, that bureaucracy goes on forever. The quote is from the excellent book *The Appian Way, A Journey*, by Dora Jane Hamblin and Mary Jane Grunsfeld. Hannah and I just pushed aside the trash and had a nice picnic there.

What struck me most about Formia were the hordes of idle men, of all ages, in the park that used to be the Roman forum, jawing and playing cards. I had seen this on a lesser scale in other towns and wondered about it, especially since this was the time of grape harvest, when labor was much in demand.

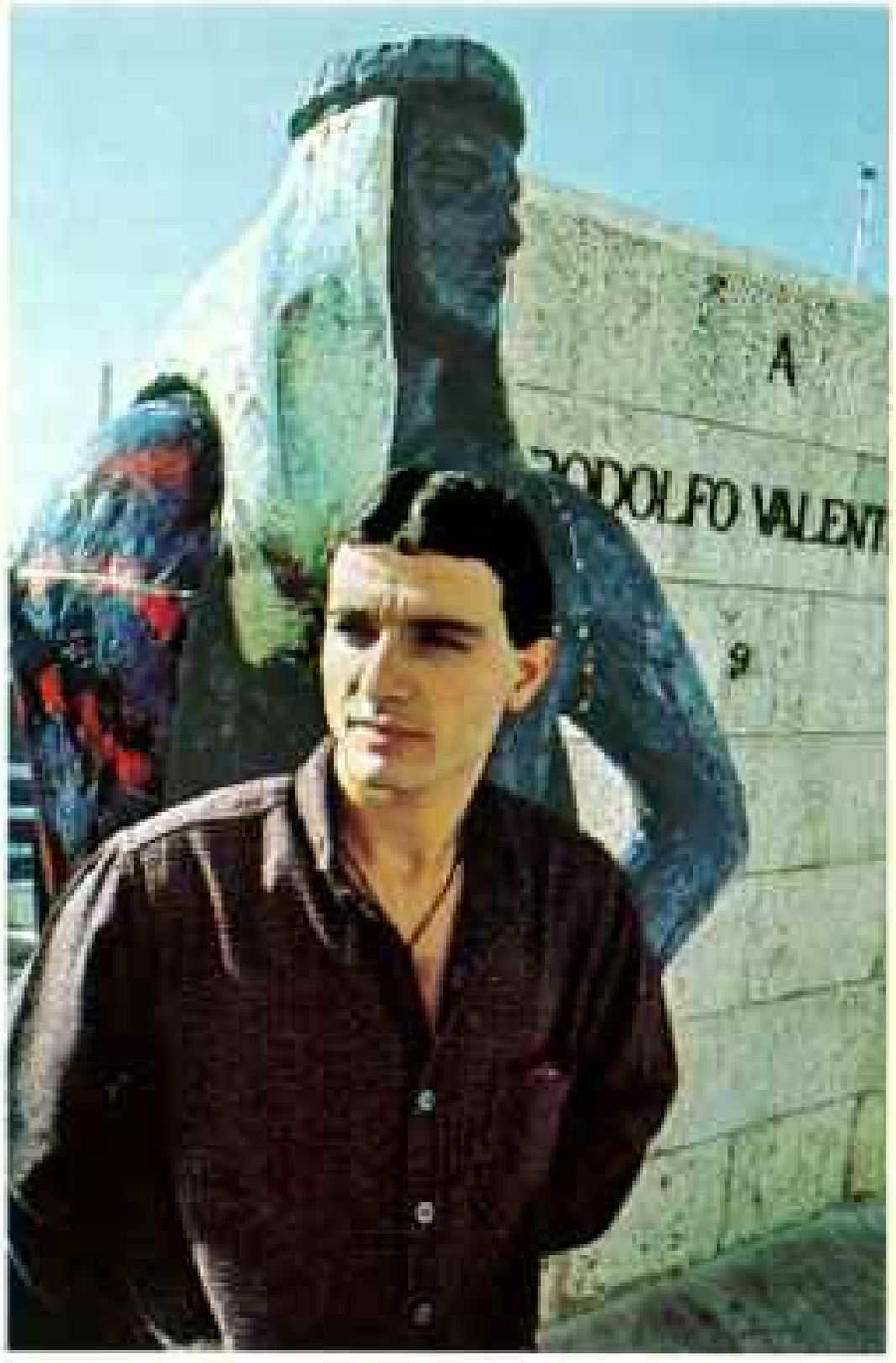
I had remarked on this to Baldo, and he gave me his view as a liberal, a tag which in Italy of course means the opposite, a conservative. "Why should they want to work? Just because we are born, we have the right to receive everything we want. This is from socialism. We have only rights, no duties. We await the grace of God."

When I saw the imposing so-called Tomb of Cicero on the Appia at Formia's edge, I thought of Baldo. Cicero was a famed consul, senator, and orator of Julius Caesar's time. He, too, was given to such Baldian exclamations as, "*O tempora! O mores! O di immortales!*—O times! O morals! O immortal gods!"

On a Sunday, Baldo took us to *pranzo* (midday dinner) at a friend's house on the Appia in Minturno. Our host, a lawyer, was

***Grace masters age** in a Roman copy of Aphrodite (**facing page**), the Greek goddess of love and beauty, unearthed near the ruins of Sinuessa, an ancient Appia resort.*

*Youth imitates style of a 20th-century god of love, silent-screen star Rudolph Valentino, whose hometown of Castellaneta raised a statue and monument in his honor (**below**).*



Signor Signore, which means "mister mister." We also met Mrs. Mister, the chef, and lovely daughter Miss Mister. I thought of Horace. He too cadged his way down the Appia, eating on friends of friends. It was the Roman law of hospitality. You were just as low as the scoundrels who lurked there if you had to go to an inn. Friends and families who lived along the Way exchanged stamped clay disks of hospitality that were transferable. If the pact was broken, the disks were broken.

What a meal that was! Seven delectable courses (six are normal). One was roast rabbit, which prompted Baldo to remark: "When I was in the United States, I was very

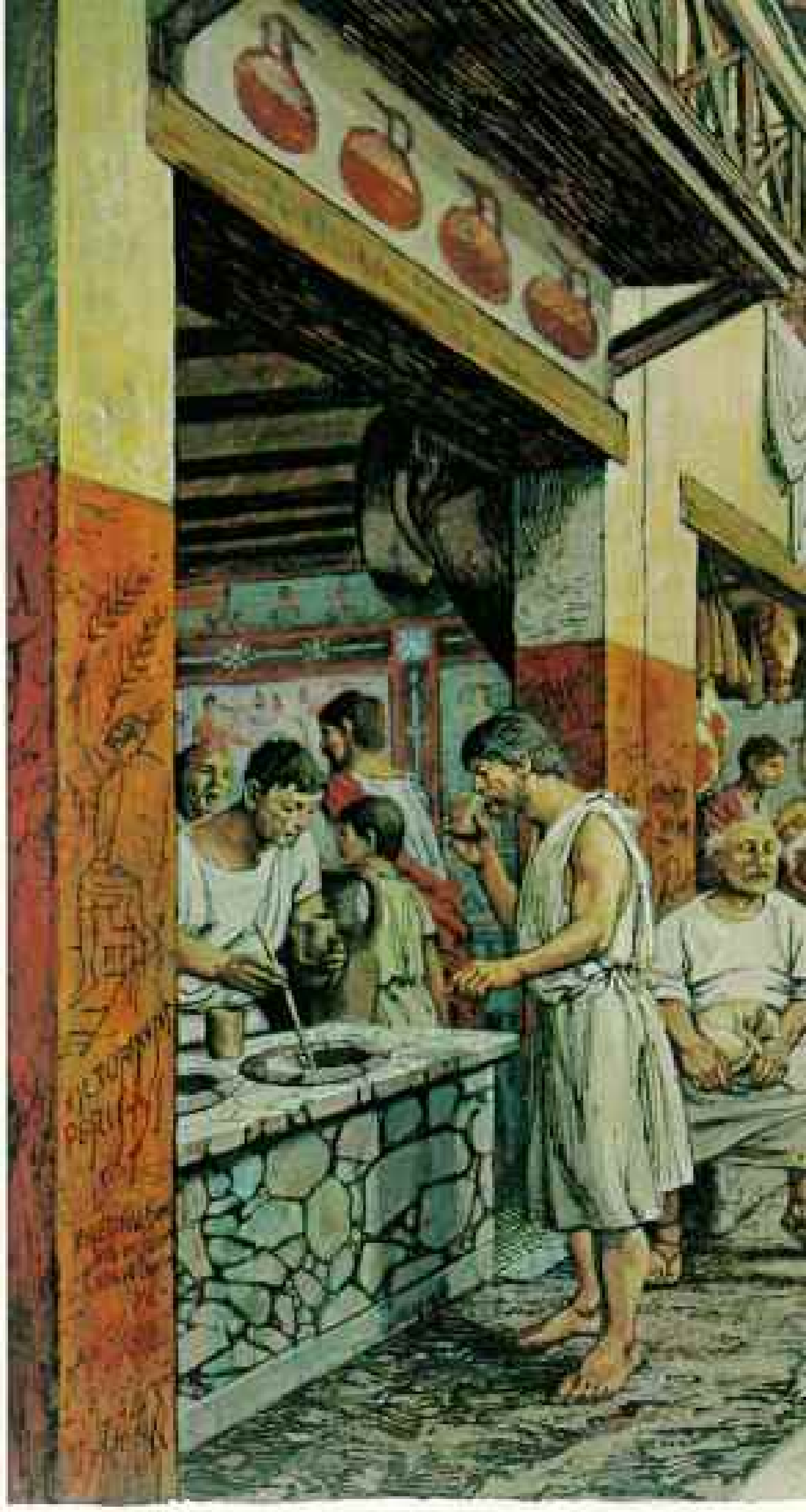
astounded to see those rabbits walking around on the White House lawn—no, of course, *squirrels*. In Italy, if one animal walks alone, he dies!"

A few days later Mr. Signore took us to the ruins of Minturnae, accompanied by his cousin, Professor Antonio D'Urso, a local teacher of English. Minturnae I classify BR, one of the Appia's "better ruins." It has substantial remains of forum, aqueduct, bath, temple, restored first-century theater, and a nice slice of the old Appia. You can imagine it as a living place.

"Biggest Roman city after Rome and Capua—300,000," Mr. Signore said. (But Baldo later told me, "He is a local booster. Even Capua had only 30,000, not 300,000. So Minturnae—ha!")

Mr. Signore, not then privy to the Baldian caveat, went confidently on. "You see the inscriptions on these two monuments? Two lines are chiseled out, a name and titles. Some emperor didn't like his predecessor. That's called *damnatio memoriae*, damnation memorial. . . .

"And here we have the Appia. You see how the blocks poke up; you must raise your feet high." He demonstrated a goose step. "That is how the *passus Romanus*, the Roman double pace—1,000 to a mile—originated, and Mussolini's soldiers copied." Cousin Antonio took issue with that: "Yes, but the Roman pace was not so high as Mussolini's. Even in the pace Mussolini went too far." (Baaaaldo!!??)

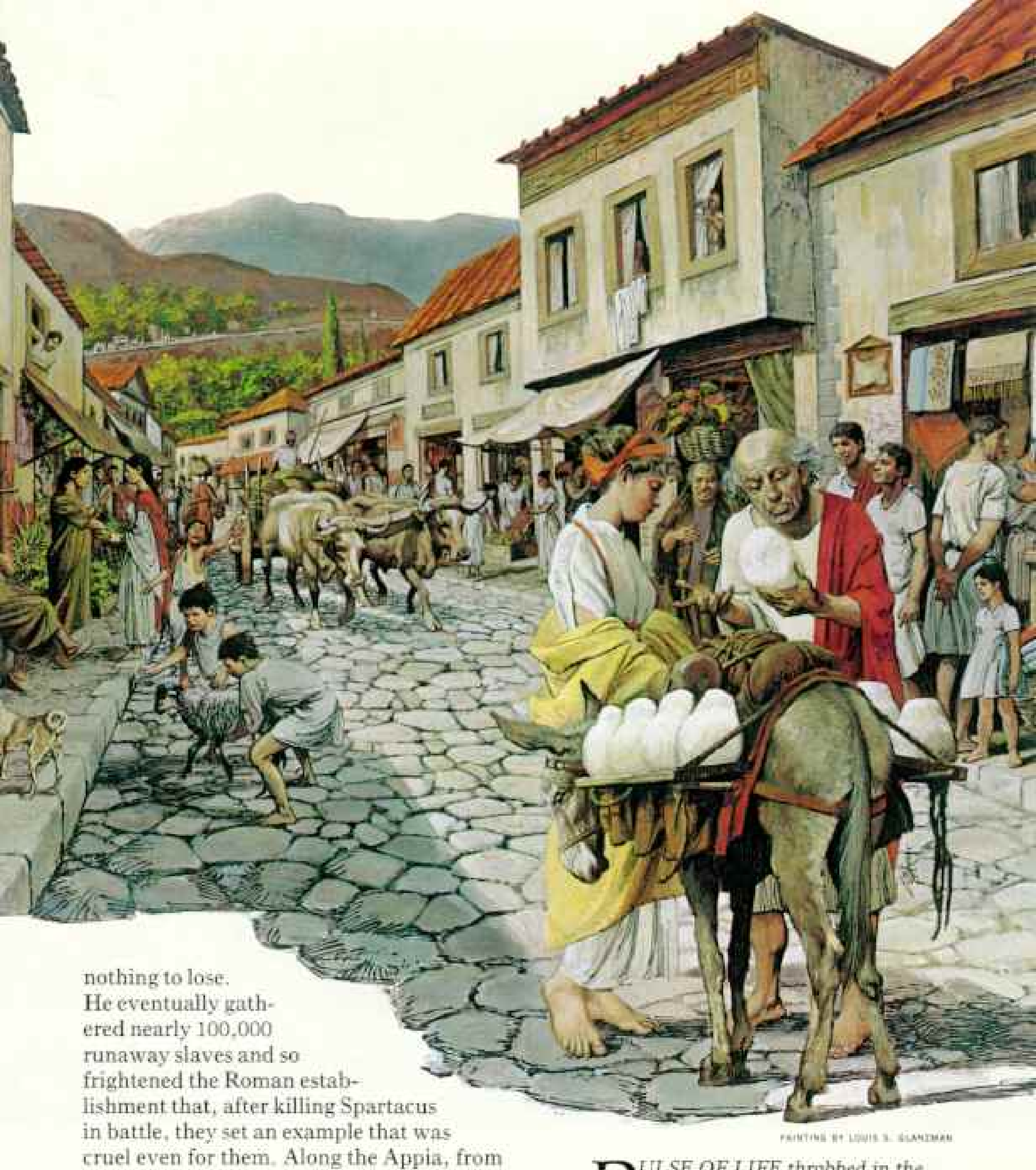


WE REACHED the Garigliano River, the ancient Liris, where the wooden Pons Teretinus carried the Appia south in days before the birth of Christ. This little river has stalled invading armies that tried to cross it, including the Allied force in World War II. The U. S. Fifth Army and the British troops who composed it sat here, facing the entrenched German Gustav Line, during the winter months of 1943-44. And from what Signori Signore and D'Urso avoided saying, I got the impression that some of these troops did not treat Italian ladies as ladies.

Mr. Signore said we could keep our hospitality disk; so my wife and I proceeded with turned heads to Capua. You must understand that this was not really Capua, but rather Roman Casilinum. Roman Capua, three miles down, is now Santa Maria Capua Vetere. This is all clear to Italians. In 216 B.C., the Carthaginian general Hannibal (down to his last elephant) took both Capuas (probably because he couldn't tell which was which), cut the Appia, and panicked the Romans. He came close to bringing Rome to her knees but ended on his own.

Santa Maria, the real old Capua, has the evocative remains of an amphitheater built by the emperor Hadrian, but like so many Roman monuments, when we arrived on the doorstep, it was *chiuso* (closed). Attendants are there, however, to hurl the dread word at you with great satisfaction.

It was near this site that Spartacus, a gladiator-slave, began the Slave War in 73 B.C. Marked for death in the arena, he had



nothing to lose. He eventually gathered nearly 100,000 runaway slaves and so frightened the Roman establishment that, after killing Spartacus in battle, they set an example that was cruel even for them. Along the Appia, from Capua to Rome, they crucified 6,000 of Spartacus's followers (pages 726-7).

When Horace came to old Capua, he was in the company of the poet Virgil and Maecenas, a wealthy Etruscan, who was on a diplomatic mission for Octavian, soon to become Emperor Augustus. While Horace and Virgil took a snooze here (typical freelance types), Maecenas got up a ball game, just like any Kennedy.

The scenery southward now became

PAINTING BY LOUIS S. GLANZMAN

PULSE OF LIFE throbbed in the villages that lined the Appian Way, as the plunder of empire poured into southern ports and moved overland to Rome. But the road also opened up a marketplace for country people, such as this young woman selling cheese, and for village craftsmen who display their wares in stalls beyond. For the thirsty, a vendor dispenses watered wine.

Pride of heritage *shines from the faces of a restoration crew at Minturnae, a prosperous Roman city that reached its height during the second century A.D. Remarkably preserved original stones of the Appia run past broken columns of a once grand portico. The ancient city's theater, now restored in right background, again stages classical plays in summer.*

stunning: great Apennine mountains, narrow defiles. In one defile known as the Caudine Forks, a Roman army, in 321 B.C., was ambushed by the Samnites while trying to colonize them. The Romans had to pass under the yoke, an arch of spears, like dumb oxen. But in 290 B.C. they got their own back and the Samnites down.

"Next stop, Beneventum," as Horace wrote so poetically, but out of step as usual; if he'd come at the right time (about 150

years later), he could have stood there under Trajan's Arch and written a few poetic words, like, "Next stop, Brundisium." For the arch marks the starting point of the Appia Traiana, which goes to Brundisium via the Adriatic coast. We left that route for the trip home.

Climbing to Aeclanum, near Mirabella Eclano, the Appia Antica disgorged an NLR, or "nice little ruin," sleeping on its hills. Custodian Guarino Pasquale showed me second-century B.C. works for making glass and tiles, and I mused on the continuity of human life; just down the road I'd seen a big modern factory making tiles. I wondered whether the Italians also come here to philosophize so richly. "No," said Mr. Pasquale. "Many Germans, Americans, Belgians. But Italians travel to eat, not to look at ruins."

Next stop, Venusia, Horace's own home town. Modern Venosa has erected a sissified

statue of him in Horace Square. There, favorite of an emperor, he keeps an anxious watch on the local headquarters of the Communist and Socialist Parties, which now represent 40 percent of the Italian electorate.

The prettified statue is a kind of unintentional damnation memorial. And Venosa has an even bigger example of the genre, in which the whole Roman Empire is, symbolically, expunged by the Roman Catholic Church. This is the huge Abbey of the Trinity, built during the 11th to 13th centuries. Beside it lies the pathetic cadaver of a Roman amphitheater picked almost clean to make the crazy-quilt Christian structure of Roman blocks and columns. It seemed a tad spiteful to me.

To ease the rigors *of Appia travel, a luxurious bath awaited at Minturnae. While sipping wine, patrons might view a floor mosaic of cupids stomping juice from grapes* ***(above)****. Less romantic but more efficient, today's grape crushers in Gravina di Puglia use a hand-cranked press to serve residents who make wine from their own grapes.*

THE SOUTHWARD MARCH of the Appia Antica (or facsimiles thereof) brought us to Taranto, ancient Tarentum. This was a key port of Magna Graecia: scores of Greek settlements in Italy that added up to bigger than Greece itself and lasted for 500 years, until Rome grabbed up the lot in the third century B.C.

The greatness of Magna Graecia can be felt in the superlative collection of Graeco-Roman art in Taranto's National Museum. But Antonio Pagano, a state employee to whom I had presented my hospitality disk, told me when we returned to the outside world and its industrial smog that Taranto is much greater today: "A century ago this was a quiet fishing and farming town. Now there are 250,000 people here."

What happened? *Cassa per il Mezzogiorno* happened—"Cash for the Midday Sun," or Italy's fund to put the sunny south on its economic feet. The intent is to create new industrial complexes—like Taranto's metalworking Italsider—in the hope that they will spawn satellite industries. Right on the Appia, a ballista's throw from a Roman aqueduct, Italsider is Italy's largest steel center, employing 30,000 workers. But Italsider has failed to spawn satellites and has attracted more workers than it can use.

I don't know whether the Greek Tarentines had a similar unemployment problem, but the Romans solved it anyhow. In taking the city in 272 B.C., they considerably reduced the able-bodied population. That was quite a war. Appius Claudius, blind in his old age, had had to buck up the wavering senate to press the fight. He had wanted his road to go in there, no doubt so Roman tourists could get to Greece to plunder it.

The Tarentines had called in Pyrrhus, King of Epirus, who had defeated the Romans in 279 B.C. at Asculum. But so high had been his casualties in that battle that he cried, "One more such victory and we are lost," thus giving rise to the immortal phrase "Pyrrhic victory." The victory that counted was Roman, in 275, at Beneventum.

Judging by the number of Pirros and Annibales in phone books, southern Italians still feel an affinity for Rome's gallant

Driving through this wilderness of rock, *the Appian Way pushed south toward the heel of Italy, probably following a centuries-old shepherds' track. Cities on these promontories rose and fell. Excavation suggests that the town the Greeks called Sidion*

was succeeded by the Romans' Silvium, mentioned as an Appia stop by ancient travelers. The huddled old section of today's Gravina di Puglia may conceal the ruins of the Roman settlement; the Appia's path here remains uncertain.

foes. (Roman efficiency was just too much.) Pirro Scoditti was the only Pirro I met, but he looked very Roman. I say that because he stands five feet two inches, the average height of the ancient Roman male, and is baldish, like Julius Caesar.

Pirro is in the state travel office in Brindisi, and I was afraid he might be a Horace-type bureaucrat. "No," Pirro reassured me, his dark eyes crackling with wit. "I have no political influence, and I live in a housing project. I also work."

At Appia's terminus, on the Brindisi waterfront, Pirro explained why only one and one-eighth columns remain of the two 60-foot columns that were erected to celebrate completion of Trajan's Appia. "Only the base of this one is here. Its column is in Lecce. An earthquake knocked both columns down, and later, around 1600, the mayor of Lecce asked for the pieces of one to put together with a statue of Sant' Oronzo on top. Oronzo is the saint of the province, and Lecce was then

A craft still cherished: *Villagers of Alberobello, near the Appia Traiana, have good reason for building "trulli," beehive homes. Steep limestone-slab roofs direct infrequent rainwater to underground cisterns. Thick whitewashed walls assure cool summers.*

Cradled by time, the remains of a young girl who played in the streets of Egnazia 2,300 years ago came to light during excavation of that Adriatic port on the Appia Traiana.

provincial capital. So the mayor got!"

Pirro invited us to Sunday pranzo at his home in the state housing project. There we met wife Rita and their four grown children. The apartment was elegant, spacious, spanking new, with vegetable garden—all for $35 a month. "But I have waited 25 years to get such an apartment," Pirro said. "You must add my 25 years of state taxes to the rent. I work for the state; so I must pay taxes—the state knows my income."

Rita introduced us to the glory of purple octopus tentacles, sweet and tender as scallops, and crunchy sepia (tiny cuttlefish) mixed together with squid rings. With the spaghetti (chewily *al dente*, as only in Italy) came plump mussels in a piquant red sauce.

Pirro passed the olives across the mussel platter, and I thought, "Olives and mussels, alive, alive-o!—that's what the Mogli Maloni of Puglia must cry." Puglia, the region in which Brindisi is situated, is first in olives in Italy, with endless groves of gigantic old trunks. They are twice as big around

With skill now practiced by few, *stonemasons in Itri repair a swath of the present-day Appia uprooted to install a gas line. Since no original stones remain near the surface here, they lay new stones in an 18th-century pattern. Although only bits and pieces of the celebrated road survive along its 360-mile route, those with a sense of history and imagination can retrace the course of empire.*

as Santa Claus, known here as San Nicola, a posthumously transplanted Puglian who, when not working, rests in his lonely crypt in Bari, right on the Adriatic and the Traiana.

Ah yes, the Appia Traiana, our homeward route, and now time to go. I can't say much about St. Nick's Bari, Roman Barium, of which almost nothing remains. But we seemed to remain eternally in the worst traffic jams of our trip (a superlative I do not bestow lightly). Modern Bari has 400,000 people and exactly 800,001 cars. It took us all that day to count them, but we did.

I had wondered how Italians, in view of their tottering economy, could afford so many cars and keep them running, with gas at more than three dollars a gallon. Pirro had explained: Many Italians have one known job, on which they cannot duck taxes; but then, what with the short working hours enforced by powerful labor unions, they also have a secret, moonlighting job, on which they report no taxes.

If Bari was lacking in antiquarian charm, Egnazia, just a few miles south of it, smack on the Adriatic, was not. Its class MLR, "moody little ruins," emanate that melancholic charm characteristic of resort towns that have gone to seed. There is a forum, fishponds in the sea, and Trajan's Appia, with ruts cut into its polygons by Romans' iron-rimmed wheels. I have disputed with other Appian scholars whether Romans drove to the right or left. Egnazia's ruts clinched it for me. Romans drove down the middle, just like Italians today.

Horace stopped there and criticized it as "a town clearly built when the freshwater nymphs were at odds with the natives." He was much put out that he had to buy water in this region. But the natives here were merely ahead of their time. Today water is sold in every restaurant, *acqua minerale*, automatically placed on the table at 75 cents a liter. Waiters panic if you ask for *acqua dolce* (plain water).

HORACE WROTE of Canusium, a main Traiana station north of Bari, that it "had bread made of gravel." I thought it was marshmallow. The bread of Puglia resembles plastic-wrapped French bread consumed with the wrapper on—totally unlike the wonderful crunchy bread we savored on the Tyrrhenian coast.

Authors Hamblin and Grunsfeld warned in their book that "Canosa can be a very frustrating city," and indeed it can. We wanted to see "the magnificent bronze doors" of the Tomb of Bohemund, a 12th-century Norman crusader. The tomb is attached to Canosa's principal church, where a priest with a ten o'clock shadow was standing in the doorway. He had the doors nine-tenths shut—it was 11:50, and he closed at noon. I asked him where Bohemund's doors were, and he directed us way around the church. There a dignified Italian matron, seeing our worry, said the doors were *in* the church, and walked us back. The padre looked at his watch and "chiusoed!" us. Upon which our matron lost her dignity and called him "*cattivo!*" several times. Loudly. Cattivo, I found later, means "wretch! villain!" Thank you, ma'am.

Ten miles east of Canosa, off the Appia, lies hilltop Cannae, which I rate NULR, "nice unassorted little ruins," because Roman and medieval are all mixed up in them. Just below, on the Ofanto River, in 216 B.C., Hannibal handed the Romans one of their worst beatings in five centuries.

Herdoniae, modern Ordona, sits in a farmer's fields, is almost unreachable, and so is shockingly clean. A BLUR, "big little unified ruin": a grand temple sketched in pillarless bases and capitals, a bit of Appia snuggled under the boiler of a bath. But what really haunted us was the line of shops, each with a stone groove in front, ready, as in Italy today, to receive the shutter at closing time. Bang! Chiuso!

In Troia, the Traiana goes down the main street, and under its asphalt probably lies the selce Traiana of Roman Aecae. An NSR, "no show ruin." Buonalbergo down the road, once Forum Novum, is similar.

And then. . . ! We stood again in Benevento under Trajan's Arch, eyes moist (smoggy day), recalling all the inspirational polygonal pavement and cheery old tombs we had seen, the piquant peccadilloes we had found in Horace's tracks. If a great adventure can be accumulated out of small misadventures, the whole being greater than the sum of its parts, then we, and Horace too, had had it. □

Somalia's Hour of Need

By ROBERT PAUL JORDAN
SENIOR ASSISTANT EDITOR

Photographs by
MICHAEL S. YAMASHITA and KEVIN FLEMING

EARLY MARCH IN SOMALIA. Old border agonies flare. Ethnic tensions mount with Kenya, on the southwest; in Ethiopia's Ogaden region, guerrilla warfare. Nomads are fleeing by the hundreds of thousands into Somalia, itself cursed with drought and food shortages. Disease and death, as always, attend the wretched refugee camps.

Escorted by four guerrillas, I drive across the sandy barrens from the city of Hargeisa deep into the Ogaden. Prudent men travel this contested land by night. But a flat tire has delayed us, and we move forward again at dawn. Our Land-Rover casts a horrid plume of dust that an Ethiopian fighter pilot could detect from 80 kilometers.

This Ogaden, furnace-hot land of sand and brush, has been home to countless generations of Somali nomads. Ceded to Ethiopia by European colonial powers near the turn of the century, it is regarded as Western Somalia by the ragtag guerrillas now seeking to wrest it back.

Mohamed, our commander, is easy. At 23, he has been a "freedom fighter" for eight years, and thrice wounded. He is wearing a tattered U. S. Army field jacket with a small round hole in the left breast. "Where did you get the jacket?" I ask. He shifts his AK-47 assault rifle. "From a Cuban I killed. Many Cuban troops are fighting for Ethiopia."

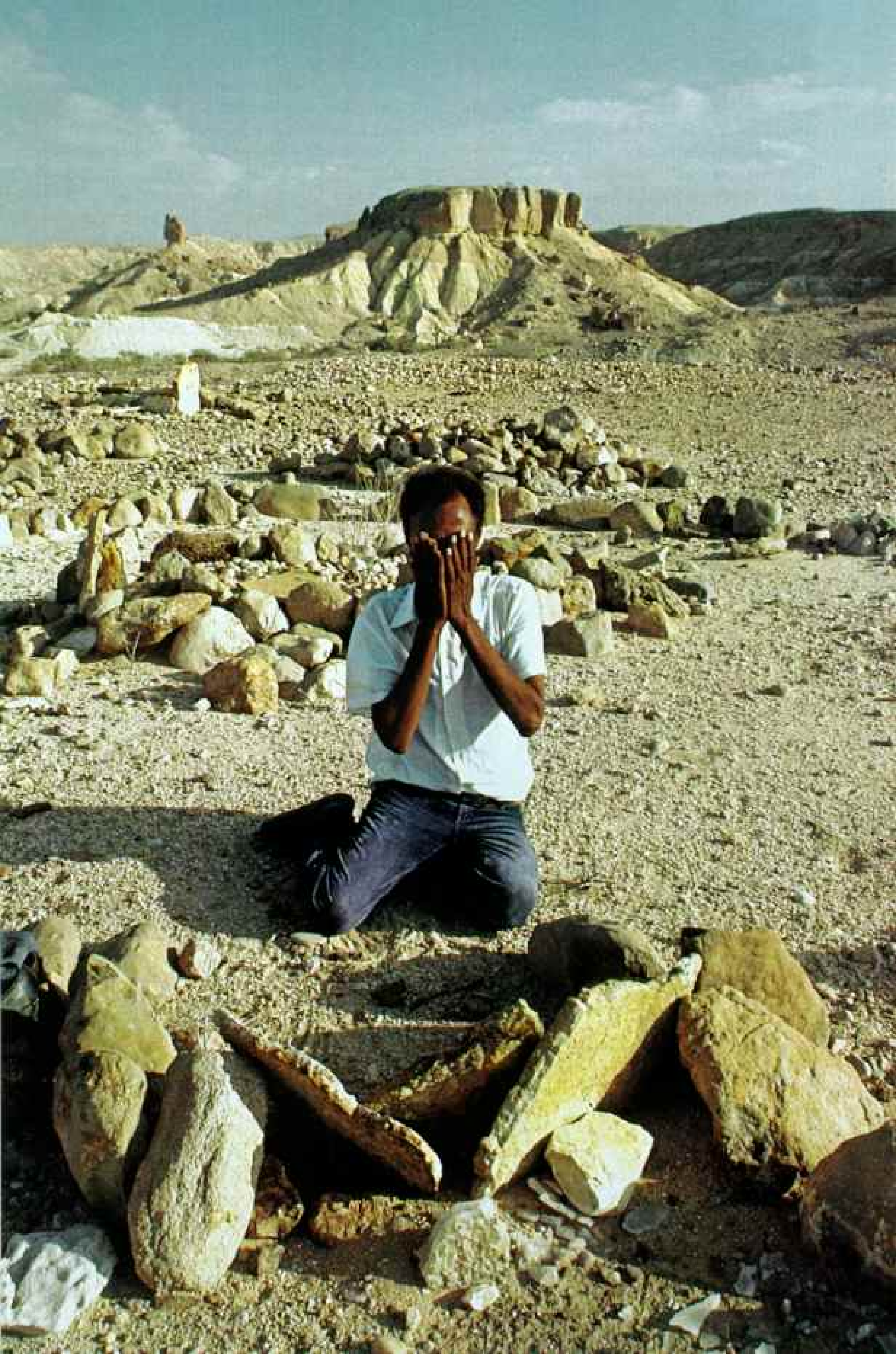
At 1 p.m. we come up at last to our destination, a camouflaged outpost of the Western Somalia Liberation Front. I see little activity. Several dome-shaped, stick-frame huts, homes of departed nomads, stand beneath spreading acacia trees: The women and children walked to Somalia after this place was bombed and strafed. Nearby sit a couple of trucks loaded with sacks of rice and flour. Armed men, mostly young, all thin, loll about; life is dull between forays against enemy convoys, discipline nonexistent. One soldier leans cranelike on his rifle, its bayonet anchored in the ground.

It is dry and hot. I recline in the shade of a thick arbor, free of the glaring sun. A few feet away Mohamed and the camp commander are working out our program. They talk; a fierce argument erupts. Just as suddenly, we are unwelcome. Abruptly we are ordered to leave. To protest could be deadly.

As we pull away, bullets clip the branches alongside. Pop! Pop! Pop! A few rounds from the freedom fighters.

Somalia has long supported the guerrilla movement. In Mogadishu, the capital, I complained to Abdullah Hassan Mohamoud, secretary-general of the insurgents. "You must understand," he said apologetically, "that life is very rough there in this

Though fortune may frown *on his country, a Somali praying toward Mecca holds firm in his faith that "Allah will provide." Beset by drought, poor in resources, the nation faces the world's most severe refugee crisis, as ethnic Somali nomads flee Ethiopia's Ogaden, a territory claimed by Somali guerrillas.* MICHAEL S. YAMASHITA



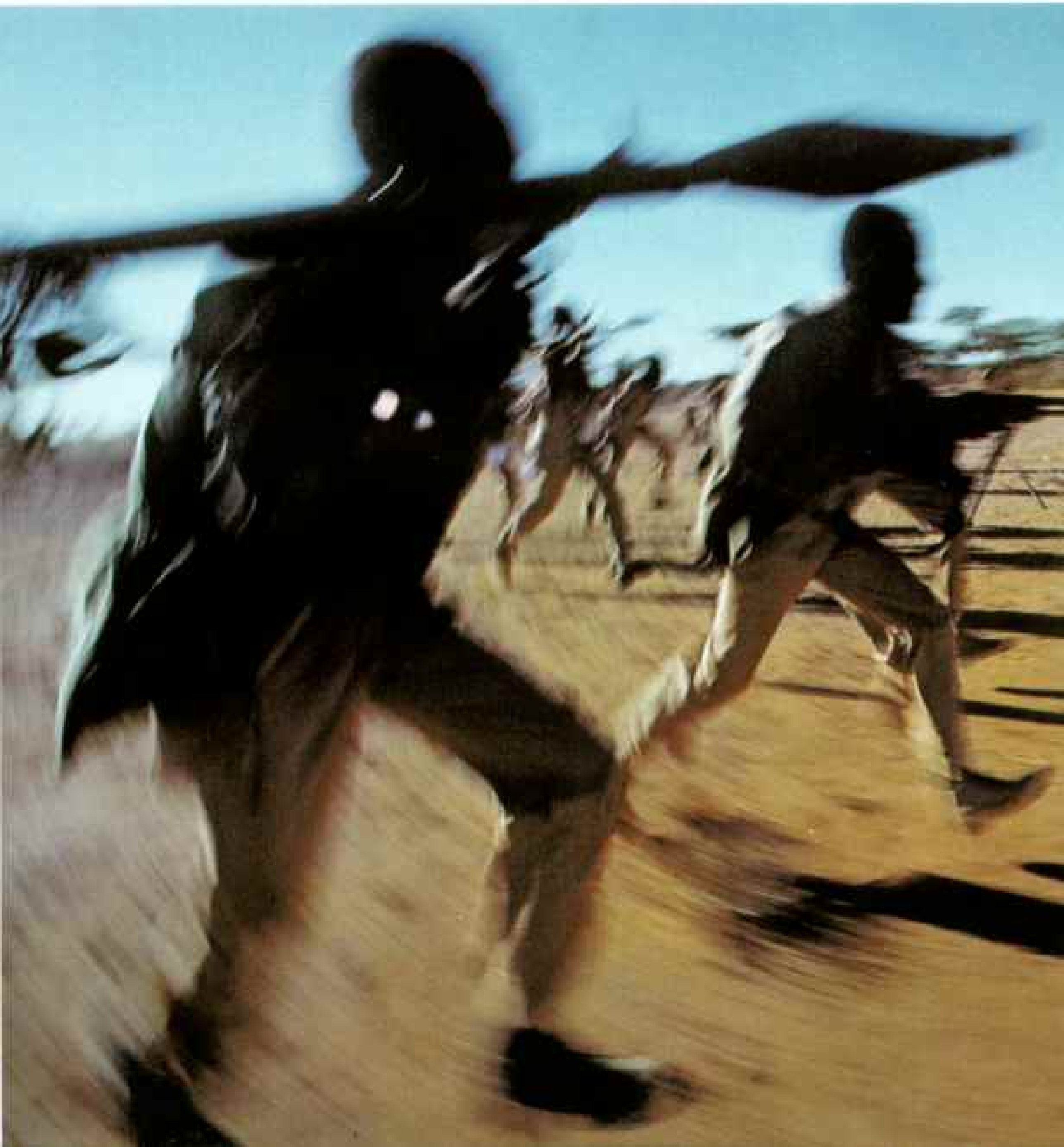
dry season. Those boys face great hardships. They were not thinking properly."

To me, pausing a few days in Mogadishu, the dusty city seemed oddly complacent. It closed down every afternoon in the humid East African heat, streets empty by 2 p.m., shops shuttered until dusk, government gone home. This is a tomorrow country; people, said an official, are used to waiting. The bureaucracy reopens at 7 a.m.

Few nations are poorer. There is little industry. Most people live at subsistence level. A startling number of the best minds and skilled hands, you learn, have gone for good to the Arab world for oil money. At 7 a.m. in front of the passport office the usual long line of applicants will be waiting. You wonder if Somalia doesn't die a bit more each day.

A few months before his death, I strolled at nightfall along the esplanade with the scholar Musa Galal. The Indian Ocean sent a sweet breeze, and the Southern Cross brightened overhead. Here it blesses a Muslim land.

"Most African states," he said, "are composed of diverse peoples. We Somalis have unity—we are one in speech, traditions, and religion. We claim descent from the Prophet



Muhammad." Only short years ago they had acquired another profound tie: a script for their spoken language.

The incoming tide crashed against immense boulders and subsided into froth. A U. S. Navy cruiser rode in the harbor—Somalia recently gave port and airstrip facilities in return for American military aid. "What about border problems?" I asked.

"We do not make these problems. Allah created this beautiful land [land of thirst and woe, I amended silently] for Somali nomads and camels."

Skinny boys whooped at play along the beach. "Camels are great scientists," continued Musa Galal, poet and author. "They know their country. They belong to sand. When the country goes into a forest, they stop. There lies the true border."

KEVIN FLEMING

Nomads Wander a Harsh Land

Camel country extends far inland on the Horn of Africa, west in Ethiopia to the highlands. Somalis have lived here for centuries, wandering in search of water and pastures, free. A harsh land, this: not desert, but close. High, arid country mostly, a savanna of acacias, patches of grass, thorny shrubs, tall anthills, and rocks.

When the scant rains fail, it turns cruel. Then sheep and goats slowly die. The barrens are strewn with their carcasses. As we traveled, Ahmed, my guide, always insisted that hyenas and jackals would not eat the remains—"No protein in them."

We were cruising one day in a four-wheel-drive vehicle. A shepherd flagged us down. This man was existing on camel milk alone. He craved water. Offering it, I pondered the fate that disposed him here. He drank his fill, took up his staff, and stalked away.

Nomads endure in freedom, proud people of inbred self-determination. Somali nationalism springs from this root. Today's conflict goes back to the late 1800s, when European colonialism divided the Somali-inhabited region into five parts—French, British, and Italian Somaliland, and adjoining sections of Ethiopia and what is now Kenya.

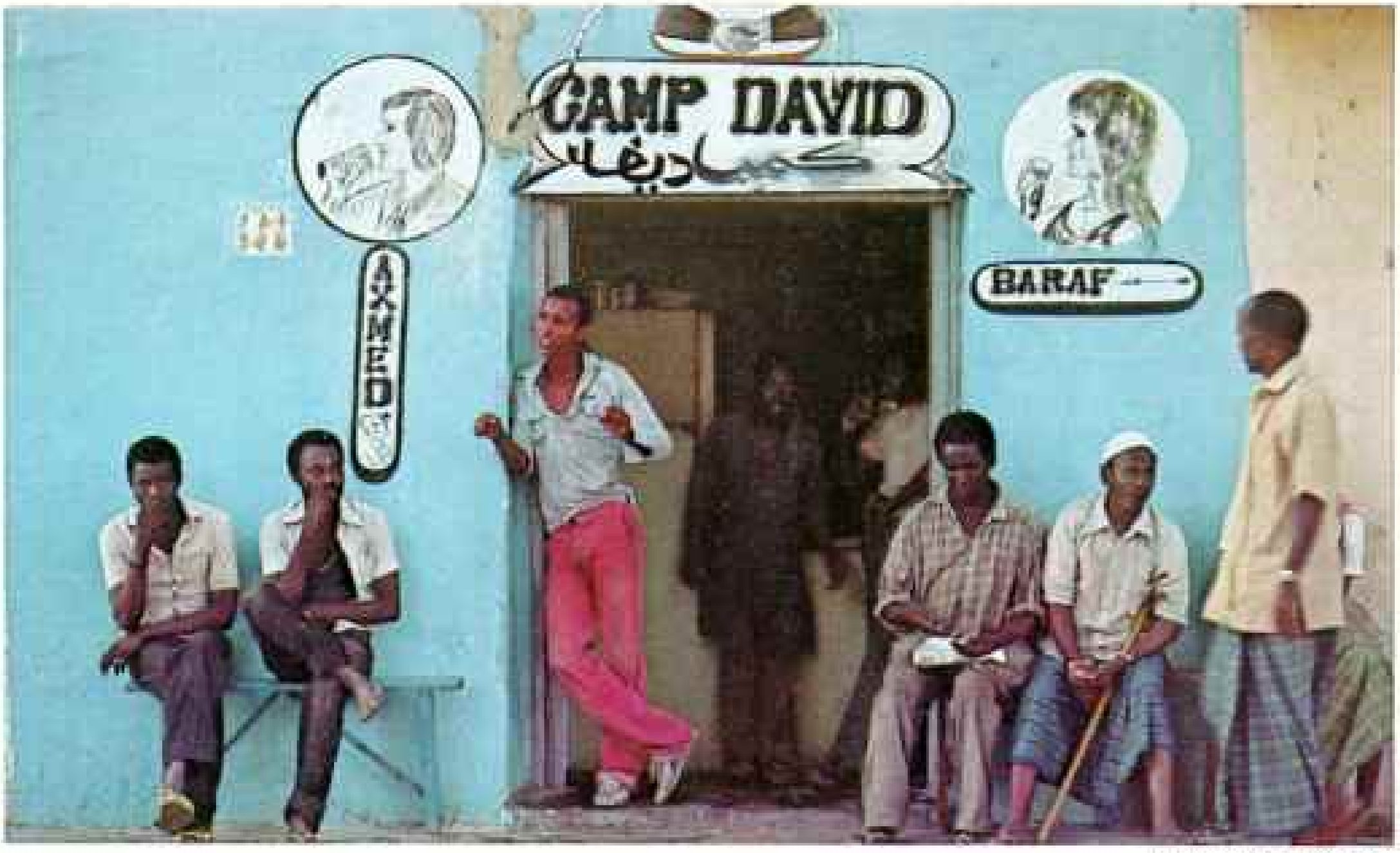
In 1960 the Somali Republic was created from the British and Italian entities. In 1969, after a military coup, it became the Somali Democratic Republic. Still controlled by the same officers, the Marxist-oriented government seeks to advance what it terms "scientific socialism." Around 60 percent of the population is nomadic, 15 percent agricultural, the rest urban.

France's colony recently became the tiny

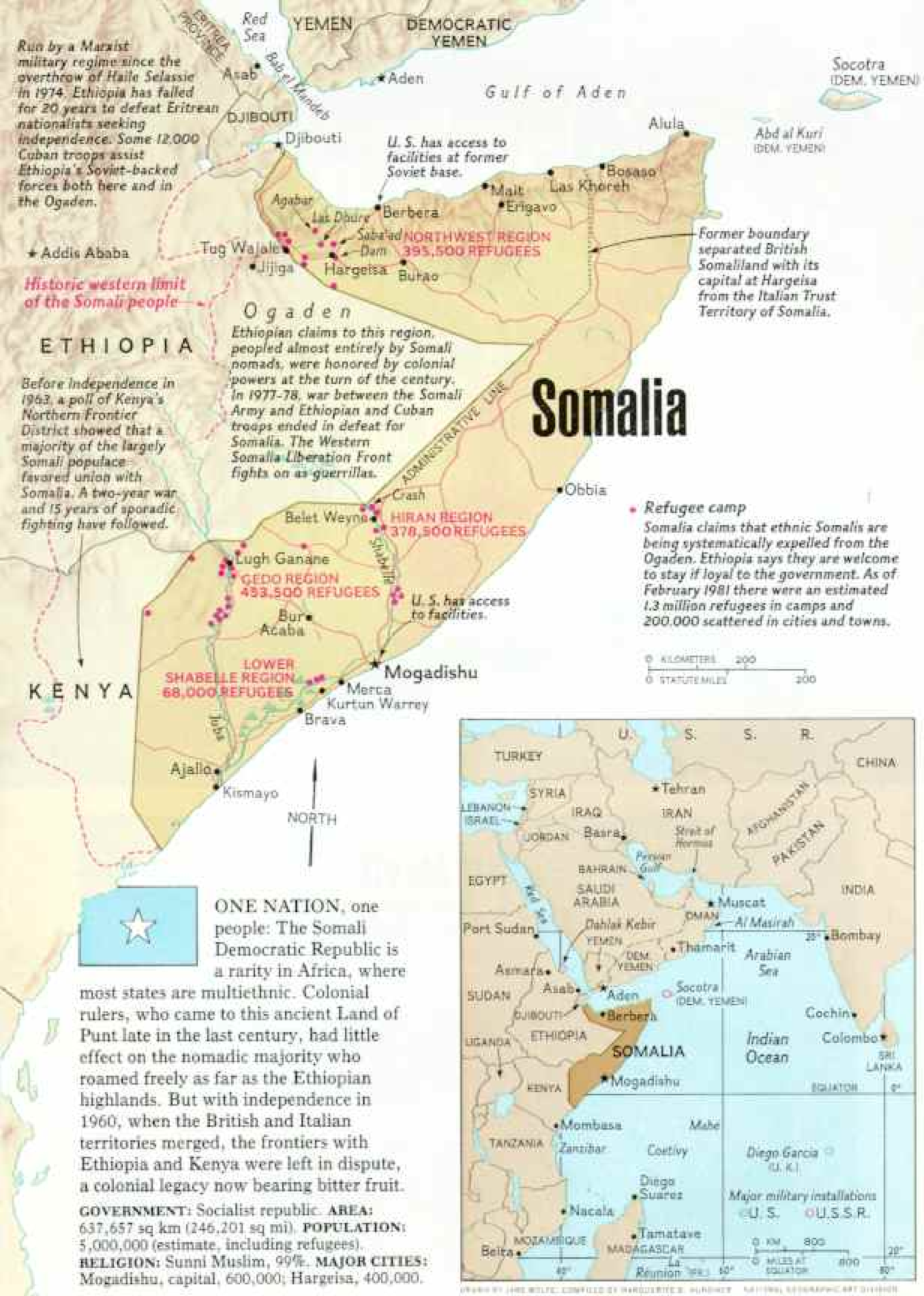
*"**With knives we win guns;** with guns, rocket launchers," say members of the Western Somalia Liberation Front **(left)**, who, with Soviet arms captured from Ethiopian and Cuban troops, penetrate deep into the Ogaden.*

New presence *in Somali harbors, a missile cruiser from the U. S. Seventh Fleet* **(above)** *visits Mogadishu, seat of a government rooted in Marxism. In 1977 Somalia ousted thousands of Soviet and Cuban technicians after their governments began supporting Ethiopia. The United States respects Ethiopia's borders but has agreed to provide Somalia with 42 million dollars in arms for defense, after assurances that regular Somali forces are not deployed in the Ogaden. In return, the U. S. gains access to port and air facilities near Middle East oil fields and shipping lanes.*

Centuries of Arab influence and decades of Italian colonization are reflected in the architecture of Mogadishu **(top)**. *The name on a popular bar* **(right)** *bears witness to Somalia's tendency to swim against the tide. Although a member of the Arab League, she defends Egypt, who was suspended from the league in 1979 for signing the Camp David accords with Israel.*



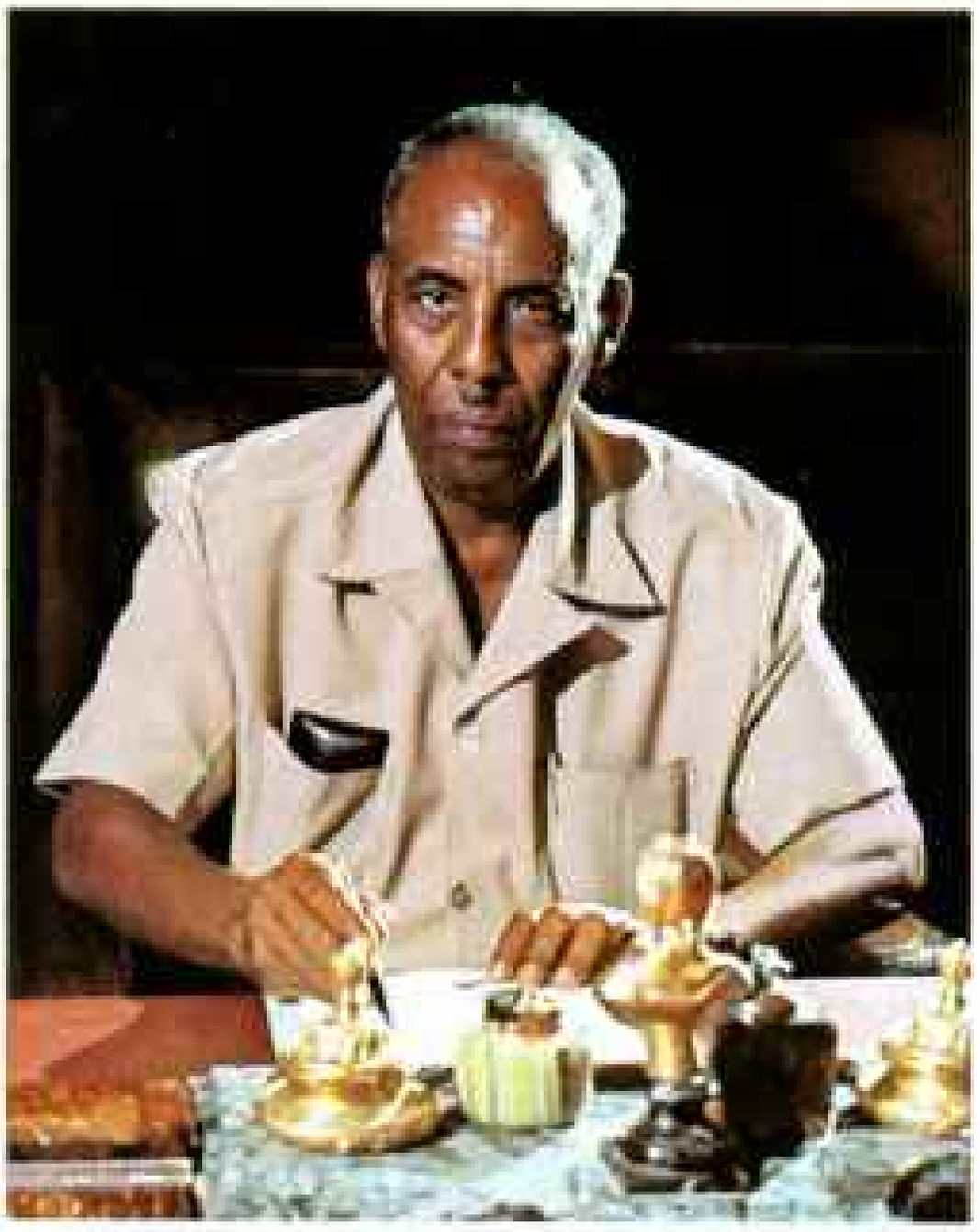
ALL BY MICHAEL S. YAMASHITA



ONE NATION, one people: The Somali Democratic Republic is a rarity in Africa, where most states are multiethnic. Colonial rulers, who came to this ancient Land of Punt late in the last century, had little effect on the nomadic majority who roamed freely as far as the Ethiopian highlands. But with independence in 1960, when the British and Italian territories merged, the frontiers with Ethiopia and Kenya were left in dispute, a colonial legacy now bearing bitter fruit.

GOVERNMENT: Socialist republic. **AREA:** 637,657 sq km (246,201 sq mi). **POPULATION:** 5,000,000 (estimate, including refugees). **RELIGION:** Sunni Muslim, 99%. **MAJOR CITIES:** Mogadishu, capital, 600,000; Hargeisa, 400,000.

Toughing it out, *President Mohamed Siad Barre remains as committed to "scientific socialism" as when he seized power in 1969. Most African nations, of the political left and right, oppose the Somali drive for a Greater Somalia, since it defies a golden rule of postcolonial Africa: Do not tamper with existing borders.*



KEVIN FLEMING

independent state of Djibouti.* About a fifth of Kenya remains largely Somali occupied, in the North-Eastern Province. In Ethiopia, Somalis also predominate in about a fifth of the country—mainly in the Ogaden—or did until their tragic hegira.

How many people live in Texas-size Somalia proper is unknown. A government planner gave me an estimate of five million. Around a million and a half were refugees, he guessed, more than three-fourths in camps, the rest scattered in cities and towns.

"We feel they are our people," he went on, sadness in his voice. "We have a moral obligation to them. We must share whatever meager resources we have."

All the nation's resources, and the international community's medicine, food, and advice, fall short. Somalia bears the most serious refugee situation in the world today.

The short drive from Hargeisa, Somalia's second city, to the armed border town of Tug Wajale carries you through desolate gray-green bush and burned-out farmland, past towering dust dervishes dancing in a strong wind. A lake appears on the horizon, long and inviting; soon it billows and vanishes, a teasing mirage. In a dim village restaurant, earthen floor hard packed, whitewash flaking on mud-twig walls, a small boy serves goat meat and camel milk. "If you use this milk," said my guide, a restraining hand on my arm, "three times a day you can visit the latrine."

Transit Camps First Stop for Refugees

At Tug Wajale we stopped at a cluster of rude metal sheds and nomad stick houses. This was a transit camp, a first station for refugees. About 150 families were awaiting assignment to permanent camps. The camp manager introduced me to Abdi Hassan, a herder, and his wife and four children. "We walked three nights from near Jijiga," he said, "and hid by day."

I asked why they had fled.

"Ethiopian soldiers came. They took my animals, 30 head, and my property, and forced me to be a soldier. I escaped, went home, got my wife, my children." He managed a smile. "Somalia has saved us. I will go back to fight with the Front."

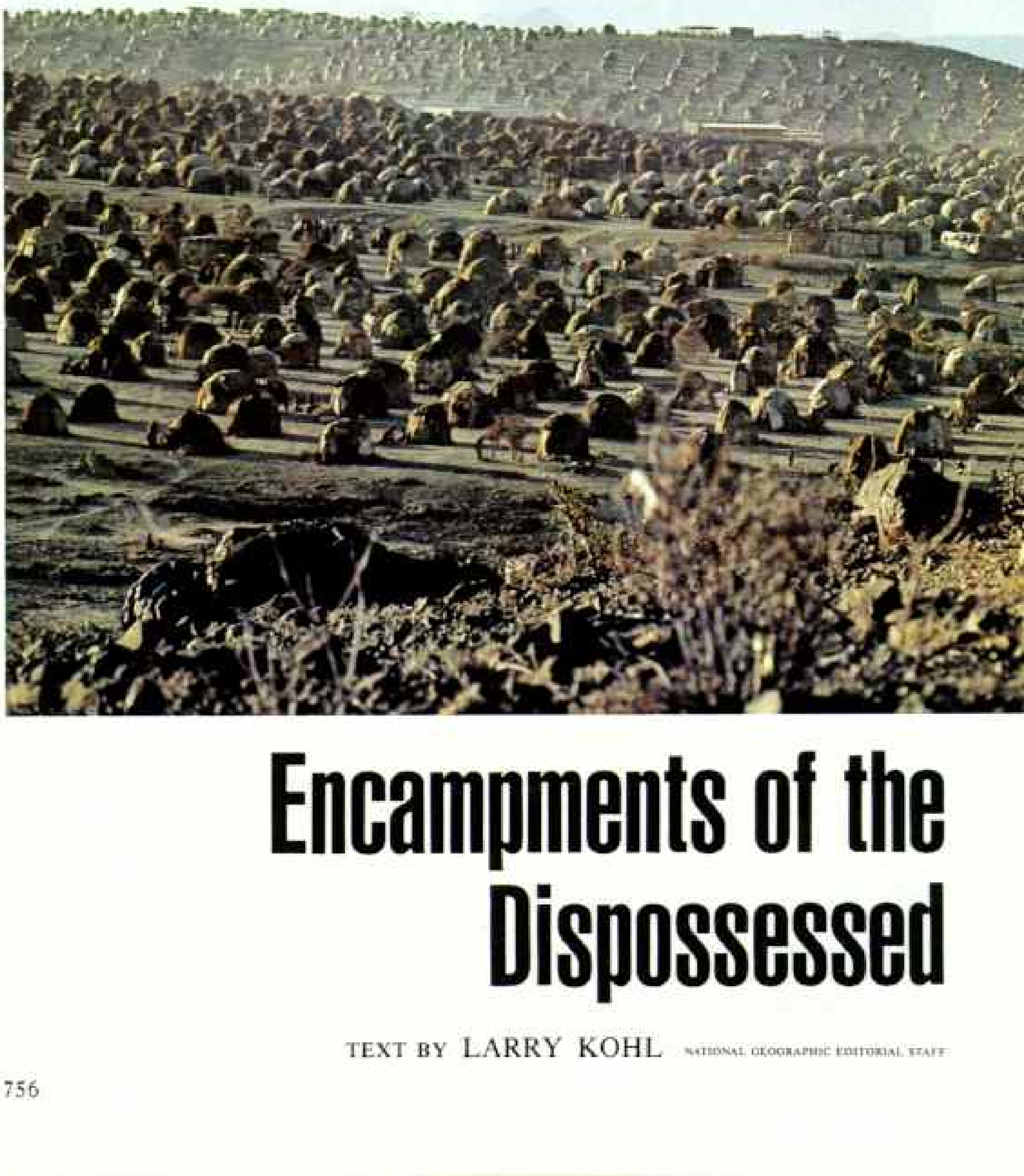
I would hear much the same story many times. Villages bombed. Tanks. Livestock killed or driven away. Houses burned. Ethiopia colonizing the Ogaden, aided by Soviet military advisers and Cuban troops.

More than a thousand refugees were crossing the long border daily. In the camps, nine out of ten were women, children, and the elderly. The men, I was invariably told, were off warring in the Ogaden.

And many were, I knew. Many others, I also knew, had drifted to urban areas. But much remained unknown. Perhaps near famine, rather than war, had driven some of those families into Somalia. Some, I suspected, now were fleeing misery in the camps, slogging back to the Ogaden. In the Horn of Africa, people shift like the sands.

I headed back to Hargeisa. On the way a broken dream *(Continued on page 765)*

*See "Djibouti, Tiny New Nation on Africa's Horn," by Marion Kaplan, GEOGRAPHIC, October 1978.



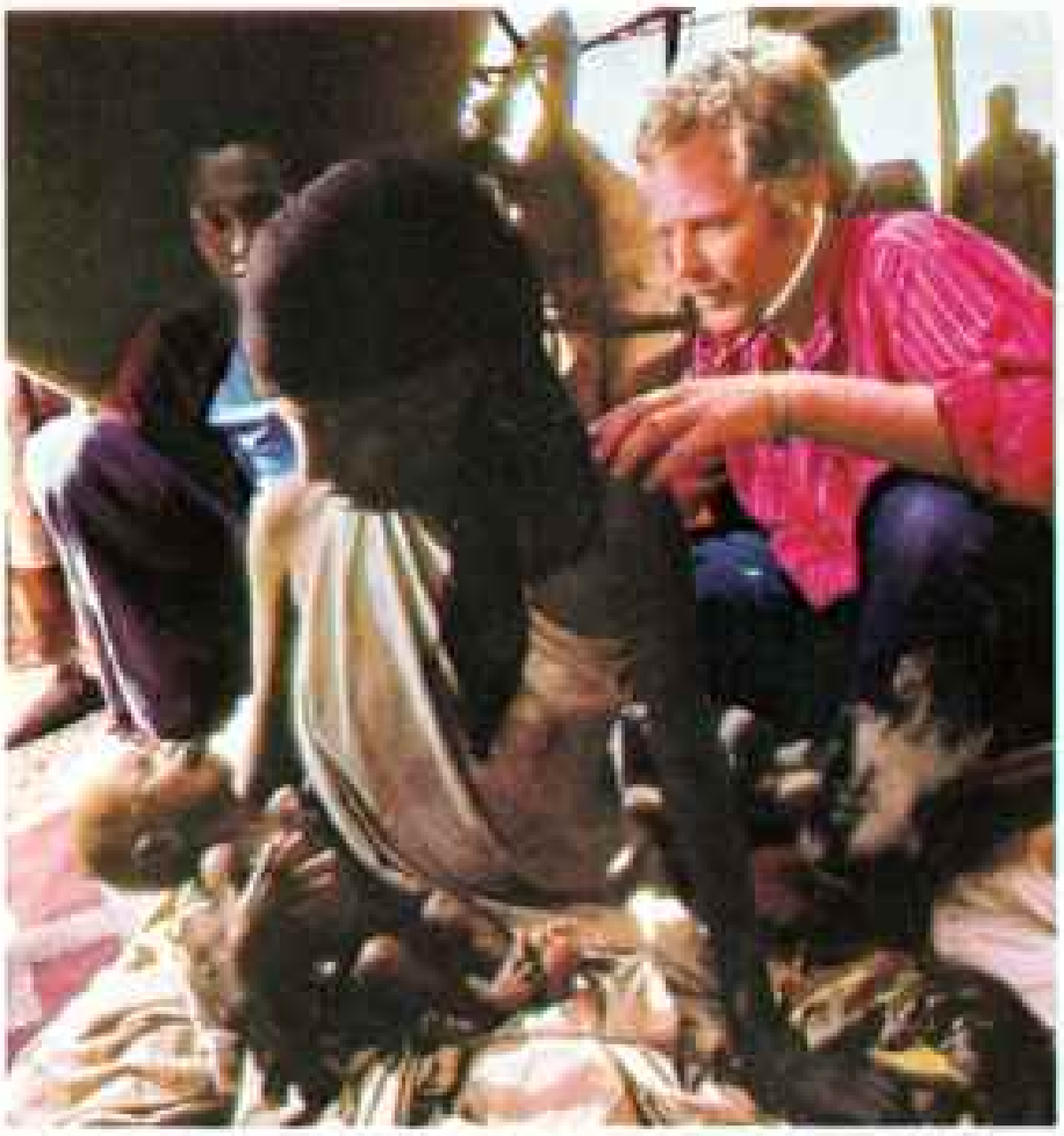
Encampments of the Dispossessed

TEXT BY LARRY KOHL NATIONAL GEOGRAPHIC EDITORIAL STAFF

KEVIN FLEMING

ON THE FRONTIERS of existence, thousands of refugees crowd Las Dhure camp in Somalia's Northwest Region. For miles around, the meager land has been stripped of thornbush and grass to provide cooking fuel and building material for makeshift huts. Thus a country suffering widespread drought becomes even more blighted.

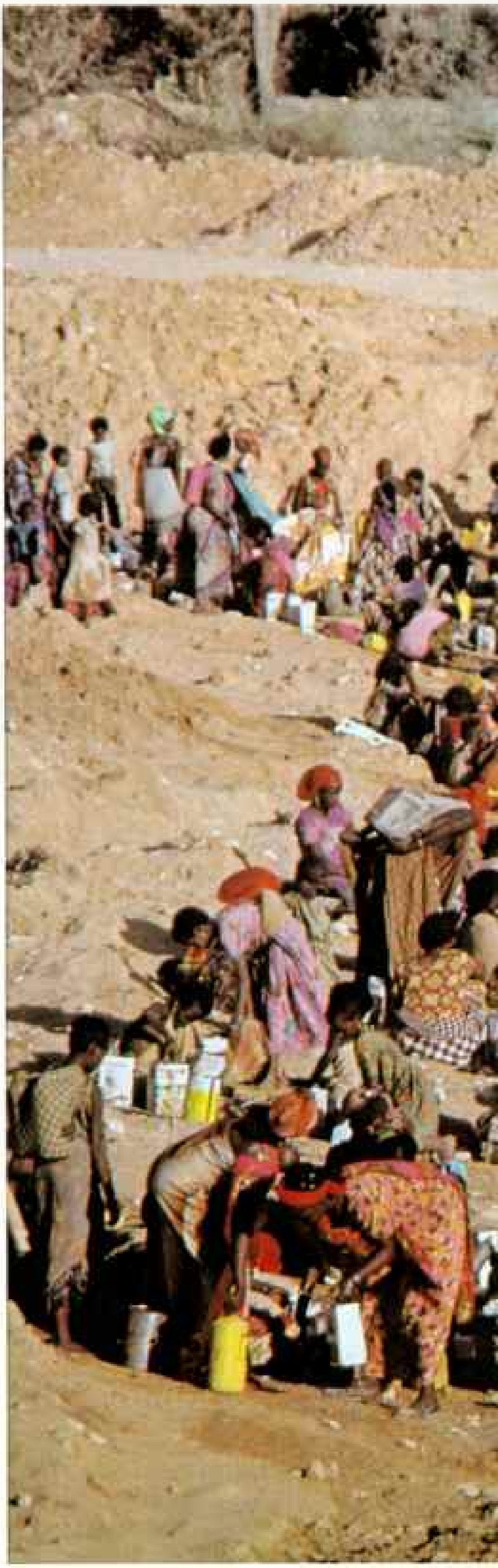
By February of this year, 33 camps harbored more than three-quarters of an estimated 1.5 million refugees. Fleeing war and famine, a thousand a day poured across the Ogaden border, welcomed as kinsmen by one of the world's poorest nations. Carrying children and possessions, some walked for weeks; most arrived malnourished or diseased.

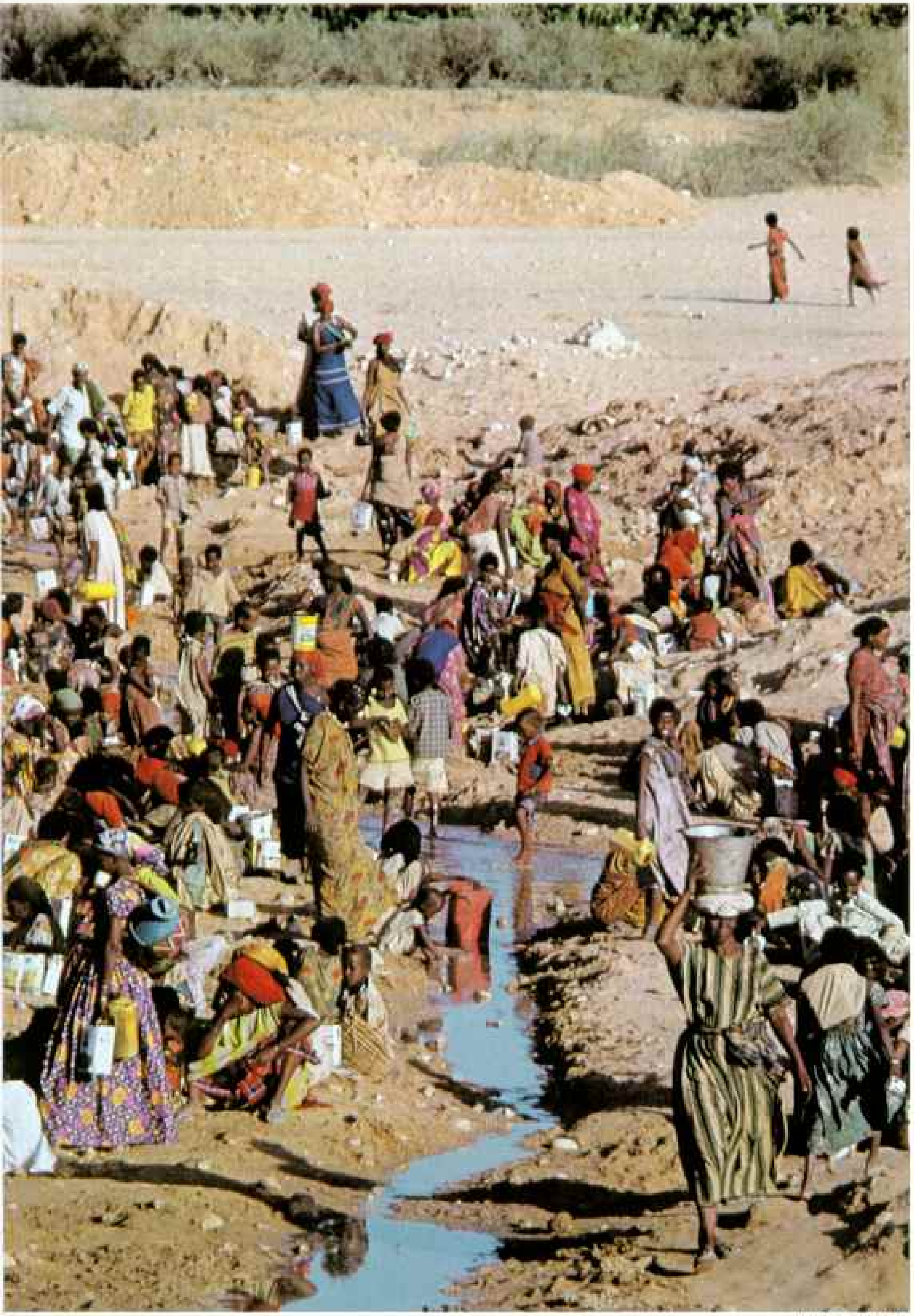


KEVIN FLEMING

PLAGUE OF DISEASE hangs like a curse over the refugee camps, as malnutrition makes easy prey of all. Tuberculosis and malaria are epidemic, but measles and diarrhea are the biggest killers in the camps. On a "hut call," Dr. Eric Avery, an American with World Vision, an international relief agency, examines a young mother (***above***) too weak with a cold to visit his clinic at Las Dhure. He and a dozen assistants are responsible for the health of 75,000 refugees, mostly women, children, and the elderly. Young men over 15 usually return to the Ogaden to fight, or shift for themselves in the cities.

The camps have been described as "time bombs of communicable disease." Execrable water supplies, such as the animal-fouled, mosquito-ridden pool that refugees scratched from a riverbed near Saba'ad camp (***right***), explain why.





MICHAEL S. YAMASHITA

THE RIGHT TO LIFE pales before the scourge of hunger among refugee children, like this month-old infant held by a German Red Cross worker at Las Dhure camp. The boy's relatives kept him barely alive on a diet of sugar and water after his mother died giving birth. By the time he was brought to the clinic, severe malnutrition had taken too great a toll, and the boy soon died.

In just one camp, Agabar, food shortages led to the death of 700 children in the first three months of 1980. A year later most refugees were still subsisting on little more than 1,000 calories a day—about half the normal daily requirement.

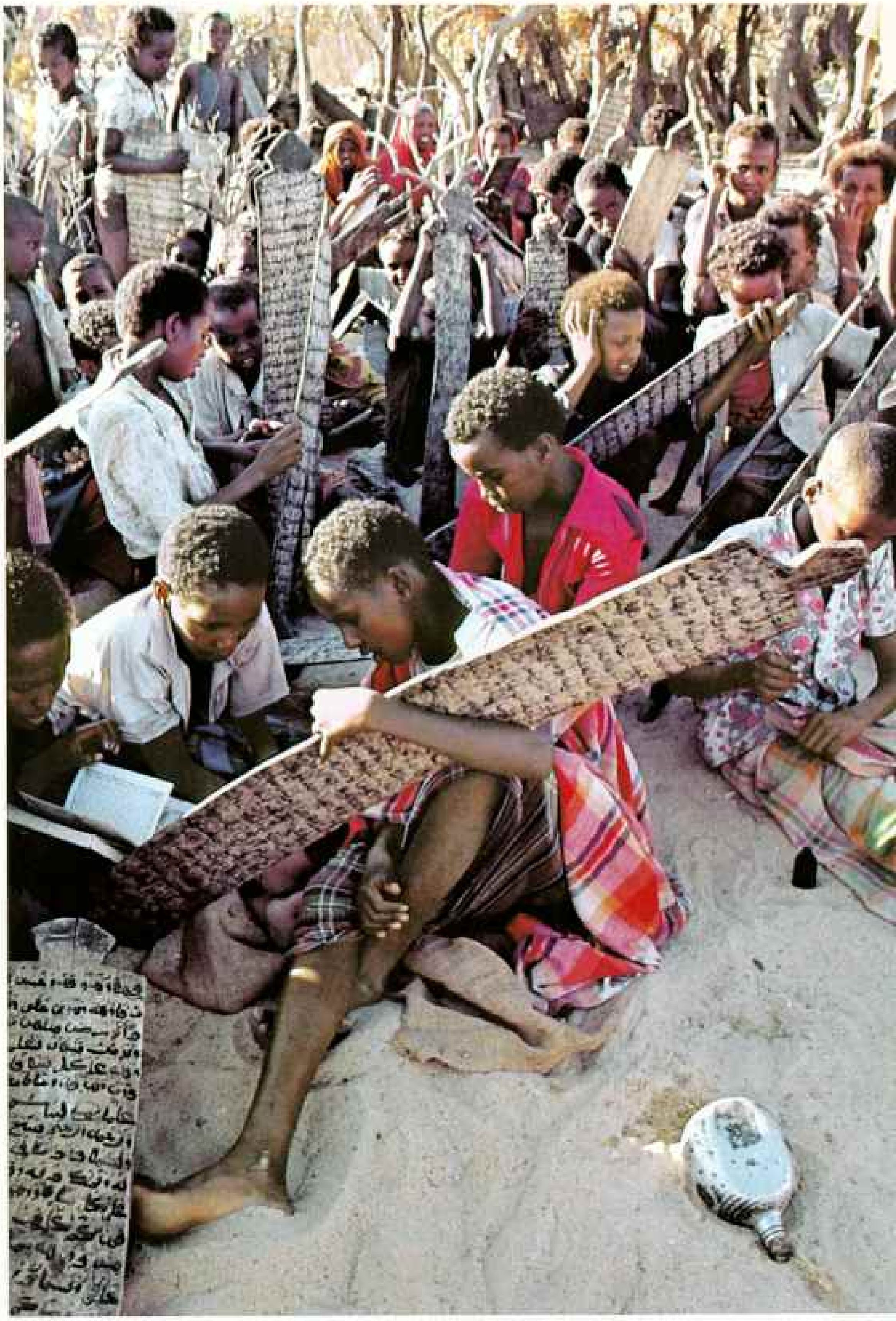
Convoys of 15-ton food trucks from Berbera and Mogadishu

represent critical lifelines to the remote camps. If the daily deliveries are disrupted, as they were last year when fuel supplies were cut off because of the war between Iran and Iraq, the dying begins, despite the dedication of health teams.

The world relief community, long occupied with the smaller number of refugees in Indochina, is stepping up its assistance here dramatically. Even so, increases in aid are lagging far behind the swelling population of hungry and homeless Somalis.

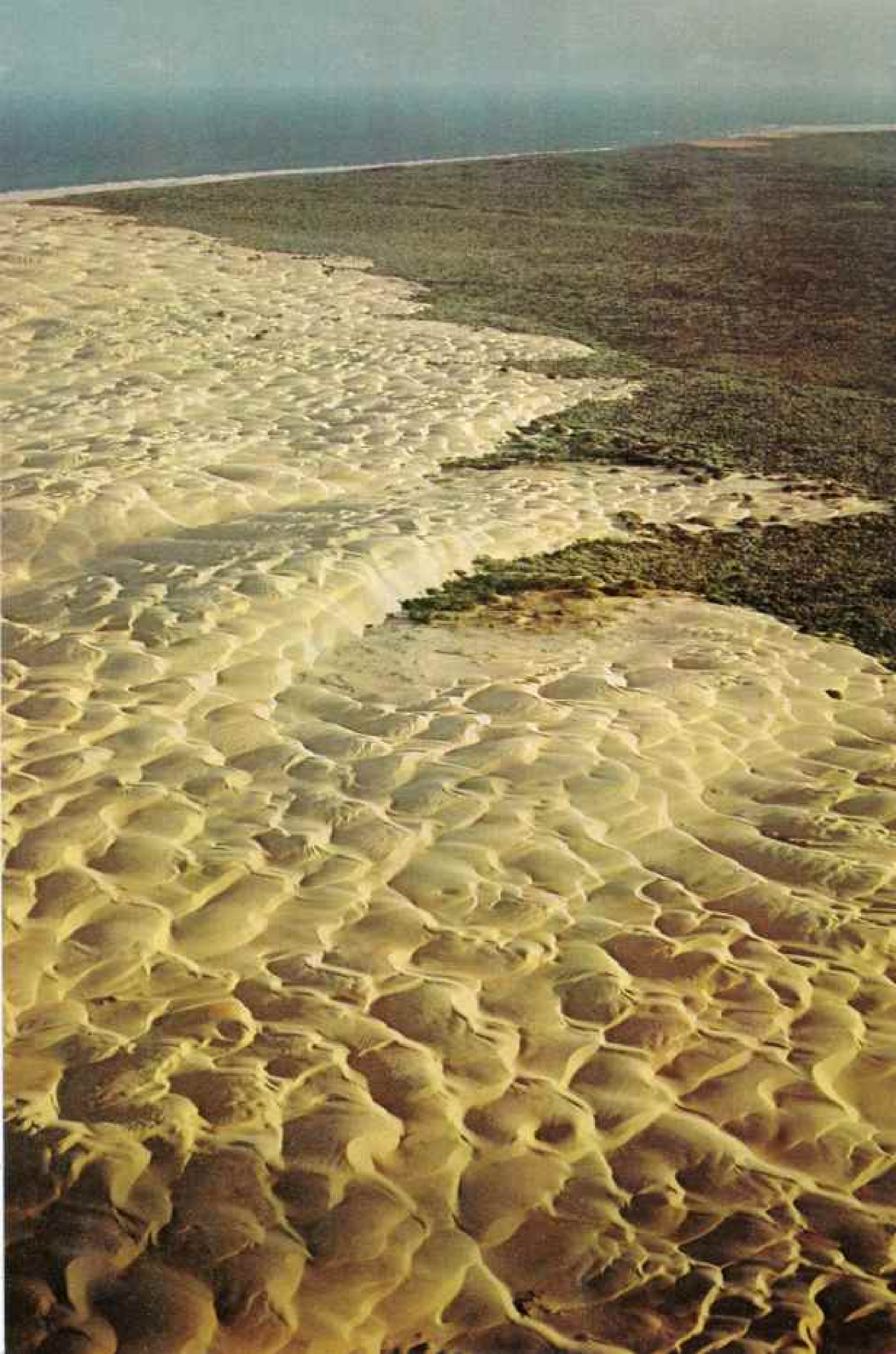
Ethiopia charges that these relief efforts are indirectly aiding Somali fighters in their guerrilla war by freeing them of the responsibility of caring for their wives and children.

KEVIN FLEMING



YOUNG MINDS are fed though stomachs are pinched at Agabar camp, where refugee children recite lines from the Koran off prayer boards. For centuries Koranic schools provided the only education for Somali nomads. Today serving as preschools, they are followed by classes in Somali—a language just recently provided with a system of writing. Too young for school, a child at Crash camp cuddles a goat outside his family hut, or *aqal*. □

MICHAEL S. YAMASHITA (LEFT); KEVIN FLEMING



(Continued from page 755) materialized. Once there were plans to turn the thin soil here into a granary; Soviet agricultural experts would know how. Near the transit camp, we drove past their extensive storage yard. It lay abandoned, filled with rusting machinery, while the wind blew the land away. Somalia's President, Maj. Gen. Mohamed Siad Barre, had ousted the contingent of Soviet advisers in 1977 because the U.S.S.R. had taken Ethiopia to its bosom.

Survival Main Concern in Camps

Like the pioneer adventurer Sir Richard Burton a century and a quarter ago, I found the slim, handsome Somalis quick to smile, congenial unless roused. Burton wrote of their hospitality and concern for strangers—"What hath brought thee, delicate as thou art, to sit with us on the cowhide in this cold under a tree?" It is different today in the camps. The concern there is only to survive, and one day to go home to a new country called Western Somalia.

To the north I visited Agabar, a haven for 45,000 souls, straddling a dry river. Serene in the hush of daybreak, the valley cradled a communion of domed huts that challenged the eye's reach. Dawn burst, the land warmed, smoke from cook fires hovered above the valley for miles, life started up.

I walked among the jam-packed dwellings, accompanied by a small army of children. One of the largest huts I saw, 12 feet across, was still being built by Mohamed Omer. His wife and their seven children would live here, he told me, as well as the several children of his brother, who was killed in the Ogaden. A freedom fighter on leave, Mohamed had finished weaving the framework of pliant branches. To cover it would be difficult—flattened cans, rags, burlap, cardboard, paper were much in demand. Such huts are collapsible. When nomads travel, they take their homes along.

At the medical compound Dr. Marilyn Black, a young English pediatrician, offered me a cup of coffee. With a Somali doctor, she and Australian nurse Cecilia Liddle were operating a small hospital and dispensary. "It's terribly frustrating," she said. "We can't begin to do as much as we want—and we're not doing what we should."

I asked Dr. Black to explain.

"Cecilia and I came here to train mothers in primary health work: birth attendants,

Slow-motion disaster, *thousands of acres of wind-driven sand dunes south of Mogadishu threaten to engulf villages, roads, and arable land; the latter comprises only 15 percent of Somalia's area. To stem the tide, the government has mobilized volunteers and national rangeland employees in a bold effort to stabilize the sand by planting cactuses* (**right**) *and casuarina trees.*

In the 21 years since independence, Somalia has made steady progress in turning the deep-set tribal loyalties of a free-spirited people to a sense of national consciousness. A massive literacy campaign in the hinterlands stands out as one notable achievement.

BOTH BY MICHAEL S. YAMASHITA

outpatient aides. Instead, we are conducting a feeding program, giving dried milk to 180 children. Otherwise, they. . . .

"Malnutrition is very severe. Agabar is full of diarrhea, dysentery, tuberculosis, measles, whooping cough. If a little meat arrives, it goes to the sick. The rest get rice and flour. Almost no protein. Our program reaches less than 5 percent of the camp."

Somalia has set up more than 30 camps. Agabar was better off than many. True, women were trudging up to ten kilometers a day for firewood, bringing it in on their backs; they had denuded the land all around. But good water flowed from a distant spring. A pipeline was being laid.

Let me tell you about water. Sometimes none exists, as at Dam camp when I stopped by. This was the country's first settlement for the Ogaden refugees, opened in 1978, which also happens to be when the drought began. The bed of the Herat River lay bare and caked in the sun; behind a low dam, the reservoir was baked rock hard.

A single water truck was serving Dam camp's 42,000 people. It roared in as I looked about. Every day, 6 a.m. to midnight, it ran 50 kilometers round trip from the source. For this truck the United Nations High Commissioner for Refugees was paying $7,000 a month. Greedy private contractors had raised the charge for additional trucks beyond reach.

At Dam camp each and all received three small cups a day.

Yet I could not consider the residents of nearby Saba'ad more fortunate, though water did rise there in holes hand-scooped in a

dusty streambed. By night wild animals drank and fouled the seeps. By day hundreds of women and children dipped the dark water into old cooking-oil cans, carrying them away balanced on their heads.

The man in charge of the camp invited me into his tent. Spindly boys stared through the entrance, darting away when I waved, stealing back in seconds. Beyond, women were receiving the flour ration: a hundred grams daily for each family member.

Responsibility bore heavily on my host, Ali Bogmodow, a tall, weary man I judged to be 40 or so—not far from the average life expectancy. "How will all this end? It will go on until Western Somalia becomes a nation, that's how. All the world, especially the superpowers, must face this problem."

He spoke of camp life. The population approached 40,000. After that no more could be taken. The biggest problem was continual shortages of food and medicine. Weakened by hunger and disease, 82 had died at Saba'ad the week before.

Quietly he said: "Two years ago I lost my camels and sheep in the Ogaden. I stay here to work with my people. When you worry, you soon get older. Tell me—do I look 26?"

Ancient Egyptians Sought Spices

Turbulence, peace, change have washed over the Horn of Africa for thousands of years. Along its coast sailed the ancient Egyptians—to them this was the Land of Punt—seeking incense and spices to grace pharaonic temples. Phoenician traders came by, and Greeks and Romans, who called the people Berbers (hence the port town on the Gulf of Aden named Berbera).

Arabs and Persians brought the word of Allah in the seventh century. Coastal towns became sultanates. Portuguese conquerors ruled and yielded. The Italians built triumphal arches, only to depart in defeat. Britain's day ended just two decades ago.

In this day the Somali Democratic Republic finds itself beset by neighboring nations—they protest that Somalia besets *them*—and by nature. To a Westerner the outlook seemed grim. One day, in a spare government office, a bureaucrat suggested that I take a broader viewpoint. "In Africa," he said reproachfully, "you have to be patient. It's going to take a long time. You don't know how it's going to turn out. But it will work!"

I bear witness that some things do. On a bright morning a new blacktop highway carried me swiftly, smoothly, the 160 kilometers from Hargeisa to Berbera. One does not forget, after all, the back-wrenching gullies and potholes of the roadless bush. Today there would be no broken spring, no ripped muffler. A paved road!—in all Somalia you

MICHAEL S. YAMASHITA

Endless quest *for pasture and water defines the life still adhered to by most Somalis, such as this family crossing a dry riverbed near Bur Acaba. Symbols of wealth and status, and never ridden except by the sick, camels carry disassembled huts and other supplies.*

can log scarcely 2,500 such kilometers.

In the front seat, Abdi, a government escort, and Rashid, the driver, were munching steadily on kat, the mind changer of East Africa. They jabbered away blissfully, increasingly euphoric from the cathinone in the leaves, and regaled me with a popular song, "The Man Who Died of Love."

I said, "Abdi, kat is expensive. And it lets you down hard." The price varies. They had paid a bargain 30 shillings (about $5) for the bunch they were chewing. Another bunch waited beside them.

He shrugged, the epitome of unassailable logic. "Yes, but kat is not our luxury. It is our necessity."

The demand for kat, a habit-forming stimulant, brings the war with Ethiopia to a brief pause when camel loads arrive at the border from the highlands, where the best bushes grow. Unable to prevent the practice, authorities pragmatically tax kat on entry. It is transferred to a waiting vehicle.

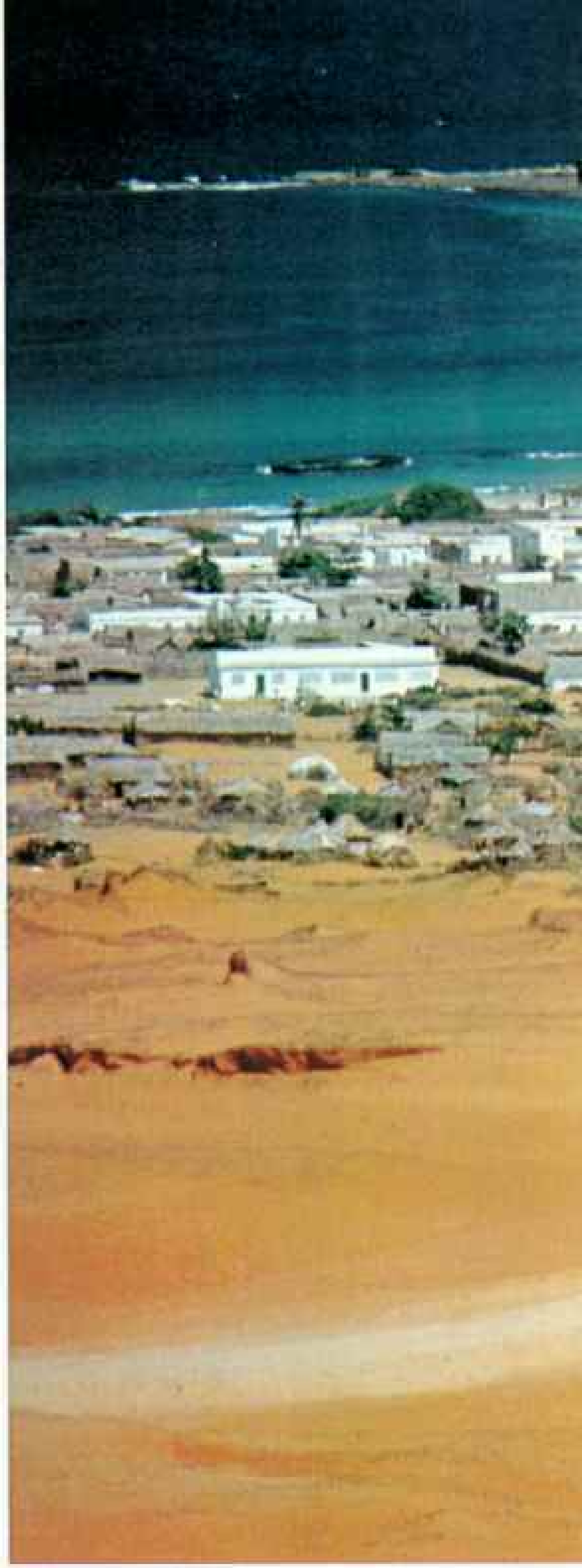
Fresh leaves are crucial. The kat courier is a man of consummate mission. I have been overtaken by him in the empty wastes, hunched over the wheel of his Toyota pickup with its special springs, pounding and lurching for Djibouti in a frenzy of dust. He does not bother to wave.

Livestock Country's Main Export

At Berbera I strolled along the dock. A stained Arab dhow, relict of a vanishing species, sat in the harbor. Perhaps its cargo would be the bags of gum arabic stacked on the pier. Not far away at Erigavo grew the trees whose resin the ancient Egyptians so coveted—trees of frankincense and myrrh.

A pair of Soviet-made cranes reached forlornly above us, abandoned when the U.S.S.R.'s large contingent here sailed away with its floating dock. "Those cranes were a waste," Abdi scoffed. "Cables too small. They can lift only five tons."

Idly I watched a decrepit Lebanese cattle carrier out of Beirut nestle alongside the pier. Livestock is Somalia's main export. Most of it is shipped from Berbera. The goats, sheep, cattle, and camels go to the Arab world, principally Saudi Arabia. In 1979 Somalia's livestock trade added up to 87 million dollars—greatly needed income in this deficit-ridden nation.



Fabled land *of frankincense and myrrh, the Somali coast lured Arab merchant-settlers a thousand years*

MICHAEL S. YAMASHITA

ago. The thriving trade centers they established at Brava (**above**) *and elsewhere served as African portals for the Islamic faith. Today former nomads, some of whom had never seen the ocean, are learning to fish the teeming offshore waters.*

In addition to port facilities, which included naval supply and missile storage, the Soviet Union left an airstrip being developed just outside town. The runway is long enough to accommodate the largest aircraft. We drove past it. Empty control tower and skeletal hangars loomed in the distance; the field was closed. One need not visit it to sense its meaning.

The United States has an agreement with Somalia to use the airfield and port to strengthen its Rapid Deployment Force in the strategic Indian Ocean and Persian Gulf region. In return, Somalia is to receive 42 million dollars' worth of American arms.

Of this there can be no doubt: Turmoil and war in the Middle East and the invasion of Afghanistan compound the chaos in the Horn of Africa. Somalia, a foreigner might reflect, is the land Allah forgot.

Somali Airlines no longer flies by the most direct route from the north to Mogadishu. Mindful of Ethiopian jets, the pilot scurries east to the ocean, thence down the coast. It is a pleasant flight, and soon the old city takes form. Far back from the shore it spreads, minarets thrusting, to all appearances an Oriental citadel of low alabaster buildings taking the eternal sun. Thirty-five hundred years ago seafarers knew it as the White Pearl of the Land of Punt.

In the pearl's imperfection lies its charm. Mogadishu reveals its true nature only at close range: a marvelous mélange of time-worn pastel Arab and yesteryear's Italianate hand, blending nicely into contemporary African. European in the dress of many, in speech it is multilingual. You quicken to a city of crumbling hallowed mosques and Roman Catholic cathedral, young people crowding into cinemas, thronged promenades in the cool of evening, dignified elders wearing hennaed goatees, and life's poor culls holding out their hands.

Mogadishu is best as twilight descends. In the market, ivory carvers and goldsmiths smile from tiny shops—"Ah, the price of gold today is. . . ." Street merchants serve up an African feast—brilliant cloths to wrap sinuous bronze-hued beauties, rugs of strange and alluring design, hand-shaped and decorated wooden jugs, underwear of startling color, long walking sticks.

Nearby—a curious thing. Knots of young

Fast food *for the open-air market, a Fiat full of bread* ***(left)*** *is a Mogadishu taxi driver's first fare of the day. In addition to Italian cars, other reminders of Somalia's colonial past and ongoing ties include spaghetti and lasagna—which are eaten everywhere—and Italian thrillers that pack the movie houses.*

Though the government owns most large enterprises, small privately operated storefronts and market stalls handle much of the nation's retail trade. After two o'clock in the afternoon, when the mercury usually hits 100°F, shops and government offices close, and the city takes its ease. Then, poetry and politics—both venerable Somali pastimes—will pepper the conversation of young men playing dominoes outside a teahouse on a Mogadishu street ***(right)****.*

men cluster, each group intently listening to a radio. Rock music? Not at all. The BBC's twice-daily world news is on, a half-hour shortwave program in Somali.

People Told What They Need to Know

The government position on information is clear. President Siad Barre put it this way, years ago: "We have made it our duty to inform our people of whatever we believe to be of interest to them and to the country." Naturally, the state-controlled radio and press purvey propaganda, directed by the appropriately named Ministry of Information and National Guidance.

I called regularly at the ministry. They told me there of large expectations. International oil companies would soon be prospecting; in the south, a new sugar plant; a search for uranium, Arab backed; ongoing road construction; agricultural development. And now, television.

"It will be small at first," an official told me in a paper-strewn office. "A reach of 200 kilometers from here." Down the hall a telephone rang endlessly. "We are one of the last countries to get television. It will inform our people about agriculture, commerce, arts, and traditions. We must educate."

No one could disagree with that. A United Nations specialist enlarged on it bluntly: "The major constraints to Somalia's progress are the lack of trained manpower and education. How many universities does Somalia have? Just one."

I made my way along a busy thoroughfare one morning to National University and Kassim Ibrahim, director of planning. "We're growing so fast," he said, "it's a strain keeping up. We're trying our best. Five years ago we had only four faculties: agriculture, economics, education, and law. Now there are 11."

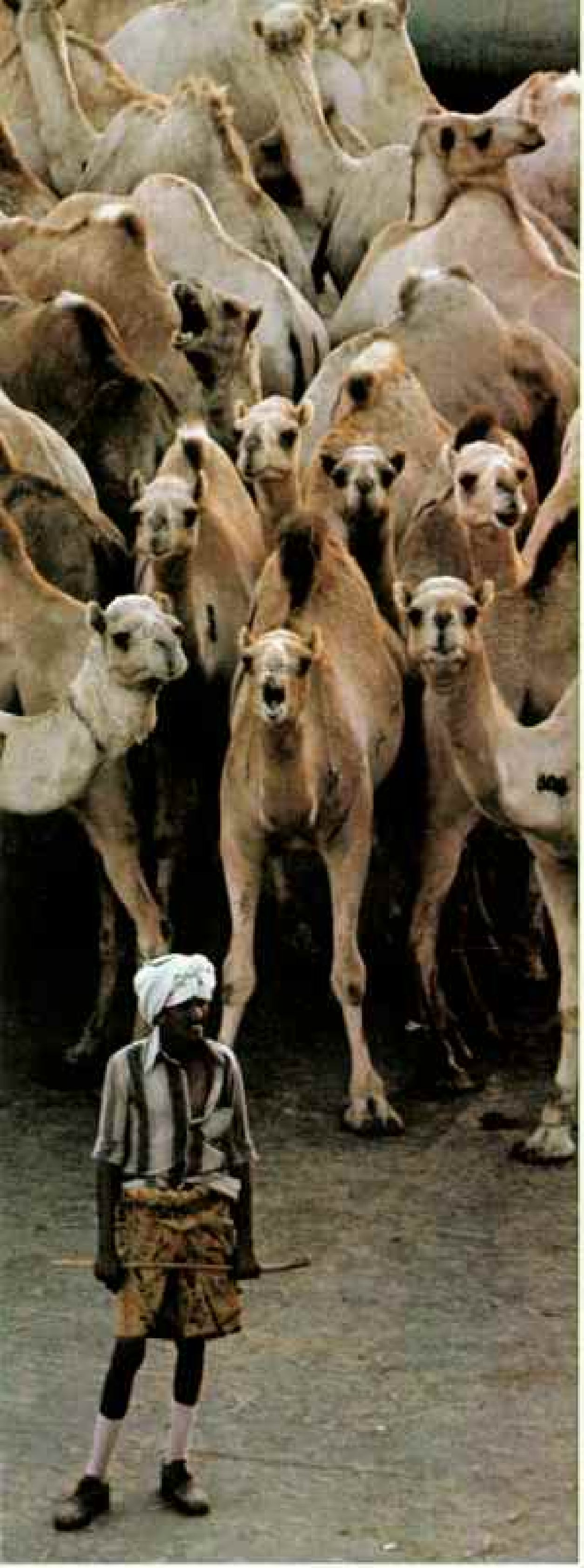
How many students? A total of 2,184, Mr. Ibrahim replied, 246 of them in the four-year medical school.

Late that afternoon at the Cathedral of Mogadishu I chanced to meet Sister Maria Antonia Pira, one of about 60 Italian Consolata nuns who serve here. A nurse, she was not yet 30, sweet of face and careworn.

"I deliver children," she said. "The hospital is overwhelmed. Imagine. More than 12,000 births a year. I help a Chinese doctor.

BOTH BY KEVIN FLEMING

Greetings on the flanks *of camels crowding a wharf at Berbera are actually the seller's identification marks. From here they will be shipped to Saudi Arabia, which shares Somalia's fondness for camel meat. Together with bananas, grown in the*



KEVIN FLEMING

south, livestock and their products are major exports—vital foreign exchange for the oil-starved nation's mounting fuel bills.

We don't have the facilities." She sighed. "The mothers come, have their babies, and leave within three or four hours."

Somalia is a man's world. Until a couple of decades ago, taking a man's life could cost a hundred camels; a woman's was valued at fifty. The new government ended such blood money, just as it banned tribalism—people must give their loyalty to the state, not their tribes. You might call this the greater socialism.

Tradition clings. Parents, not heaven, make marriages. The prospective groom's family pays a bride-price, to be refunded if all goes well. The ancient curse of female circumcision and infibulation also prevails, inhumanly practiced in the name of chastity. "It is a plague in Africa's life," said a government cultural authority to me. "It is hateful, and we don't know how to get out of it."

The nomad man looks after the camels, his status symbol; woman, the sheep and goats. Man slaughters an animal for a feast, woman skins and cooks it. Woman disassembles the hut for the trek to new pastures and packs it and household goods on the burden camels. Man will fight in the Ogaden or seek work in the city; he feels superior to people who farm or fish. Down the reaches of time nomads have disdained fish, a stark incongruity in a hungry land.

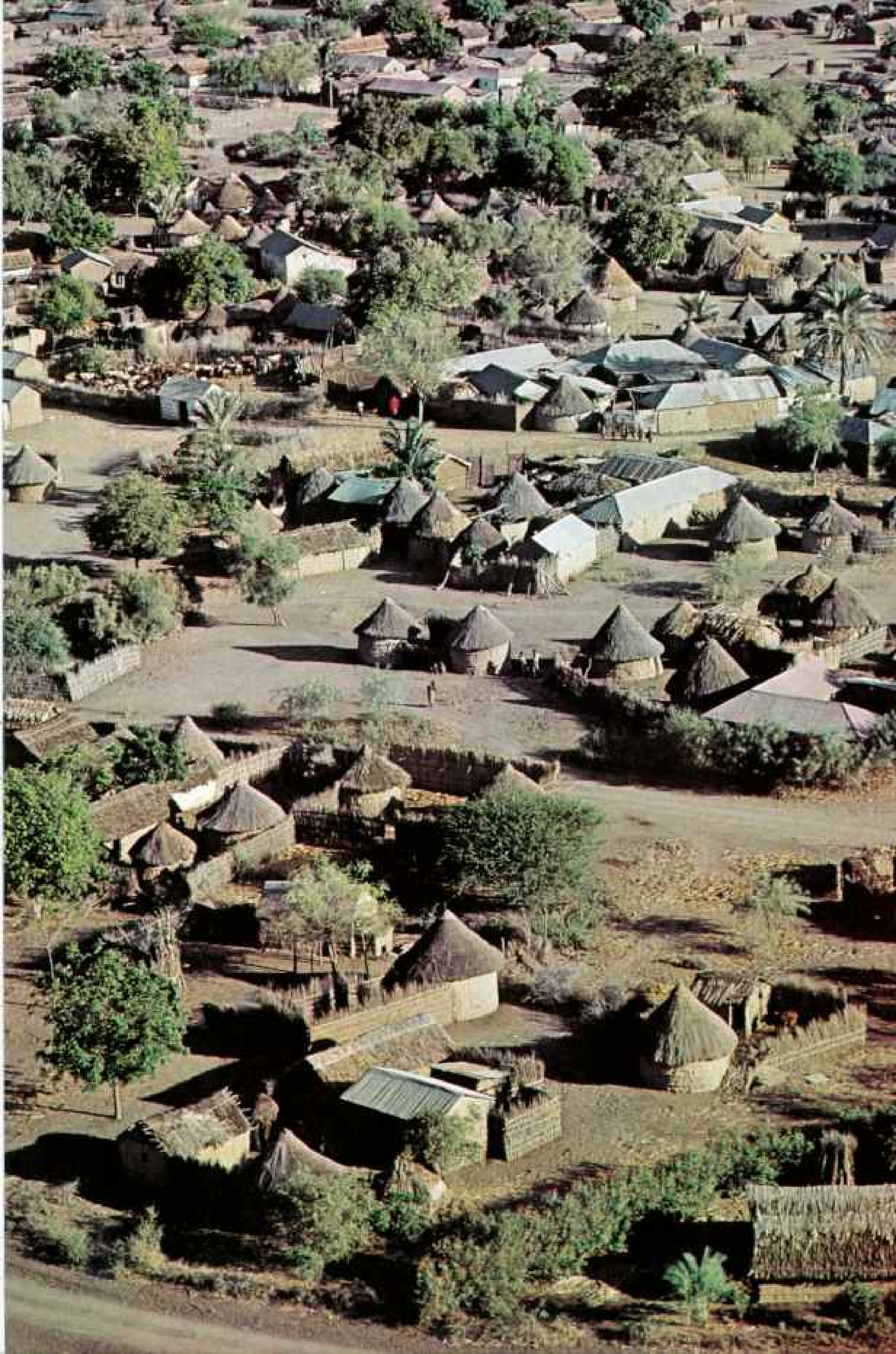
But now change has come. Many nomad women farm or work in fish factories.

Fishing Industry Being Developed

In the hot season called *tangambili*—two sails—I drove south from Mogadishu. At this time, it is said, a boatman needs two sails to catch enough breeze. I pulled over at faded Brava, where Vasco da Gama is said to have dallied, to watch women prepare the morning catch for refrigeration. They were artists with a cleaver. The Indian Ocean teems with fish along the coast—rockfish, red snapper, mackerel, shark, tuna. Rock lobster and shrimp abound. Most of the catch is shipped abroad.

At Brava and other places, widespread drought brought more than 100,000 starving nomads in 1975 in a vast resettlement scheme. They would fish and farm, saving themselves and feeding the nation.

Somalia has long imported food. Only about 15 percent of the land is arable, mostly



Somalia greens with the rains in the river valleys of the south, where villages ***(left)*** *are home to a minority: tillers of the soil. Here the government encourages nomads to settle and grow food for the nation. But the pastoral life remains a powerful calling for most Somalis, such as this young nomad* ***(right)*** *whose only encumbrances are a water bowl, staff, and wooden headrest.*

BOTH BY MICHAEL S. YAMASHITA

in the southern region between the country's two permanent rivers, the Shabelle and Juba. Almost permanent: Both ran dry last year for the first time in memory, old-timers informed me.

I moved on to Kurtun Warrey, a state farm. An official offered tea and then took me about his far-flung domain. The original 28,000 settlers had dwindled to 18,000, he said. A large majority were women: "We've had trouble with the men. It is not easy to make a nomad man accept this life. It will take time. But the women"—he smiled with pride—"make good drivers and mechanics, construction workers, technicians. They can do anything."

In the parched soil they labor unflaggingly. I stopped beside a crew of field hands planting maize in deep furrows, kernel by kernel. "This is easier," a pert, pretty miss named Fatima declared. She had once followed the nomad life.

True, there were drawbacks. She was 20 now, she said, and unmarried. Prospects were limited. Abruptly she turned away with a flip of her jaunty red turban. There was work to be done.

I scanned the horizon for rain clouds. In the wet, fields would swell to a marvelous harvest of grain, fruit, and vegetables. Plump tomatoes, succulent watermelons, cucumbers, carrots, luscious mangoes and papayas, tart grapefruit, bananas to grace Somalia's tables. Allah sets the countryside abloom overnight, when the rains come.

Farther south, at the port of Kismayo, I found people observing two nonmeat days a week by government order, while the meat cannery went about its business of exporting beef. I was grateful to the small but active fishing industry—it is a rare, if gluttonous, pleasure, daily to eat one's fill of lobster.

One morning I rode from Kismayo along the Juba River. The sun made the bush into an oven. Sullen monkeys paid us little attention; beside a pool in the desiccated Juba a crocodile lazed, ignoring a hippopotamus emerging from the water.

In late afternoon at the village of Ajallo, in a game preserve, we halted beside the well. People were leading camels, cows, and goats to a long trough; a pump labored to supply it. When the animals finished, water jugs were filled for cook fires, and water was sluiced on faces and hands.

Dusk came on. A gamekeeper turned to me. "Now you will see," he said. One after another they loomed out of the bush, elephants trooping up to the trough. Males drank, then stood watch over their harems. Wild pigs trotted past, waiting. "In the night," said my companion, "others come. Zebra. Giraffe."

I got back in the Land-Rover and pointed for Kismayo. A spear-carrying nomad caught a short lift with us. We had nothing to say to one another. Speech was unnecessary. Somalia already had spoken. □

The American Red Cross: A Century of Service

THE IDEA was born in the horror of war. For centuries soldiers had died unattended on battlefields, their cries unanswered, their agony adding to the tally of conquest.

It was this chaos of warfare's aftermath that appalled—and inspired—Swiss businessman Henry Dunant, who witnessed the 1859 Battle of Solferino in Italy. Shocked by the 23,000 wounded men, many of whom would die from lack of simple medications, he returned to Geneva and in 1863 organized the Permanent International Committee for Relief to Wounded Combatants, predecessor to the International Committee of the Red Cross.

At about the same time, Clara Barton (***left***) responded to the needs of soldiers in the American Civil War. The diminutive Patent Office clerk earned the sobriquet Angel of the Battlefield, delivering supplies to the front and identifying the graves of 13,000 men who died in the Confederate prison at Andersonville, Georgia (***right***). In founding the American Red Cross on May 21, 1881, she hoped not only to improve the lot of soldiers but also to aid the victims of natural disasters.

Today the American Red Cross is the largest grass-roots volunteer organization in the United States, with a 455-million-dollar budget, 3,053 chapters, a staff of 18,353, and 1.4 million volunteers. It does everything from teaching skateboard safety to counseling teenage drug addicts. This year as the Red Cross celebrates its centennial with fairs and fanfare, it is still listening to voices in need and appealing to man's humanity to man.

AMERICAN RED CROSS (FACING PAGE)

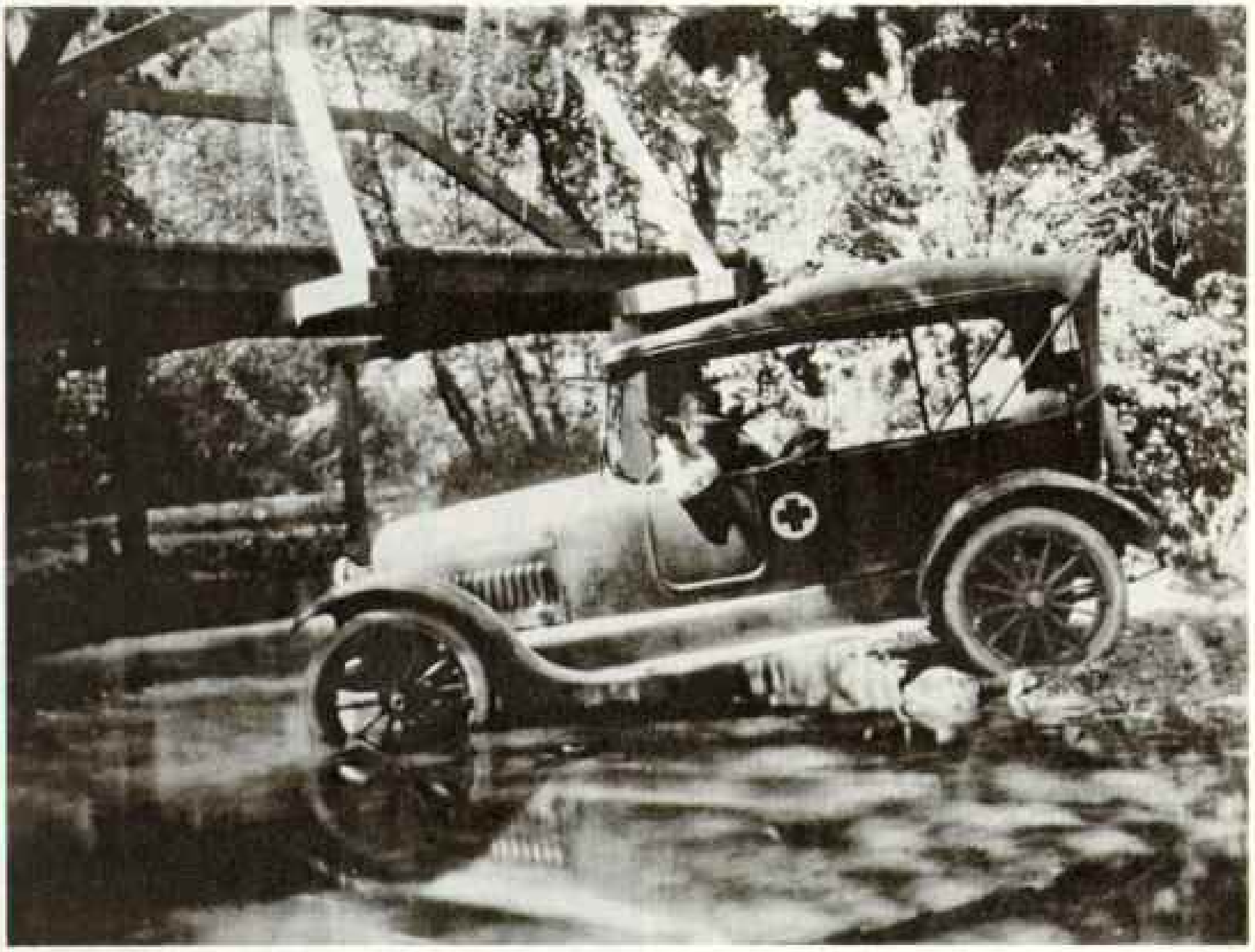
By LOUISE LEVATHES
NATIONAL GEOGRAPHIC EDITORIAL STAFF

Photographs by
ANNIE GRIFFITHS

THE TIRELESS volunteer nurse. From the beginning she was there: tending yellow-fever patients during a tragic 1888 Florida epidemic, venturing into rural America to teach and provide basic health care, and staffing makeshift hospitals during World War I.

In the 1920s and '30s Red Cross public health nurses (***below***) braved poor roads and primitive living conditions to carry medical services to the needy. "She might occupy a room without heat, take her bath in a wash bowl, eat biscuits with raw centers and fat salt pork with her mountain families . . ." (from *The Red Cross Nurse in Action 1882-1948*).

With the soaring cost of hospital care today, health planners are turning to preventive medicine as the best hope for increasing life expectancy in the



AMERICAN RED CROSS (ABOVE AND BELOW)

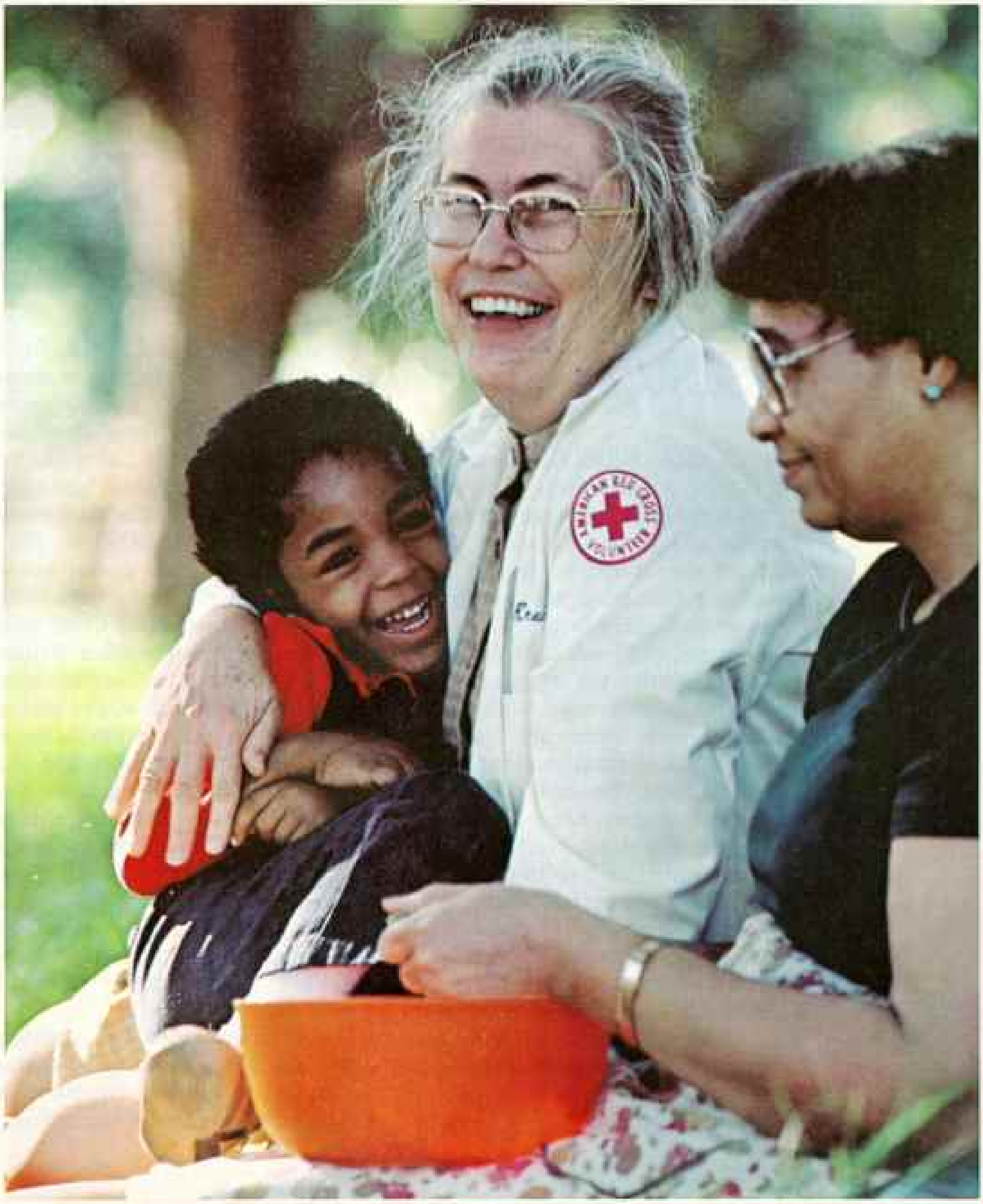
A new role for home nursing

coming decades. One mission of the American Red Cross in its second century is to help Americans improve their health habits, and rural nurses, such as Hazel Kreimeyer of Baker County, Georgia, again have important roles.

"I was amazed—45 people showed up at my home-nursing night courses just to hear that health care is *their* responsibility first," said Mrs. Kreimeyer, visiting (***below***) with one of her students, Mrs. Bizzie Williams, and her grandson, Kyle.

Mrs. Kreimeyer taught her class how to monitor a patient's vital signs, recognize heart-attack and cancer symptoms, and give emotional support to terminally ill patients.

"I feel better prepared to care for my elderly relatives now as well as plan better meals for my family," said Mrs. Williams.



Disaster

AS CLARA BARTON noted in 1878, ". . . the valleys of the Mississippi [River] are subject to destructive inundations; the plains of the West are devastated by insects and drought, and our cities and country are swept by consuming fires."

What she could not have foreseen was that someday the American Red Cross would also cope with train wrecks of toxic chemicals, leaks of radioactive gases from nuclear plants, and boatloads of Vietnamese, Haitian, and Cuban refugees. Recently the Red Cross prepared a self-teaching Civil Defense manual on how to manage a fallout shelter in a nuclear war.

And then there was the eruption of Mount St. Helens on May 18, 1980.

"The volcano had been going off since March—we got used to it," said Janice Bishop, who lived with her family (***right***) on the banks of the Toutle River, 35 miles from the mountain.

After the blast an oozing river of mud and debris engulfed the Toutle River Valley. Mrs. Bishop watched dumbfounded as the steaming mud broke through the front door and crumpled their mobile home like paper. "There goes my house!" she cried. Before the 12-foot wall of mud receded, it had bulldozed 140 homes; about all that was left of the Bishop household was young Christopher's teddy bear. An ash-stained Red Cross truck (***above***) carried food to other victims.

The cost of disasters has risen enormously in the past decade, and the federal government has come to the rescue with a variety of insurance and loan programs. Still, the American Red Cross provides food, clothing, shelter, and cash on an emergency basis; last year it amounted to 57.5 million dollars in aid to 136,810 families. For the Bishops, that meant more than $500 from the Red Cross for new clothes and $10,000 in federal money toward a new home.

For all its programs, the American Red Cross fights for survival against the shrinking value of contributions and a general decline in voluntarism.

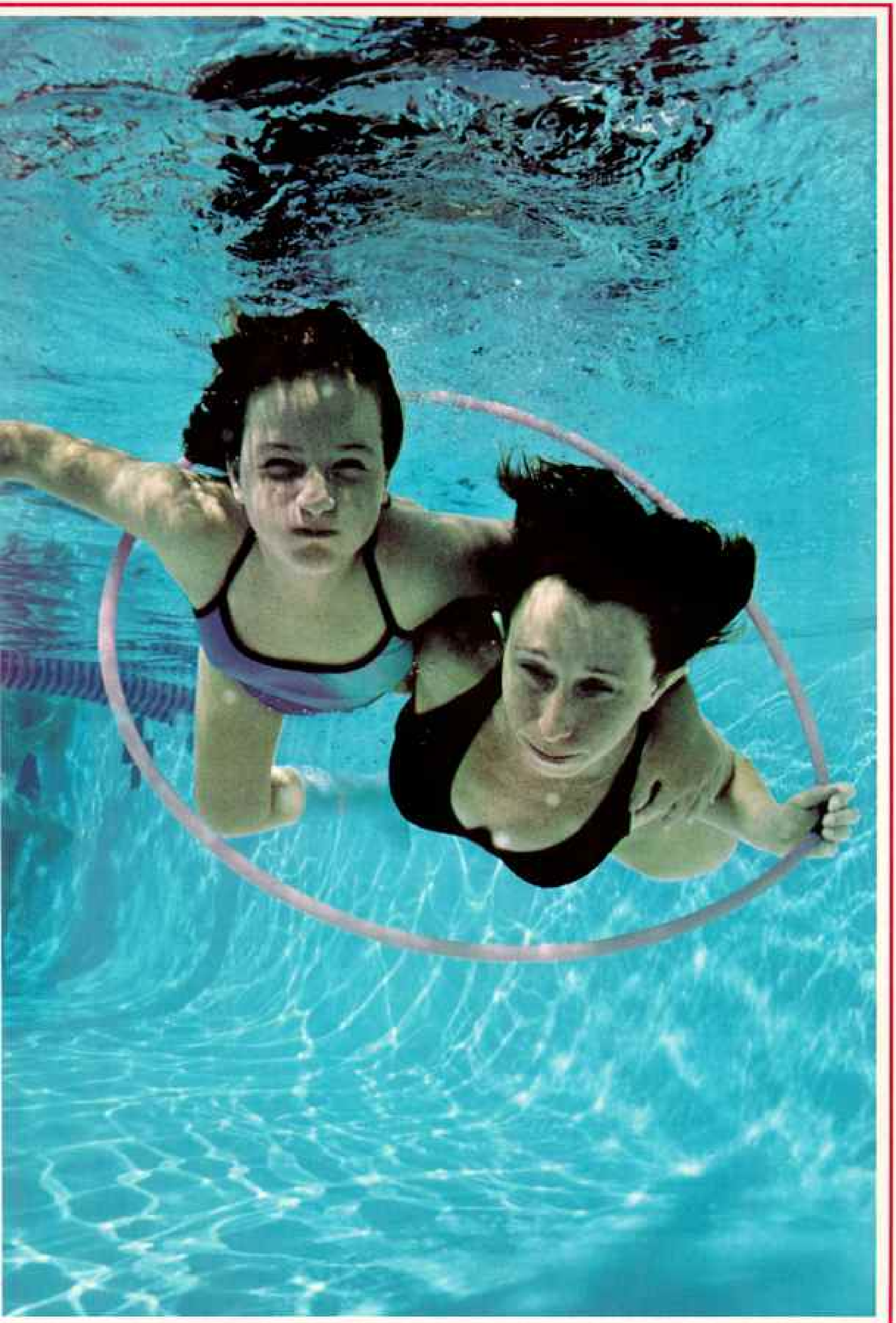
Water safety

AMERICAN RED CROSS

"LAND DRILLS," a popular dry-land method for teaching swimming in 1900 (***above***), was clearly not the preferred method of Commodore Wilbert E. Longfellow, who launched the Red Cross water-safety program in 1914. He believed that people learned to swim more quickly in the water.

Since that time the Red Cross has come to symbolize for Americans—among its other services—the teaching of safety skills. Last year nearly five and a half million certificates were awarded in swimming, lifesaving, first aid, cardiopulmonary resuscitation, and small-craft safety.

Adapted Aquatics (***right***) is a program in which the blind, deaf, and disabled learn to swim. On land, Cindy Herren, ten, at left, of Lawrenceville, Georgia, is confined to a wheelchair because of a spinal defect. But in the water she plays like a porpoise. Swimming with Red Cross instructor Boni Zucker through a hoop helps build Cindy's confidence underwater. Her biggest thrill, however, is being free, for the first time in her life: free of braces, wheelchairs, and hovering adults. She can swim—alone.



AMERICAN RED CROSS

Service to the armed forces

IN TIMES OF national travail—the years of war—the American Red Cross has proven indeed to be a "bulwark against the mighty woes," as Clara Barton predicted.

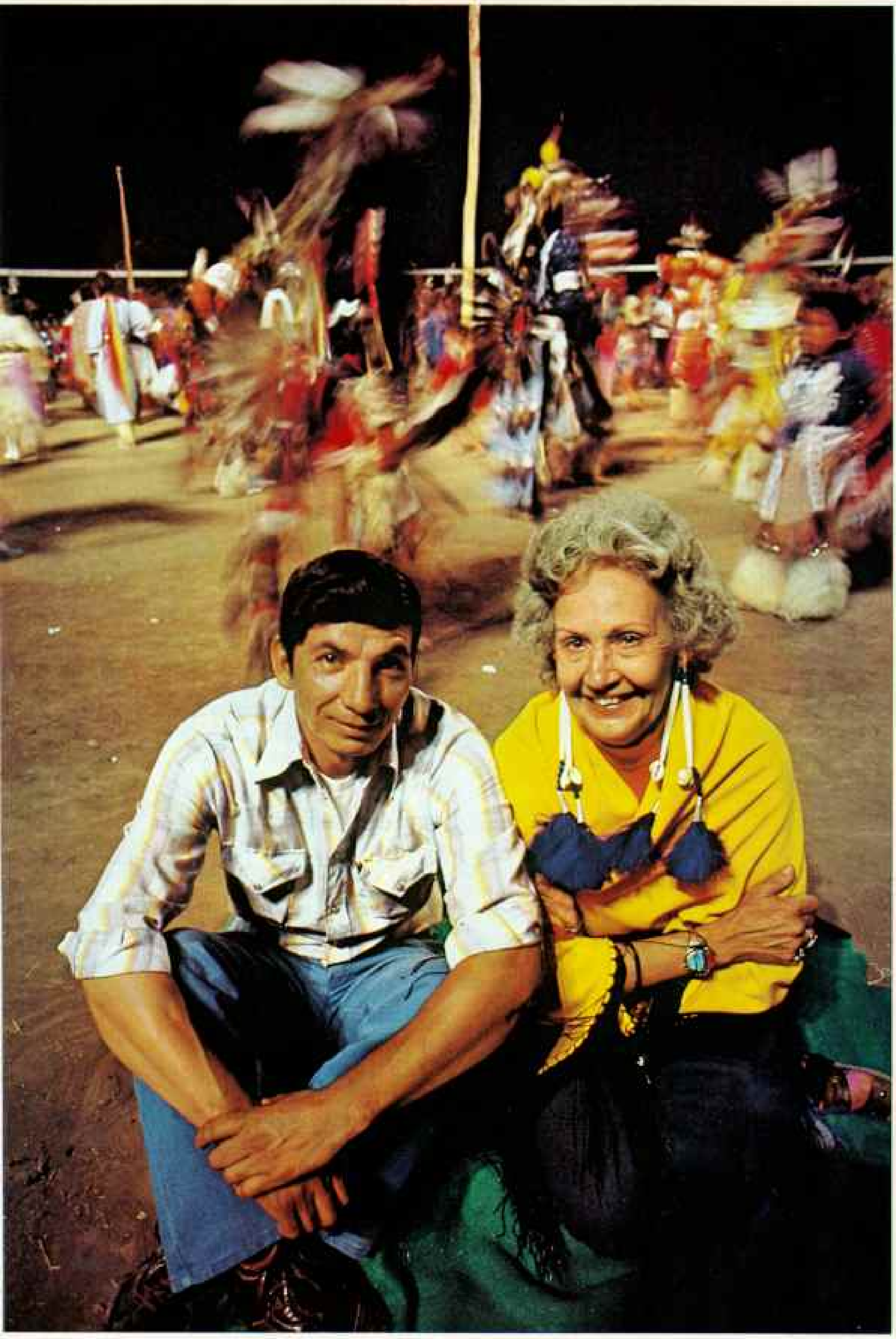
In World War I the Red Cross ran canteens for troops at home and abroad and set up dozens of hospitals and health centers for Europe's war-ravaged peoples. With heroic campaign posters (***above***) the Red Cross raised 730.7 million dollars for relief efforts during World War II. Red Cross volunteers aided victims after the Pearl Harbor attack, Motor Corps drivers delivered Red Cross surgical dressings and other essential supplies where needed, and recreation workers cheered spirits in hospitals and on bases worldwide. Throughout the war the Red Cross handled some 42 million messages between servicemen and their families.

Today the American Red Cross is still a valuable communications link between the military and civilian populations. Increasingly its staff personnel, such as Doye Fannin of San Diego (***right***), also serve as advocates for the rights of servicemen and veterans.

In 1973 at Fort Carson, Colorado, for example, where Doye was stationed, there was a Sioux Indian, Douglas Archambault, left. He had been jailed for desertion and held 90 days without benefit of interview.

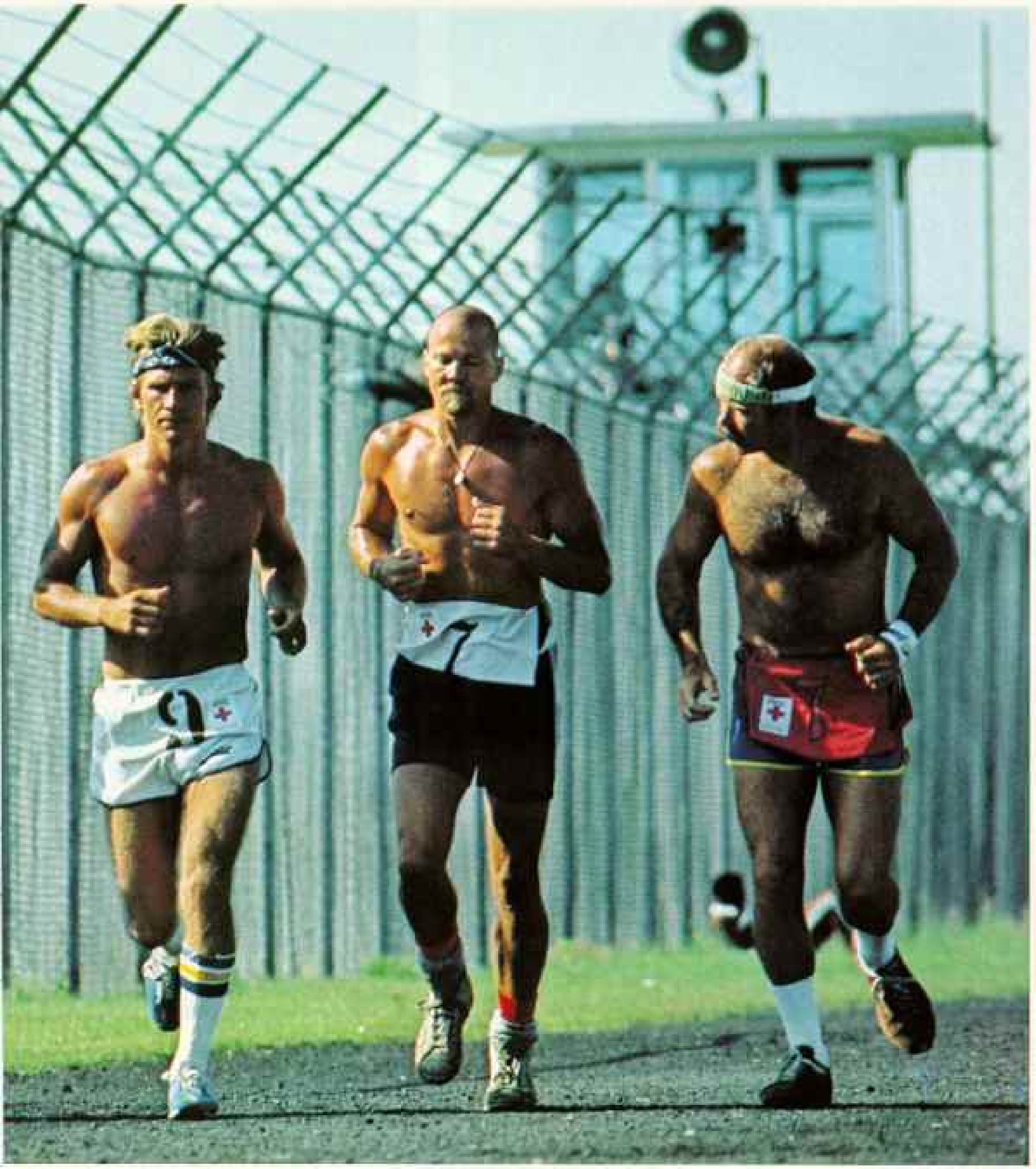
"If you tell me the truth, I'll fight for you," said Doye, after learning of his plight. And Doug spoke: "I did not desert. I received a medical discharge." It took digging, but Doye and the defense counsel eventually discovered that someone had falsely signed the quiet Indian on for another tour of duty and collected his reenlistment bonus. Doug was cleared.

The Sioux made Doye an honorary tribal member and here dance in her honor at their South Dakota powwow.



Behind prison walls

THERE WAS A FIGHT in a dorm. Two inmates were killed. Fire department paramedics



were called in—and almost taken hostage. That was it. The medics would not respond to calls from the prison again.

Who would help the prisoners now?

"We'll have to help ourselves," said Cliff Duncan (***above left***), convicted of killing a longtime friend. With local Red Cross help, Cliff and other inmates at Ohio's Marion Correctional Institution soon became first-aid instructors and organized the first Red Cross prison unit.

Supporting the branch with a prison-yard Run-A-Cross (***above***), the men raised $450 to equip first-aid teams, who have had experience as well as practice (***left***) moving injured cell mates. "How can you learn how to help people and ever think about hurting them again?" said Cliff, who wants to be a medic when paroled.

Blood services

"SIX THOUSAND units of plasma went ashore at Tarawa," wrote a Navy surgeon in World War II, "and 4,000 of them came back in the veins of wounded marines."

American Red Cross plasma processed from whole blood is credited with reducing the death rate among wounded Americans to half what it was in World War I.

After the war the Red Cross launched its first national peacetime blood-collection program. Now it is the largest provider of blood and blood products in the U. S., collecting more than 5.4 million units last year, about half the country's blood supply.

The uses for blood products grow each year. Plasma from the Red Cross in St. Paul, for example, currently supplies an experimental program at the University of Minnesota Hospital (***above left***) to reduce the symptoms of multiple sclerosis.

But the cost of the Red Cross blood service runs high. Transportation by

helicopter out of Madison, Wisconsin (***above***), is but a minute part.

As early as 1954 the Red Cross felt the pinch and soon began charging hospitals modest fees for shipping blood products. The fees, which are ultimately passed on to the public, rose sharply in the 1970s when the Red Cross came to the decision that it was necessary to recover all its expenses in the blood program if it hoped to continue offering this major health resource to the country.

From almost every unit of blood donated to the organization, the Red Cross separates various products—ranging from red blood cells to platelets to clotting components—for which it charges hospitals $8 to $200 in fees to recover a reported 241 million dollars in processing expenses.

Although problems caused by competition among blood-collecting services have led to proposals for a national blood-exchange program, the Red Cross blood-service network of 57 regional programs, supplying more than 4,000 hospitals and other medical facilities, still retains the support of the American people.

People alive today

The American Red Cross awards Certificates of Merit to people who use its emergency procedures to save a life. Several thousand people who might have died are alive today. Meet some of them.

LOUIS REYNOLDS

NEXT-DOOR neighbors Peter Palermo, 50 (***left,*** center), and Frank Gerow, 48, right, live in Alexandria, Virginia, and often help each other with projects, like building the Gerows' patio roof. Now there is a new bond between them. They have both had heart attacks. And they are both alive today because of Frank's 19-year-old son, Pete, left, who has received two Red Cross Certificates of Merit for his rescues.

Both men were stricken suddenly, just four months apart. Their hearts had stopped, and they weren't breathing. Pete kept them alive with cardiopulmonary resuscitation (CPR)—a lifesaving procedure that combines mouth-to-mouth breathing with external chest compressions—until the arrival of paramedics.

"I was too busy to be scared," said Pete. "It was only afterward—I had trouble sleeping for a while."

"Strike two!" John McKenna (***above,*** in cap) of New Bedford, Massachusetts, was umpiring a high-school baseball game when a curveball hit home plate, bounced up, and jabbed him in the neck. He staggered to the third baseline, then fell unconscious. Paul Peloquin, right, an athletic trainer, rushed over and found that McKenna had stopped breathing.

"I remembered he had been chewing tobacco," said Paul, "and I realized that it was lodged in his throat." Working quickly, Paul cleared the obstruction, letting the umpire breathe normally again.

Susan Morris, ten (***below,*** right), of Tullahoma, Tennessee, is fortunate enough to have a dad, a Red Cross first-aid instructor, who taught her about water safety. When her friend, Dwyne Ellis, left, 12, slipped off a docked motorboat in a lake and started to go under, Susan knew she should try to reach for her first—and not go in the water herself. She jumped to a lower boat where she could hold on to Dwyne's arm and keep her head above water while shouting for help.

In people like Susan Morris, Paul Peloquin, and Pete Gerow, Clara Barton's dream of people helping people in time of need lives on. □

LETTER FROM KUNMING

Two American Teachers in China

By ELISABETH B. BOOZ

Photographs by THOMAS NEBBIA

MY SON PADDY and I struggled off the train in Guangzhou (Canton), our heavy suitcases loaded with books, on a rainy February afternoon in 1979. We had no idea what to expect next. Our tickets went no farther than Guangzhou, although our destination was Kunming, in Yunnan Province, 700 miles to the west.

The Chinese official who handed us the tickets at the border had assured us that somebody would meet us in Guangzhou. But who? Suppose no one showed up? For a few panicky moments Paddy and I stood on the platform while crowds of closely packed Chinese carrying bags, boxes, and bundles, lugging shoulder poles, and toting babies, sacks, and trunks streamed past us and out into the gray, rainy city.

Suddenly a voice asked in perfect English, "Are you by any chance the American teachers?"

A small, energetic man with his blue jacket buttoned up to the chin looked at us hopefully. When we assured him we were, he stood back and surveyed us with undisguised curiosity.

"Good gracious," he said, as his eyes lit on Paddy's curly, unruly hair. "You look just like Beethoven!"

This was our first meeting with Yang Zhida, one of the vice-deans of Yunnan University's Foreign Languages Department, who had come all the way from Kunming to meet us. He was to be our "keeper" (as we affectionately came to call him in private). He was our interpreter, helper, chaperone, guide, permission giver or permission withholder, responsible for both our welfare and our good behavior, for more than half of our two-year stay at Yunnan University.

Two months earlier nothing had been further from my mind than coming to live in China for two years.

In the summer of 1978 an old friend who had lived in China for many years learned that the People's Republic—just on the verge of opening up to the West—wanted to recruit 50 native-speaking English teachers from the United States to teach in Chinese universities and foreign-language institutes. Even though I was a history teacher, he thought the fact that I was also a writer and had lived for long periods in other Asian

***To live and work** in remote southern China offered a rare chance to my son Paddy and me. In 1979 we began teaching English at Yunnan University in Kunming, capital of Yunnan Province and familiar to World War II veterans as base of the Flying Tigers and western gateway to China. The province, with Han people predominant, includes 23 minorities, such as this Yao girl (**facing page**).*

DEMONS AT PING-PONG, *sons of the university staff improvise with a net of bricks on one of the study tables of stone that dot the campus. Red scarves identify members of the Young Pioneers, a Communist Party youth group.*

PATRICK BOW

countries might qualify me for the job. He suggested that Paddy might apply as well, since he was about to graduate in Asian studies from the University of Wisconsin and spoke Chinese quite well. My old friend thought that a mother-and-son team might appeal to the family-conscious Chinese.

At the Liaison Office of the People's Republic of China in Washington, D. C., a sympathetic cultural affairs official indicated that we shouldn't raise our hopes. "Perhaps you are too young," she told Paddy, who was almost 24, "and perhaps your mother has her feet in two boats." (I was considering another job in Indonesia.) So we more or less put China out of our minds.

Just before Christmas 1978, the cultural officer telephoned me with exciting news.

"Today I received word from Beijing that you and your son have been appointed to the faculty of Yunnan University in Kunming for two years. Can you leave immediately?"

A hasty family conference with all five of my children. A rapid scramble to pack up the house. A kind cousin who offered part of a barn to store the furniture. And now, only six weeks after that fateful phone call, Paddy and I were getting our first look at China.

I knew no more about present-day China than the average reader. I had a vague idea that a billion hardworking people in blue Mao jackets (called Sun Yat-sen jackets in China) had somehow forged a new kind of society by sheer willpower. But common

As "foreign experts," *Paddy and I enjoyed a six-room faculty bungalow, including a tiny kitchen* **(left)**. *Two rooms for a whole family is the norm. The grand European-style administration hall, built in the 1920s* **(above)**, *rises behind the president, left, and two other officials. The school is one of more than 90 "key" universities and colleges that receive extra funds and other*

sense told me that China was also a backward country that had been cut off from the outside world for many years and was badly in need of modernization. The cultural officer had not been able to enlighten us or even tell us what our job would entail.

WITH YANG ZHIDA we flew from Guangzhou in a small jet and landed three hours later in brilliant sunshine on the mile-high Yungui Plateau in south-central China. This was the very airport that Gen. Claire Chennault had used as his Flying Tigers base nearly 40 years before.

As we drove into Kunming, renowned as China's City of Eternal Spring, my first impression was color: intensely blue sky above the encircling mountains; rosy-cheeked mountainfolk; a riot of camellias, azaleas, magnolias, cassias; willows bursting into golden-green leaf. And on the streets the costumes of Yunnan's minority peoples made bright splashes of color among the blues and grays of the predominant Han.

Yunnan, which means "south of the clouds," is a border province surrounded on the south and west by Vietnam, Laos, and Burma. It has 23 different national minorities, with distinctive costumes, cultures, and languages. They frequently come to Kunming, the provincial capital, for marketing or sight-seeing. We had not been in Kunming long before a joke was making the

privileges, including permission to hire foreign faculty.

*With English now viewed as the get-ahead second tongue, my pupils included teachers of foreign languages (**above**), many of whom had formerly taught Russian. During a class break with his students (**right**), Paddy wins warm results with some local dialect he has learned to enrich his fluent Chinese.*

rounds: "Now we have a 24th national minority—the Americans!"

To our delight, a third American—28-year-old Steve Thorpe from the University of Texas—arrived a few days after we did, to teach English at neighboring Kunming Teachers College. (A year later Kunming's foreign community increased by a third when Penny Schiller came to China to marry Steve, and Kunming Teachers College got another good teacher as a bonus.)

Our biggest problem was learning to blend into our new surroundings. Although Kunming had been the base for thousands of American servicemen during World War II, no foreigners had lived here since the Russians stopped aid and withdrew in 1960. Everywhere we were met with gasps of astonishment, and crowds followed us constantly. Paddy got a Chinese haircut to eliminate part of his outlandishness. We soon put on blue Mao jackets and bought bicycles. This helped, but not entirely. More than once as we pedaled across the city, an unsuspecting worker pulled up beside me, looked, and then did such a violent double take that he fell off his bicycle.

The sight of Paddy pumping up bicycle tires at a public air pump was always a great attraction. But all Paddy had to do was explain in Chinese that we were Americans who had come to teach English, and everybody would break into smiles, repeating what he had said to others and holding up their children to get a better view.

Over time, people have gotten used to us. We felt thoroughly accepted the day Paddy was biking through the city and a stranger riding beside him, instead of gasping or falling off his bicycle, handed him a cigarette, with a smile and a wave.

Children still find us hilarious. The naughty ones leap up and down, singing: "Foreigners! Foreigners! They've got big noses and funny eyes and they don't have black hair!" The good ones greet us with wide smiles and the one English word everybody in China knows: "Good-bye!"

Yunnan University is one of more than 90 "key" schools among some 650 institutions of higher learning in China. As such it receives extra funds, it may import certain equipment from abroad, and it may employ "foreign experts" (our official title) to spearhead the drive for modernization. As a border province far from the dynamo of Beijing, Yunnan has had more need than most to catch up.

THE UNIVERSITY spreads across the top of a high hill where part of Kunming's ancient city wall once stood. The campus is enclosed by red mud-brick walls, the color of Yunnan's soil. How the Chinese love walls! Every entrance is guarded by a gatehouse with its aged gatekeeper, straight out of a Chinese fairy tale.

Although handsomely laid out with some fine buildings, the campus looked seedy and run down when we first saw it. Around our own Foreign Languages Department old peeling buildings were falling down next to gaping holes where foundations were being dug by hand for new ones.

"The place looks as if it's been bombed!" remarked Paddy.

"No—just 13 years of total neglect," explained one of our new colleagues.

When I look around today and see the new buildings, fresh paint, paved paths, and sturdy young trees, I can hardly believe that so much regeneration has taken place in less than two years.

In 1966 China's Cultural Revolution turned young people radically against education, authority, and tradition. High-school students became activist Red Guards and stopped studying. All Chinese universities were forced to close down while students and teachers alike were set to doing manual labor for their "reeducation."

Four or five years later the universities reopened. But only factory workers, peasants, or soldiers, who had been recommended by their leaders, had the right to attend (although some of the leaders managed to slip

A fun revolution *was started recently by Frisbees from the West, which fired imagination at this small factory. As a diversified arm of a nearby agricultural commune, it had been producing plastic lids for glass jars. A worker studied the toys, redesigned a machine part, and presto! Yunnan Province had its first Frisbee plant.*

PATRICK R. BOCZ

A CHILD IS PRECIOUS BALANCE *for Chinese cabbages riding to market on a woman's shoulders. Her family probably grew the vegetables in one of the private plots allotted communal workers to grow produce for their own use or to sell for extra income.*

their own children in). The standards were low, the students stayed for only three years, and the curriculum was heavily weighted with politics and manual labor.

In 1976, when Chairman Mao Zedong died, the notorious Gang of Four, which had seized the reins of power during his old age, was overthrown. China's schools, colleges, and universities began to return to real education amid the wreckage.

In 1977 stiff college entrance exams were restored across the nation. There is room in China's colleges for only about 4 percent of the high-school graduates in any year, and after the Cultural Revolution there was a huge backlog. So the standards for passing were set extremely high, and the competition was ferocious among young people under 30, some of whom had waited ten years for a chance to go to college.

Many of Paddy's students were older than he was. The last group of worker-peasant-soldier students was starting its third and final year, bringing the revolutionary system of the past ten years to a close. It was a mixed and marvelous bunch.

THE NEW SYSTEM was represented by the sophomores, known to the teachers as the "Wonderful Seventy-Sevens," for the year they passed the entrance exams and for the quality of their studies. In the years since they had left high school and the Red Guards had been disbanded, they had been working as farmers, teachers, factory workers, and heaven knows what. Every one of them was bright, and classes had the exciting ferment of older students who had seen and done a great deal. They were intellectually starved and longing for knowledge.

We found three unequal parts to the Foreign Languages Department—an English section with about 160 students, a French

Faces in the crowd? *After a time, we were hardly noticed* ***(above,*** *at center) when we joined the city's rush-hour throngs of bicyclists. Yet at first some riders literally fell over in astonishment at the sight of foreigners in their midst.*

I finally learned enough Chinese for back-fence rapport with my neighbors ***(above)****, Gao Benkun and his wife, Chen Jin, parents of a university physics teacher. The boundless hospitality of my Chinese colleagues included a dance for my birthday* ***(above right)****, an occasion that the Chinese themselves rarely celebrate.*

Exploring the city, I discovered a recent innovation—free markets ***(above, far right)****. Here local peasants can sell for profit goods grown or produced at home, as long as they first meet production quotas on their communes. Compared*

section with 40, and a Russian one with 20.

I was astonished at the fluency of the students' English. They spoke with British accents picked up from language tapes made in England. (The language lab where they listened to the tapes was a work of genius, with banks of ancient reel-to-reel tape recorders connected by a maze of wires, switches, and contraptions made from empty tin cans.) The students spoke correctly, but like 19th-century books.

"Do you really deem us diligent, Mrs. Booz? Why, we think it very boring to remain idle!"

The classrooms where we were to teach up-to-date oral English looked like the old one-room schoolhouse, and they still do. Each desk, for two, has its bench attached to the desk behind, and all are lined up in straight rows facing the teacher, who stands on a small platform by the blackboard. Women sit beside women, and men sit beside men. When the teacher comes into the room, all the students stand up.

"Good morning, comrades."

"Good morning, teacher," they reply, in chorus.

"Sit down, comrades." And class begins.

Paddy and I brought new ways with us. We rearranged the furniture so the students could sit in a circle, and we tried to make our lessons informal, spontaneous, and fun.

The formality of the students and their respectful distance from the teachers were hard on Paddy, their contemporary. Sports helped him break through the barrier. The rough-and-tumble of basketball on outdoor concrete courts, or a game of badminton or volleyball on the road after supper, went a long way toward opening up an easy, friendly give-and-take.

The ravages of the Cultural Revolution were visible everywhere. Buildings were run down, equipment obsolete or nonexistent.

with state markets, I found the free markets' offerings fresher, more varied, and only a bit more expensive.

*We regularly ate on campus, but sometimes snacked at a nearby noodle shop (***right***), here joined by my daughter, Katherine, on a summer visit.*

doorknobs and window latches missing. In the windy season we had to teach over a cacophony of slammings and bangings. Worst of all, there were virtually no books!

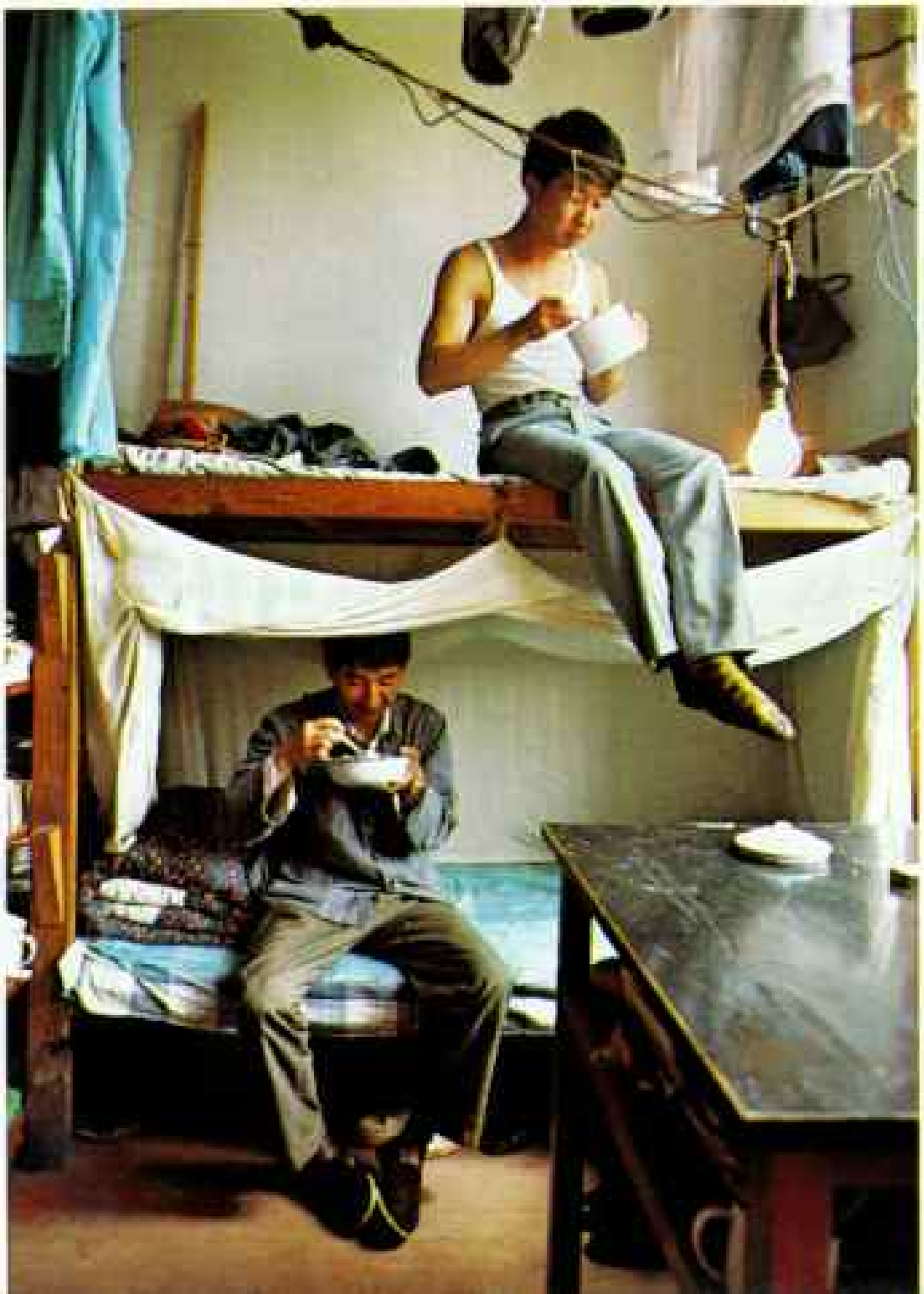
Many students studied from bundles of smeared mimeographed sheets stapled together. They were full of mistakes because the typist didn't know English. No foreign-language books had been acquired during the previous dozen years. The prize possession of the main university library was a 1964 *Encyclopaedia Britannica* kept in a reference room open only to faculty, not to students. Most of the books in the Foreign Languages Reading Room were pre-1950.

Paddy and I accosted the tourist groups who were beginning to visit Kunming, telling them of our plight and begging for magazines and books. At the same time, we wrote letters to America howling for help. The response was overwhelming! My mother began collecting old NATIONAL GEOGRAPHICS and *Reader's Digests* from all over northern New Jersey. Friends scoured book fairs and church bazaars. Relatives simply emptied and packed up their entire bookcases.

The books took three months to reach us by the proverbial slow boat to China, but once the "book lift" got started, they arrived in a steady stream. We received two brand new encyclopedias. The National Geographic Society sent a globe, maps, atlases, and a complete set of its illustrated books. By the time we had been there a year, every wall of our office was lined with bookcases.

AT FIRST it was called the Foreign Experts' Library. Several months ago the leaders of our department moved it to a much larger, sunnier room where there is space for a magazine rack and a seminar table. A bright young teacher, Pu Zhenwei, took charge of the 2,000 or so books, as part-time librarian. Although the main university library is now acquiring up-to-date foreign books as fast as it can, this room is the intellectual and social center of the Foreign Languages Department, and nowadays the students and teachers always refer to it as "*our* library."

At first we lived in the Kunming Hotel. We got a lot of exercise pedaling to and from



Extraordinary event: *The first municipal elections in more than 20 years drew a massive turnout at the campus ballot box (**right**). From a wide field, two candidates were elected to represent the university in a council for one of the city's administrative districts.*

*Universities were closed during the Cultural Revolution of the 1960s, and its lingering effects kept admission standards low through 1976. The next year stiff entrance exams were restored. These students, lunching in their dorm (**left**), belong to the first new class, which we called the "Wonderful Seventy-Sevens."*

As a legacy of the dark era, we found books in English nearly nonexistent. Through friends at home and tourists, we began a "book lift" that brought some 2,000 volumes.

our college on the other side of the city. After a few months Paddy and I moved to our own house on the campus of Yunnan University. The house is actually one-third of a long, one-story brick bungalow, one of dozens of such buildings where faculty, staff, and administrators live. Every household has a tiny yard different from its neighbors. High hedges of bamboo and vines sometimes arch over the narrow paths between them, making tunnels where one is likely to meet strolling families of ducks and chickens.

Our house has five minuscule rooms—an almost unheard-of luxury for only two people in this packed, overcrowded country, where two rooms for a whole family is the normal allotment. A sixth room was added especially for us—a Western-style bathroom with a custom-made, four-footed concrete bathtub, and a charcoal-burning hot-water heater that looks like the Tin Woodman of Oz sitting on a grate.

The shortage of housing poses a big problem all over China. Even though construction goes on wherever one looks, there are just too many people. At Yunnan University new apartment buildings (following pages) have taken some of the pressure off the faculty—but not yet off the 3,000 students, who all live on campus. Eight or ten men in double-decker bunks share a dormitory room that would house two in an American college, and there are usually six women to a single room. Yet the students are extraordinarily patient and good-natured about the crowding. They have no alternative!

The 1,500 teachers and administrators may take their bowls or food boxes three times a day to a teachers' mess hall for a hot cooked meal that most of them carry home to eat. Paddy and I sit nearby in our own private dining room—a small storage shed whitewashed, furnished, and curtained in our honor. It is attached to the kitchen courtyard behind the mess hall, a little world presided over by master cook Li Fa. His merry chuckles and benign, spherical form conceal an exacting artist of the highest order, trained 35 years ago in the kitchens of Yunnan's last warlord. Cook Li's meticulous eye oversees the crew who tend the giant woks and immense wooden rice steamers, and

PATRICK R. BOLE

Catching up with fashion, *workers show off the Western look (**above**), which took a year to reach Kunming from more cosmopolitan cities. While many townspeople favor imported styles from Hong Kong, the mood on campus is far more conservative. That means pants, not skirts, for women, including me.*

*New faculty apartments (**right**) rise near the campus. With three or four rooms, the units are more spacious than older housing and offer the luxury of plumbing (many people still get water from a public outdoor tap). Student housing crowds as many as ten people to a room.*

supervises the chopping of mountains of fresh, ever varying vegetables.

In addition, he cooks exquisite meals especially for Paddy and me in a small side kitchen. With Yunnan's abundance of year-round fresh vegetables and cook Li's array of skills, we rarely have the same dish twice. Yet once in a while when we join Steve and Penny at their apartment for some of Penny's down-home brownies, I get homesick for plain old American home-cooked food.

One of our adjustments was learning to slow down. We came with an American sense of timing: jump in the car—make 20 copies—pick up the telephone—take a quick hot shower. At first we rode our bikes at top speed, always in a hurry to get where we were going, zipping in and out of the traffic. Several near accidents taught us that it was easier, safer, and much more pleasant to pedal along at the Kunming pace with time to enjoy the ever changing scene on the sidewalks.

PATRICK R. BOOZ

In lush fields *a peasant harvests grain on a commune in the countryside, where a gentle climate keeps a rich array of crops growing year round. Kunming itself hums with industry as economic growth replaces the stagnation of the Cultural Revolution, when opposing factions fought and production reached a standstill.*

IN A DISTANT PROVINCE such as Yunnan, it takes much longer to acquire new technology than in China's bustling east. Photocopying is no longer very rare in Shanghai or Beijing. But we were frustrated beyond words to find not a single copying machine of any kind in our department. All classwork to be duplicated had to be typed on a blue stencil and carried to the university printing shop, where half a dozen mimeograph machines and two antique hand-set letterpresses served the copying needs of the entire university.

But in the typical Chinese way, things were adjusted to minimize frustration and make the most of what was available. The printing shop got instructions that any work for the foreign experts was to be given priority, and now my endless piles of class material are cheerfully produced in half a day.

The lack of telephones is a relief rather than an obstacle. There are two at the Foreign Languages Department, though three more will soon be installed. But incoming calls for Paddy or me usually come to the gatehouse, often at strange hours. Then the old gatekeeper trundles up the road and knocks on our window. The first time he learned that he had been speaking to an operator in New York, he nearly fainted!

The leisurely pace and lack of time-and-laborsaving devices make for long workdays. I wake up to the slap-slap-slap of joggers' feet in the predawn darkness, for the Chinese are as enthusiastic about running as Americans are. All China uses uniform Beijing time, so here in the west the sun rises late. That's fine for Paddy, a night person. In winter, waking up at the last possible moment at 7:30, he can see a magnificent

National Geographic, June 1981

dawn spreading across the sky without the pain of getting up early.

Before Paddy comes to life, I take a large enamel mug and two milk coupons (red for a pint-size dipperful and green for a half-pint) and walk to the lower gate of the university. Cocks are crowing in all the yards, and small children brush past me hurrying to school, their red neck scarves just visible in the first light. At the lower gate the milkman in his white coat is perched backward on the seat of his three-wheeled bicycle cart, ladling fresh milk from two big cans. I join the end of the waiting line and watch the sun rise.

The walk home takes longer. Students are already pacing up and down outside their dormitories in the first daylight, reading their textbooks or reciting aloud.

"Mrs. Booz, is it more correct to say *in order to* succeed, or simply *to* succeed?"

"Mrs. Booz, what does 'gizmo' mean? It's not in my dictionary."

Paddy is up and waiting. Breakfast is cocoa, heated on my one-burner kerosene stove, and excellent French bread from Kunming's Vietnamese bakery.

WE EACH TEACH five courses and develop most of our own material. Our classes meet once or twice a week and last for two hours, with a short break in the middle. We teach students in the morning and teachers in the afternoon. Spoken English. Composition. Literature. Grammar (although we will never be a match for the learned grammarians among our colleagues). But the most fun is something known as the Survey Course.

When Li Jialiu, our progressive academic vice-dean, discovered that I was really a history teacher, he was delighted.

"Would you and Paddy—Mr. Booz, that is—care to give the sophomores some knowledge about the Western world?" he asked in his beautiful BBC accent.

I said we would love to if he could tell me what subject matter he wanted covered.

"Well, ah, how about the history and culture of the English-speaking world? In one semester?"

Every Friday morning we did just that, as soon as we finished the vigorous daily four-minute exercises, in which nearly everyone takes part, outside our classroom building.

Half the people who attended the Survey Course that first year were auditors from outside our department. The course was wildly popular for its content and for the fact that the lectures were given in English. It was a great novelty. A hundred and fifty people would cram into a big classroom each Friday, and when the university tried to establish an orderly system of attendance, more auditors came in through the window.

Beginning with the discovery of America, we bounced through history, trying to explain why so much of the world today speaks the language of one small island in northern Europe. Paddy would talk for one hour, and I'd talk for the other, except when we were singing songs, drawing on the blackboard, or acting out a scene together. In the second semester we took the students on a lecture tour around the world, one or two countries a week, to see where the forces of history have landed the world today.

Not a single course in world history or geography was taught in any Chinese secondary school for at least seven years during the Cultural Revolution. These bright, eager students came to college with almost no foundation of general knowledge. The purpose of the Survey Course was to give them at least a crude skeleton on which to hang new information gained from their reading. And read they did!

In place of a textbook, because none existed, I mimeographed a six-page summary of each lecture. But the world perspectives they were encountering drew students to our growing library. Biographies and historical novels were snapped up quickly, while weekly news magazines and pictorials were pored over—even when they were months, or years, old.

At the same time, the language lab underwent dramatic changes. Money made available to key universities was channeled into new sound equipment. The tin cans and tangled wires vanished; up-to-date Japanese consoles and good audiovisual machines took their place. A dedicated teacher provided up-to-the-minute recordings and transcriptions of the Voice of America and the BBC—the latest news broadcasts, special science programs, and educational features. Knowledge and modernization were in the air!

Sketching surreal pinnacles, *I find a moment's peace southeast of Kunming in the Stone Forest, a karst formation of eroded limestone. Legend says one of China's*

mythical eight immortals fractured a mountain to create the labyrinth on a barren plain, to give privacy to lovers who had no place for their courting.

While students at Yunnan University and Kunming Teachers College next door forge ahead, countless people in the city and the province are trying to learn English by any means they can. Learning English is seen as the touchstone for getting ahead. It represents modernization. It can open new realms of understanding, and it is a constructive way to fill the great patches of boredom that go along with too big a population and insufficient entertainment.

Paddy and I have been asked to give talks in English to groups as different as high-school teachers and shopkeepers. We have occasionally given public lectures in the university's big auditorium, which holds a thousand people on hard, backless benches.

"Make your talks long and meaty," a colleague admonished us, "because some people come a very long way to hear you."

My three-and-a-half-hour lecture on "American History From Columbus to Carter," delivered through a forest of small tape recorders, left the audience so benumbed and satiated that it must rank as an all-time test of endurance.

TO CELEBRATE our first May Day, International Labor Day, a big holiday in China, Paddy's students put on a hilarious performance of part of *A Midsummer Night's Dream*. The cast, dressed in pieces of our foreign-looking clothes, hammed it up for an audience who for the most part couldn't understand a word of Shakespearean English. It was a smash hit, perhaps the first time this play had been performed live in Kunming, although Shakespeare is well known. The following week we all watched Sir Laurence Olivier's *Hamlet* on TV, with Chinese voices perfectly dubbed in.

My most difficult task is assisting former teachers of Russian to turn into English teachers. Trained as language teachers in the early 1950s, they had to find other kinds of work after the Soviets withdrew from China in 1960. Today language teachers are needed again—but to teach English.

"We're too old to make our tongues pronounce new sounds," lamented one 57-year-old in a strong Russian accent. "We can hardly keep one hop ahead of our students."

When a live teacher is out of the question, as it is for most people, they can listen to "English by Radio" broadcast daily by a special radio team from our faculty at the Foreign Languages Department. But anybody who owns a tape recorder wants recordings of the English grammar books available in shops. The most popular and widely used is an old series of four textbooks from England, written before the Second World War and later slightly revised.

Paddy and I have spent uncounted hours in the language lab's little recording room (switching off the microphone whenever a train goes by outside) putting all four books of *Essential English* onto tape. We try to vary our voices to sound like Mrs. Priestly answering an invitation to a garden party at Buckingham Palace or Theophilus Hobson taking his daily cold bath. Sometimes it is a shock, on my way to get the morning milk, to hear my own voice booming out of an open window as a worker bones up on his essential English.

For nine months Paddy and I team-taught a special English course for scientists and researchers—such people as the top specialist in radio astronomy at the Yunnan observatory, the chief of acupuncture anesthesiology from the medical college, a senior microbiologist from the botanical institute, and a snake specialist from the zoological institute. These remarkable people became our good friends.

Late one night in June of our first year we received a message from the observatory.

"The clouds have lifted and Saturn is clearly visible. Come and have a look."

So we peered through the largest optical telescope in China and counted the rings of Saturn, while our friend made lucid explanations in the technical English that he had long known how to read but only recently had learned to speak.

We were invited to the medical college to watch two operations with the patients wide awake, anesthetized only by acupuncture. And once Paddy was invited to go on a day-long eel hunt. (The eels were delicious when cook Li braised them with mint and garlic.)

As any teacher knows, the reward for hard work is a well-earned vacation. Chinese universities have two vacations a year—six weeks in the summer and a month in winter for the Chinese New Year (called

Spring Festival). Paddy and I have visited all but six of China's 27 provinces and autonomous regions in our travels, and we know that Yunnan is the province we would choose as the best place to live in China.

Yunnan ranges from steaming tropical jungles in the south to impenetrable snow-bound regions in the northwest. There is an incredible variety of animals and vegetation, and an equally varied human scene. Peasants, town dwellers, people from the colorful minorities—all showered us with hospitality. We have been able to take part in Yunnan life as rarely seen by outsiders.

On the banks of the Mekong River close to the borders of Burma and Laos, we joined the graceful Dai people in their annual Water-splashing Festival, when the whole population, armed with dishpans, mugs, and buckets, sloshes and soaks one another to wash away ignorance and evil.

Deep in the Yunnan countryside, we helped the villagers celebrate Spring Festival in the old traditional way, for the first time in 14 years. A 12-man dragon came out of mothballs to dance and twirl through the village streets once again. There were parades and masks and Ferris wheels, and an opera performed by the farmers themselves in the village square. The hordes of children who had never seen such things in their lives went crazy with delight.

"Eat!" exhorted our host. "Eat till you're dizzy!"

And only a few hours away from Kunming by bus stands the Stone Forest, an area of huge limestone monoliths 100 kilometers southeast of the city (pages 810-11), where the colorful Sa-ni people need only the slightest excuse for an impromptu festival of singing and dancing.

WE HAVE SEEN astonishing changes in two years. Kunming has awakened, as though from a bad dream. The prosperity of the countryside comes spilling into town as free markets burgeon along the sidewalks (page 803). New buildings, new shops go up on every side. Fresh paint and bright new flower beds appear with growing frequency in side streets and alleys. People smile a lot.

But the most important and heartening change for China is the generation of young people who have so eagerly and single-mindedly seized the chance for education. They know that they must make up for a lag of at least ten years.

I have never encountered students who were brighter, more highly motivated, and more determined to make a solid contribution to their country. Some of them may never get to see the great modern cities of Guangzhou, Shanghai, or Beijing. But I feel like yelling across the whole width of China to the leaders in Beijing:

"Look at the young people in your farthest provinces, and feel proud!" □

A dragon unleashed *for the first time in 14 years breathes joy into the Spring Festival, beginning the 1980 lunar New Year in Jiangcheng, a small town south of Kunming. Such festivities had been banned since the onset of the Cultural Revolution in 1966. Now we watched children meet old traditions for the first time—fireworks and costumed serpents, lions, shrimps, and clowns.*

The more we felt such new winds stirring, the closer we sensed China's ancient culture under the surface. And with signs of prosperity on all sides, the friends we have made really have something to celebrate.

PATRICK R. SCOT

The Beauty and the Battles of San Francisco Bay

By CLIFF TARPY
NATIONAL GEOGRAPHIC EDITORIAL STAFF
Photographs by JAMES A. SUGAR

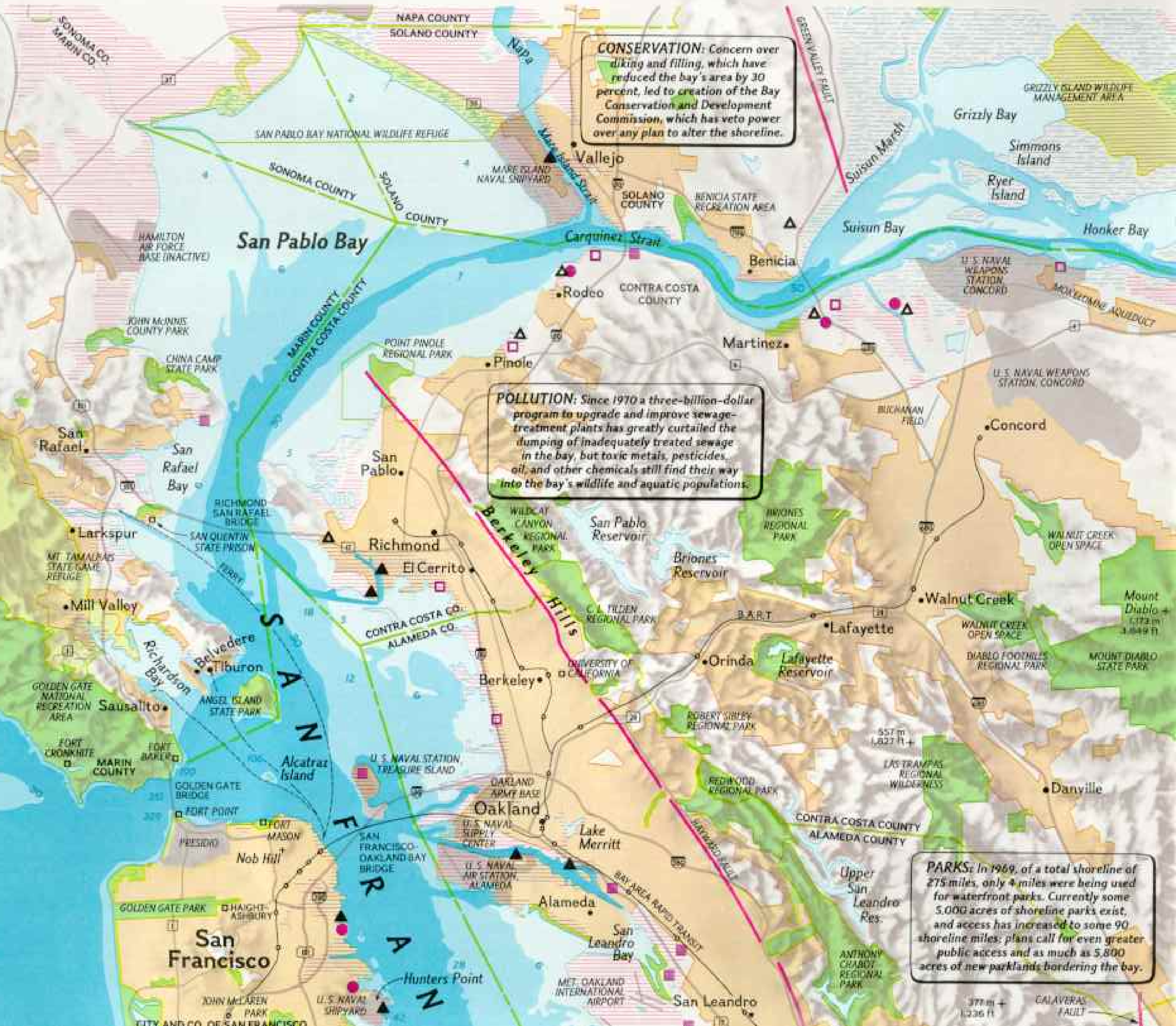
A GLOWING tower of the Golden Gate Bridge thrusts above the veiled entrance to San Francisco Bay as summer fog rolls in at sunset. Beyond the San Francisco skyline and below the Berkeley Hills, the bay widens into an inland sea that anchors a region of rich diversity. Busy maritime centers, spiced with the cultures of the Orient, sprawl only minutes from broad marshy realms where the flutter and splash of wildlife punctuate the quietude.

After California rivers first disclosed their gold in 1848, the harbor in the bay attracted sailing ships from around the globe. Dreamers who came for fortune founded a great urban complex. The gold gave out but the great bay remained, the heart of a land it helped endow with bounty and beauty.

California's Golden Gateway

A MARRIAGE of waters from the salty Pacific Ocean and inland valleys and mountains forms a bay 80 miles long and as wide as 12 miles. As the last ice age waned about 10,000 years ago, the sea invaded the broad valley fed by the Sacramento and San Joaquin Rivers, creating a matchless harbor. The bay's narrow, often fogbound mouth, however, escaped the notice of Juan Rodríguez Cabrillo and other seafaring explorers. Not until 1769 did Spain's Gaspar de Portolá reach the bay, and even then by land, not sea. Site of a Spanish mission, San Francisco remained a small, isolated trading post through the early 1800s. But the 1849 gold rush changed all. By the time the transcontinental railroad opened in 1869, the city's population had jumped from 900 to 150,000.

San Francisco remained California's largest city until overtaken by Los Angeles in 1920. Today, with southern California cities and agricultural empires tapping huge amounts of water from the north, residents of northern California fight increasingly heated battles over control of the freshwater flow through the Sacramento-San Joaquin Delta.



Pacific Ocean

SAN FRANCISCO BAY

DREDGING: *Though it reaches a maximum depth of 350 feet, two-thirds of the bay is less than 18 feet deep at low tide, requiring constant dredging to keep shipping channels open.*

FAULTS: *Three major fault lines—Hayward, Calaveras, and San Andreas—cross the region. Some geologists fear a major quake in the next 20 years along the San Andreas Fault, whose last violent movement touched off the 1906 earthquake and fire.*

WILDLIFE: *South bay salt marshes provide important feeding and nesting areas for migratory birds along the Pacific flyway. Creation of the 23,000-acre San Francisco Bay National Wildlife Refuge in 1972 protected the area from development.*

Daly City
SAN MATEO CO.
San Bruno Mt.+ 401 m 1,314 ft
Brisbane
South San Francisco
San Bruno
SAN ANDREAS FAULT
SHARP PARK
Pacifica
SAN FRANCISCO INTERNATIONAL AIRPORT
COYOTE POINT COUNTY PARK
ALAMEDA CO.
SAN MATEO CO.
SAN MATEO-HAYWARD BRIDGE
San Andreas Lake
SAN PEDRO VALLEY COUNTY PARK
Burlingame
San Mateo
Sawyer Ridge
SAN FRANCISCO STATE FISH AND GAME REFUGE
319 m+ 1,303 ft
Moss Beach
HALF MOON BAY AIRPORT
Lower Crystal Springs Reservoir
Upper Crystal Springs Reservoir
Belmont
San Lorenzo
Hayward
HAYWARD MUNICIPAL AIRPORT
HAYWARD SHORELINE REGIONAL PARK
SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE
DUMBARTON BRIDGE
Redwood City
WETON HETCHY AQUEDUCT
Menlo Park
SAN MATEO COUNTY
SANTA CLARA COUNTY
Palo Alto
STANFORD UNIVERSITY LINEAR ACCELERATOR PROJECT
STANFORD UNIVERSITY
HOOVER COUNTY PARK
WUNDERLICH COUNTY PARK
MOFFET FIELD NAVAL AIR STATION
MARIN REGIONAL PARK
DRY CREEK PIONEER REGIONAL PARK
Union City
COYOTE HILLS REGIONAL PARK
Fremont
Newark
ALAMEDA CO.
SANTA CLARA CO.
Sunnyvale

MARSHLAND
SALT PAN
WILDLIFE MANAGEMENT AREA
MILITARY INSTALLATION
PARK
BUILT-UP AREA
LAND RECLAIMED FROM OPEN BAY OR MARSH
20 SOUNDINGS IN FEET
KILOMETERS 0 5
STATUTE MILES 0 5

PETROLEUM FACILITY
CHEMICAL PLANT
SHIPYARD
FOSSIL-FUEL POWER STATION
OTHER INDUSTRIAL DISCHARGE SOURCE

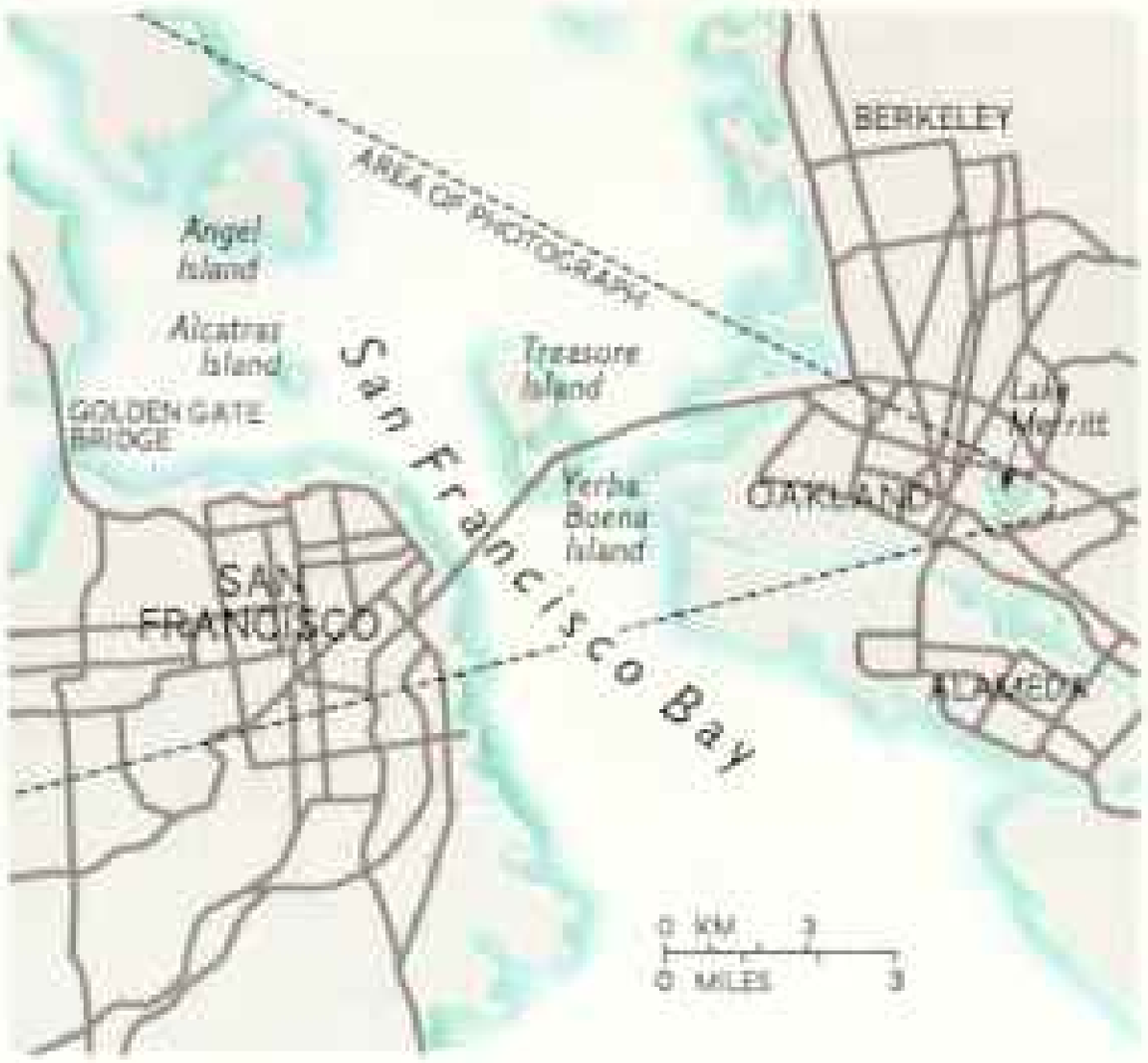
Industrial sites shown are classified by the Association of Bay Area Governments as significant dischargers of potentially toxic substances.

South bay

SERPENTINE ROWS of mobile homes reflect the bay area's rapid growth since World War II. Today, stringent requirements control development. Some permits are granted only if the builders agree to restore a comparable piece of shoreline property to its natural state.

At the San Francisco Bay National Wildlife Refuge, San Jose schoolchildren ***(below)*** *get close to nature—too close—by holding a baby black-necked stilt. They were later reprimanded for ignoring the refuge's hands-off policy.*

Golden silence comes at sundown *to south-bay wetlands zigzagged by levees separating salt pans. Two companies extract more than a million tons of salt a year by a system of progressive evaporation. In peaceful coexistence with the animals, Leslie Salt Co. uses 12,000 acres of federal refuge property.*



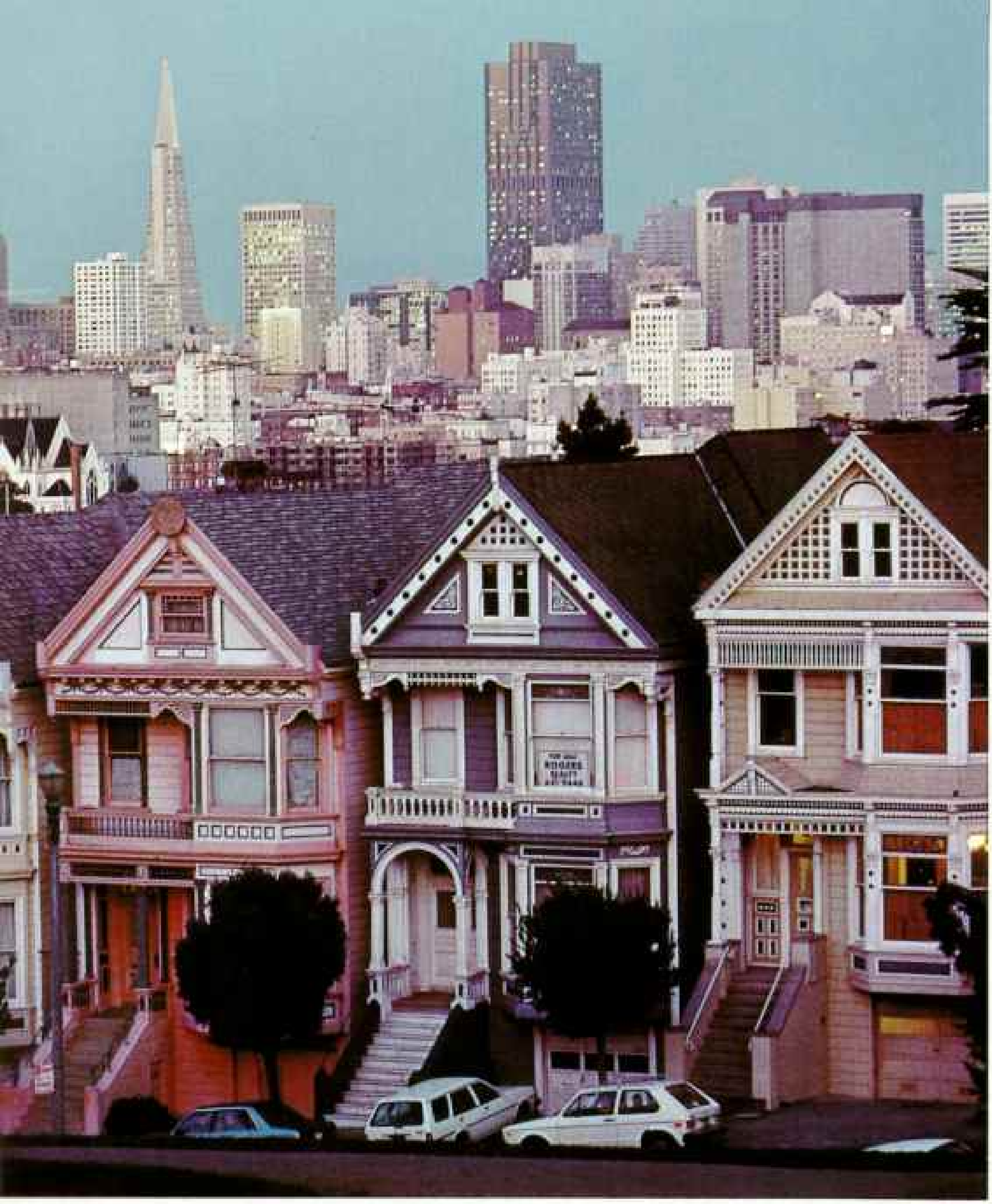
Oakland

NO LONGER a poor cousin to the rival across the bay, Oakland has prospered by expanding her port with efficient container-cargo facilities while San Franciscans faltered and squabbled over their aging waterfront. Though San Francisco's skyline remains more impressive from the bay, Oakland exhibits her own charms. Lake Merritt eases the eye of a jogger (**right**) *while adding a touch of class to the city* (**below**). *For the downtown area bordering on this inland shoreline, Oakland has drawn up a massive redevelopment program, including a convention complex and an international trade center.*

San Francisco

"DON'T call it *Frisco*," say proud city dwellers, who find the nickname belittling. They insist that San Francisco is "the City," thank you.

Coveted properties with enviable vistas and an agreeable climate help make San Francisco a place of shoulder-to-shoulder houses, such as these Victorians on Alamo



Square. With 674,000 residents squeezed into 45 square miles, the metropolis stands second only to New York as the most densely populated major U. S. city. Rising property values and a strong tradition of preservation have pitted multi-unit developers against those who oppose destruction of existing communities. Such issues are grist for nearly 100 neighborhood associations, which wield considerable clout with local government.

White-collar industries now create the majority of new jobs in San Francisco, the banking capital of the West and headquarters for more than 20 major corporations. Advances in earthquake-resistant construction are features of such skyscrapers as the 52-story Bank of America building, upper right, and Transamerica Corporation's pyramid—a design initially deplored but now increasingly admired as a hallmark of the city's skyline.

The delta

FURIES from the sea swept the bay area in early 1980, when a series of major storms blew in during an eight-week period. Hardest hit was the inland delta, a crazy quilt of low-lying land at the junction of the Sacramento and San Joaquin Rivers, much of it reclaimed by earthen levees built by Chinese laborers a century ago. Farm tracts bordered by the levees are increasingly vulnerable to large-scale flooding as the cropland subsides and the dikes age and crumble.

While the storms lashed the region, yellow-slickered teams from the California Youth Authority and the California Conservation Corps worked feverishly to stem the onslaught with sandbag-weighted tarpaulins ***(above)****. Wind-blown water in the flooded Holland Tract on the left threatens to breach the levee and merge with the boat channel on the right that skirts the tract.*

Armed to the teeth, Conservation Corps member Sue Davies has a tug-of-war with gale-force winds ***(left)****. Thanks to a week of round-the-clock work, the levee was secured. But the Holland Tract farm of Jack Williams was ravaged* ***(right center)****. By summer, things were back to normal* ***(lower right)****.*

The Bay: Its Beauty and Battles

THE PACIFIC OCEAN renews its timeless assault on the central California coast when the tide comes foaming up on pebble-strewn beaches and crashing against dark mossy rocks. The ocean finds a rare breach in a deep narrow channel called the Golden Gate. Here the water rushes into San Francisco Bay, a place the Indians called the "sundown sea."

That name seemed fitting as I crossed the Golden Gate Bridge and watched the bay dress for the winter evening. Here, I had found, this great bay offers its finest vantage point. To the north, the smooth green headlands of Marin County turned dark gold. To the south, buff-colored buildings on the hills of San Francisco blushed pale orange in the sunset. On the waterfront, lights blinked on.

Below me the sea surged in through the mile-wide narrows, then slowed and spread into a basin that from the air resembles a dark blue sea horse adrift in an earthy ocean of green and brown. This briny body measures 80 miles from marshy crown to a shallow tail quilted with salt evaporation ponds.

The salty tide mingles with fresh water flowing from the Sierra Nevada through the Sacramento-San Joaquin River Delta. This mix of waters—some two trillion gallons of water covering 548 square miles—gives San Francisco Bay its dual nature. The bay area is both a haven for a lively society of fish and fowl and a cosmopolitan metropolis spawned by a maritime industry that now boasts the seventh busiest port system in the nation, with some 4,000 ocean vessels calling each year.

Today bay-area residents battle to save its lifeblood: the freshwater inflow. But battles to save San Francisco Bay are nothing new. Over the past century, the bay has been dredged, developed, polluted, and 30 percent of it diked and filled. Public outcry finally halted the wholesale filling, and strict laws now protect the shoreline. The latest fight is over a project that would capture more water from the delta before it enters the bay and send it to the farms and cities of southern California. The dispute promises to smolder for years, for feelings about the bay run strong and deep.

On San Francisco's Municipal Pier, I met Ernest Teal, a man who likes to catch his dinner from the bay.

"I got some tomcod, some rock cod, and some kingfish. I'll have some tonight—a little corn meal, a little salt, then deep fry 'em."

Teal, a retired highway-maintenance worker who has been fishing the bay for 30 years, has seen the fishing decline.

"We used to have fishermen elbow to elbow along the pier," he said. "We'd have striped bass stacked up like cordwood." He nodded toward the water and added hopefully: "They say it's cleaning up some."

Still, most of the 160 boats berthed at Fisherman's Wharf work the open sea rather than the bay. Sam Luoma, a marine biologist with the U. S. Geological Survey, told me: "In 1957 commercial salmon fishing was banned in the bay to preserve game fishing. There's an even older law protecting the striped bass, but that species is now disappearing at an unprecedented rate.

"Nowadays commercial fishing in the bay concentrates on smaller, faster-reproducing species like anchovies and herring and shrimp," said Luoma. "But we really can't say how much of the decline of larger fish is due to pollution and how much to overfishing. We don't have enough hard data."

For its ten-year-old bay-studies program, the USGS uses the sleek 96-foot research vessel *Polaris*. I boarded one daybreak at Sausalito, a wealthy Marin County community of hillside homes and houseboats.

We drifted to a halt in the Golden Gate at 7 a.m., and the captain dropped anchor. Belowdecks, sleepy-eyed scientists drained cups of coffee and began work.

"The chemistry of the water is the framework of our studies," Larry Schemel, the ship's chief scientist, told me. "We're measuring the content of salt, silt, and other substances important to the bay's health."

The *Polaris* is loaded with gauges and probes that record salinity, temperature, and oxygen and carbon dioxide content, and measure the abundance of the microscopic plants and organisms that are the bay's primary foodstuffs. The data wind up at the USGS's regional headquarters in suburban Menlo Park, 30 miles south of San Francisco.

There John Conomos directs the work of the ship's dozen researchers.

"We want to find out how the bay works and try to predict what changes will occur because of the works of man—both good and bad," he told me.

"With its freshwater inflow, the bay is really an estuary. Fifteen thousand years ago the sea was 300 feet lower than it is now and the bay was like a canyon, carrying the combined waters of the San Joaquin and Sacramento Rivers to the ocean. As the sea level rose with the melting of polar ice, the ocean came in to create the bay."

It is actually a bay of bays. San Francisco Bay proper takes up only 60 percent of the surface, with San Pablo Bay second largest. The others are San Rafael, Grizzly, Richardson, Suisun, Honker, and San Leandro.

A Natural Fog Machine

The bay is a powerful moderator of climate. In summer, when the inland valley bakes, the rising warm air sometimes draws in fog from the ocean. In winter, if the water stays warmer than the land, radiation fog from the valley rolls westward over the bay. Unwary sailors lulled by gentle spring breezes see their masts suddenly lean toward the water when they round the headlands and meet winds called venturis that howl through the Golden Gate.

In its northern and southern reaches, the bay is shallow and marshy. In the middle it is deep—as much as 350 feet at the Golden Gate. Safe and sheltered from the ocean, the bay escaped detection by 16th- and 17th-century explorers. With its narrow mouth so often shrouded by fog, it wasn't discovered until 1769, and then by land—and by accident. That year a Spaniard, Gaspar de Portolá, headed north for Monterey Bay but overshot the mark. Before turning his starving men back to Mexico, Portolá sent scouts out for a last look. They scaled a summit and returned talking excitedly of finding a vast arm of inland water.

For decades, the area had only the isolated Mission San Francisco de Asís and a nearby fort called the Presidio. After gold was discovered in 1848, San Francisco's population leaped from 900 to 25,000 in two years. By 1890 its 300,000 residents made San Francisco the nation's eighth largest city. Today, with 674,000, it is the hub of a nine-county metropolitan area of five million people.

In the history of San Francisco's maritime growth, no name stands larger than Crowley. Starting in the late 1800s with one man and one boat, Crowley Maritime Corporation today owns the nation's largest fleet of oceangoing barges and tugs.

From his office in downtown San Francisco, Thomas B. Crowley, a soft-spoken man of 67, can watch his Red Stack tugs shepherding cargo ships while his Red and White Fleet hauls tourists around the bay.

"My grandfather started with a single Whitehall boat—really just an 18-foot rowboat with a sail," Crowley told me. "He would go out to a sailing ship and bring sailors back to the boardinghouses. He'd also take out the butcher, the grocery man, and the ship chandler.

"When the great earthquake and fire of 1906 hit, one of the city's leading banks hired my father to put its gold bullion onto a boat and take it out into the bay and sit on it for safekeeping."

Crowley Maritime expanded rapidly after World War II and prospered further when its tugs and barges hauled 200,000 tons of cargo to the North Slope during construction of the trans-Alaska pipeline.

Boom Years Brought More Industry

On the west side of the bay the postwar boom fostered a string of industrial cities spreading along the peninsula south of San Francisco. White-collar towns between Redwood City and San Jose—including Palo Alto, home of richly endowed Stanford University—became a leading production center for the electronics industry.

The east bay became the area's stout industrial backbone. Huge oil refineries cluster along the waterfront, and pastel storage tanks dot the hills north of the Richmond-San Rafael Bridge.

With the bay's girdle of hills and forested mountains, an impressive view is never far away. Along a ridge atop the San Francisco Peninsula, Crystal Springs affords a striking aerial view when it catches the evening sun. But the long, narrow reservoir marks an ominous aspect of the geography: It traces the San Andreas Fault, whose last violent

Venerable daughter of the bay, *Claire Giannini Hoffman stays involved with the Bank of America, founded by her father, A. P. Giannini, in 1904 and now one of the world's leading financial institutions. Portraits of her father, upper left, and her late husband, Clifford P. Hoffman, dominate the living room of the family home in San Mateo.*

movement touched off the cataclysmic 1906 earthquake and fire. The fault, many geologists say, causes a major quake roughly every century. Some predict it will happen again within the next 20 years.

For USGS geophysicist Bob Nason, earthquakes are a vocation and an avocation. "I'm an earthquake chaser," Nason told me in his Menlo Park office. "Wherever a major quake occurs in California, I go there and study what happened.

"Most of the damage in 1906 was from the fire, and very few buildings collapsed," he told me. "But many walls came off the outside of buildings, so that the guy who stayed in bed didn't get hurt and the guy who ran outside got clobbered."

To another San Francisco Bay history buff, Diana Lyster, 1906 was the finest hour for her favorite topic: the ferryboats. We stood on the deck of the *G. T. Marin,* a new jet-powered ferry. San Francisco's handsome old Ferry Building shrank in the distance as we sped toward the Larkspur

terminal, serving Marin County residents who commute to San Francisco.

"The ferries helped save this city," she said. "They worked night and day, around the clock, transporting fire-fighting equipment to the city and carrying people across the bay to safety." Today ferries offer a pleasant alternative to commuters faced with rising fuel costs and congested bridges and freeways.

In addition to the ferries, seven bridges stitch the bay together, and patronage of the Bay Area Rapid Transit (BART) system—which includes a tunnel under the bay that links San Francisco and Oakland—is steadily growing.

For me, the best way to get around San Francisco is with comfortable shoes and 50 cents to ride the cable cars. The system, with its little cars driven by huge wheels located at Mason and Washington Streets, is now a national historic landmark. The wheels move cables that hum along just beneath the pavement. The gripman engages the clutch, jaws under the car grasp the cable, and you're off.

I boarded a car at Sutter and Powell Streets to get to Fisherman's Wharf.

We climbed Nob Hill, the cable singing that high-pitched metallic song and the gripman clanging the warning bell with his own rhythmic composition.

The car became a roller coaster climbing slowly toward the top of the hill, gliding across the flat intersection, then . . . swooping down the hill, and there was the bright blue bay: Alcatraz with Angel Island beyond, whitecaps and white sails catching the fresh breeze below billowing clouds.

Women Lead Antipollution Fight

The post-World War II years have not left the bay unscathed. If a developer wanted more room, he merely diked off an area, pumped it dry, and filled it in with dirt. Whole communities sprang up where there was once only water; much of downtown San Francisco sits on fill. Ending that practice was a goal of a small group of people drawn together by one woman, Kay Kerr.

In the 1960s, Mrs. Kerr often showed off the bay. As the wife of Clark Kerr, then president of the University of California, she took visiting dignitaries around. What she saw made her sad. "It was obvious there had to be a stop to the pollution. You could smell it. Canneries in the south bay were emptying their wastes. There was a sewage outlet near the bay bridge. There was no more swimming, and the air was polluted. And when the freeways and the BART subway tunnel were built, they filled the bay with dirt and rubble from old buildings."

Mrs. Kerr, with her university friends Esther Gulick and Sylvia McLaughlin, founded the Save San Francisco Bay Association in 1961.

Herb Caen, columnist for the *San Francisco Chronicle*, wrote in 1965: "The great public is apathetic: 'How can they say our bay is disappearing when I can look out of my window and see it?'" But Mrs. Kerr knew the association had struck a chord when it sent out 700 letters of appeal and got back 600 replies.

She persuaded a morning disc jockey, Don Sherwood, to describe various threats to the bay so commuters could spot them on their way to work.

"He was great," Mrs. Kerr said. "Every day he would say something like: 'Don't drink your morning coffee until you've written to the governor and the legislature and told them how much you love the bay.'"

They did, in droves. The Save San Francisco Bay Association today claims 20,000 members. The group led the long, bitter fight to create the San Francisco Bay Conservation and Development Commission (BCDC), which now determines what projects can be built in or over the water and must approve any project within a hundred feet of the shoreline.

In San Francisco's State Building I heard the commission debate whether the bayside city of Vallejo should be allowed to fill 11 acres of Mare Island Strait across from the Mare Island Naval Shipyard. A private firm would use the property to assemble oil-drilling rigs and other marine equipment.

In granting a permit, the BCDC authorized one of the largest fills in its history—but only with a trade-off: Vallejo would be required to restore an adjacent 50-acre parcel of shoreline just inside the mouth of the Napa River to its original condition.

Requiring a developer to restore shoreline property in exchange for a permit is called

Jeans that won the West, *Levi's became a household word and launched a worldwide clothing empire. Levi Strauss & Co. still makes the sturdy trousers promoted by this late 19th-century poster* ***(left)****, as well as suits, shirts, belts, and hats.*

In the San Francisco plant that Levi Strauss opened in 1906, his great-great-grandnephews maintain a family tradition. Peter E. Haas, Jr., at left, and Robert D. Haas help direct a firm with 2.8 billion dollars in annual sales and 95 plants in the U. S. and overseas.

mitigation. With BCDC's severe staff and budget limitations, mitigation is one of its biggest sticks. That tool paved the way for the largest marsh restoration project ever undertaken on the West Coast, a 210-acre parcel near Hayward used as a garbage dump since 1948. More than half the million-dollar restoration cost is being borne by the state as partial recompense for other marshland destroyed by construction of a new bridge across the southern part of the bay.

The bay's wetlands provide crucial nesting and feeding areas along the Pacific flyway, the route for migratory birds between North and South America. To protect the southern reaches from destruction by development, a 1972 law created the 23,000-acre San Francisco Bay National Wildlife Refuge. Most of the property was owned by Leslie Salt. The federal government bought

the property but agreed to let Leslie continue operations that extract more than a million tons of salt a year from bay brine (page 821).

Staff naturalist Larry Vojkufka drove me along narrow dirt levees that separate the salt ponds. In the solitude, it was hard to believe that harried commuters jammed freeways just a few miles away.

"Some of these ponds are full of brine shrimp, the kind used for aquarium food, and water bugs—nutritious foods for waterfowl and shorebirds," Vojkufka said.

On our left the water was thick with a colorful community of fowl in a pond brushed by gentle breezes.

"Those black-and-white ducks are scaups. We've got some canvasbacks over there—and there goes a willet. That's an avocet—see his cinnamon head? He's in breeding plumage. When we get a real high tide, mice come up hanging on to anything that will float, and the marsh harriers really have a field day."

The refuge protects several endangered species. Among them is the brown pelican. Larry went on: "Some people come here and see a lot of pelicans and say: 'What do you mean, they're endangered?' But what they're mainly seeing are old or migratory birds. Pelicans can live to be 25 years old." In fact, the pelican population is beginning to increase again, he said—largely because of the 1972 ban on DDT. That chemical severely affected the birds' nesting by causing eggshells to weaken to the point where they would crack when sat upon.

Water Diversion Threatens Wetlands

Fresh water is of relatively little importance in the salty habitat of the national wildlife refuge. But it's increasingly important to residents in the bay's northern end, particularly in the Suisun Marsh area, 85,000 acres of brackish wetlands, sloughs, and hilly pastureland between San Pablo Bay and the delta. Supporting 245 species of birds and mammals, the marsh is prime fishing and waterfowl-hunting territory.

To provide water for farming and other uses, California's far-flung network of dams, pumping stations, and canals taps huge volumes from the Sacramento-San Joaquin river system. The Central Valley Project irrigates rich but semiarid farmland. California's newer State Water Project moves two billion gallons daily through the 444-mile California Aqueduct, 40 percent of it to farms and cities in southern California. As more fresh water is diverted, more salt water moves upriver to take its place.

Lifelong resident June Kindelt has seen the effects. I drove with her over the marsh's bumpy levees as redwing blackbirds and white-tailed kites fluttered up beside us.

"In 1970 I noticed that we were losing the blackberries, the wild plums, and the fig trees. The salt water killed all of that out. I used to trap a few raccoon and a few beaver, but primarily muskrat. I could go out and catch a hundred a day. Then the muskrats started to go downhill on me. Then the ducks—your ducks want fresh water too."

Says John Conomos of the bay-studies program: "The major thing that causes circulation in the bay is the river flow that comes from the delta. The fresh water, with its high sediment content, helps shade the plankton and control their growth.

Conomos is particularly concerned about something called the "null zone." "This is where the salt and fresh water meet, the area of highest ecological sensitivity. Fresh water flowing over heavier salt water creates a rolling action, which migrates with the tides and seasons. After heavy rains the fresh water overrides the ocean water and travels as far as 30 miles downstream.

"But in the drought of 1976 and 1977 the null zone stayed far upstream, and all of a sudden the bay's production of plankton and fish fry went down. We're just beginning to understand why the null zone is so important."

Southern California currently gets much of its water from the Colorado River. But a Supreme Court decision gave Arizona the go-ahead for its own Colorado aqueduct. When it is completed in five or six years, it will cut California's share drastically.

To make up the difference, the Los Angeles area is pressing for construction of the long-proposed second phase of the State Water Project: the Peripheral Canal. The 42-mile-long canal would start at the Sacramento River, cut an arc southward through the periphery of the delta, empty into a collection point called Clifton Court Forebay,

and feed into the California Aqueduct. The legislation authorizing construction of the five-billion-dollar project was signed into law by Governor Edmund G. Brown, Jr., in July 1980.

Promoters call the Peripheral Canal the "missing link" in the California Water Project. The state's Department of Water Resources believes it is crucial to California's economic health and insists the delta would be protected from excessive pumping.

Canal opponents are not convinced. The save-the-bay advocates, delta farmers who fear the loss of irrigation water, and others gathered enough signatures to force a referendum calling for repeal of the canal bill. The issue will be decided by California voters this year or next.

The intense feelings highlighted something that was impressed on me over and over; no one takes the bay and its priceless shoreline for granted any longer. With restrictions on filling, both public and private sectors face hard decisions on how best to use the existing waterfront.

Overlooked Oakland on the Rise

Over the past two decades Oakland used its large share of prime waterfront to install efficient containerized-cargo handling equipment. With its convenient rail and highway connections, Oakland prospered in the highly competitive world of Pacific Basin trade and far surpassed San Francisco as the bay area's busiest port.

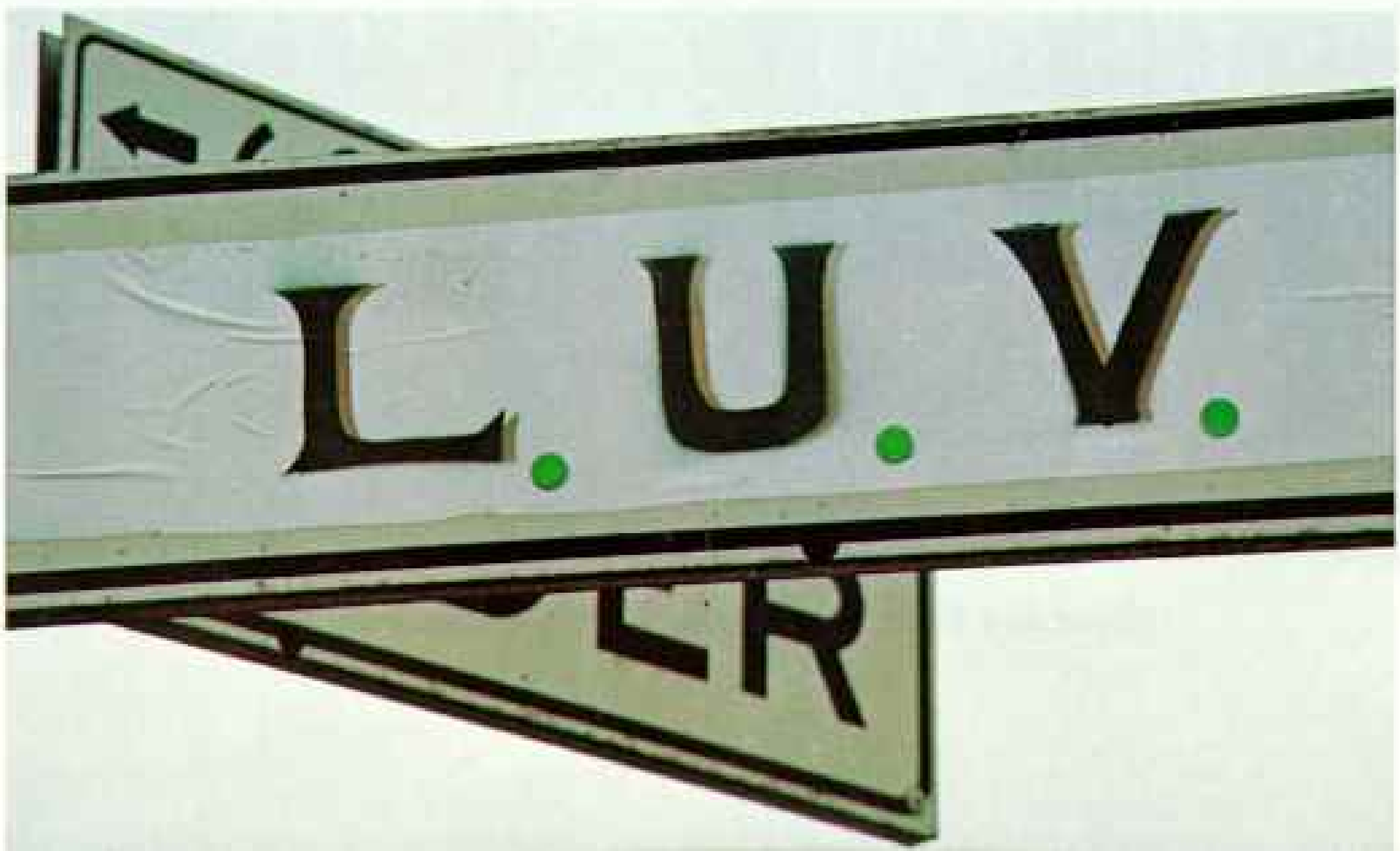
"We were hungrier and more aggressive than San Francisco," city manager David Self told me in Oakland's old, ornate city hall. "I can see us becoming *the* West Coast trade center. We have the hardware at the port, and we're now beginning to cultivate some of the cultural and international trade aspects that the port is bringing."

The city is banking on its newfound prosperity to revitalize the downtown area. On Self's wall hangs a drawing of a 130-block area showing plans for a new convention center, hotel, international trade center, and renovations of Victorian houses into shops and restaurants.

Self talked of the problems of a city whose population had dropped from 370,000 to 340,000 over the past 20 years. We joked about the comment by author Gertrude

Long hair and love beads *have given way to more conventional dress in Haight-Ashbury, where a former art gallery and coffee house (**above**) now offers a less bohemian scene. The San Francisco district gained attention in the late 1960s as the center of the counterculture movement. After sliding into disrepair, the area is rebounding with renovations of the bay-windowed row houses that are a San Francisco trademark. Although Haight-Ashbury's days of "flower power" are gone, the mark of one of today's free spirits overrules Haight on a street sign (**right**).*

OF 'THE BEHOLDER'



Caged in a forest of metal, traffic in the westbound lanes of the double-

decked Bay Bridge streams from Oakland toward San Francisco.

Stein, who once wrote of Oakland: "There is no there there."

"We have our negatives," he said. "We've had a history of people attractive to the news media—Huey Newton, the Black Panthers, Sonny Barger and his Hell's Angels.

"Our population, which is 45 percent black, has begun growing again—and we now have some very active neighborhood organizations."

But Oakland may have to start looking over its shoulder and northward up the shore to Richmond. That city has embarked on a massive waterfront redevelopment project that already includes some of the most modern container-handling facilities in the world—with room for more.

Lance Burris, Richmond's former director of economic development, thinks it's ironic that his city's fortunes have been tied to the Japanese—first during World War II, now through trade. "The city bought 22 million dollars' worth of real estate along the waterfront. Most of it was vacant—the site of the old Kaiser shipyards. That's where Liberty ships and Victory ships that helped defeat the Japanese were built.

"The basin is where our country's future is," Burris said. "The Japanese lost the war, but now we're bringing in their Hondas."

When I drove through the redevelopment site, I saw that some old buildings still stood, their windows broken, their yards sprouted with weeds. Vast areas were freshly bulldozed. Richmond's waterfront plan calls for 200,000 square feet of commercial space, 3,500 condominiums and rental units, a 2,000-berth marina, park, and esplanade, woven together by trails and paths.

Tourism Outstrips City's Industry

Despite what she sees happening at the ports across the bay, Dianne Feinstein, San Francisco's brisk, plain-speaking mayor, remains optimistic.

"Oakland did ace us out of a lot of business," she told me. "Where there were once about 60,000 blue-collar jobs on our docks, there are now 10,000. Bringing back maritime business to the port is a high priority.

"But tourism is now our number one industry," she added. "Last year we had more than 3.5 million visitors."

The largest new waterfront development is Pier 39, a collection of 150 restaurants and shops and a marina close by a much older competitor, Fisherman's Wharf.

"Pier 39 is the first big waterfront redevelopment this city was able to get off the ground, the first that replaces our rotting pier sheds with something that opens up the water for people to enjoy," Mayor Feinstein said. "I want it to succeed. There's plenty of room for shipping and tourism in San Francisco. All exciting port cities have both."

A Melting Pot's Melting Pot

Perhaps an even bigger challenge for the mayor comes from serving the needs of an ethnically and culturally diverse constituency in the densely populated city.

San Francisco's 67,000 residents of Chinese ancestry—the largest concentration outside Asia—have begun moving out of Chinatown into other neighborhoods.

Growing numbers of Vietnamese and Cambodians join Japanese, Filipinos, Koreans, Tibetans, and others of Oriental heritage among new San Franciscans. Meanwhile, the city's other ethnic communities—Italian, Irish, black, and Hispanic among them—work to hold their influence. The city's homosexuals, estimated by local activists at 30 percent of the population, comprise a strong political force.

"Yes, the city has changed," Mayor Feinstein said. "My job is to accept the new constituency, and I don't draw any value standards over who is more important. There's no city in the United States where you'll see more neighborhood protection and rehabilitation, more dedication to preserving our heritage."

San Francisco has always tolerated the unconventional, even the zany.

As early as 1859, a man named Joshua Abraham Norton placed an advertisement in the *San Francisco Bulletin* declaring himself "Emperor of the United States." He donned a blue uniform with gold epaulets and a peacock-plumed beaver hat. Thereafter, with his dogs Bummer and Lazarus in tow, Emperor Norton got the honor he demanded: free clothing from the finest stores, free meals at fancy restaurants.

As late as 1979, a punk-rock singer calling himself Jello Biafra ran for mayor and got 3.4 percent of the vote.

Seven of the eleven *Nobel prizewinners at Berkeley, oldest campus of California's nine-campus state university system, gather for a group portrait. Back row, from left: Donald Glaser, physics; Edwin McMillan, chemistry; Melvin Calvin, chemistry; and Emilio Segrè, physics. Front, from left: Luis Alvarez, physics; Glenn T. Seaborg, chemistry; and Owen Chamberlain, physics.*

In the 1950s San Francisco's North Beach became the center of a bohemian subculture chronicled by Jack Kerouac in his novel *On the Road*.

In the 1960s the bay area was a focal point for the counterculture movement: antiwar demonstrations, the free-speech movement in Berkeley, the hippie culture in the Haight-Ashbury District. Rock groups such as the Jefferson Airplane and the Grateful Dead gave free concerts and attracted worldwide followings. The music and memorabilia of that era are now collected by the fledgling Bay Area Music Archives.

The Ghosts of Angel Island

Evidence of the bay area's colorful and often boisterous past can be found everywhere, including its islands. Alcatraz sent away its last federal prisoners in 1963 and now captivates hordes of tourists. I discovered intriguing bits of history on Angel Island, the bay's largest, a 740-acre oasis of greenery operated by the California Department of Parks and Recreation.

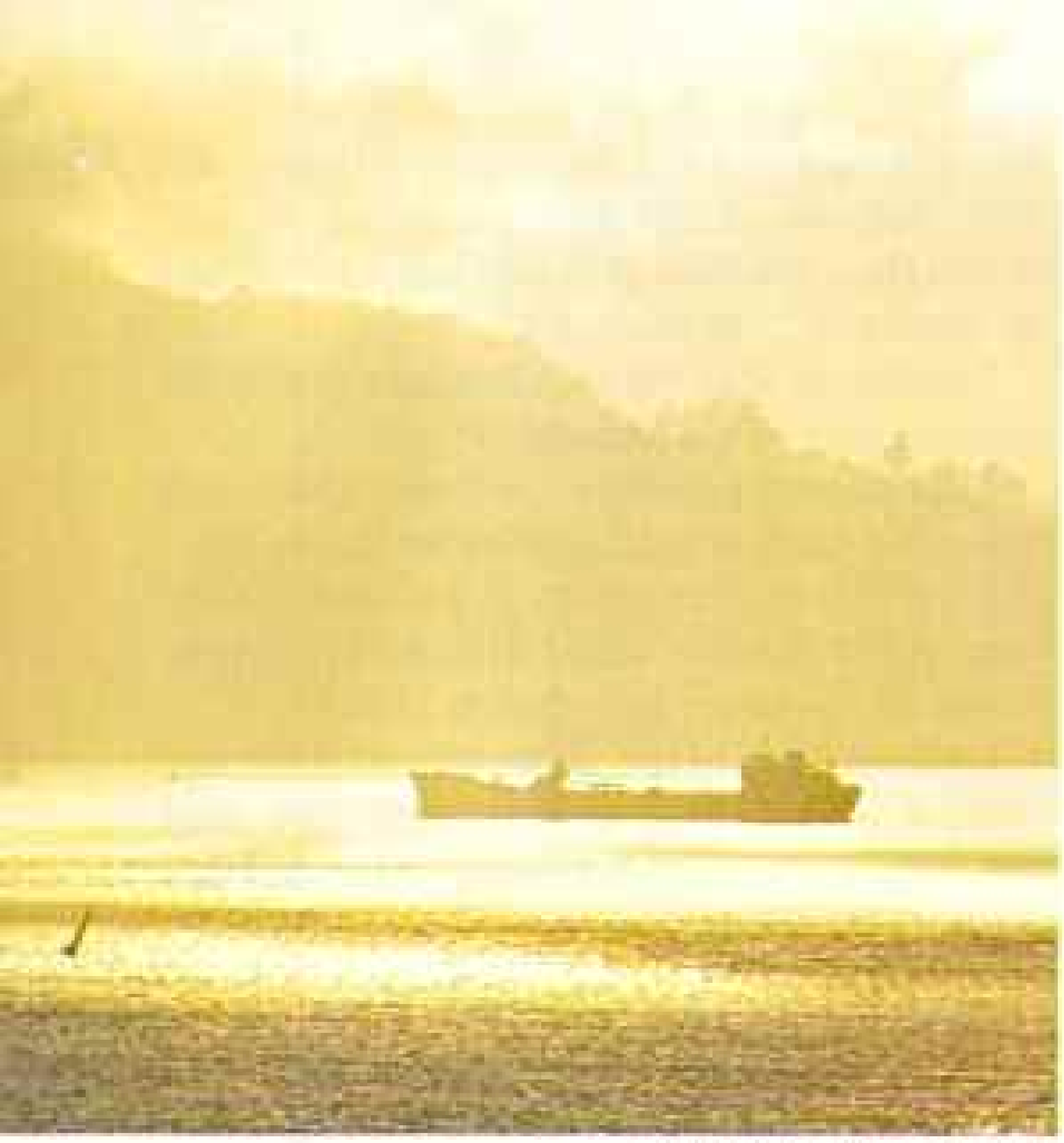
I rode the island's winding roads with area manager Jack Hesemeyer. We stopped and walked through the barren dusty rooms of barracks that sit on the northern slope. Here Orientals and other immigrants were processed until 1940. During World War II it served as a POW camp.

Outside I walked on the foundation where the mess hall once stood. A monument bore a plaque in Chinese. The inscription had been chosen from entries in a contest. It read: "Leaving their homes and villages, they crossed the ocean only to endure confinement in these barracks. Conquering frontiers and barriers, they pioneered a new life by the Golden Gate." That winning entry, scribbled in Chinese on brown paper, arrived in the mail.

When we reached the top, Hesemeyer

San Francisco's culinary notables: *Sourdough bread, cioppino—Italian fish stew—crayfish, rock cod, clams, delectable Dungeness crab tempt the eye and palate on Fisherman's Wharf* ***(above)****. Herring boats* ***(right)*** *still ply the bay, which suffers a decline in overall production because of pollution and overfishing.*

SUNDAY MARCH 28 1952
FRIED CHICKEN
SAGE DRESSING
SNOWFLAKE POTATOES
GIBLET GRAVY
BUTTERED ASPARAGUS
ROLLS — BUTTER
CRANBERRY SAUCE
PUDDING — FRUIT
COFFEE



SISSE BRIMBERG (ABOVE AND RIGHT)

Tourists escape to Alcatraz *by the hundreds of thousands since the closing of the famous federal prison. Visitors gawk* ***(above)*** *as a guide tells of earlier guests such as Al Capone and Machine Gun Kelly. A Sunday dinner menu still hangs above the door to the mess hall* ***(left)****. A prankster altered the date; the actual Sunday was March 25, 1962.*

The closing of the prison in 1963 started nearly a decade of wrangling over its future. In 1969, Indians seized the island, claiming it under a 1868 Sioux treaty. Beset by other turmoil of the late 1960s, the government watched but didn't act to end the occupation until June 1971. By then "we had had everyone from the Hell's Angels to Girl Scouts to Ethel Kennedy out here," a guide recalled. Now a safe family attraction and part of the Golden Gate National Recreation Area, the island retains a forbidding presence under lowering skies ***(upper left)****.

told me of the island's strategic military role.

"The army established a garrison here in 1863. Cannon were installed to protect the harbor and for fear of Confederate raiders when gold was being brought down the Sacramento River.

"This island is part of what was called the 'ring of fire' that included Alcatraz, Fort Mason, Fort Point, Fort Cronkhite, and Fort Baker." The guns, he said, were fired only once, and that was a mistake.

The nuclear age now overshadows the bay's military significance. The Presidio that protected the Spanish mission is now a handsome, hilly, tree-shaded military complex spreading south from the Golden Gate Bridge. Today it's the headquarters of the Sixth Army. Nearby Fort Mason houses offices of environmental organizations, art and theater groups, and a vegetarian restaurant run by Zen Buddhists. The Navy still runs two air stations, two shipyards, a huge naval weapons depot, and, in the middle of the bay, a headquarters on man-made Treasure Island. Dozens of mothballed Victory ships lie in idle ranks in Suisun Bay.

Perhaps the busiest uniformed force on the bay is the U. S. Coast Guard, whose 30 vessels engage in as many as 50 search-and-rescue (SAR) missions daily—capsizings, boats running aground or running out of gas. At Fort Point near the southern end of the Golden Gate Bridge, I hopped on a 41-foot SAR boat with Brian McKeever.

"We're supposed to be experts on everything," the petty officer told me as the boat climbed toward 15 knots.

"We're law enforcement officers, ambulance drivers, emergency medical technicians, and, supposedly, experts on environmental protection. If the Internal Revenue Service has to confiscate a boat that's under way, they call us. We get a lot of drug smuggling. If we feel we have a probable cause to board a boat, then we may take U. S. Customs officers with us.

"And of course, we have to go out under the Golden Gate Bridge and pick up the suicides. Very few survive. One who did not was a young woman who told us before she died that she really didn't mean to jump. When the crewman grabbed her, she looked up and said: 'Are you God?' "

McKeever was not looking forward to the opening day of yachting season.

"There are going to be three thousand boats out here wanting to go in three thousand different directions," he said. "One year, a guy threw a water balloon at another boat and the other guy shot at him."

I asked McKeever if he agreed with another Coast Guard officer who had told me: "We're mainly bay-area babysitters." McKeever nodded.

A Bridge Over Tranquil Waters

Some say San Francisco is the most feminine city in the world. If so, the Golden Gate Bridge is the matriarch. I could see that exquisite marriage of form and function from my hotel window. The curve of the cables between her two 746-foot towers was the smile of a woman who in her 44 years has seen it all. On foggy days she would tease by showing only the tops of those towers—or disappear altogether. In the rain her orangy coat turned dull.

Once more I crossed the bridge, this time just as the sun was rising. The water below was dull blue-gray, barely textured by tiny whitecaps.

The sun arrived as a wafer, perched on the Berkeley Hills. A lone gull looking for breakfast swooped up startlingly close. Its translucent wings brushed in front of the sun—a fleeting study in orange and gray.

A tug cut a V toward the open sea. Soon sailboats drifted down the bay. As the sun brightened and the clouds rolled away, joggers passed me, gulping the sweet-salty air.

On the bridge's six lanes traffic picked up, with cars headed north for the green hills of Marin and beyond, and others going south for a Sunday in the city. It was ebb tide now and the water rushed out of the Golden Gate, compelled by a moon who hid her face below the western horizon and looked down upon the Orient. □

Tucked in their berths, *sailboats slumber in shadow as last light warms the hills of Tiburon in Marin County. Across the Golden Gate from San Francisco, Marin looks to the Pacific and toward the bay—ever changing with the works of man and nature.*

Saving the Philippine Eagle

By ROBERT S. KENNEDY
Photographs by ALAN R. DEGEN, NEIL L. RETTIG,
and WOLFGANG A. SALB

ALL FOR THE SAKE of getting to know one of the air's noblest fliers, I had put myself in a ridiculously awkward position. Deep in the tropical forests of Mindanao in the Philippines, I dangled slothlike by hands and feet from a nylon rope slung 120 feet above the ground between two great trees. Inching across the 20-foot gap between them, I pulled myself from one tree to the other, which held the nest of a Philippine eagle, second largest of all eagles and one of the world's rarest birds. The nest cradled a month-old eaglet that I hoped to weigh, measure, and photograph, as part of a National Geographic Society-supported research program.

Exhausted, sweat soaked, and scared to death, I did not know where the powerful mother eagle was.

"Will she attack?" I kept asking myself, and half hoped she would. For I was the intruder, and her eaglet, on the face of it, surely must have seemed in critical danger.

Just then, shouts echoed through the valley: "Here she comes!"

The warnings came from my companions Neil Rettig and Alan Degen, who were filming from the ground, and from Wolfgang Salb, who aimed his camera from a tree blind 65 feet away.

Glancing up the ravine, I saw the female swooping in, wings spread to their seven-foot maximum. At the last moment the eagle pulled out of her attack.

Shaken, I climbed over the rim of the nest, 146 feet up, to meet an angry reception from the baby eagle. Then Alan cried, "Here she comes again!"

I looked around, shielding my face with my arm. With her great talons, the irate mother eagle raked my shoulder and the motorcycle helmet I was wearing. The three-inch scar on the helmet and my torn shirt and scratched arm were proof enough of the eagle's maternal instinct to defend her nest against all enemies.

The downy white eaglet weighed just under two pounds. I quickly took other measurements and left. In ten days I would repeat the operation.

The incident occurred in February 1979, in the Mount Apo range of south-central Mindanao. Nine years earlier, as a student, I had seen a mounted specimen of a bird then called the monkey-eating eagle, found only in the Philippines. Even this product of taxidermy well displayed the bird's gigantic size, blue-gray eyes, incredible crest of long lanceolated feathers, arched but narrow bill, and very powerful legs and feet.

As I learned more about the extreme rarity of *Pithecophaga jefferyi* and the sparse

***A troubled future** awaits this eaglet, being fed by its mother on Mindanao. The Philippine eagle—largest in the world after the South American harpy eagle—has been stalked by trophy hunters and threatened by destruction of its habitat, prompting an international effort to save it from extinction.*

knowledge of the species, I knew I had found an ideal study subject.

Now renamed the Philippine eagle, this splendid raptor was first reported in 1896 on the island of Samar by English naturalist John Whitehead. In the early 1960s, the Filipino scientist Dioscoro S. Rabor alerted the world that the bird was endangered.

During the 1950s and '60s the logging industry boomed in the forested mountains where the eagle lives and hunts. Logging roads became avenues by which thousands of settlers streamed—many illegally—into the forests to make their homes. The farmers cleared vast areas by slashing and burning. As the forest vanished, so did the eagle.

Eagles nest high, *and so did the team of photographers. One rappels from a blind 145 feet up in a lauan tree* ***(left)****. Approaching a nest, photographer Salb* ***(right)*** *wears a helmet to guard against a parent eagle's talons. The author was scratched in such an attack. Perhaps 300 to 500 of these birds range Luzon, Samar, Leyte, and Mindanao* ***(above)****.*

National Geographic, June 1981

Apart from loss of habitat, many eagles were shot by trophy hunters; others were taken alive for private and public display.

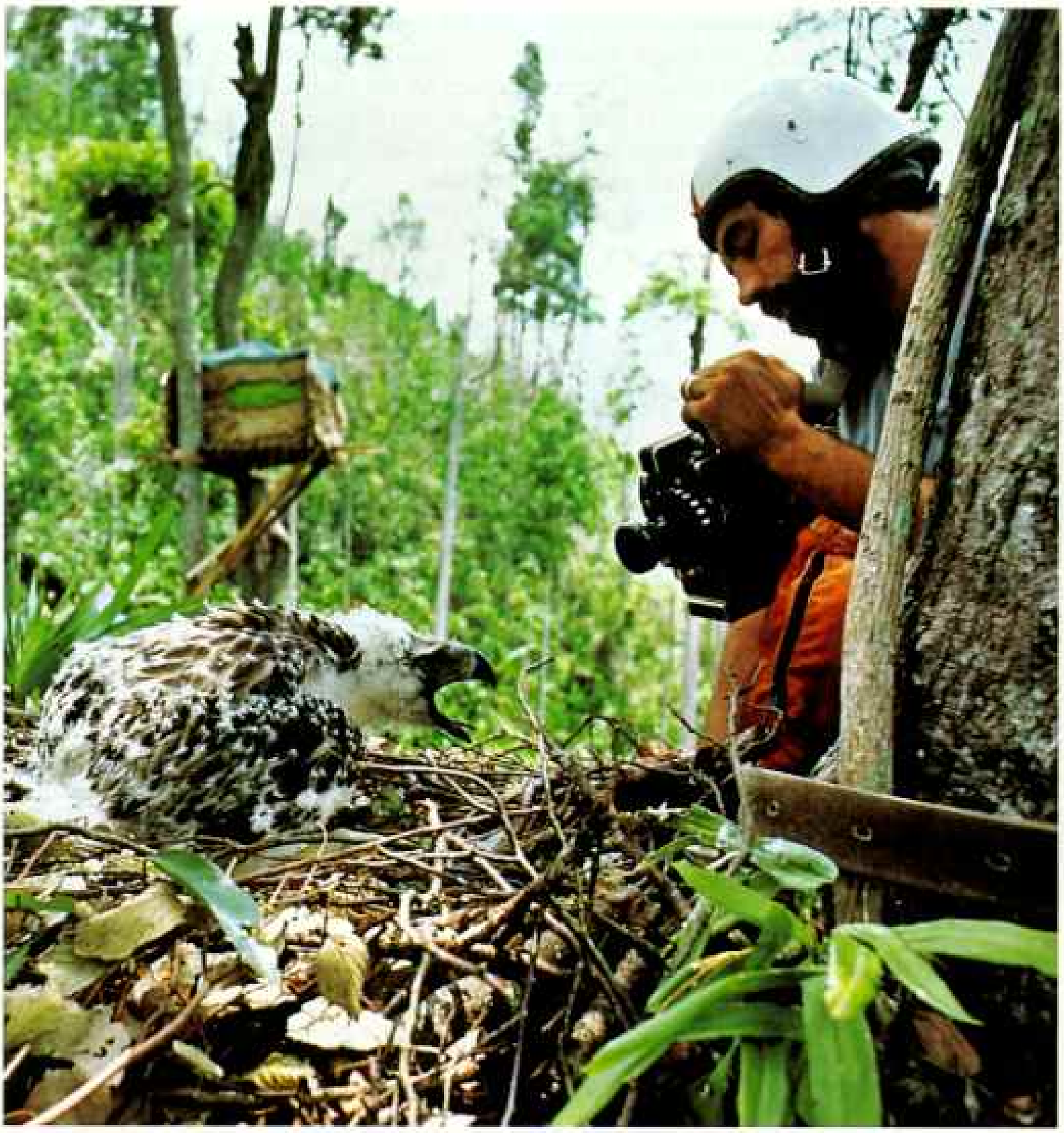
Rabor's alarm raised international concern. Conservation-minded Charles A. Lindbergh, the Lone Eagle, journeyed time and again to the Philippines, promoting protection for the endangered bird.

While a participant in a Smithsonian-Peace Corps environmental program in the Philippines in 1973, I estimated the number of these eagles on Mindanao at 200 to 400.

In 1976 I met three American naturalist-photographers who had made a documentary film of the nesting cycle of the South American harpy eagle (*Harpia harpyja*), the largest eagle in the world. Joining forces, Neil Rettig, Alan Degen, Wolfgang Salb, and I, with a new team member, Ronald Krupa, established a nonprofit organization, Films and Research for an Endangered Environment, Ltd. (FREE, Ltd.). Our first project: to study and document the monkey-eating eagle.

We collected funds, and in October 1977 Philippine Airlines flew us to Manila, a substantial contribution to the project. Jesus B. Alvarez, Jr., assistant director of the Bureau of Forest Development, pledged his agency's full cooperation.

In Mindanao not only was a five-year-old Muslim-Christian conflict still raging, but



fresh dangers were posed by the New Peoples Army, a group fighting the government. For safety, Alvarez recommended we search forests of the Paper Industries Corporation of the Philippines (PICOP) near Bislig on Mindanao's east coast.

On our first day at PICOP we saw an eagle in the wild. We saw eagles nearly every day thereafter, but by late November we still had not found a nest. Splitting into two groups, Neil, Alan, and Ron stayed at PICOP while Wolfgang and I headed for Tudaya Falls in Mount Apo National Park.

A commercial jeepney (a jeep converted into a minibus), jammed with poultry, pigs, and 16 people, took us most of the way. We hiked the last six miles. Delfin, a young Bagobo native, invited us to share his hut.

In midmorning on December 6, 1977, we heard and saw an eagle in virgin forest across a deep ravine. The bird glided down the valley carrying a flying lemur. It landed and was joined by a second eagle, which seized the carcass. The first bird glided farther down and landed in a tall Philippine mahogany tree.

"Bet there's a nest there," Wolfgang said.

Next morning we climbed down the slope, hanging on vines and tangles, to reach a vantage overlooking the tree. There, cradled in a huge treetop fern, lay a single white egg the size of my fist.

Over the next weeks we built three blinds. To avoid disturbing the birds, we worked only a few hours a day. As the eagles grew accustomed to our presence, and after the egg hatched, we put our major effort into the closest blind, 85 feet from the nest and 90 feet off the ground. Alan was our chief architect and engineer; Wolfgang rigged a rope system to move his cameras about within the tree's canopy.

By the time the blind was completed, the eaglet had noticeably gained strength, and we felt confident that this nesting would succeed. But at daybreak on January 19, Neil observed the eaglet in trouble. It would not eat. It kept shaking its head, trying to regurgitate. Neil's field notes record the tragic outcome:

"12:41—The female began feeding herself. She ate 37 pieces [of meat], offering

Wings spanning seven feet *carry an eagle with a twig toward a nest* ***(above)****. For such a large bird, its wings are relatively short and broad, built for quick bursts of speed and agile movement through the dense forest. The long tail aids in braking to a landing, as when a parent delivers a palm civet to an eaglet* ***(right)****. For maneuvering in tight spots, Pithecophaga jefferyi tucks its wings into a compact delta shape. Impressed with the stately birds, Charles Lindbergh—the Lone Eagle—traveled to the Philippines to try to secure their protection.*

several to the eaglet, but none were taken. At 12:50 the chick began to regurgitate after considerable struggle—suddenly it began thrusting in death throes; the baby eagle died about a minute later. Something appeared to be lodged in its throat."

The eaglet was 27 days old. Saddened, we left Tudaya to search for another nest.

Persistence Pays Off in Nest Hunting

After hundreds of hours combing the mountains of eastern Mindanao, we scored again. On March 8, Neil, Alan, and Wolfgang found a nest at Kiandang in the municipality of Magpet, across the Mount Apo range from Tudaya. It held an eaglet already ten weeks old, leaving us with a six-week gap in our nesting study.

The virgin forest in the area was being logged, and the nest tree was scheduled to be cut before April. It was the end of the dry season, and the slash-and-burn farmers were setting fire to most of the logged-over land. The situation was critical.

We found an ally in Nicasio Alcantara, president of C. Alcantara & Sons, Inc. "Not only will I stop the logging and pull out the machinery," he said, "but I will set this area aside as a sanctuary for the eagles."

And so the first Philippine eagle sanctuary—subsequently recognized by the government—came into being.

With our second nest protected, we got down to work. My wife, Cindy, Wolfgang's fiancée, Jayne, and Neil's wife, Cheryl, joined us at Kiandang. We lived with Dionisio Narciso and his family in their nipa-palm hut and in a small tent staked outside.

To complete our documentation of the nesting stage, we looked for still another active nest. Actually, we found three, all on Mindanao—at PICOP, at Amabel, and at Magsaysay. At the Amabel nest, studied in detail, we bridged the six-week gap.

Behavioral patterns emerged. Rainy season or dry, nesting began in all cases from late September to early December, suggesting that the decrease in day length stimulates breeding. All nests we found occupied the canopies of huge trees growing on the lower halves of slopes, usually in ravines.

Our biggest surprise was finding nests in

cover from virgin forest (the Tudaya nest) to almost no forest at all (the Magsaysay nest). The belief had been that the eagles required virgin forest or advanced second growth for nesting and foraging. Apparently the birds can adapt to man's presence if enough forest survives, and assuming, of course, they are not shot or captured.

Flying lemurs, chief item on the eagle menu, aren't really lemurs but small nocturnal mammals that use broad webbing between their limbs to glide from tree to tree. The food list also included palm civets (catlike mammals), flying squirrels, a rat, monkeys, a 30-pound deer, several species of bats, hawks, a fledgling owl, rufous hornbills, a monitor lizard, and several kinds of snakes, including a deadly Philippine cobra. To our surprise, the prey items included only five monkeys.

Teenage Bird Gets a Beeper

On May 6, 1978, when he was 4½ months old, Doofus, the juvenile at the Kiandang site, left his nest for the last time. Government biologist Marcelo R. Caleda saw him forced off the tree by marauding rufous hornbills. Two days later Neil and Cheryl found him resting in virgin forest 700 yards from his natal tree. There he stayed, fed by his parents, until late August, when he strayed toward the southern border of the parents' home range. The parents kept locating the youngster and bringing him food.

To study the post-fledging habits of Doofus, we fitted him with a radio so he could be located at will. For this we recruited Thomas C. Dunstan,* an expert on radio tracking of raptors. Tom sutured a small transmitter to the bases of the central tail feathers. We now had our baby bugged for at least eight months, the life of the transmitter battery.

One question about the eagles concerned the function of their extremely long legs; another was how the birds captured nocturnal animals that hole up by day in dense foliage or tree cavities.

One day I saw young Doofus fly to a knothole in a tree. Comically, he grasped the rim with his feet, using his tail as a prop. Then, wrapping his wings around the trunk, he poked his head into the cavity. Suddenly his head recoiled, and in its stead one of his long legs shot down into the hole. Doofus pulled out a "toy," a piece of rotten wood. Mock killing followed, as he squeezed and bit the chunk. The two questions were answered in this single act.

Our Filipino field technician, Eduardo Cañada, helped me track the bird. As Doofus approached his parents' range limits, we wondered if the adults would follow him.

"Baby eagle soaring—going south—maybe never come back!" Eddie, worry in his voice, reported to me on September 11. Soon Eddie shouted, "Father coming!" High above us the father raced toward Doofus. He was not carrying food.

Moments later both eagles soared up together. Eventually, the adult maneuvered

*See "Our Bald Eagle: Freedom's Symbol Survives," by Thomas C. Dunstan, February 1978.

Mouthful of monkey bone *proves too much for a bird* ***(above)*** *once called the monkey-eating eagle. After the author confirmed that the birds fed mostly on flying lemurs, and rarely on monkeys, Philippine President Ferdinand Marcos decreed the name change.*

This 58-day-old chick ***(facing page)*** *had gone without food for four days. The parents' habitat had been drastically reduced by slash-and-burn farming, making hunting difficult.*

Testing his wings *in a preflight exercise, this fledgling eaglet—named Doofus by the research team—hops from the nest to a nearby branch. He jumps in increasingly larger circles—yet never strays too far since he is still very dependent on his parents.*

Photographer Rettig once saw Doofus fall. "When he tried to hop to a higher branch, he slid down to a lower one and had to work himself back into the nest," he recalled.

Doofus left the nest at four and a half months and made his first kill at ten months. He remained near his parents until they were ready to breed again.

The birds produce one egg every two years and are long-lived. A Philippine eagle was kept at the Rome zoo for more than 41 years until its death in 1976.

behind the juvenile and coerced him back into family territory.

Eddie interpreted the event: "Baby eagle no good—fly far away. Father have to come to bring baby back home."

On September 28, 1979, almost 17 months after Doofus left the nest, Eddie found him still in his parents' custody. Doofus was not seen again, but the next morning Eddie observed the parents mating on the nest, beginning a new breeding cycle.

In April 1978 Neil and I met with Philippine President Ferdinand E. Marcos, who expressed deep interest in the eagle and offered us his full support. While discussing our project, we told him how rarely the bird ate monkeys.

Soon thereafter, Marcos issued a proclamation stating that "one of the most marvelous and cherished dwellers of our forests through the ages is a bird of great strength and beauty." Pointing out that the name "monkey-eating" was denigrating, Marcos declared that the bird should henceforth be called the Philippine eagle.

Additional Findings Bring Hope

To round out our study, we wanted to find out if the eagles still survived on the other major Philippine islands of Luzon, Samar, and Leyte. In 1978 Cindy and I searched Luzon, finding one eagle in the wild and accumulating reliable reports of 16 sighted, 13 killed, and 5 captured. We were also successful on Samar (where the eagle had not been reported since the 1930s) and on Leyte.

We were elated to discover that the species still existed on all four islands where it was originally known. Analyzing our data, we estimate the total population of Philippine eagles to be between 300 and 500.

In view of the uncertain future of the bird, its survival may depend on Ron Krupa of FREE, Ltd. With the help of the Philippine Bureau of Forest Development, Ron is setting up a breeding program at Baracatan in Mount Apo National Park. He works with captive birds donated to breed offspring for release in the forest.

But the eagle's survival ultimately will depend on the Philippine nation and the management of its forests. As the rain forests have disappeared, the incidence of floods and droughts and the number of dried-up riverbeds have increased. But if forest conservation efforts succeed, future generations of Filipinos will be assured of enough water for drinking and for irrigating their farms, plentiful wood for building their homes, and a habitat for future generations of the Philippine eagle.

Why should anyone bother about just a single species of bird? Perhaps naturalist William Beebe said it best many years ago: ". . . when the last individual of a race of living beings breathes no more, another heaven and another earth must pass before such a one can be again." □

Telegraphing annoyance, *a bird raises its hackles in an aviary where it is kept for a breeding experiment. Resulting offspring may later be set free.*

Meanwhile, the government begins clamping down on illegal logging and discouraging slash-and-burn farming in order to preserve the rain forest—a resource for man, a home for the eagle.

NATIONAL GEOGRAPHIC SOCIETY

WASHINGTON, D. C.

Organized "for the increase and diffusion of geographic knowledge"

GILBERT HOVEY GROSVENOR
Editor, 1899-1954; President, 1920-1954
Chairman of the Board, 1954-1966

THE NATIONAL GEOGRAPHIC SOCIETY is chartered in Washington, D. C., in accordance with the laws of the United States, as a nonprofit scientific and educational organization. Since 1890 the Society has supported more than 1,950 explorations and research projects, adding immeasurably to man's knowledge of earth, sea, and sky. It diffuses this knowledge through its monthly journal, NATIONAL GEOGRAPHIC; its books, globes, atlases, filmstrips, and educational films; *National Geographic WORLD*, a magazine for children age 8 and older; information services; technical reports; exhibits in Explorers Hall; and television.

GILBERT M. GROSVENOR, President
OWEN R. ANDERSON, Executive Vice President
HILLEARY F. HOSKINSON, Vice President and Treasurer
WILLIAM T. BELL, FREDERICK C. GALE, LEONARD J. GRANT, JOSEPH B. HOGAN, ADRIAN L. LOFTIN, JR., LEWIS P. LOWE, RAYMOND T. McELLIGOTT, JR., Vice Presidents
EDWIN W. SNIDER, Secretary and Corporate Counsel

BOARD OF TRUSTEES

MELVIN M. PAYNE, Chairman of the Board
ROBERT E. DOYLE, Vice Chairman
LLOYD H. ELLIOTT, Vice Chairman
President, George Washington University
MELVILLE BELL GROSVENOR, Chairman Emeritus
THOMAS W. McKNEW, Advisory Chairman

OWEN R. ANDERSON
Executive Vice President,
National Geographic Society

THOMAS E. BOLGER
Executive Vice President, American Telephone & Telegraph Company

FRANK BORMAN, Chairman of the Board and President, Eastern Airlines

J. CARTER BROWN, Director,
National Gallery of Art

WARREN E. BURGER
Chief Justice of the United States

GEORGE M. ELSEY, President,
American Red Cross

GILBERT M. GROSVENOR
President, National
Geographic Society

ARTHUR B. HANSON, Attorney

CARYL P. HASKINS, Former
President, Carnegie Institution
of Washington

JEROME H. HOLLAND
Former U. S. Ambassador to Sweden

CARLISLE H. HUMELSINE
Chairman of the Board,
The Colonial Williamsburg Foundation

MRS. LYNDON B. JOHNSON

CURTIS E. LeMAY, Former Chief of Staff, U. S. Air Force

WM. McCHESNEY MARTIN, JR.
Former Chairman, Board of Governors, Federal Reserve System

LAURANCE S. ROCKEFELLER
Chairman, Memorial Sloan-Kettering Cancer Center

ROBERT C. SEAMANS, JR.
Dean of the School of Engineering,
Massachusetts Institute of Technology

JAMES H. WAKELIN, JR., Former
Assistant Secretary of Commerce
for Science and Technology

JAMES E. WEBB, Former
Administrator, National Aeronautics and Space Administration

CONRAD L. WIRTH, Former
Director, National Park Service

Trustees Emeritus

CRAWFORD H. GREENEWALT
FREDERICK G. VOSBURGH
LOUIS B. WRIGHT

COMMITTEE FOR RESEARCH AND EXPLORATION

MELVIN M. PAYNE, Chairman
T. DALE STEWART, Vice Chairman
EDWIN W. SNIDER, Secretary

BARRY C. BISHOP, HARM J. de BLIJ, Professor of Geography, University of Miami, ROBERT E. DOYLE, GILBERT M. GROSVENOR, MELVILLE BELL GROSVENOR, CARYL P. HASKINS, THOMAS W. McKNEW, BETTY J. MEGGERS, Research Associate-Anthropology, Smithsonian Institution, CHARLES H. SOUTHWICK, Professor of Biology, University of Colorado, GEORGE E. STUART, JAMES H. WAKELIN, JR., GEORGE E. WATSON, Curator of Birds, Smithsonian Institution, FRANK C. WHITMORE, JR., Research Geologist, U. S. Geological Survey, CONRAD L. WIRTH, LOUIS B. WRIGHT, and PAUL A. ZAHL.

ASSISTANT VICE PRESIDENTS: James P. Kelly, Ward S. Phelps, Cletis Pride. **ASSISTANT TREASURER:** Alfred J. Hayre. **ASSISTANT SECRETARY:** Earl Corliss, Jr. **ASSISTANTS TO THE PRESIDENT:** Joyce W. Graves, Thomas E. Kulikosky, Richard E. Pearson.

ADMINISTRATIVE STAFF: *Accounting:* Dorothy L. Dameron, Jay H. Givans, Laura L. Leight, William G. McGhee, George E. Newstedt, David H. Peters. *Administration:* D. Evelyn Carnahan, Ruth E. Clark, Robert V. Koenig, Zbigniew Jan Lutyk, Marta M. Marschalko, Myra A. McLellan, Rose L. Mulford, Shirley Neff, Jimmie D. Pridemore, Joyce S. Sanford, Karen F. Shrewsberry, Nell G. Snow, Janet C. Soper, Frank M. Twigger. *Computer:* James G. Schmelzer, William L. Chewning, Ronald C. Kline, Richard A. Mechler. *Educational Services:* Wendy G. Rogers, Dean R. Gage, Carl W. Harmon, Jr. *Employee Benefits:* Howard R. Hudson. *Explorers Hall:* Peter Purpura. *Membership Services:* Margaret L. Bamford, Robert C. Dove, Erma T. Goetzinger, William T. McDonnell, Charles P. Thomas, Paul B. Tylor, Dorothy M. Wagner, Marguerite M. Wise, Peter F. Woods. *Personnel:* Thomas L. Hartman, M.D., Robert E. Howell, Glenn G. Pepperman, Shirley N. Wilson. *Printing:* Joe M. Barlett, Frank S. Oliverio, Margaret A. Sifer, Hans H. Wegner. *Promotion:* Charles T. Kneeland, Robert J. Warfel, Eileen W. Bowering, James R. Dimond, Jr., Robert L. Feige, Joseph S. Fowler, Thomas M. Kent, Mary A. Mattingly, Marian B. Platt, F. William Rath, Towne Windom. *Purchasing:* Robert G. Corey, Thomas L. Fletcher, Sheila H. Immel

ADVERTISING: *Director:* James L. Till, 1251 Avenue of the Americas, New York 10020. *Asst. to Dir.:* Blanche Coffey. *Assoc. Sales Director:* George W. Kellner. *Managers—East:* Bart W. McDonnell, New York. *Midwest:* Robert R. Heun, Chicago. *San Francisco:* Cecil H. London. *Los Angeles:* Richard H. Lehman. *Detroit:* George E. Moffat. *International Editions:* Robert W. Horan, New York. *Travel:* Gerald A. Van Splinter, New York. *Europe:* Michel A. Boutin, Paris. *Business Manager:* Peter W. Michaels. *Production Manager:* G. Sarita Lapham

 POSTMASTER: Send address changes to National Geographic (ISSN 0027-9358), P. O. Box 2174, Washington, D. C. 20013.

MELVIN M. PAYNE *Chairman of the Board*
MELVILLE BELL GROSVENOR *Editor Emeritus*

NATIONAL GEOGRAPHIC MAGAZINE

GILBERT M. GROSVENOR *President*
WILBUR E. GARRETT *Editor*
JOSEPH JUDGE *Associate Editor*

SENIOR ASSISTANT EDITORS

James Cerruti, *Contract Writers* Richard J. Darley, *Cartography* Robert E. Gilka, *Photography* William Graves, *Expeditions* Robert P. Jordan, *Special Projects* H. Edward Kim, *Layout* Edward J. Linehan, *Manuscripts* Samuel W. Matthews, *Production* O. Louis Mazzatenta, *Control Center* Howard E. Paine, *Art* Carolyn Bennett Patterson, *Legends* Thomas R. Smith, *Illustrations* Mary G. Smith, *Research Grant Projects* Kenneth F. Weaver, *Science* Ann K. Wendt, *Research*

TEXT

ASSISTANT EDITORS: Rowe Findley, Bart McDowell, Elizabeth A. Moize, Merle Severy
SENIOR WRITERS: Thomas J. Abercrombie, David S. Boyer, Thomas Y. Canby, Mike Edwards, William S. Ellis, Rick Gore, Noel Grove, John J. Putman, Peter T. White
SENIOR EDITORIAL STAFF: Harvey Arden, Robert Booth, Kent Britt, John L. Eliot, Boyd Gibbons, Alice J. Hall, Bryan Hodgson, David Jeffery, Michael E. Long, Ethel A. Starbird, Peter J. Vesilind, Gordon Young
EDITORIAL STAFF: Allen A. Boraiko, Larry Kohl, Douglas Lee, John L. McIntosh, Cathy Newman, Cliff Tarpy
RESEARCH: Frances H. Myers (Associate Chief); *Researcher-Editors:* Susan L. Anderson, Judith Brown, Lesley B. Rogers, Michaeline A. Sweeney. *Researchers:* Carolyn H. Anderson, Julia A. Gamble, Ann B. Henry, Jan Holderness, Patricia B. Kellogg, Kathy B. Maher, Jean B. McConville, Jeanne E. Peters, Frances W. Shaffer, Barbara L. Wyckoff. *Geographic Information:* Betty Joan Goss. *Legends:* Abigail A. Tipton

ILLUSTRATIONS

PHOTOGRAPHERS: Dean Conger, Joseph J. Scherschel (Assistant Directors); James L. Amos, Joseph H. Bailey, James P. Blair, Victor R. Boswell, Jr., Jodi Cobb, Bruce Dale, Gordon W. Gahan, David Alan Harvey, Otis Imboden, Emory Kristof, Joseph D. Lavenburg, Bianca Lavies, Bates Littlehales, Robert W. Madden, George F. Mobley, Robert S. Oakes, Steve Raymer, Robert F. Sisson (*Natural Science*), James L. Stanfield, Volkmar Wentzel (*Architecture*). *Administration:* Claude E. Petrone, Susan A. Smith
ILLUSTRATIONS EDITORS: W. Allan Royce (Assistant Director); David L. Arnold, Taylor Gregg, Declan Haun, Bruce A. McElfresh, Charlene Murphy, Robert S. Patton, Elie S. Rogers, Jon Schneeberger
LAYOUT: Constance H. Phelps
ART: William N. Palmstrom, J. Robert Teringo (Associate Directors); Walter Q. Crowe, John D. Garst, Jr. (Assistant Directors); Elie Sabban (Production). *Artists:* Lisa Biganzoli, William H. Bond, John W. Lothers, Ned M. Seidler. *Map Editors:* John T. Blozis, Gus Platis. *Research:* Virginia L. Baza, Harold A. Hanson (Supervisors); Ross M. Emerson, Margaret Denne Gray, Dorothy A. Nicholson. *Map Artists:* Isaac Ortiz, Leo B. Zebarth (Supervisors); Iskandar Baday, Peter J. Balch, Snezinka Stefanoff, Alfred L. Zebarth
DESIGN: Charles C. Uhl, Betty A. Clayton, Robert E. Pullman
ENGRAVING AND PRINTING: William W. Smith (Director); James R. Whitney (Associate Director); Bill M. Aldridge, John T. Dunn

CARTOGRAPHY

John F. Shupe (Associate Chief); Ted Dachtera, Richard K. Rogers (Assistant Chiefs); John F. Dorr (Art Director); Margery K. Barkdull, Charles F. Case, Hanni A. Delanghe, Russell G. Fritz, Martin J. Golden, Charles W. Gotthardt, Jr., Thomas L. Gray, Catherine M. Hart, Karen F. Jacoby, Harry D. Kauhane, Mary C. Latham, Mary Anne McAfee, Charles L. Miller, Roland R. Nichols, Robert W. Northrop, Charles L. Stern, Douglas A. Strobel, Tibor G. Toth, Thomas A. Wall, Thomas A. Walsh, Elizabeth Wolf, Susan Young

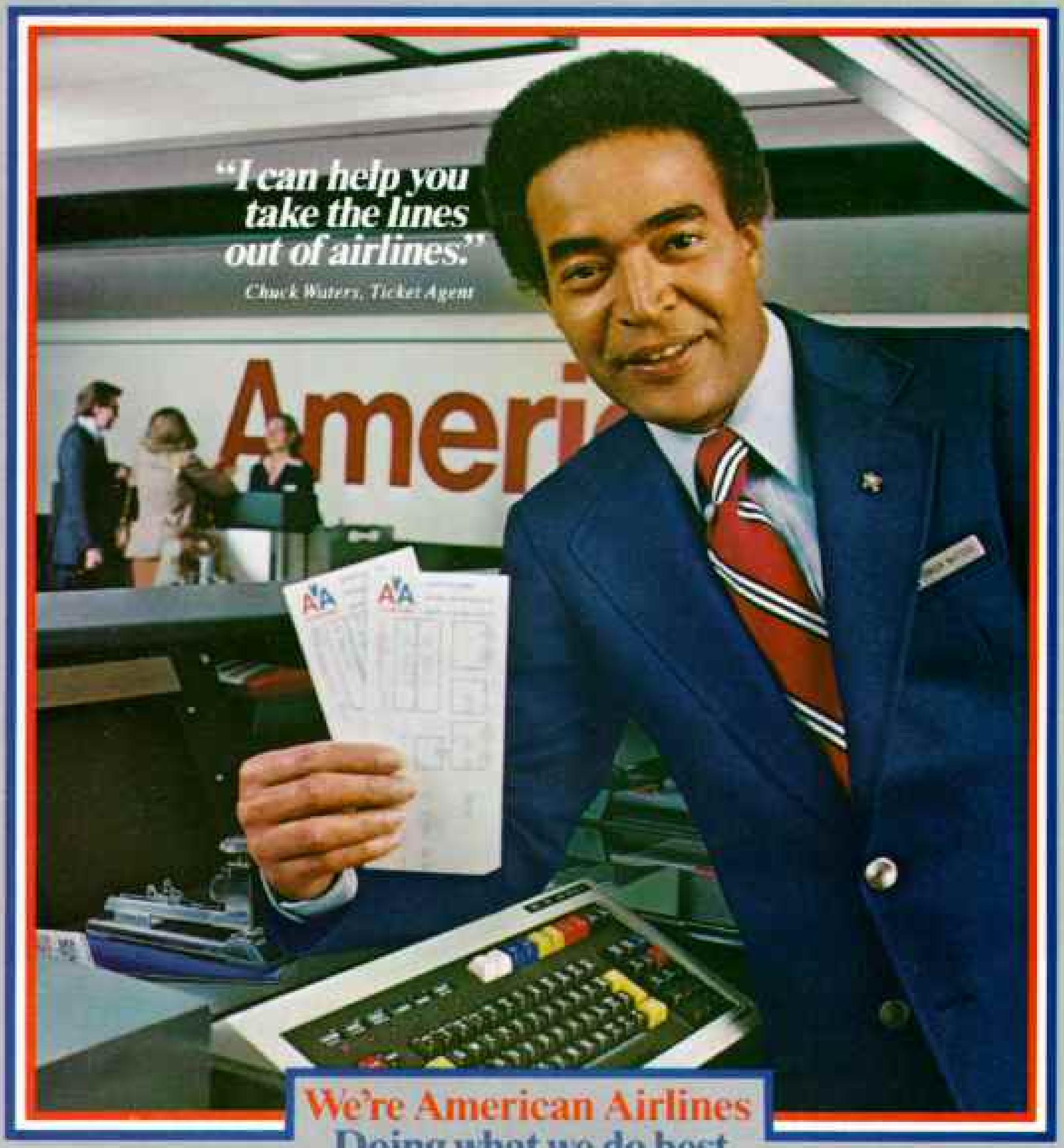
EDITORIAL SERVICES

ADMINISTRATION: M. Jean Vile (Assistant to the Editor), Elaine Rice Ames, Marie L. Barnes, G. Murrell Cliff, Neva M. Collins, Lillian Davidson, Virginia H. Finnegan, Eleanor W. Hahne, Mary F. Klemann, Lucille L. McInerney, Patricia M. Oakes, Barbara A. Shattuck. *Correspondence:* Carolyn F. Clewell. *Indexes:* Jolene M. Blozis. *Travel:* Virginia A. Bachant
LIBRARIES: *Publications:* Virginia Carter Hills (Librarian), Patricia Murphy Smith, Susan M. Fifer, Carolyn Locke, Louise A. Robinson, Maria Strada. *Illustrations:* L. Fern Dame, Carolyn J. Harrison, M. Scott Bolden. *Records:* Lorie Northrop, Mary Anne McMullen, Marguerite S. Northwood, Meonen M. Smith. *Films:* Betty G. Kotcher
NEWS SERVICE: Paul Sampson (Chief); Donald J. Frederick, Ellen E. Kohlberg, Barbara S. Moffet, William J. O'Neill, Robert C. Radcliffe
PHOTOGRAPHIC LABORATORIES AND TYPESETTING: Carl M. Shrader (Chief); Milton A. Ford (Associate Chief); Lawrence F. Ludwig (Assistant Chief); Herbert Altemus, Jr., Billy R. Barnett, Richard A. Bredeck, David H. Chisman, Ellwood M. Kahler, Jr., Geoffrey T. McConnell, Arletta M. Mullinax, William S. Petrini, Bernard G. Quarrick, Joan S. Simms, James H. Trott, Alfred M. Yee

RELATED EDUCATIONAL SERVICES OF THE SOCIETY

ROBERT L. BREEDEN *Vice President*

SENIOR ASSISTANT EDITORS: Donald J. Crump, *Special Publications and School Services;* Charles O. Hyman, *Book Service*
BOOK SERVICE: Kenneth C. Danforth (Assistant Director); Thomas B. Allen, Ross Bennett, Mary H. Dickinson, Karen F. Edwards, Robert C. Firestone, Anne Dirkes Kobor, J. Edward Lanouette, Carol Rittig Lutyk, Linda B. Meyerriecks, David F. Robinson, Shirley Scott, David M. Seager, Margaret Sedeen, Veria Lee Smith, George E. Stuart, Anne E. Withers
SPECIAL PUBLICATIONS AND SCHOOL SERVICES: Philip B. Silcott (Associate Chief); William L. Allen, Jody Bolt, Tom Eugene, Seymour L. Fishbein, Ron Fisher, Patricia F. Frakes, William R. Gray, Barbara Gruzzini, Sallie M. Greenwood, Mary Ann Harrell, Suzanne J. Jacobson, Bonnie S. Lawrence, Christine E. Lee, Geraldine Linder, Tee Loftin, Louisa V. Magration, Tom Melham, Robert Messer, H. Robert Morrison, Raja D. Mushrif, Thomas J. O'Neill, Thomas B. Powell III, Cynthia Ramsay, Kathleen F. Teter, Jennifer C. Urquhart, George V. White, Merrill Windsor. *National Geographic WORLD:* Ralph Gray (Editor); Pat Holland, Ellen Joan Hurst, Margaret McKelway, Pat Robbins, Eleanor Shannahan, Veronica Smith, Ursula Perrin Vosseler. *Educational Media:* George Peterson (Editor); Jimmie Abercrombie, James B. Caffrey, Margery G. Dunn, Jacqueline Geschickter, Jane R. McCauley, Judith E. Rinard
TELEVISION AND FILMS: Dennis B. Kane (Chief); Sidney Platt (Manager, Educational Films); Donald M. Cooper, Anne B. K. Krumbhaar, Yeorgos N. Lampathakis, Louise C. Millikan, Marjorie M. Mooney, Patricia F. Northrop, Nola L. Shrewsberry, Carl E. Ziebe
AUDIOVISUAL: Joanne M. Hess (Chief); Jon H. Larimore (Technical Director); Ronald S. Altemus, Robert G. Fiergal, Mary W. McKinney, Gerald L. Wiley



Hurry out to the airport, wait for a boarding pass, and hope you get the seat you want. Most airlines waste your time that way for every flight, even if you already have your reservations and tickets.

But American has a better way.

We can pre-reserve your seat on any American flight, up to eleven months in advance, and hold it for you right up to 15 minutes before your scheduled departure.

We can also give you all your boarding passes at once—for your entire trip, including connecting and return flights anywhere in the continental U.S. and Canada.

All you have to do is ask for them when you check in for your first flight. Then, for the rest of your flights, just be in your reserved seat at least 5 minutes before scheduled departure time.

It's a great way to save time and avoid lines, but it wouldn't work without courteous, efficient people like Ticket Agent Chuck Waters. It takes the best people to make the best airline. Chuck is one of them, and we thought you'd like to meet him.

When the world around you is exploding, there's one camera you can trust not to blow a shot.

In the heat of battle or the heat of Mount St. Helens, UPI photographers know the OM-1 won't let them down.

And for good reason. As the world's first light, compact SLR, the OM-1 is built to take it and be taken anywhere. It doesn't get the easy assignments. It's proven itself in places other cameras fail. Even at the freezing summit of Mount Everest.

And as part of the OM System of over 300 equally light, compact, rugged components, it meets the needs of the most demanding photographers: UPI photographers whose jobs take them to the far corners of the world, who require a camera system that insures total flexibility, versatility and fail-safe dependability.

The fact that the OM-1 is truly professional equipment is not the only reason UPI photographers use it. What makes it equally appealing to professionals and amateurs alike is how easy it is to use. No matter where you use it, how you use it or how much you ask of it.

For information on the camera you'll want to take along, write Olympus, Woodbury, N.Y. 11797. In Canada, W. Carsen Co., Ltd., Toronto.

OM-1

OLYMPUS

PHOTOGRAPHED FROM ADJACENT CAGE BY EUGENIE CLARK

Playing it cagey with sharks

"FACING UP to a great white is fine—as long as a steel cage intervenes!" Photographer David Doubilet, working off Australia for a forthcoming article on sharks, felt the cage vibrate and turned to confront a 2,000-pounder (**above**). "It was chilling; they have such expressionless eyes," he says. Author and marine biologist Eugenie Clark (**right**), with photographers Doubilet and Flip Nicklin, pursued and studied sharks around the world for a year and a half. They witnessed courtship in the Red Sea, swam with cave-dwelling sharks off Japan, and met a 40-foot whale shark off Baja California. Share with your friends such firsthand encounters with nature. Use the membership form below.

DAVID DOUBILET

You can replace a lost Citicorp Travelers Check in places that've never heard of meter maids.

Imagine being lucky enough to visit a place where you don't have to be bothered with double parking, exact change lanes and speeding tickets.

The fact is, you never know where you might end up. That's why Citicorp has tens of thousands of convenient refund centers throughout the world (with emergency funds in the U.S. through 8,500 Western Union locations, many of them open 24 hours a day, 365 days a year).

So don't worry if you're visiting a part of the world where if they say "fill 'er up," it means with water. Because you can get a refund on a lost Citicorp Travelers Check even there.

Travel the world with Citicorp—America's leading financial institution, worldwide.

CITICORP®
TRAVELERS CHECKS

Tested under gruelling conditions. Because life isn't a simple Sunday drive.

The Accord is Honda's luxury car. But it isn't built to live a life of leisure.

On the contrary, the Accord is tested to the very limits of performance and durability.

SOME SIMPLE ENGINEERING FACTS.

The Accord's standard engineering features are the result of years of exhaustive testing at every stage. From original design through production.

Beginning with its front-wheel drive.

Which we've been perfecting for the past ten years. Including its transverse-mounted engine. Four-wheel independent suspension. 5-speed manual transmission. Rack and pinion steering. And dual-diagonal brakes.

But the testing story doesn't stop there.

DURABILITY HELPS MAKE THE ACCORD SIMPLE TO MAINTAIN.

Since no human is as durable as a Honda, mechanical devices are used to perform the toughest durability tests.

Like the continuous opening and closing of doors. And bouncing up and down on seat cushions.

Other tests are done in refrigerated rooms or heat chambers. And then repeated in places like Alaska and Death Valley.

Of course, chances are you will never drive your Honda in a climate that extreme. Or push it to those limits. But if you do, you'll enjoy the luxury of knowing it can take it.

You'll notice the results of all this ongoing testing every time you drive your Honda.

But should you ever decide to sell it, you'll notice them especially.

RESALE VALUE. ANOTHER SIMPLE REASON TO CONSIDER THE HONDA ACCORD.

According to the January 1981 *NADA Official Used Car Guide*, the first 1976 Honda Accords have an average retail value of over 90% of their original suggested retail price.

And few other cars can make that claim.

One more simple reason why when so many Honda owners finally do trade in or sell their Hondas, they buy another Honda.

HONDA

We make it simple.

You can count on Sears for an enormous choice (and sometimes a tiny one)

At Sears you can choose among 46 television sets, from a 2-inch portable to a 50-inch colossus. In TV, as in anything you buy at Sears, you'll seldom have to go without a feature you want or pay for one you don't.

How often have you gone rushing from store to store, only to find exactly what you were looking for at Sears?

It happens all the time—and for a very good reason. Sears offers an astounding variety of colors, sizes, styles and features, in hundreds of lines of goods.

If you're shopping for a new washing machine, Sears gives you a choice of 16 models in up to five colors.

If you're looking for stainless steel tableware, Sears offers 21 patterns.

You can choose sheer hosiery in five levels of quality. And did you know that you can get the famous Craftsman claw hammer with your choice of *four different handles?*

Sears gives you so many options that sometimes it isn't easy to make up your mind. But then Sears can usually help you do that, too.

For example, hundreds of Sears products are color coordinated. Come in for new carpeting, curtains, and a couch, and it will all go together beautifully. No guesswork.

Sears built its reputation by giving people what they're looking for. But if by chance anything you buy at Sears turns out *not* to be exactly what you wanted, remember this: *Satisfaction guaranteed or your money back.*

Sears

New and only at Sears, the Binoc TV set (foreground) can hang around your neck like binoculars. It has a 2-in. diagonal measure black-and-white picture. Behind it, Sears new projection television —50 in. measured diagonally, superb color.

The 46 Sears TV models are available in most larger Sears stores.

"So, you were 105th in your class."

Nothing else feels like real gold. Nothing else makes any moment so precious. Give her the gleaming, elegant, enduring gift she will treasure all of her life.

KARAT GOLD JEWELRY

14-Karat gold earrings similar to the ones pictured here are available at most jewelry stores in an approximate range of $40 to $200. For more information write to Jewelry Information, International Gold Corp. Ltd., 645 Fifth Avenue, New York, N.Y. 10022.

Germany, now only $4.95

It's the new low rate. $4.95 for a 3-minute call to Germany. Just dial the call yourself during the lower rate periods, any night 5 p.m. to 5 a.m.

No International Dialing in your area? You still get the same low rate as long as it's a simple Station call. (Person-to-person, credit card and collect calls, for example, cost more because they require special operator assistance.) Just tell the local Operator the country, city, and telephone number you want.

Here's how easy it is to dial Munich:

011 + 49 + 89 + LOCAL NUMBER

(If you are calling from a Touch-Tone telephone, press the "#" button after dialing the entire number. This will speed your call along.)

$4.95! What a nice surprise! Or . . . as they say in Germany, "Ach Du lieber!"

INITIAL 3-MINUTE DIAL RATES

FROM THE U.S. MAINLAND TO:	DAY RATE	LOWER RATE
Austria	$6.15	— A
Belgium	6.15	$4.95 B
Denmark	6.15	4.95 B
Finland	6.15	4.95 B
France	6.15	— A
Germany	6.15	4.95 C
Ireland	4.65	3.60 B
Italy	6.15	4.95 B
Luxembourg	6.15	4.95 B
Monaco	6.15	— A
Netherlands	6.15	4.95 B
Norway	6.15	4.95 B
Portugal	6.15	4.95 B
San Marino	6.15	4.95 B
Spain	6.15	4.95 B
Sweden	6.15	4.95 B
Switzerland	6.15	— A
United Kingdom	4.65	3.60 B
Vatican City	6.15	4.95 B

A) No lower rate period
B) Nights 5pm-5am & Sunday
C) Nights 5pm-5am only

The charge for each additional minute is 1/3 the initial 3-min. dial rate. Federal excise tax of 2% is added on all calls billed in the United States.

Bell System

Ach Du lieber!"

"You can feel it when you drive."

Lee Trevino

NEW BRIDGESTONE SUPERFILLER RADIALS.

The Bridgestone Tire Company announces new SuperFiller steel-belted radial tires.

Bridgestone's advancements in tire technology have resulted in a radial tire that gives you premium performance.

"I can feel new Bridgestone SuperFiller radials when I stop, start or corner ...when I drive."

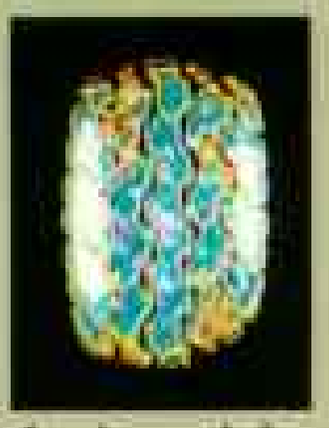
The Bridgestone SuperFiller radial tire is built with two steel belts behind the tread for strength, a polyester cord body, and a special hard rubber insert in the bead area near the rim. This is SuperFiller, the key to our performance.

Think of the three areas of a tire (the bead, the sidewall, and the tread) as springs. Bridgestone SuperFiller construction allows these three areas to have different spring rates. There is

a very stiff SuperFiller bead area that allows a flexible sidewall for comfort and performance, and a hard tread area with an aggressive tread pattern designed for long wear.

"I'm certainly not the first to tell you that the grip is important when you drive."

Freeway or fairway,



on the roads or in the rough, grip is important. Bridgestone SuperFiller radials are designed for a big footprint and an even pressured, sure footed grip on the road, with a minimum of heat generating "squirm" that ages tires.

"Put the advanced technology of Bridgestone SuperFiller radials between you and the road. You can feel it when you drive."

Check the Yellow Pages for the Bridgestone dealer near you.

Put Bridgestone between you and the road.

BRIDGESTONE

Beauty that's more than skin deep.

Architect: Wendell Lovett, FAIA, Seattle, Washington

The beauty of wood. It's what makes your home look warm and inviting.

The beauty of Olympic Oil Stain. It enhances the natural beauty of wood. Protects wood, too.

That's because Olympic Oil Stain's specially-treated oils penetrate into wood's fibers. To protect from within. And to give your home a natural beauty that lasts for years.

See all 66 colors at your Olympic dealer. He's listed in the Yellow Pages. Or write Olympic, Department C, P.O. Box 1497, Bellevue, WA 98009.

OLYMPIC

Because you care about your home.

Only Eastern gives you a little Walt Disney World before you even get there.

Our exclusive Fun Flight Bag* and Fun Flight Meal.†

On an Eastern flight, we keep your kids amused all the way to the Walt Disney World Vacation Kingdom in Orlando. With our Fun Flight Bag, featuring puppets, games, puzzles and more. And our Fun Flight Meal. A hot dog, shake, fruit and cookie for lunch and dinner. The fun doesn't stop there.

Only Eastern offers you a Walt Disney World Character Breakfast.◦

Once you've arrived in the Magic Kingdom, Eastern can still give you things no other airline can.

We can offer you breakfast with Donald and the bunch when you book your vacation with us.

We give you the most nonstops to Walt Disney World.

Eastern serves Orlando with nonstops from cities all over the U.S. Many of them are wide-body movie flights (there's a $2.00 charge for headsets in coach).

Only Eastern can give you a Super 7℠ super vacation.

We can give you a low-cost vacation too good to pass up. It includes discounted airfare, hotel, rental car and a 2-day passport that includes admission and unlimited attractions inside the Magic Kingdom.

Call your Travel Agent for more information. Or call the official airline of Walt Disney World. Eastern, of course.

*Available on nonstop and direct flights. Passengers on connecting flights receive gift bag at final connection.

†You must ask for the Fun Flight Meal when you make your reservations.

◦Breakfast costs extra unless included in package. Cast may vary.

Movie program and system provided by Trans Com— a unit of Sundstrand Corp.

EASTERN

WE HAVE TO EARN OUR WINGS EVERY DAY℠

ANIMALS SHOWN APPROXIMATELY ACTUAL SIZE

The Woodland Animals

MINIATURE PEWTER SCULPTURES

Twelve beautifully detailed sculptures by the gifted artist Jane Lunger, meticulously crafted in fine pewter, and affordably priced at just $12.50 each.

Available by subscription only, exclusively from The Franklin Mint. Please order by June 30, 1981.

Imagine—for just a moment—that you're standing in a quiet forest glade. It's early morning, and sunlight filters softly through the trees. You brush aside a screen of leaves . . . and there, nestled in the undergrowth, is a baby fawn.

This is part of the magic that inspired Jane Lunger to create a wonderful new collection, *The Woodland Animals Miniature Pewter Sculptures.* Twelve endearing pewter figures—each no more than two inches high—yet each engagingly true to life.

Each miniature a small masterpiece of design and detail

Sculptor Jane Lunger has been acclaimed for her remarkable ability to capture all the spirit and grace of wild animals. For this collection, she has portrayed twelve forest creatures with amazing warmth and realism . . . so that every one of the animals is brought to life in a charmingly original work of art.

Here is the fox, curled up amid clusters of wild violets. He's at rest, but his ears are perked to catch the faintest sound. The beaver munches contentedly on a finely-veined aspen leaf. The fluffy-tailed squirrel seems to be chattering impudently from his safe perch.

And each original pewter sculpture is richly detailed—so that you can see the most subtle nuances of form and expression . . . and practically *feel* the texture of each animal's fur.

Jane Lunger selected the medium of fine pewter because this metal is unsurpassed in its ability to capture such fine detail. Master pewterers of The Franklin Mint—renowned the world over for their skill—will devote their attention to each work. Every sculpture will be *individually finished* to highlight the beauty of the fine pewter.

Exceptional quality . . . at a very affordable price

Despite the care and time that must be taken with every sculpture, these original works will be available at the extremely reasonable price of $12.50 each. This price is guaranteed for all subscription applications received by June 30, 1981. *The Woodland Animals* are available exclusively from The Franklin Mint, and only as a complete collection.

Because they so perfectly combine art and nature, these beautifully crafted miniatures will be endlessly fascinating for you, your family, and friends. As a collection, they will be a delight to display in your home.

There is no need to send any money at this time. Please keep in mind, however, that the subscription application should be signed and mailed to The Franklin Mint, Franklin Center, Pennsylvania 19091 by June 30th.

At The Franklin Mint, we take pride in our design and craftsmanship. But we believe our efforts should be judged by the people we serve. Any figure may be returned for any reason within 30 days for your choice of replacement or refund.

SUBSCRIPTION APPLICATION

The Woodland Animals

Limit: One subscription per person. Please postmark by June 30, 1981.

The Franklin Mint
Franklin Center, Pennsylvania 19091

Please enter my subscription for *The Woodland Animals Miniature Pewter Sculptures*, consisting of 12 finely sculptured pewter miniatures by artist Jane Lunger.

I need send no money now. The sculptures will be sent to me at the rate of one every month, and I will be billed $12.50* for each figure, beginning prior to the shipment of the first figure in the series. I may return any figure in the collection within thirty days of receipt for replacement or full refund.

*Plus my state sales tax and $.71 shipping and handling

Signature _____
ALL APPLICATIONS ARE SUBJECT TO ACCEPTANCE

Mr.
Mrs.
Ms. _____
PLEASE PRINT CLEARLY

Address _____

City _____

State _____ Zip _____

Canadian residents will be billed C$18.50 plus C$.75 for shipping and handling.

For the cost of a few extra rolls of film you can own the choice of professionals, instead of the choice of amateurs.

*Cost comparison based on purchase of 2 to 5 rolls of 36 exposure color print film, plus processing.

Nikons are used by more professional photographers than all other 35mm cameras combined.

But you don't have to be a pro to own a Nikon.

For not much more than it would cost to buy one of those cameras amateurs buy, you can own the Nikon FE. A camera which many professionals buy because it's compact, yet durable.

The Nikon FE—like our top-of-the-line camera—is simple to operate. It features aperture priority automation. Which means you set the f-stop and the camera automatically selects the correct shutter speed. Shutter speeds are electronically controlled and continuously variable from 1/1000th to 8 full seconds.

If you choose to override the automation, just turn a dial and you'll be in complete manual control. Which means you can exercise your creativity by intentionally overexposing, underexposing or double-exposing your shots.

The FE has other features professionals have come to value about Nikon. Things like true center-weighted metering for exposure accuracy. A memory lock feature that helps you get perfect exposures, even under back-lit conditions. Interchangeable viewfinder screens. And a solid, all-metal body for unsurpassed ruggedness and reliability.

And when it comes to lenses, Nikon offers what many professionals regard as the finest system in the world. There are over 60 Nikon lenses in all. Our world-renowned Nikkor lenses range from a 6mm fisheye to a 2000mm super-telephoto. Or, if you prefer, you can choose one of Nikon's superb, but inexpensive, Series E lenses.

So why spend your money on a 35mm camera that's famous among amateurs? When for the cost of a few extra rolls of film,* you can have something in common with the pros?

Nikon

We take the world's greatest pictures.

Whirlpool announces tomorrow. Today.

Important changes are coming in the design of major home appliances. And Whirlpool is proud to be a leader. With our first family of quality appliances to give you the benefits of solid state technology today.

Our newest refrigerator is almost human. It constantly monitors itself to help protect your food.

Our Whirlpool microwave oven has a miniature computer built right in. To help make preparing complicated meals a little simpler.

Our solid state dishwasher can be programmed to start washing hours after you turn it on. And when you're done setting the controls, they totally disappear.

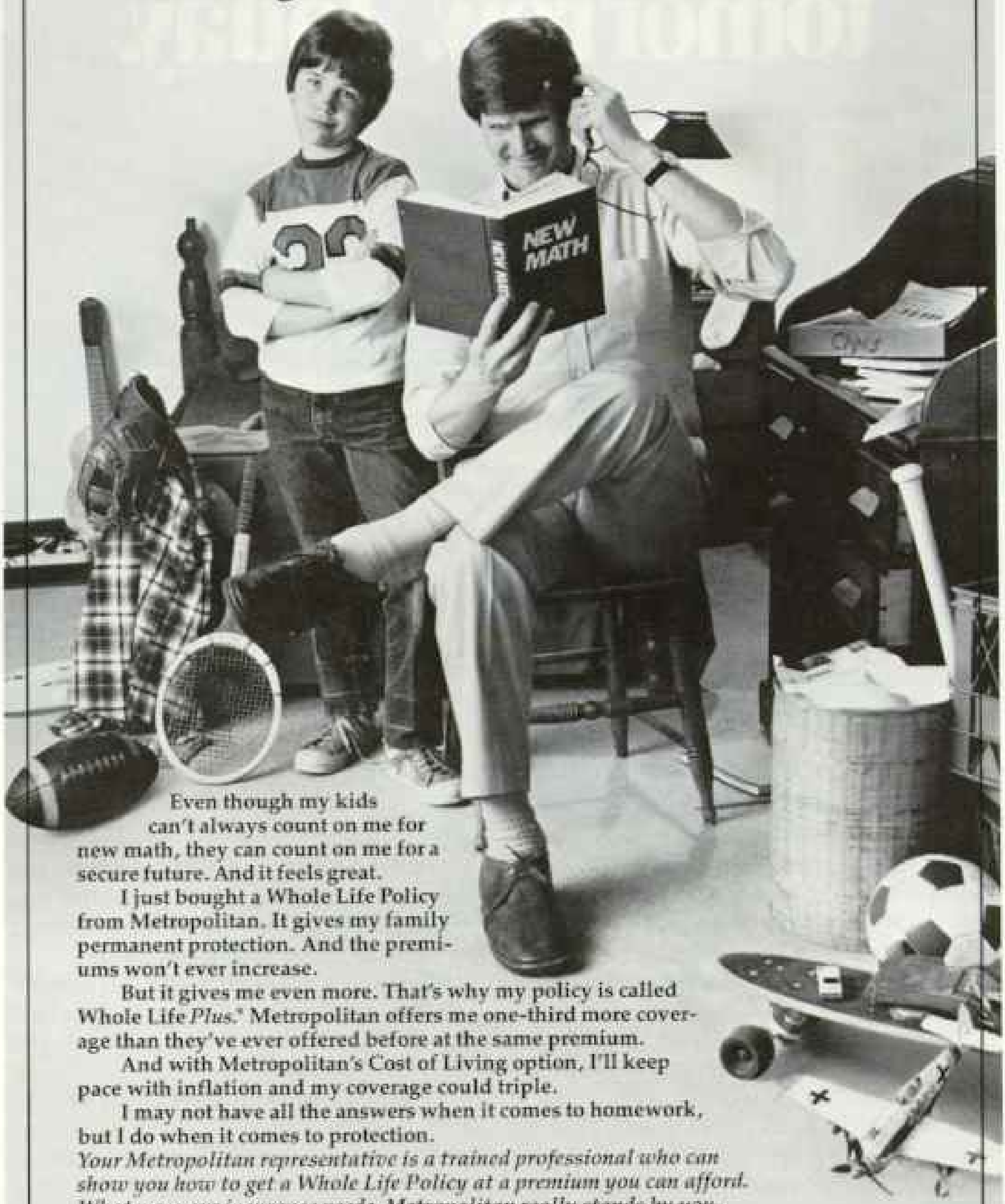
And our solid state Whirlpool laundry pair has electronic controls to help get today's fabrics washed and dried just the way you want them.

The solid state family from Whirlpool. They're more than just our latest innovation in home appliances. They're designed to put the quality of tomorrow's technology into your home today.

Whirlpool
Home Appliances

Quality. Our way of life.

Today I became the kind of father my kids can live without.



Even though my kids can't always count on me for new math, they can count on me for a secure future. And it feels great.

I just bought a Whole Life Policy from Metropolitan. It gives my family permanent protection. And the premiums won't ever increase.

But it gives me even more. That's why my policy is called Whole Life *Plus*.* Metropolitan offers me one-third more coverage than they've ever offered before at the same premium.

And with Metropolitan's Cost of Living option, I'll keep pace with inflation and my coverage could triple.

I may not have all the answers when it comes to homework, but I do when it comes to protection.

Your Metropolitan representative is a trained professional who can show you how to get a Whole Life Policy at a premium you can afford. Whatever your insurance needs, Metropolitan really stands by you.

Metropolitan

Metropolitan really stands by you.
LIFE/HEALTH/AUTO/HOME/RETIREMENT

E L D O R A D O

More going for it than the luxury imports...

...more advanced technology like V8-6-4.
No luxury import offers an engine that goes from 8 to 6 to 4 cylinders, but Eldorado does and it's standard. Also standard is another Cadillac exclusive, Digital Fuel Injection—a generation ahead of conventional electronic fuel injection.

...more meaningful features like front-wheel drive.
Surprisingly, most luxury imports lack front-wheel drive while Eldorado has had it since 1967. Other Eldorado standard features often lacking on luxury imports include electronic level control, cornering lights and MPG Sentinel—a miles-per-gallon monitor which can help you become a more efficient driver.

...more ways to go.
No single luxury import model offers you Eldorado's unprecedented engine choice ...standard V8-6-4...available V6...or available Diesel.

Eldorados are equipped with GM-built engines produced by various divisions. See your Cadillac dealer for details.

...more interior roominess.
In addition to impressive traction, front-wheel drive helps give Eldorado more interior roominess than most luxury import models. Source: EPA Interior Volume Index.

...more convenient service.
Eldorado has a larger dealer network than any luxury import...for readily available service and parts across America.

...more in demand.
Eldorado outsells any single luxury import model. Any single luxury import model. Source: R. L. Polk Registrations, Jan.-Oct., 1980.

...and more...distinctive styling.
...more going for it...and you.
When you compare everything you get with an Eldorado that you don't get with a luxury import, we think you'll agree that there is no comparison. Eldorado has more going for it...and you. Whether you buy or lease, see a Cadillac dealer, and see for yourself.

GM

CADILLAC MOTOR CAR DIVISION, U.S.A.

Kodak brings the instant closer.

Take pictures at normal distance.

Or close up.

Smaller than actual size.

Introducing the Kodak Colorburst 350. The only instant camera with a built-in close-up lens.

Our exclusive built-in close-up lens and our built-in electronic flash let you take beautiful instant color pictures from as close as two feet away–in any light. Color pictures that are sharp, rich, vivid. And, best of all, also built in are 100 years of Kodak experience. The Colorburst 350 is the perfect instant camera for you and the perfect gift.

Kodak brings the instant to life!

OH WHAT A FEELING

Presenting the 1981½ Toyota Corolla Sports Hardtop. A totally new kind of Corolla from the roof down.

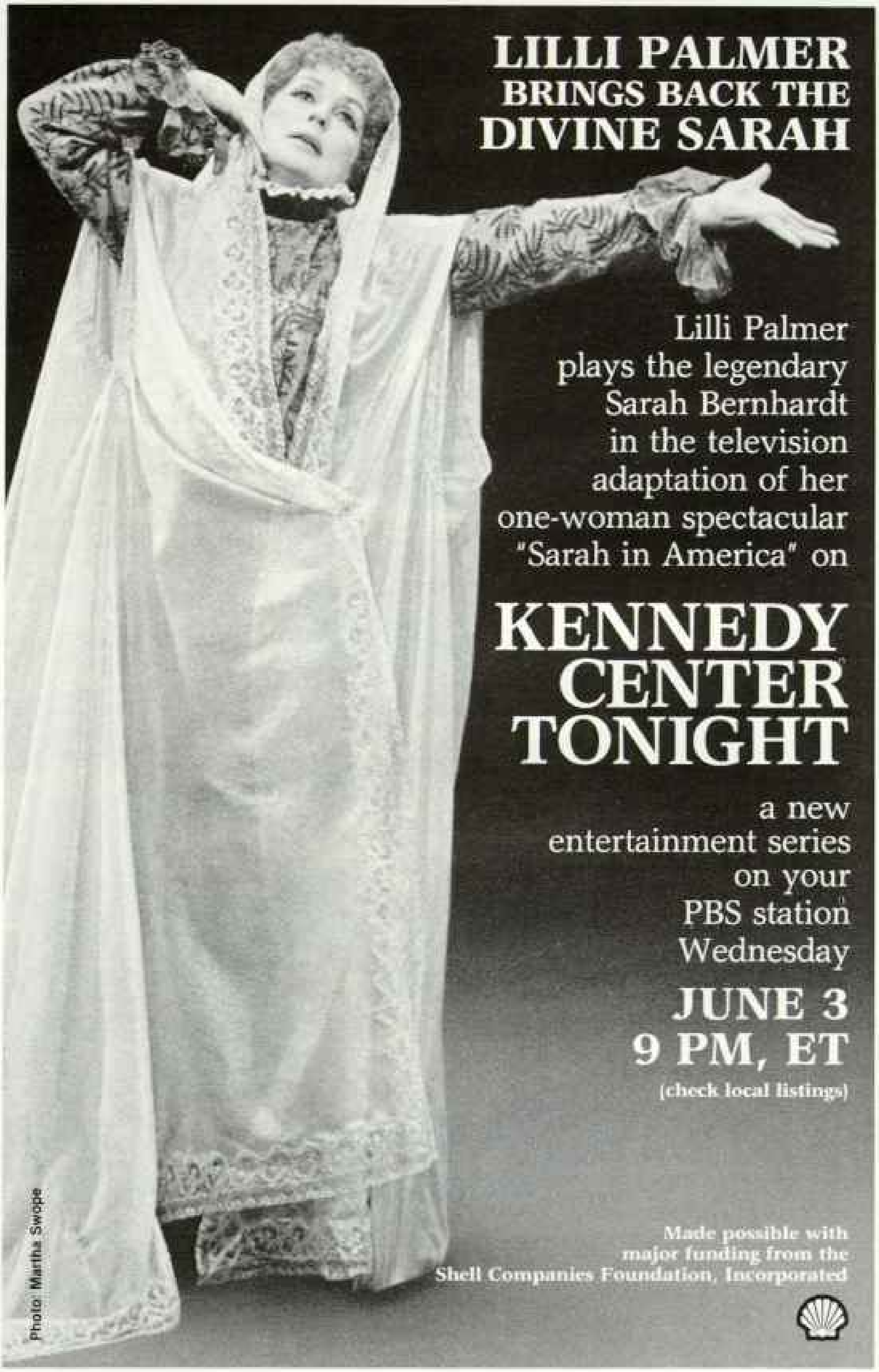
Fresh, crisp, contemporary lines. Distinctively subtle, yet the very latest in sporty good looks. The hardtop design gives you a wide-open, airy feeling. The spacious trunk allows you to lock valuables out of sight. And the roomy interior is loaded with the kinds of standard equipment you'd expect to pay extra for on most other cars.

But best of all, beneath that beautiful, sporty exterior, the Sports Hardtop is all Corolla. And it acts like one. It's incredibly dependable. Totally economical. And extremely thrifty.

With Corolla's 1.8 liter 4-cylinder engine and 5-speed overdrive transmission, the Sports Hardtop is rated at: 39 EPA EST. HWY. MPG. (28) EPA EST. MPG. Remember: Compare this estimate to the EPA "Estimated MPG" of other cars with manual transmission. You may get different mileage, depending on how fast you drive, weather conditions and trip length. Actual highway mileage will probably be less than the EPA "Highway Estimate."

The 1981½ Toyota Corolla Sports Hardtop. It's a whole new sport that's hard to top.

INTRODUCING THE COROLLA SPORTS HARDTOP.
A WHOLE NEW SPORT.


LILLI PALMER
BRINGS BACK THE
DIVINE SARAH
Lilli Palmer
plays the legendary
Sarah Bernhardt
in the television
adaptation of her
one-woman spectacular
"Sarah in America" on
KENNEDY
CENTER
TONIGHT
a new
entertainment series
on your
PBS station
Wednesday
JUNE 3
9 PM, ET
(check local listings)
Photo: Martha Swope
Made possible with
major funding from the
Shell Companies Foundation, Incorporated

Sears Stereo-TV Sale

May 31 through June 27, 1981

Model #9915

Save $40*
on a Compact Stereo

Enjoy your favorite music on cassettes, 8-track tapes or records.

Record onto cassette from 8-track, records, or AM/FM stereo receiver. System includes two 14½" high speakers.

Now only $159.95

Model #421. Simulated TV reception. 19 in. diagonal measure picture.

Save $70*
on a 19 in. Color TV

Discover the difference solid state electronics can make. Reliability is designed into the 100% solid state Electronic Tuner. Touch 'n Tune selector

lets you "jump" instantly to any channel. One-Button Color locks in a beautifully adjusted picture. Light Sensor automatically adjusts brightness, contrast and color level to changes in room lighting.

Now only $399.95

You can count on

Sears

Each of these advertised items is readily available for sale as advertised.

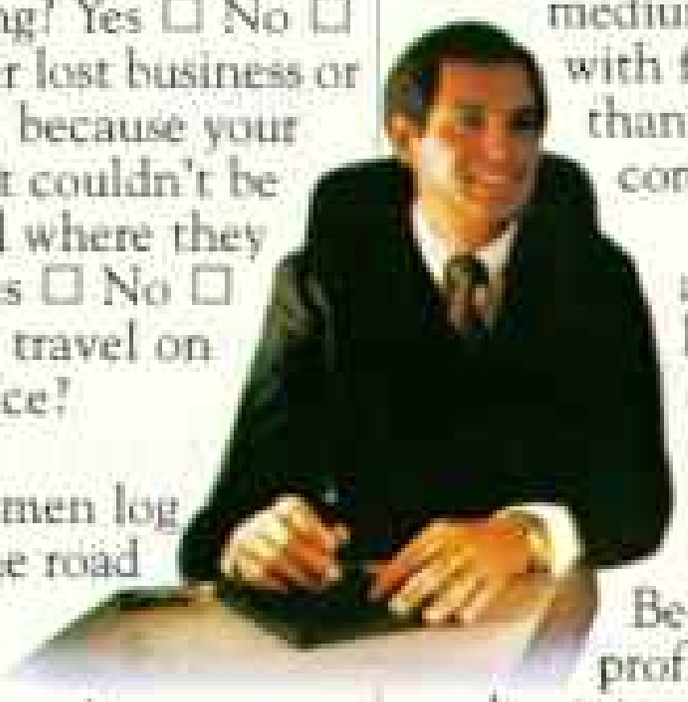
*These are the minimum savings nationally. Prices and dates may vary in Alaska and Hawaii. Available in most Sears retail stores.

You may be in a position to justify an airplane and not even know it.

The Beechcraft Bonanza A36TC can carry 6 people at speeds up to 246 mph.

To find out, take this simple test.

1. Do you or your people travel several times a month? Yes ☐ No ☐
2. Do you travel to, or come home to, destinations not well served by airlines? Yes ☐ No ☐
3. Have you ever been out of town two days and a night for a two hour meeting? Yes ☐ No ☐
4. Have you ever lost business or money, or both, because your top management couldn't be there, when and where they were needed? Yes ☐ No ☐
5. Do you often travel on a moment's notice? Yes ☐ No ☐
6. Do your salesmen log more time on the road than in selling? Yes ☐ No ☐



If you answered yes to any of the above questions, you'll have no trouble justifying a Beechcraft company airplane. To your accountants. Your board of directors. Or your stock holders. Because a Beechcraft means more efficient, more productive travel.

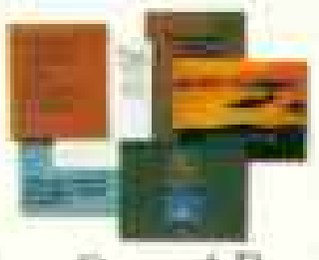
It means one of your most valuable resources, good people, can be there, when and where they're needed. And that's even more critical to small and medium sized companies, with fewer resources, than it is to large companies.

Our free Management Guide to Business Aviation shows that virtually any size company can, and has, used a Beechcraft to increase profitability and/or productivity. The size of your company isn't nearly as important as the size of your ambition. The Guide lays it all out in black and white, net dollars and capital recovery. And the more you travel, the more sense it makes.

Especially when your Beech dealer makes owning an airplane so simple. He has a unique plan for managing many of the details for you. Maintenance, scheduling, upkeep, helping to find pilots, whatever you need. So all you get are the benefits.

The Beechcraft Baron E55. A 6-seat twin that combines speed, fuel-efficiency and comfort. Up to 239 mph.

Send for your free 1981 kit.



If you answered yes to any of the quiz questions, write us at Beech Aircraft Corporation, Dept. AB, Wichita, KS 67201. We'll send you all you need to start thinking.

If you answered yes to all the questions, maybe you should call collect. 316-681-7072. Ask for Dick Schnaufer, Jr.

Member General Aviation Manufacturers Association

Beechcraft

Be there in a Beechcraft.

A Raytheon Company

Change of Address?

(Please give six weeks notice.)

1. Print your new address below:

NAME

ADDRESS

CITY, STATE, ZIP CODE

2. Attach the address label from your NATIONAL GEOGRAPHIC Magazine wrapper here, so your record can be updated.

Paste Label Here

3. Clip this entire form and mail to: **National Geographic Society, Washington, D.C. 20036**

HOW CAN SOMETHING THIS WELL CRAFTED BE SO PRACTICAL

Not easily. But at CasaBlanca Fan Company we've developed ceiling fan-making to a fine art.
The art of conservation reflected in the energy savings you'll see month after month, both summer and winter.
The art of old world craftsmanship evidenced in every one of our investment quality fans.
Call us at 1-800-423-1821 and we'll be glad to tell you where you can view our extensive collection.
In California call (213) 960-6441.
CasaBlanca Fan Company,
182 South Raymond Avenue,
Pasadena, California 91109

CASABLANCA FAN COMPANY

Made in the United States of America
THE WORLD'S FINEST.

For more information
Call Toll Free 1-800-423-1821
In California call (213) 960-6441