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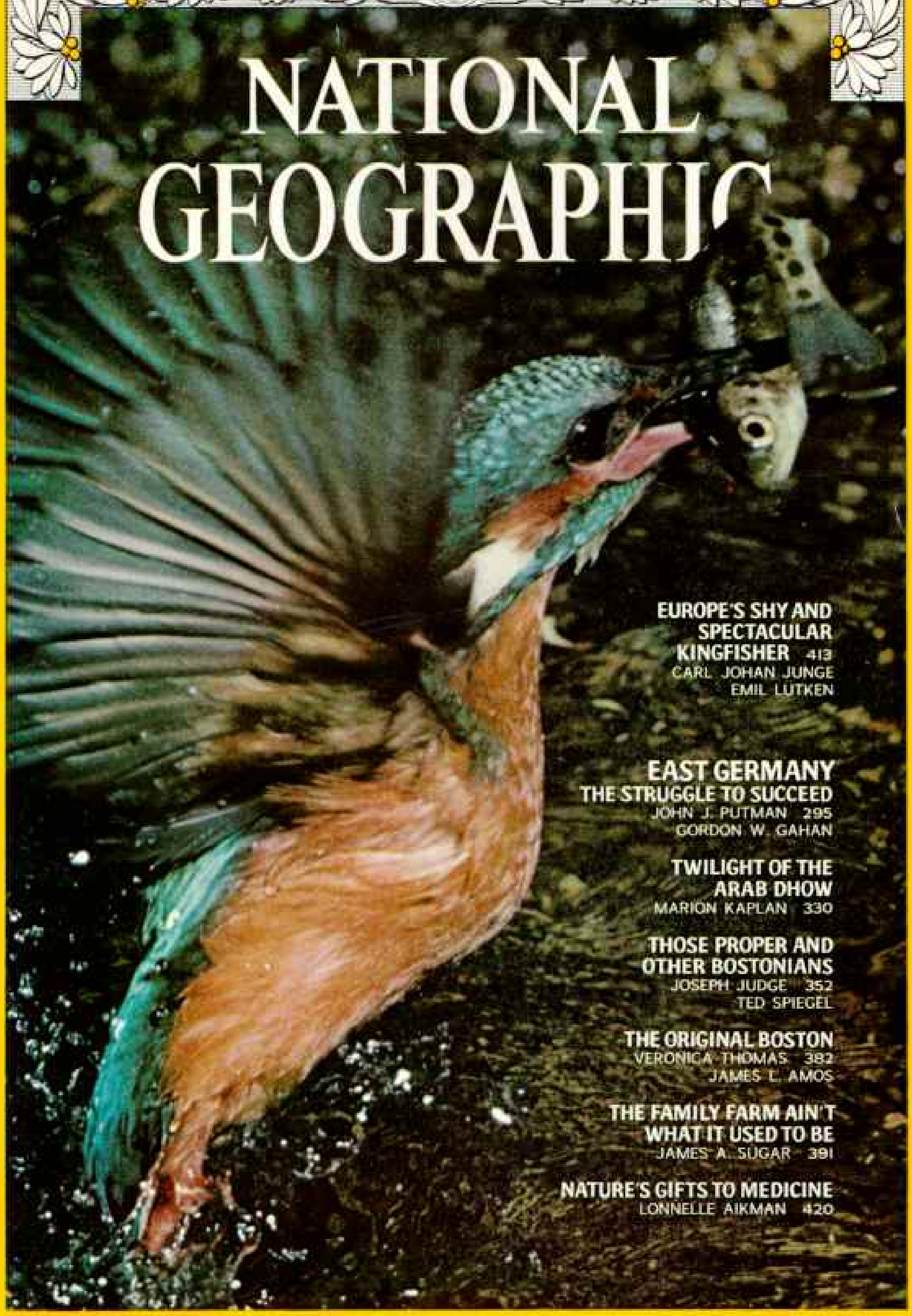
NATIONAL GEOGRAPHIC



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NATIONAL GEOGRAPHIC

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East Germany: The Struggle to Succeed

By JOHN J. PUTMAN

Photographs by GORDON W. GAHAN

BOTH NATIONAL GEOGRAPHIC STAFF

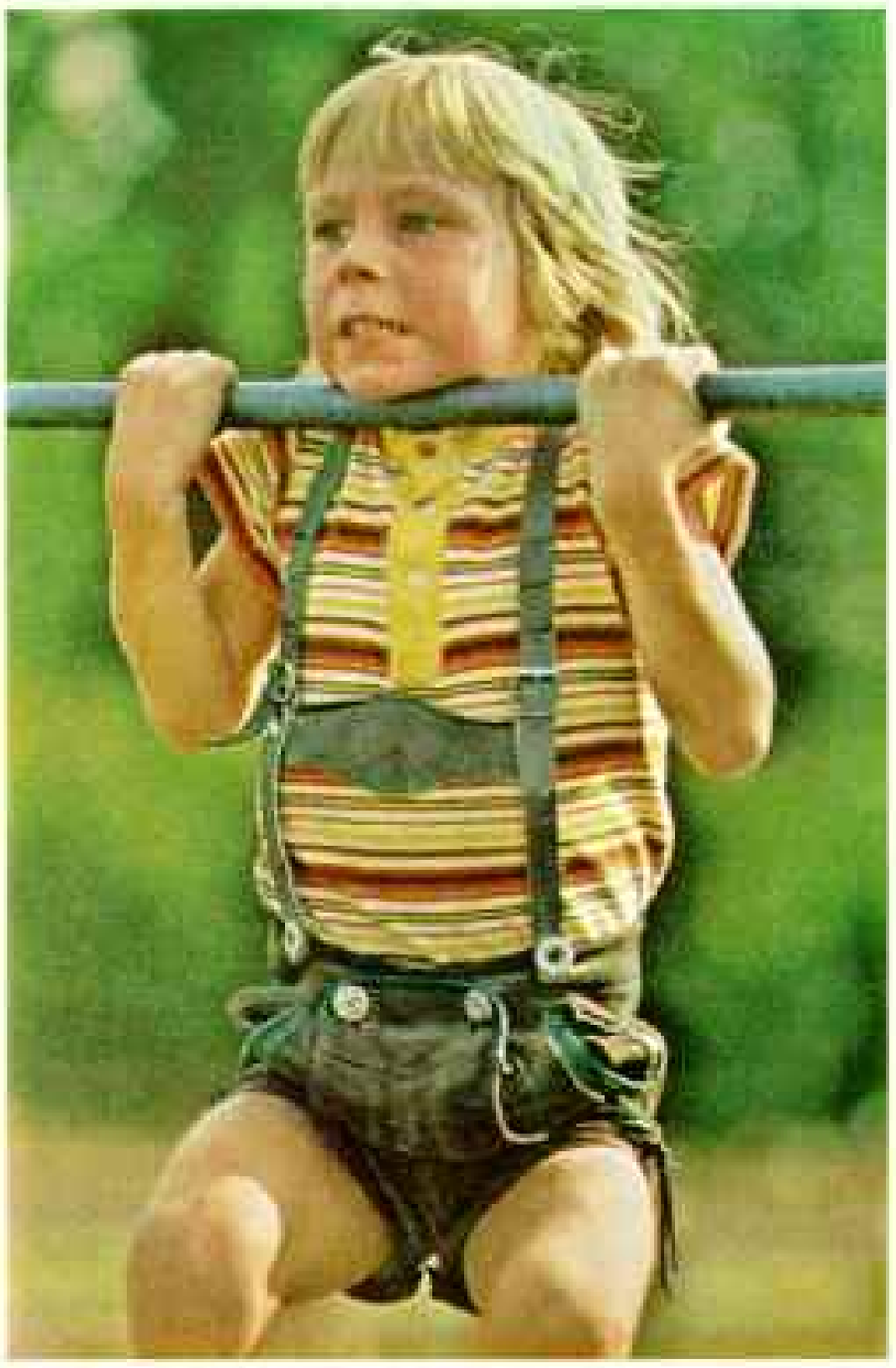
ALONG THE WIDE AVENUE of Unter den Linden the first leaves were unfurling. Old women sat beneath the trees, faces turned toward the warming sun, while young girls strolled arm in arm, laughing, as if awakening from winter's sleep.

In residential areas such as Pankow, proud car owners rolled their vehicles out of winter storage and washed them lovingly. Is it not said that East Berliners drive their cars once a week and wash them seven times?

Apartment dwellers made their way by subway and elevated S-Bahn to the *Laubenkolonien*, jigsaw puzzles of tiny gardens and garden houses squeezed along railroad rights-of-way and on empty lots. There they would satisfy their thirst to dig in the earth, to plant, to care for their own place.

Families strolled the park at Köpenick to feed the swans and ducks, crowded the merry-go-rounds and shooting stands at Treptower Park, or hiked into the Müggelberge, the small forested hills in the city's south.

Excursion boats plied the River Spree southward toward the lakes, where boat owners prepared their craft for *Ansegeln*, "sailing day." From the city's northern exits, holidayers rolled toward the greening fields of Mecklenburg, where village *Hausfrauen* scrubbed winter's grime from windowpanes.



Keeping his chin up, a towheaded East Berlin lad builds strength that will help mold the future of his Communist land—the "other" Germany.

Germans have always greeted the spring with fervor; but for the citizens of the Deutsche Demokratische Republik—German Democratic Republic, or GDR—this spring seemed to have come with a special warmth.

Long regarded as an "outlaw" by the West, East Germany in 1973 was welcomed into the United Nations. More than a hundred countries, including France and Britain, have granted it diplomatic recognition. The United States is expected to follow suit.

Treaties now allow West Germans to visit East German kinsmen with far less difficulty than in past years, and it is possible to telephone across the Berlin Wall.

Industrial production, long laggard, now ranks close to tenth in the world. Per capita gross national product surpasses that of Italy and Ireland and the socialist countries to the east. The GDR boasts more television sets per capita than France. Restrictions on daily life also have been eased a bit.

It seemed as if both East Germany's leaders and the nations of the West were at last agreed that a secure socialist state had risen from the ruins of Nazi Germany and should take its place in the world community.

Eight Weeks Behind the Wall

What had evolved from those years behind the Wall? I spent eight weeks, in several visits to East Germany, seeking answers. I journeyed from the Baltic Sea coast and the farmlands of the north to the forests of Thuringia and the industrial cities of the south (map, page 299).

The journeys were not without difficulty; once I was asked to leave because I had departed from the approved itinerary. I found many East Germans still reluctant to talk

Who, me? Giggling at the photographer's attention, members of an East German collective farm near Wismar race frosts to harvest sugar beets. Women work beside men to earn bread and calluses in a land with a chronic labor shortage—a legacy of the manpower drain during and after World War II. From 1949 until 1961, nearly one East German in six fled to the West. Since the infamous but effective Berlin Wall went up in August 1961, East Germany's sealed-off society has made dramatic economic gains, and on a per capita basis is now the most productive Communist nation, ahead of Czechoslovakia and the U.S.S.R.

with Western journalists, frequently described by their government as likely spies and provocateurs. Dresden's director of tourist information refused to see me at all. His secretary explained that he had received no instructions from Berlin.

Still, one could learn. And no matter where I traveled, my journeys always led back into the minds of men and women. For the landscape of East Germany—the land that gave us Luther, Bach, Goethe, Schiller, Frederick the Great, Bismarck, and Hegel—remains the landscape of the mind.

During an earlier visit to East Berlin, a fog had swirled down from the north. Apartment buildings loomed like ships at sea, their windows glittering with Christmas trees. The city center, busy with shoppers only a few days before, was almost deserted. The lovely old Marienkirche, where I had squeezed in to hear one of Bach's Christmas cantatas, was now silent and shut; the sprawling *Weihnachtsmarkt* (Christmas fair), where crowds had lined up for roller-coaster rides and hot *Kartoffelpuffer* (potato fritters sprinkled with sugar), had packed up. On Christmas Eve in East Berlin, everyone seeks the warmth of family and old friends.

Communists Explain Their Beliefs

Mine were not yet old friends, simply acquaintances who had helped me see something of the city. My taxi stopped on Grellstrasse before one of the old prewar apartment houses with an inner courtyard and five flights of stairs. At the top I was greeted by Michael and Erika Gromnica and their son, Bonni. Both Michael and Erika are journalists, members of the Communist Party, and had left the West by choice in 1961 to "help build a new and just society."

Erika said her decision had been an easy one. "I come from an old Communist family." Michael's reasons were more complex—a father murdered by the Nazis, a childhood pledge to resist fascism, a gradual change during university days from Catholicism to Communism. Neither had regrets.

Their flat bespoke a pleasant life: book-lined walls, antiques, mementos of vacations to the east—icons from Rumania, great brass cooking pots with long wooden handles from Russia. They owned no car, but rented a small summer house in the country—"our dacha," they laughingly called it.

A small Christmas tree glittered in a corner.

Exclamation point of the future, a 1,200-foot television tower proclaims the new image of East Berlin, a city in the process of shaking off a reputation for architectural drabness. Soaring above the fast-building East German capital, the tower boasts a rotating restaurant in the ball.

"A matter of tradition," Erika explained, "for in this house we are not religious."

We exchanged gifts, then sat down to a traditional German Christmas dinner—roast goose stuffed with apples, potato dumplings, red and green cabbage, light and dark beer.

It was an excellent dinner and Bonni, 12, caught up in the excitement of a foreign visitor, summoned up his manliness to raise his own glass of beer in a toast, "Prosit!" I was more than pleased to join him.

Over brandy we talked of the differing views of East Germany. I told them that, for many in the West, the Berlin Wall and the shooting of people who tried to cross it were the most telling comments on the GDR.

"I disagree," Michael said. "The Wall is there, of course. But the really important things to know about us are these: We have now established our own identity as a state. Before, we were Germans; now we are

AREA: 41,610 square miles.
POPULATION: 17,011,000.
RELIGION: Predominantly Protestant, 10 percent Roman Catholic.
GOVERNMENT: Actual power resides with the Politburo of the Socialist Unity (Communist) Party.
ECONOMY: Dominated by industry; machinery, processed foods, chemicals. Lignite is the chief mineral resource.
CITIES: Capital, East Berlin, 1,000,000; Leipzig, 577,000; Dresden, 505,000.
CURRENCY: 2.5 marks equals $1 U. S.

East Germany

NATION IN THE MIDDLE, East Germany—officially the German Democratic Republic (GDR)—gives the Communist bloc its westernmost salient in Europe. With less than half the area and a third the people of West Germany, the Ohio-size "workers' and farmers' state" inevitably trails in most economic comparisons. Even so, driven to try harder, the GDR has transformed itself from a war-wrecked, semi-agricultural nation to a leading industrial power in the world.

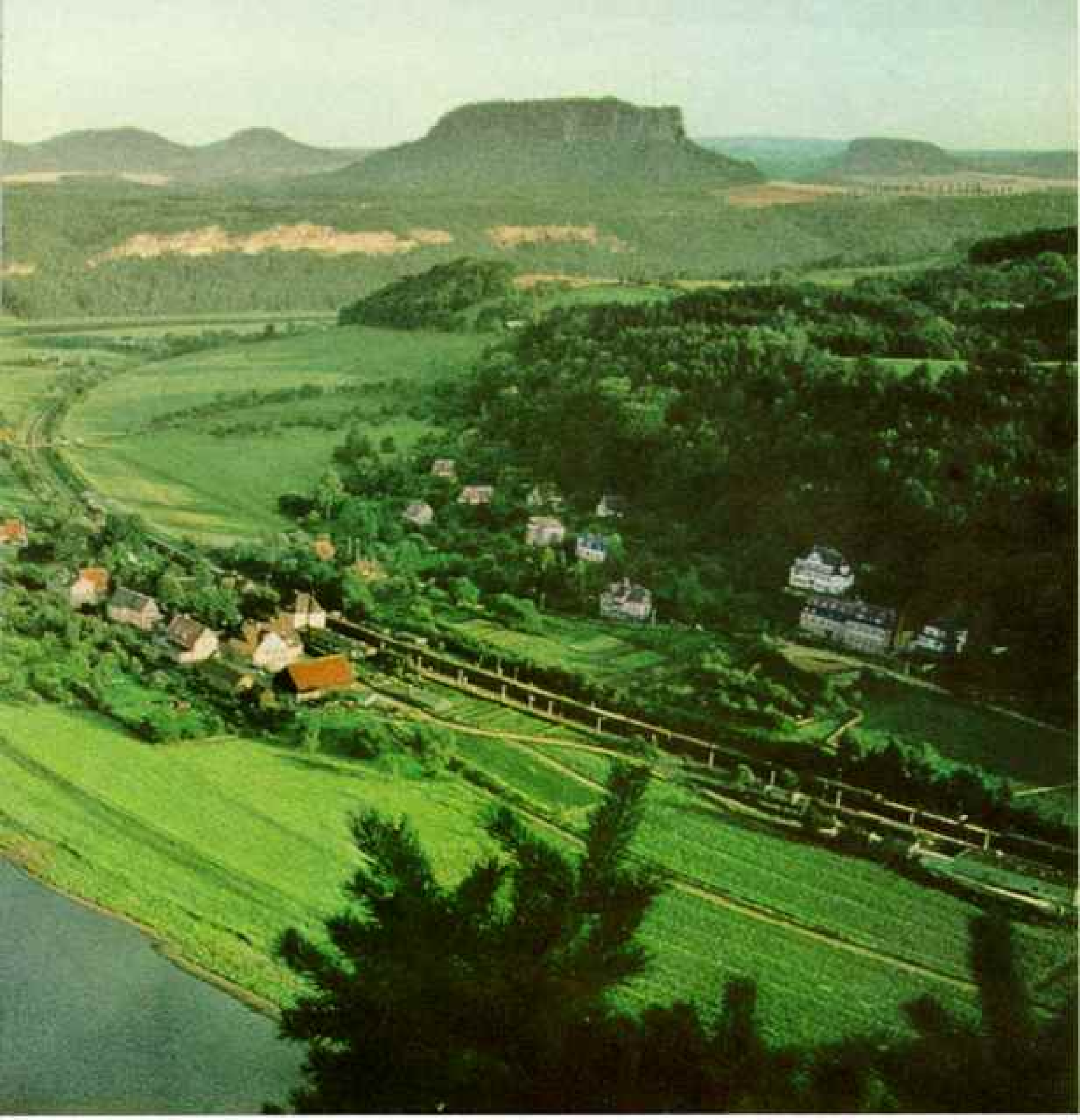
Minds and muscles given to the socialist cause, young East Germans stage a pageant with clockwork precision at the tenth World Youth Festival in East Berlin. Most of the nation's young people belong to Free German Youth, a state-run organization devoted to shaping young minds in the socialist mold. A leader of the FDJ (**below**) watches its well-drilled performances during the festival. To heighten their sense of socialist consciousness, East German youths also undergo a ceremony called *Jugendweihe*, dedicating their lives to the state.

Rustic beauty and challenging cliffs make the Elbe River Valley in East

citizens of the GDR. And we have now brought up our first generation. They carry no holdovers from the past—no memories of the fascist years, of the war, of the early difficult times. They are faithful—true believers in the party—but not afraid to question and to speak their minds."

To prove one point, Erika asked young Bonni his nationality. Quickly and proudly he replied, "A citizen of the GDR." I had seen him earlier in the uniform of the Young Pioneers, part of the Free German Youth organization. His blue scarf was held by a clasp depicting a clenched fist and the word "Chile," symbolizing "solidarity" with the Marxist regime recently overthrown in that nation. The posters in his room depicted "American Pirate Bombing in Viet Nam," Angela Davis in shackles, and other themes assailing U. S. policies and institutions.

In building a sense of statehood, the GDR has used the U. S. as bogeyman. Wherever I traveled—hospital waiting rooms, factories, tourist offices—anti-American posters were



Germany's southeast corner a favorite escape spot for vacationing workers.

ever present. The preamble of East Germany's constitution cites the United States as the world's leading imperialist power, the cause of much of the world's troubles. A drumbeat of propaganda repeats the theme, shaping the landscapes of young minds.

That Christmas Eve dinner revealed both themes of my travels: Personal kindness, set in a framework of political differences.

I met these themes again and again.

Early one fall morning on the Cooperative Farm Bobitz, near Wismar, tractors coughed and sputtered—a medley of machines manufactured in the GDR, U.S.S.R., Czechoslovakia, Hungary. Then trucks arrived, driven by a brigade of women. Together harvesters and trucks rolled across the sugar-beet fields, racing to save the last of the crop from a killing frost.

For years East German tables held skimpy repasts, production goals were missed. Now there is ample food on every table, and the GDR exports meat and livestock. And the life of the farmers has been reshaped.

The collective life has its demands and its rewards. Up before dawn, members of the Bobitz collective farm near Wismar (**above**) toil through a long day at harvesttime.

So that both parents can work, small children (**right**) attend a day-care center in the manor house of the estate's prewar owners. One child smiles shyly while the nurse draws blinds for the midday nap.

At day's end a family reconvenes (**below**)—perhaps to catch a bit of after-dinner TV or to admire a worker's medal awarded for efforts on the collective's truck brigade.

Manager Hartmut Sadowski sketched the history of the Bobitz cooperative's 5,100 acres. Before the war, landlords owned 80 percent of this land, including the villages. After the war the estates were divided among the peasants. The system failed—and so the state moved to collective farming.

There had been problems at the start, Herr Sadowski said. "That was only natural. We had to educate farmers from individual thinking to collective thinking. This took time. It began in 1960. From 1966 on, production has been climbing—for we can apply modern systems of large-scale farming.

"And the farmers have a better life. Shorter hours, seaside cottages where they can take vacations, better pay. We are guaranteed a basic income—for most, 650 to 800 marks a month. [At current exchange rates, 2½ marks equals $1 U. S.] If we fail to make enough profit, the state will meet the gap. In a good year, income grows 20 to 40 percent."

Today the collective's 420 workers tend 3,300 cattle, 4,600 pigs, 500 sheep, and 30,000 chickens. Principal crops are corn and clover. Expansion plans are being considered.

I wondered how decisions are made. "At our annual membership meeting, with all the farmers."

And what happened if the farmers

Poet of the everyday, Leipzig *Liedermacher* (folk singer) Kurt Demmler mesmerizes listeners in a student *Keller* with his bittersweet songs of ordinary people caught up in their own and society's contradictions. He sings of a barber who speaks optimistically about politics when his customers are party members and pessimistically when they are not . . . of a young man and woman who brush by each other on a streetcar but do not speak . . . of a pregnant girl who refuses a government-paid abortion in order to bear her child.

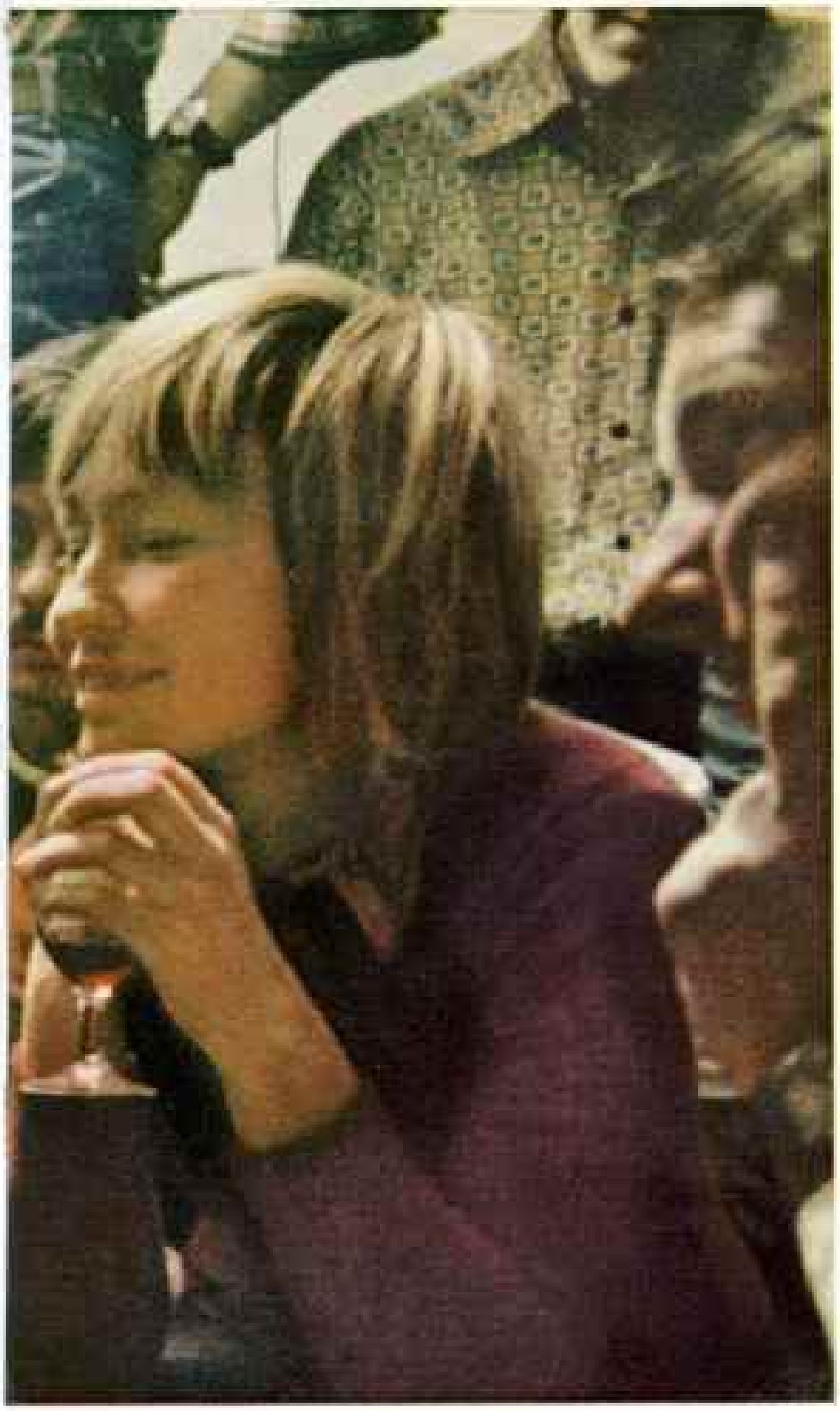
Demmler balances on the narrow tightrope of

disagreed with production goals set by the State Planning Commission?

"We had a disagreement once over sugar beets; we did not want to plant so many because of the frost danger here. We discussed it at the district level, then in Berlin. Afterward, everyone agreed to grow the sugar beets—as a matter of social need."

Shortage of Men Still Affects Nation

Such pressure to produce hits hard in a land burdened not only with poor soil and problematic rainfall but also with a chronic manpower shortage. The shortage began with losses during World War II and was intensified when at least two and a half million East Germans, most of them of working age, fled to the West before the Berlin Wall sealed off escape routes in 1961.



social comment, avoiding what might seem criticism of the state. "I agree with the state," he says. "In theory socialism is good, but in practice there are certain problems, certain wrinkles—just little everyday things that happen to people—and it's these I sing about."

Today the population has more women than men and a zero growth rate. To meet the gap, the Cooperative Bobitz encourages older persons to continue working as long as they feel able, arranges with local schools for teen-agers to help with the harvests, and urges wives to forsake the traditional *Küche, Kinder, und Kirche* (kitchen, children, and church) for truck cabs, machine shops, and the socialist struggle. Day-care centers aid the transition—78 percent of the women aged 15 to 60 work.

I visited one of the cooperative's day-care centers, in an old manor house. There were dolls and teddy bears, children's paintings, and photographs of carnage in Viet Nam. The dozen children had had their morning stroll and finished a lunch of carrot, potato, and sausage soup. They lay on cots while their young nurse, humming a lullaby, drew the curtains across the windows of what had been the landlord's parlor (page 305).

What do the cooperative's farmers think of the changes? I asked Hermann Krull, 71. He wore a peasant's cap and blue jacket; his trousers were tucked in rubber boots. He remembered the old days.

"When I came here in 1919, the Mittendorf family lived in the big house. Each year they went off to some spa, and at harvesttime they always gave a fine party. There was music, dancing, lots of food for everyone. Oh, they were splendid parties!"

Then came the war, the departure of the landlords, the arrival of Russian troops, the land reform. "We peasants became small farmers. I had 7½ hectares [about 18½ acres]." He pointed along the cobblestoned lane: "There—that was my barn, that was my stable. Then the farms were collectivized."

"And life now—is it better?"

"Oh, yes. Much better."

Herr Krull said good-bye, his blue eyes twinkling, and walked off down the lane under the chestnut and linden trees.

In the fishing village of Bodstedt, on the Saaler Bodden near the Baltic Sea, in a setting of thatched-roof houses and old sailing boats, the GDR pursues its molding of society.

I went fishing one day with Klaus Maybauer, Heinz Lange, and the Bauer brothers, Helmut and Heinz. They were rugged and

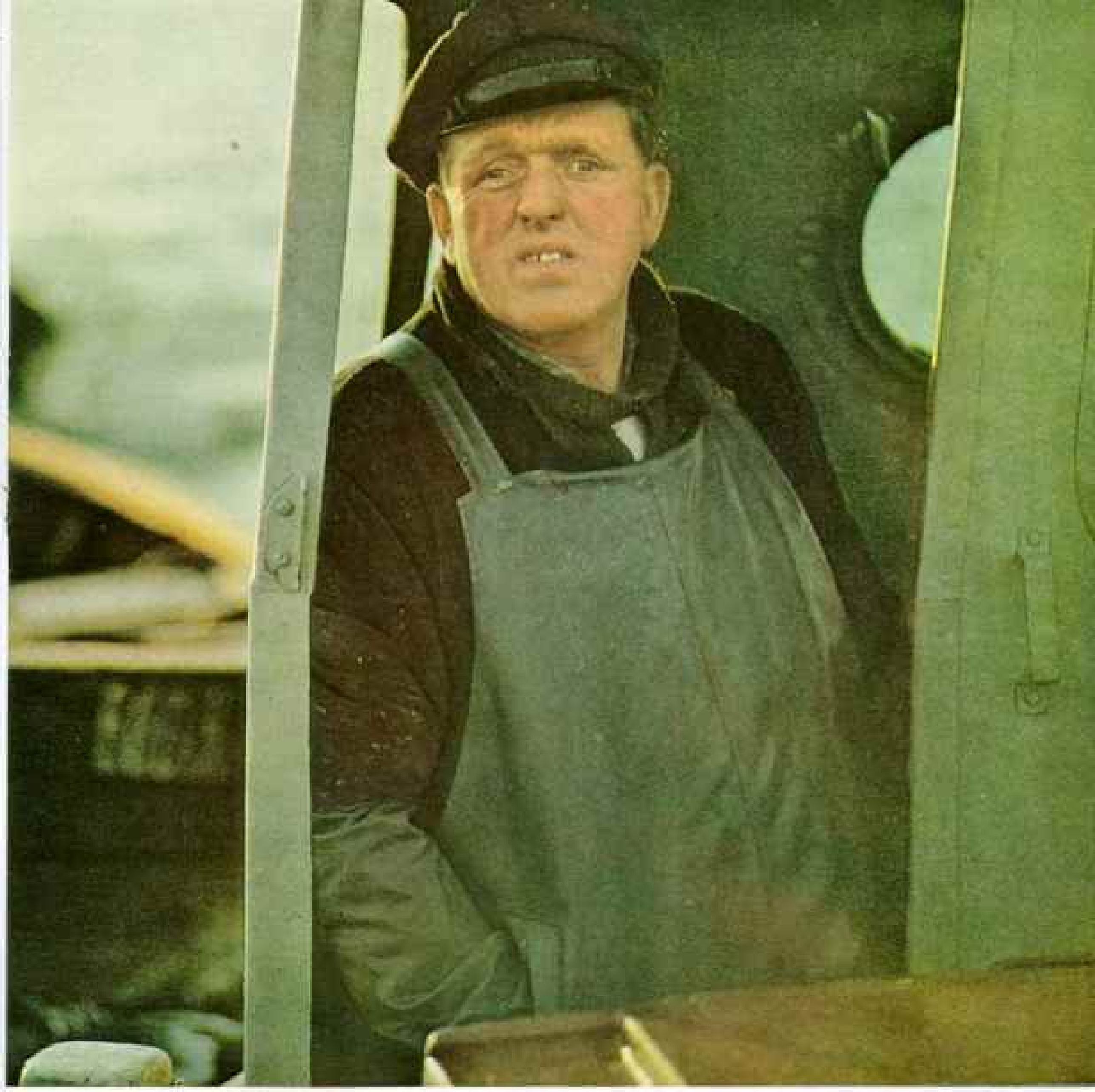
Caught in the net of collectivism, Bodstedt fishermen find their traditional free life yielding ever more to the state. This four-man crew constitutes a tiny cooperative. Under subtle pressure, they may shortly give up their boat and equipment to the state and become fishermen on a salary. Meanwhile, they go out when they choose into the Saaler Bodden, an inland bay on the Baltic coast. From dories they stake out gill nets for carp and pike perch, coming home early if they like (**bottom**) to have a few beers from the day's hard-won profits.

open men, their faces burned red by winds, their fingers thickened from working nets.

We sailed early. "There's an old German proverb," Klaus explained, "'*Morgenstunde hat Gold im Munde*—the morning hour has gold in its mouth.' We follow it."

It was bitter cold, but beautiful. Small forests and dairy farms ran down to the bay, and wild swans rested along the reed banks. By midmorning we had our catch of carp and pike perch and took it to the state fish-buying wharf. The morning hour that day held 75 marks for each of the four men.

It seemed by socialist standards a free-enough life. Some years before, the men had organized themselves into a small Class I



cooperative. They had to sell their catch to the state, but owned their boat and set their own hours. If, after a morning's toil, they chose to spend a few hours over beer, they could. But it was not to continue.

"We're being urged to form a Class II cooperative," Klaus said. "We would then receive a regular salary, but we would have to turn over our boat and gear, and we would then be responsible to the state.

"We're content as we are. But perhaps next spring we'll make the change. Things will not go better for the private sector; in a socialist state, it is on the descending line."

The number of worshipers at Bodstedt's old village church is also on the descending line, but many families still lay their dead to rest in its crowded graveyard. One day a funeral procession came down the lane.

Horses drew the hearse and flower wagon; mourners walked. The coffin was borne by hand to the grave and lowered on stout ropes. It contained the remains of Rosemarie Hanke, mother and shopgirl, dead of leukemia at 25.

The officiator wore a black suit and tie, but was not a minister. He was the director of the worker's club at a ship-equipment factory in nearby Barth. Rosemarie's husband worked there and had asked him to provide a suitable socialist eulogy.

So, in place of the old Lutheran prayers, the family was consoled with these words:


GDR
GDR
33
63

"Her death was all the more tragic because she had youth before her—and also before her was a socially secure future in the workers' and farmers' state. In life as in nature, there is an eternal coming into being, an eternal going. No one can avoid the going."

As I witnessed socialist death, I also witnessed socialist birth. I had gone to the old Hanseatic city of Rostock to see how it had been rebuilt as East Germany's window on the sea. It serves today as home port for the high-seas fishing fleet. Here the catch is processed into frozen fish sticks and meal for livestock feed. Nearby at the Warnow shipyard new vessels slide down the ways at the rate of 125,000 tons a year, many ordered by the U.S.S.R. and other socialist states.

The city's hospital is among the most modern in the GDR. It was here that I met Brigitte Kröplin, 23. She lay in the delivery room, her hands clutched at her mouth. "My belly! My belly! How long will this go on?"

Brigitte had prepared for five months, coming once a week to the hospital for exercises, to practice deep breathing, and view films of natural childbirth. The technique is encouraged in the GDR to cut down on the use of drugs, which state doctors view as harmful to the unborn infant.

Now the pain came again.

"I can't go on like this."

"Many have done this before you," the nurse-midwife replied. "You can go on."

She did.

An hour after the baby was born, I visited Brigitte in a recovery room. She had combed her hair, freshened her face, and tiny Matthias lay beside her (page 313). "I am sorry to have carried on so much," she said. "I wanted to be a brave socialist mother."

"You were," I said, handing her roses.

How good is East German medical care? World Health Organization statistics show that, despite shortages of drugs and other supplies, the infant mortality rate is slightly under that of the U. S., and there are more physicians per capita. All medical and dental costs are paid by state insurance, which costs the worker 10 percent of his earnings—up to a maximum of 60 marks a month.

Hänsel and Gretel, Socialist Style

Tiny Matthias, like other East German children, will learn socialism early, even from his fairy tales. I sat one day in the workers' hall at Blankenburg with 200 kindergarten children, awaiting a performance of *Hänsel and Gretel* arranged by the town's board of culture.

The curtain parted, the hand puppets appeared. The evil stepmother had been replaced by a loving mother who went into the forest to help her woodchopper husband; the children had followed to help them, and became lost. The chief villain now was the landlord, that vestige of capitalism; the meager sum he paid the kindly peasant family caused their hardship.

The children gasped and clapped and thundered out happily afterward. I stayed in the big empty hall to talk to the puppeteers, Georg and Ursula Birk.

Georg said theirs was one of eight private puppet theaters in the GDR; the state operated 11. Periodic refresher courses helped them sharpen performances and educate in a socialist sense. "For instance," Georg said, "here we show kindhearted, industrious parents, caution children to obey their parents, and illustrate how our children have a better life than in fairy tales.

"We also leave out things that are no longer

CLAUS C. MEYER, BLACK STAR (LEFT) AND TONY TRIOLO © 1972 AMERICAN BROADCASTING COMPANIES, INC.

East German gold rush: Happy GDR runners (**left**) flash victory smiles after winning the 1,600-meter women's relay at the 1972 Olympics in Munich. Monika Zehrt of the fleet foursome all but soars (**above**) to earn one of 20 gold medals garnered by East Germany.

valid. Hänsel and Gretel no longer find pearls and precious stones in the witch's house. Our children cannot understand this anymore—pearls and precious stones mean nothing to them. So we have them find a miracle pot, always filled with food."

One thing the Birks hadn't changed. Gretel still pushes the old witch into an oven where she is burned up. "We had to keep that," Ursula said. "The children are always waiting for that scene."

Television Leaps the Wall

As young minds are shaped toward a socialist culture, they are also shaped toward productive work habits. I glimpsed this process at Stassfurt, where the state-run RFT factory produces some 40,000 black-and-white television sets and 10,000 color sets a year. Black-and-white sets sell for 1,600 to 2,100 marks, color for 2,800.

Boys and girls completing the GDR's required ten years of schooling vie for apprenticeships here. The brightest will go on to technical universities to become skilled electronics workers; the less talented receive "suitable jobs" at the factory.

I watched one group repair sets returned for flaws. One serious youth told me that 60 percent of the boys in his brigade had enlisted for three-year hitches as army-officer trainees. "One cannot just take from the state, one must also give something back." The others would serve 18 months as conscripts.

Later I talked with the youngsters in their dorm. Their questions revealed extraordinary concepts of the United States: "Why are people starving in the streets in your country? How did you, as a journalist, personally contribute to ending the killing in Viet Nam?"

Ironically, the TV sets they build and service help overcome the lack of Western books, magazines, and newspapers, officially banned. Even the most dedicated socialist may be tempted to switch from a GDR workers' amateur chorus to a West German telecast of Liza Minnelli belting 'em out.

Weimar Reveres Giants of the Past

I traveled south to Weimar, the old ducal capital that embodies both the best and worst of German history. In the GDR, there is a use for both. Here Duke Karl August of Saxe-Weimar in the late 18th century lured the geniuses (Goethe, Schiller, Herder, and others) who created the golden age of German letters.

The state preserves their memory. Schoolchildren and tourists march incessantly through the old houses, museums, and landmarks of the period. I wondered how those literary titans, creatures of a bourgeois age who are equally revered in West Germany, serve in the new workers' and farmers' state?

At the Institute of German Classical Literature, Professor Dr. Karl-Heinz Hahn said: "True, the period was characterized by the bourgeoisie, but it also saw the laying down of bases on which Marx and Lenin would build. For instance Goethe once wrote, 'We know of no world except that which focuses on the human being, we want no art that does not reflect this emphasis.' Most outstanding! This put humans at the center of things.

"Of course the socialist view has moved on to a higher plane; we consider the human being as a social being. Oh, we are far from taking Goethe as a socialist, but the sun did not arise from nothing."

Memorial to a Time of Evil

Neither did the Buchenwald concentration camp just outside the city. Built in 1937 by the Nazis, it serves today as a national memorial. Some 56,000 perished here—Communists and other political prisoners first, then Russians, Poles, and other conquered peoples, many Jews among them.

Little remains. The gate with its infamous legend, "*Jedem das Seine*—To each his own"; a part of a factory, the cremation ovens, and several lampshades made of human skin. It is enough to provide an enduring lesson in man's capacity for evil.

The GDR, through picture displays and lectures, preaches another dogma: That only in a capitalist society could such horrors flourish, that many Nazis later found refuge in West Germany, and that "such things could not happen in our socialist state."

In Weimar I met Dr. Klaus Magdlung, a teacher of English at a local school. He confided that he was celebrating two events.

First, he had just taken delivery of his new Zhiguli, a Fiat-like car built in Russia. He had waited three years for it, and paid 19,800 marks—almost $8,000.

Second, his family was having a reunion to celebrate the fiftieth wedding anniversary of his wife's parents. A sister-in-law was coming from West Germany, another from the United States. They had come together twice before. "It is a warm and pleasant

Birth of a socialist citizen: Brief agony (**above**) precedes longtime joy (**below**) as engineer Brigitte Kröplin gives birth to a son, Matthias, in a Rostock hospital. Though the most sophisticated equipment is at hand, no anesthesia is used unless necessary —natural childbirth being considered more healthful for the child and mother alike. Eager for a bigger population, East Germany's government encourages large families.

thing, but we have one rule—we never discuss politics. It's better that way." I might join them the next day if I wished.

We met in the town church, which holds tombs of ducal nobility and a great Lucas Cranach altar painting. The old couple sat in the front row, their daughters shoulder to shoulder beside them. The minister thanked God for the kindnesses shown to the couple in the past, and prayed that He would now "guide them in their old days, make them strong in their miseries, and make them come into the realm of heaven with pleasure."

We moved from the church to a hotel banquet room. There was much laughter, hugging, the presenting of gifts (flowers, brandy, cans of coffee), and many toasts.

The family then moved to a private home, talking and remembering long into the night. For the moment, the Wall did not exist.

The GDR, eager for hard Western currency, extracts a toll for such reunions. West Germans in the GDR now must exchange and spend 20 marks per person a day—a deep bite for many. This past Christmas the number of West German visitors declined sharply from 1972 holiday figures.

Athletes Prove Elusive to Interview

From Weimar I swung west along the GDR's tourist circuit: to Erfurt, with its great cathedral and a river bridge encrusted with fine shops, like Florence's Ponte Vecchio; to Eisenach, where Luther translated the New Testament from Greek into New High German, establishing that language and fragmenting Christendom; and to Oberhof, East Germany's largest winter-sports resort.

The lodge is owned by the state trade union. Groups of workers arrive by bus on free or largely subsidized holidays. Here they learn the art of *Eisstockschiessen* (ice stick shooting, similar to curling), hike the snow trails, and sit drinking beer while an oompah band tootles old German tunes.

A ski-jumping meet among East-bloc countries was underway. I joined East German sportswriters below the jump. "Those Bulgarians, they can't ski," one said as a hapless athlete tumbled end over end. Then, "Those Hungarians, they always make the sign of the Cross before jumping, but it does them no good." It didn't.

The GDR aces, young hawk-nosed men in bright blue suits and gleaming helmets, won. They were rewarded with applause,

An honest day's work means a hard

flattering comments, backslaps, arm squeezes.

Despite the GDR's enormous pride in its athletes, who swept 20 gold medals in the 1972 Summer Olympics, I was unable to talk with any. Once I was told that the team was visiting in Cuba, another time that they were busy with their studies and duties. At Oberhof I rushed to arrange to talk with the ski jumpers before my eyes. Not possible. They had to return to their duties.

I could talk with the one-man-sledders, one official told me, and an appointment was made. When I arrived, they had vanished.

evening's scrubbing for soot-bearded, stovepipe-hatted chimney sweeps in Halle.

The iced metal run, over which I had watched them rocket downhill at speeds up to 85 miles an hour, was now silent.

In any case, my best view of the GDR's impressive sports-development program came at a competition between schools in a small town. The youngsters assembled, shouted "*Sportsfrei! Sportsfrei!*"—and raced down a street marked into six lanes. Their jaws were set, their eyes intent. Little wonder: such roads may lead to stardom, even a winter's sojourn in Cuba.

From sports I turned to entertainment. The state encourages a "healthy cultural life for every worker." It heavily subsidizes theaters and concert halls. Factories, hospitals, and farms organize group attendance.

At Leipzig, the old trading center where the GDR holds its twice-a-year international trade fairs, I joined a worker group at the cabaret Die Pfeffermühle (The Peppermill). The show, "To Fit In," was lively, fast-paced, full of double entendre and irony.

One actor began to criticize the local construction industry. "Shhhh," another cautioned, "otherwise you will have to go to jail

for three days." "Only that?" the first replied. "I thought I would have to spend three years in that new high-rise apartment on Wintergartenstrasse!"

The audience roared.

Such barbs have their limits; the state sets the guidelines. The actors told me, "We do not criticize the system, only individual failings within it."

Were they ever closed down?

"Only once, eight years ago. They were right to do so. The show—we called it "Let's Be Honest"—demonstrated a wrong attitude on our part. A too-subjective view.

"We set out to satirize the number of patriotic posters in our city. There were posters on every house! But through our lack of knowledge, we seemed to be satirizing the content of the posters. The content was correct, and should not have been satirized."

To avoid such errors, the players now check scripts with the institutions they are satirizing. Thus the landscape of humor and of the arts, too, is shaped.

At nearby Merseburg I spent a pleasant evening in a student tavern, listening to Kurt Demmler, a young physician and successful *Liedermacher* (folk singer). He sang of life and young love; he too, I learned, had experienced difficulties in the past (page 306).

"Some thought my songs were anti-Communist. It wasn't the time; five years ago our political life was less open. I wasn't grown up enough. I hadn't thought enough about our problems. Friends and party members came to me saying, 'You are not right in your texts.' Slowly I learned they were right.

"The problem was that I didn't care what the public felt about my songs, only about what I wanted to say. I was too subjective. Now I have changed myself 180 degrees."

City Risen From Its Rubble

Dresden was long known as "The Florence of the North" because of its lovely location on the Elbe, its Renaissance buildings, and its art. Then a devastating bombing raid by British and U. S. planes in 1945 destroyed its center. Part of the old city has been restored (page 321). Elsewhere rises a socialist cityscape—great plaza, fountain, all rimmed by tall buildings. And it serves today as a center for the electronic and computer industries, as well as an art center.

I joined Dresdeners memorializing the 28th anniversary of that raid. A long column of official mourners filed by a monument marking the mass grave of thousands of victims. Some older, private mourners stood apart, handkerchiefs at their eyes. It was a time to remember the past. A tape-recorded poem boomed over a loudspeaker. *"When you forget those times, you will be forgotten yourselves. . . . There were many casualties, but we knew we had to get up."* But it was also a time to sell GDR citizens on the present. *"Be conscious of the power; the power is now in your hands; never give it away from your hands again."* And, *"These are the best of times; the stars are now nearest earth."*

"They Have Lost Their Values"

What do East Germans, subject to such a continuing barrage of propaganda, think of their "cousins" in West Germany now?

I often received similar answers: "I couldn't live over there. They are money mad, have lost their values." A farm manager, among several hundred East Germans rewarded with a trip to Munich for the 1972 Olympics, said, "I was shocked at the youth, their long hair, the lack of a sense of direction."

And how does the West German view his Communist *Landsmann*? To find out, I journeyed to West Germany and a series of villages along the border. A ten-foot-high steel-mesh fence traces a dark and ugly line across fields and forests (pages 328-9). The mesh is sharp enough to slash anyone who tries to climb it; concrete posts hold anti-personnel mines set to explode at a touch. Along the fence are an antivehicular ditch, armed guards, and tall watchtowers.

The purpose of the fence, built by the GDR, is clear: To keep people in. The mines are strung on the inside.

I asked the West German villagers about that fence. "It's not pretty, not pretty." I asked if they ever talked with people across the fence. "No," one girl said. "This summer

Chips off another block, some 70,000 Sorbs, or Wends—last remnant in East Germany of Slavic tribes that migrated into the region more than a thousand years ago—add human variety to a Germanic population notably lacking in sizable ethnic minorities. Here, in the town of Hoyerswerda, Sunday church bells and age-old faith summon Sorbs to prayer.

my mother saw an old friend on the other side. She had not seen that woman for years; she called to her. The other did not speak. Police were watching from the towers."

I asked an older man the chances of the two Germanies someday reuniting. "*Schlecht!* No good! That place will not be the same; their young know nothing of us."

A young nurse piped up. "The situation should be left alone; it is OK as it is. Let them go their way."

Some had visited relatives across the border. "It was not pleasant there—I was not comfortable. One does not talk freely outside the house."

A teen-age girl said of her cousins, "They march and sing a lot; they are very political."

The two societies grow further apart; even in the West the talk of reunification has faded. Still, as the two Germanies pursue their separate ways, they are bound by more than blood, language, history, and Goethe.

After the U.S.S.R., West Germany is the GDR's leading trading partner. Last year they exchanged more than five and a half billion marks in goods. The arrangement favors the East Germans economically. As in the case of family reunions, hard Western currency is a tie that binds.

East Builds a New Industrial Base

Ironically, even the cruel steel mesh that divides the two also unites them in a way. The section of the fence along here was manufactured in West Germany to East German specifications.

Vroom!...Screech!...Bam!...Ouch! Mayhem by motorcycle rules the field during a game of "motorball" outside Dresden. Part soccer, part stunt cycling, the rip-snorting sport has become a craze in Eastern Europe and the Soviet Union. Two teams of five cyclists each contend on a regulation-size soccer field, trying to butt, kick, knock, or otherwise clobber an extra-large soccer ball into the opponent's goal. A standby medic gives one upended player (**below**) first aid for his wounds and words of consolation for his ego.

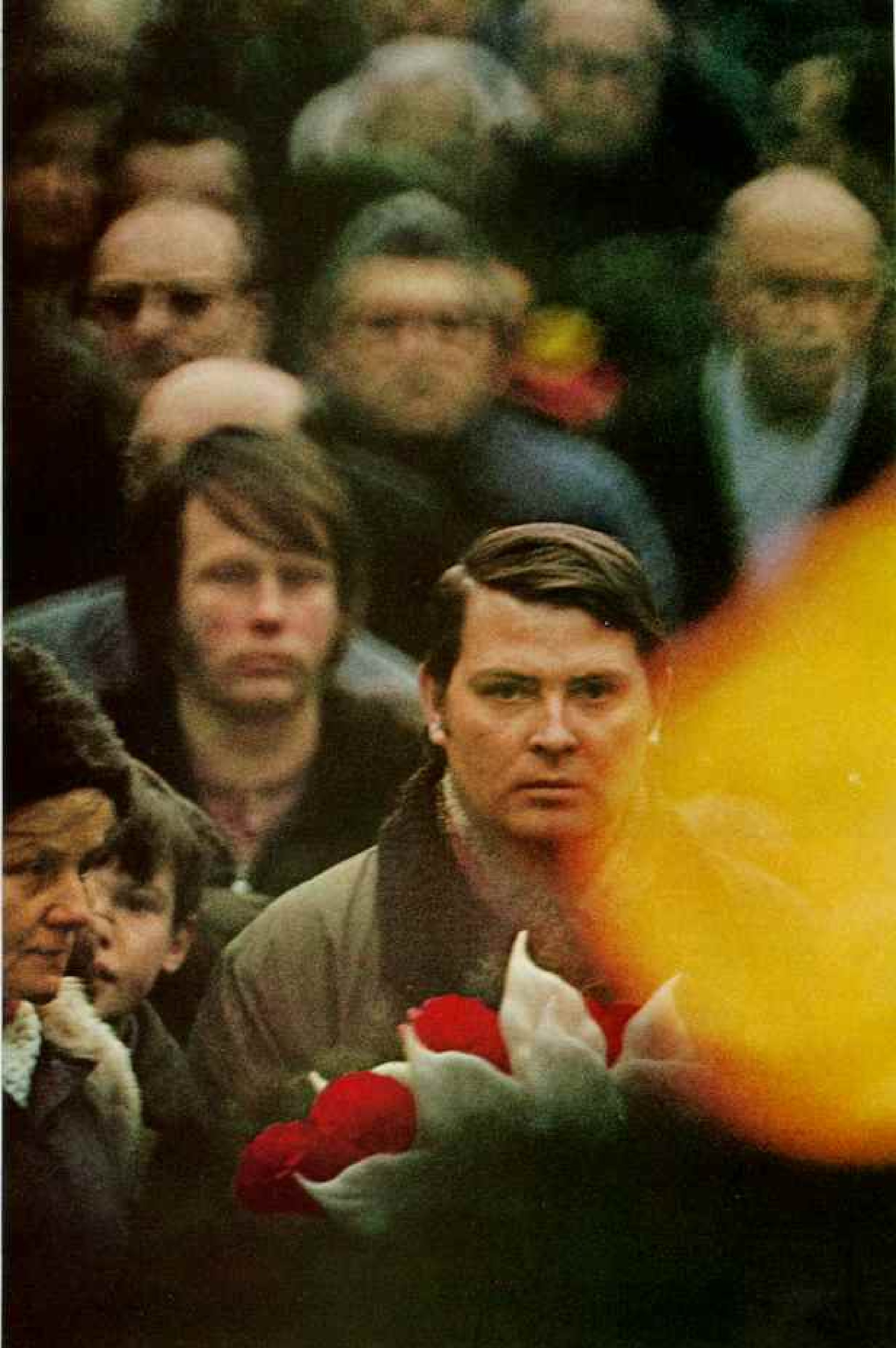
The East-West trade is substantial, but does not explain the GDR's economic gains. East Germany faced formidable problems in building an industry. The partition of Germany left the great industrial centers and coal and iron resources in the West. The East held less industry and more farmland; its chief raw material was lignite, an inferior brown coal. And while the Marshall Plan helped West German industry rebuild, the Soviet occupiers of the East packed off whole factories, claimed ownership of many of those left behind, and demanded other reparations.

In the early years, GDR industry floundered in socialist red tape, and many of its experienced managers and brightest young people fled to the West. Now the East Germans boast of their own *Wirtschaftswunder*—economic miracle—based on importing raw materials, manufacturing products efficiently, and exporting them not only to the socialist nations but also to the world. How did it come about? I got varying answers.

At the open-pit mines of Elektrochemische Kombinat Bitterfeld near Leipzig, where huge chain shovels bite into the brown coal around the clock (pages 326-7), I learned that Marx's old motto—"From each according to his ability, to each according to his need"—has been modified by the GDR. Now it ends "to each *according to his performance.*"

As one official explained, "We believe the superior worker should be rewarded."

Average workers receive 550 to 800 marks ($220-$320) a month; good performance can earn a year-end bonus of an extra month's pay.



DEUTSCHE FOTOTHEK DRESDEN

"**Who has forgotten how to weep** learns it again at the destruction of Dresden," lamented German dramatist Gerhart Hauptmann, who witnessed the Anglo-American bombing of the Saxon capital in February 1945. At ceremonies on the anniversary of the holocaust, mourners (**left**) stand before an eternal flame that burns at the mass grave of many of the 25,000 victims of the raid.

The attack, aimed at Dresden's transportation hub and industrial targets, shattered the city center and left it in ruins (**above**). View today from atop City Hall (**below**) looks out on the rebuilt inner city. Spire of the now-restored Church of the Cross stands at left of center in both pictures.

I was told that party discipline and leadership played a decisive role. "The party is the engine of the plant, the cleanest, the most progressive element." Here, as at every plant, a party boss sits at the manager's right hand, workers are urged to join the party cadre, and medals reward outstanding performance.

And, of course, there is no labor strife. When I inquired at one plant when the last strike had occurred, there was laughter. "In 1932," one worker said—the year before Hitler came to power. "But why should we strike?" an earnest young comrade added quickly. "Now we work for ourselves."

But perhaps there is another, more important reason for the GDR's progress: The traditional German penchant for hard work.

Problems remain. The labor shortage, environmental concerns, and—as in every industrialized country—an energy shortage. The latter may not be as severe as in some nations, however. The GDR draws 80 percent of its petroleum from the U.S.S.R., and husbands that supply by using it mainly in the petrochemical industry. Energy for heating, electricity, and industry comes from lignite, or from natural gas piped in from Russia.

The relationship between East Germany and the Soviet Union is everywhere proclaimed on huge red banners: "*Sowjetische-DDR Freundschaft*—Soviet-GDR Friendship." The slogan is repeated so often that a visitor may wonder if they protest too much.

But signs of the 20 Soviet divisions in East

"**A healthy cultural life** for all workers" is guaranteed by the state, which subsidizes the arts on a mass scale. At Weimar's Franz Liszt College of Music (**left**), a student practices for a competition beneath a portrait of the school's namesake master, one of a galaxy of literary and musical immortals—Goethe, Schiller, Nietzsche, Liszt, Bach, Richard Strauss—who lived and worked in the Thuringian capital. In Leipzig, another East German cultural hub, hallowed harmonies of the baroque period pour from the silver-throated boys' choir (**below**) of St. Thomas Church, where Bach himself once served as choirmaster.

Germany are less common. Now and then a military convoy; here and there a camp, encircled by a high wooden fence.

Many Western observers believe that the Russian presence is the decisive factor about East Germany. The Soviet Ambassador, these observers say, serves as a proconsul.

I cannot measure such ideas. But I do know that on both sides of the border fence stand thousands of tanks and hundreds of thousands of soldiers, many on 30-minute alert. Middle Europe remains structured (to paraphrase Bismarck) by "blood and steel."

In East Germany all roads lead to *Berlin, Hauptstadt der DDR*—Berlin, Capital of the GDR. Name and slogan on road signs, maps, and in literature impress, through repetition, the idea that Berlin's true role today is as the capital of the workers' and farmers' state. West Berlin, by implication, is only an odd vestige of World War II, a canker in the body of the socialist state, eventually to be rejected.

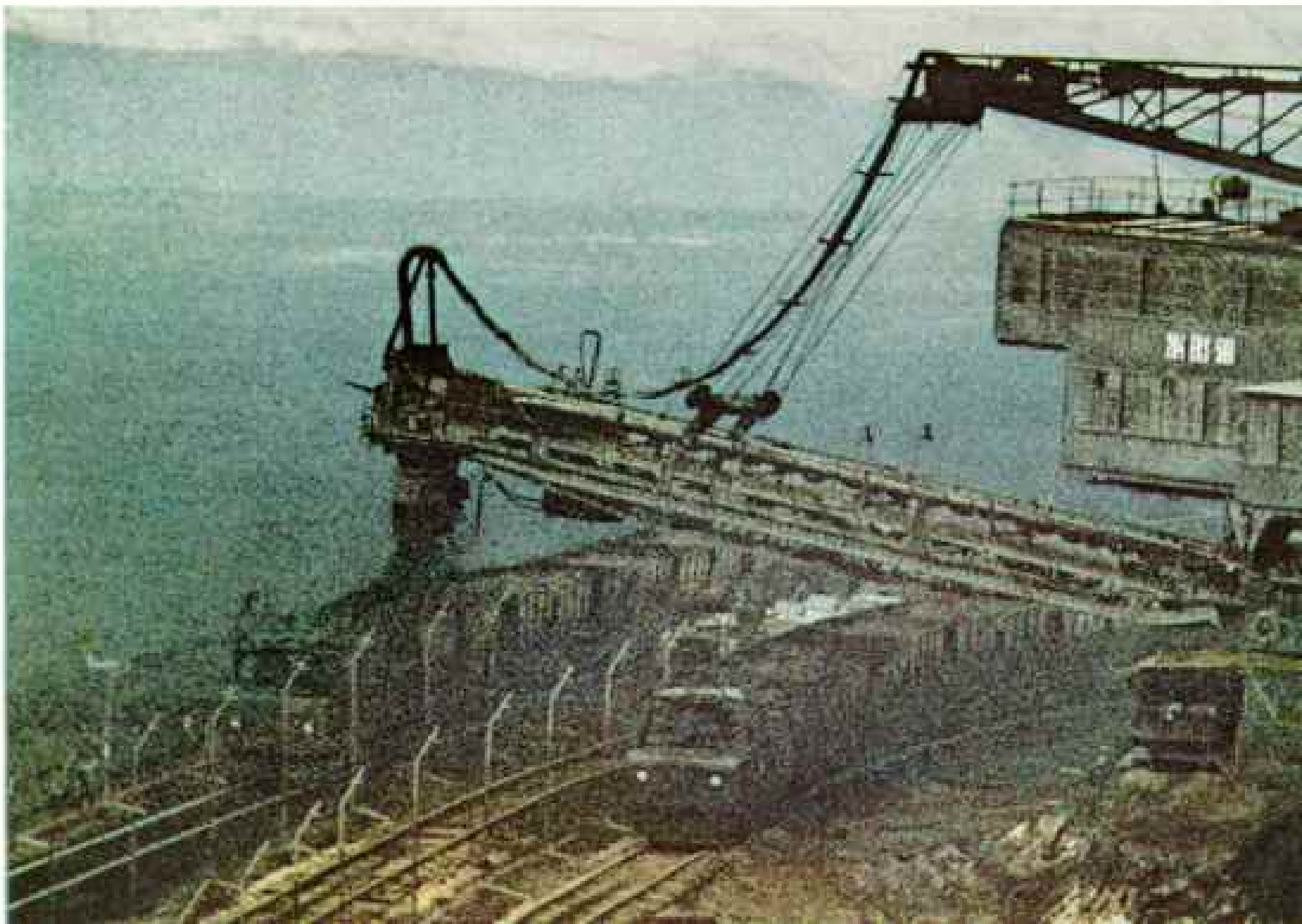
The old comparison between the glitter of West Berlin and the drabness of East Berlin remains valid, but is growing less so.* New shops, restaurants, and buildings furbish the image of the capital. And young people from the provinces flow in like Iowans to New York, in search of jobs and excitement.

There is much to see, much to do, and waiters in crowded restaurants give preference to foreign guests. Yet for the Western traveler,

*See "Berlin, on Both Sides of the Wall," by Howard Sochurek, GEOGRAPHIC, January 1970.

Morning shadows peel back from the quiet main street

of Stolberg, a resort town in the mist-washed Harz mountains.



without official introductions or companions, the Hauptstadt may seem a cold city. He may at times feel like a man condemned to ride the S-Bahn in perpetuity. Scenes flash by the window, snatches of conversation are overheard, but one remains a passing stranger.

One official introduction led me to the House of Young Talents, where Free German Youth groups were practicing for a television show. The hall was packed with the blue shirts and gold shoulder patches of the state organization. The youngsters sang, to the tune of "The Battle Hymn of the Republic," "America was revealed by Viet Nam, the war is over but our solidarity goes marching on."

City Reveals Many Sides

Better to share tables in the *Weinstuben* and cafés. Here came the university students, attractive, well dressed, discussing their examinations, the teachers they love and the teachers they hate, politics, and who is sleeping with whom. *Arbeiter* (workers), into their third bottle of wine, grumbled about Western visitors: "They think we have nothing; well, we have a lot, only not so showy."

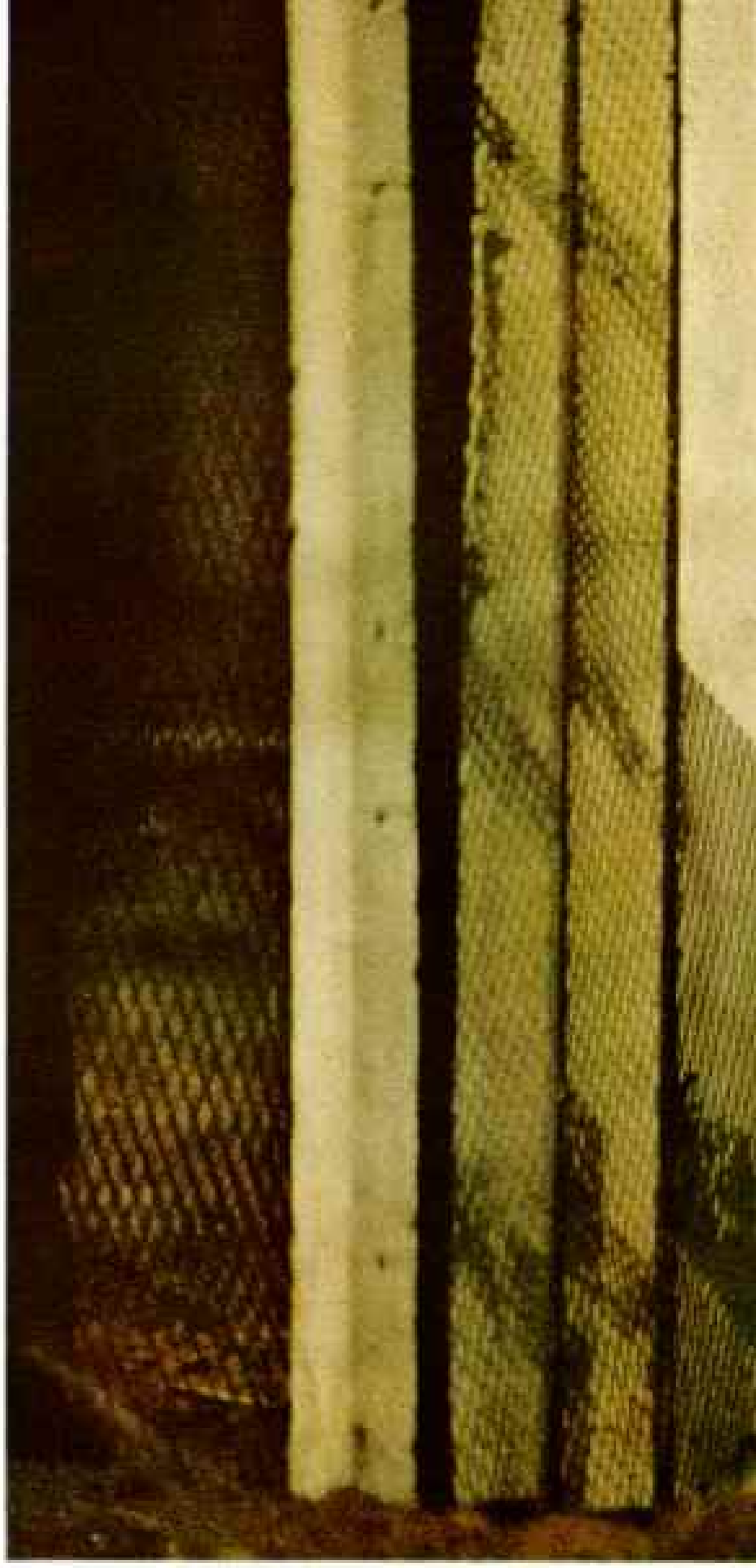
The streets have their tales too—troops of Soviet tourists, many of the women stout and in shawls; quiet young Polish couples on a shopping spree; West Germans in big Mercedes cars; Greek and Turkish workers from West Berlin, stretching their money with Saturday nights and girl friends in the lower-priced Hauptstadt.

I visited East Berlin's cultural landmarks —the Komische Oper, the Deutsche Staatsoper, and the Berliner Ensemble founded by Bertolt Brecht. But I was more interested in places where young people went.

I had learned by now that the GDR prizes its youth like the first crop from a new and improved seed. Hard-liners worry about the impact of West German television, the new

Toilers in a grudging land, East Germans overcome their country's lack of most natural resources with sheer hard work. Dresden factory workers (**above**), relaxing after a long day's labor, are vital to an economy that runs by transforming raw imports into finished exports. Lignite, or brown coal—here being strip-mined near Leipzig (**left**) —is the GDR's chief mineral resource, providing desperately needed energy to fuel the nation's economic boom.

The Wall: a fact of life . . . and death. Symbol of the division of the German soul, the barrier erected to stanch the flow of escapees from East to West not only divides Berlin but also runs 860 miles along the West German border. Beside the "unclimbable" mesh (**right**) lies a death field of land mines, attack dogs, and self-triggering shotguns. At a subway checkpoint in East Berlin (**below**), two sisters say good-bye—one returning to West Berlin after a visit, the other remaining behind in that other world east of the Wall.



Western embassies, and growing numbers of visitors. "We must be careful, we must be careful," they say. Others urge, "We must trust them; they are the future."

The Free German Youth, with their blue shirts and political songs, represent one aspect of that youth, but there is another.

I glimpsed it one night in the Kammerspiele, the small theater founded in 1906 by Max Reinhardt for experimental works. There I met Ulrich Plenzdorf, 38, with frizzy hair and a leather jacket. His *The New Sufferings of Young W.* had drawn young sellout crowds for months; the title recalls one of Goethe's most famous works, and the play itself forsakes strong propaganda elements and concentrates on a purely human problem.

The hero is a dropout; a failure at school, work, and love. He goes to live alone in a shack, sings a hymn to one youthful symbol of freedom ("Oh, Bluejeans, Yeah!"), and dies —by accident or suicide—while trying to invent an impossible machine.

The message? Ulli said, "People should not try to force young people into molds before they are ready, before they know what they want to do. Youth must have time."

His equally popular film, *Paul and Paula*, depicts an equally human dilemma, a tragic love affair. "It is impossible to see all things in life; he who sees all things is not a human being." Such ideas may seem tame to those

in the West, but are bold for the GDR. For the moment, at least, Ulli's success is established, but some have attacked his works as "not representative"; the critics prefer the constant, positive affirmation of life in the socialist state behind the Wall.

The Wall "Was Necessary"

If the Wall stands for the West as a symbol of oppression, for the GDR it stands as a monument to success. Only after it was built did East Germans settle down to make the best of things. "It was necessary," I had been told more than once.

I departed East Germany through the Wall, at Checkpoint Charlie.

As I waited for the border guards in their jackboots and pistol belts to roll a mirror under my car, raise the hood and trunk, lift the seats and probe beneath, I thought about those I had met on my travels: the journalists, the fishermen, the farmers, the puppeteers, the folk singer, the playwright, and the others.

What does the future hold for them? No one can say. As to the German past, too much is known. For the moment, no armies are marching, I know of no knocks on the door in the middle of the night. There is food, there are jobs. For many on both sides of the Wall, that is enough.

"Gute Nacht," the guard said and waved me on toward West Berlin. □

Twilight of the Arab Dhow

ARTICLE AND PHOTOGRAPHS BY
MARION KAPLAN

MY GOAT AND I huddle amid my baggage on the wharf in Kuwait's old dhow harbor. We are waiting to board a small dhow named *Aziz* and sail to Dubai, the first leg in a 4,000-mile voyage to Africa along the world's oldest commercial sailing route.

We arrived at nine o'clock in the morning, as the dhow's *nakhoda*—captain—had instructed. Now it is afternoon, the December sun is hot, small boats come and go, dockworkers stare at me. There is no sign of *Aziz*.

She has gone for more cargo to the big port of Al Shuwaikh, a few miles away, says Ahmed Jassim, the captain, who makes occasional appearances. She is to carry electrical equipment, air conditioners, refrigerators, stoves, heavy-duty tires, and someone's automobile.

Since he originally told me that *Aziz* would sail five days

Like a sultan on his throne, Capt. Ahmed Jassim keeps watch aboard the dhow *Aziz* (**left**). Water pipe and cloth-covered radio keep

him company. Smoke from oil-well flares—symbols of the new Arabia—flags the sky.

Dhowlike craft have plied Arab seas for more than 2,000 years, but now the great lateen sail gives way to the diesel. Lone woman in an all-male crew, the author shared their ship, food, and camaraderie on a five-month voyage from Kuwait to East Africa.

earlier, a few hours hardly matter. I compose myself and go to find milk for my bleating companion. The little goat is, I realize, a dreadful mistake. She is too small, too winsome, and clearly misses her mother.

The sailors, Ahmed Jassim had said a little bashfully when we arranged my passage, thought that a single woman on board could prove unlucky. Would I bring a chicken or a female goat to assuage their fears? Eager to be popular, I agreed willingly—but quite missed the point. The gift of a big male beast with plenty of meat on him would have made my shipmates vastly more contented.

Hours later, the call comes. *Aziz* has arrived. "*Taali, Mariam*—Come, Marion," says Ahmed Jassim, whose black-robed figure appears from a port office. "We are leaving."

All now is rush. Ahmed Jassim leaps on board. The sailors reach down for me, my baggage, and the goat, which disappears behind a pile of crates. Within moments we weigh anchor and depart.

Crossing the Seas of Sindbad

For more than two thousand years Arab craft, their sails like scimitars, have coursed these Indian Ocean waters of Sindbad the Sailor, of pirates, slavers, and traders in gold and ivory. Now, sadly, the vessels are being pushed off their ancient trading routes by the age of technology.

As a photojournalist, I wanted to travel with them before they sailed into oblivion. It was a project that seemed to alarm many otherwise helpful and kind Kuwaitis.

"Do you realize," inquired Najib Abdul-Karim, who heads the cinema section of Kuwait's television station, "that there are sailors who have never seen even the finger of a woman? Why don't you fly?"

He exaggerated, of course, but I knew I was entering a masculine world—understandably, in view of its Moslem culture. In Africa, where I have worked and traveled widely for years, most people's shock at the presence of a single, venturesome Englishwoman is less marked. Now, in this unfamiliar Arab world, men stared in amusement as I walked along the waterfront admiring the dhows. Their own women stayed at home or went out carefully veiled.

I watched carpenters working with saw and adz and bow drill on teak timbers from India for new Persian Gulf craft (page 346). These were the tools used to build the great dhows of the past. Yet every hull now would contain an engine. For the people who build and sail these ships, the word "dhow" does not apply. Instead, there are various types of sailing vessels entered in the Arab port books as *lanch*, which derives from "launch."

One of the biggest and most seaworthy is the *boom*, a double-ender with great extended stempost and yoked rudder; my *Aziz* is an abbreviated version. The *sambuk* has a flat transom. So has the Indian *kotia*, which, like the *dhangi*, affects a paint-striped hull. Lovely galleonlike craft such as the *ghanjahs* with their elaborately carved sterns are still occasionally seen. The huge *baggala*, similar to the ghanjah, is near extinction.

All Smoke the Same Water Pipe

Aziz was a plump little ship, a 94-ton double-ender with a 70-foot-long deck. She had a short poop, a little wheelhouse, and a tall raked mast. Her yard, three spars lashed together, ran nearly the length of the ship. Her teak hull shone with shark oil, high-smelling stuff. Her long nose stretched forward proudly from the cutwater. On it was a jack staff tipped with a model airplane. Another imported motif was painted on a strake: a rocket lifting off for outer space.

Aziz—which means "dear"—had a 130-horsepower diesel in her hold, surrounded by green paneling inscribed with Koranic texts. Her crew numbered ten. Ahmed Jassim, the nakhoda, was youngest, but always master (preceding page). He was handsome and dashing in contrast to his nine seamen, a motley lot in ragged clothes, unshaven, broken-toothed, cross-eyed, in one case a little simple. In fact, the relationship between the shipmaster and his men was always harmonious. They obeyed his orders instantly, and all shared food, tea, and the ever-circulating *hookah*—water pipe—on equal terms.

We set out under power as night darkened the pale-green water. Red-lit buoys, thrusting poles, and tanker wharves illuminated like Christmas trees marked our way. *Aziz* herself was safely lit. An electric light bulb was fixed to the airplane on the stemhead and another to our flagstaff aft. Red and green lights glowed port and starboard. With glitter everywhere, I missed seeing a vast tanker until its black hulk bore down on us.

Ahmed Jassim had missed nothing. His orders had already gone out: to engineer Khalil to speed up a touch; to Ali Mehinna,

KUWAIT

IRAN

PAKISTAN

INDIA

Kuwait

Kangan

Musandam Peninsula

Persian Gulf

Khor Fakkan

Sharja

Dubai

Gulf of Oman

Arabian Sea

Muscat

Sur

QATAR

Abu Dhabi

The Aziz carried Marion Kaplan on the first leg of her odyssey, from Kuwait to Dubai

The oceangoing boom Mihandoust took the author the 3,590 miles from Dubai to Mombasa and the Rufiji River

SAUDI ARABIA

OMAN

DHOFAR

Salalah

YEMEN (ADEN)

YEMEN (SANA)

Socotra

Red Sea

Gulf of Aden

Aden

Djibouti

SOMALIA

ETHIOPIA

500

STATUTE MILES

PAINTING BY RICHARD SCHLECHT

Mogadishu

KENYA

Indian Ocean

Lamu

Mombasa

Pemba Island

Dar es Salaam

Zanzibar Island

TANZANIA

Mafia Island

Rufiji River

Tuned to monsoon winds, dhows have sailed south in November and returned in April since before memory. The large square-stern vessels recall Portuguese galleons.

SAMBUK, once the most common of Arab dhows, has ferried generations of Moslem pilgrims from Africa toward Mecca

BOOM, built in Kuwait and considered the most seaworthy Arab vessel, features a double-ended design

BAGGALA, largest of the dhows, nears extinction. The Sur-built craft once brought ivory and slaves north from Africa

LAMU DHOW, workhorse of the African coast, wears coconut matting above the rails to keep spray from crew and cargo in rough seas

GHANJAH, also fast disappearing, roams the Indo-Arab region, taking dates to Bombay and returning to Oman with Indian timber

at the wheel, to turn off a spoke; and to one-eyed Ali Hassan, his personal attendant, to bring more embers for the water pipe.

Next day the great lateen sail appeared from its bag, was quickly bent to the yard and, amid rhythmic chanting, hoisted aloft. Its huge triangle provided instant shade on a cloudless day marred only by a thick black smear of smoke from Saudi Arabian oil wells.

After breakfast—unleavened bread called *khubz* and sweet tea served in tiny glasses—we sat and relaxed, and I became better acquainted with my shipmates. All the men, I learned, were Iranians from Kangan, although *Aziz* was a Kuwaiti-registered ship built five years earlier in Qatar. Yes, said the nakhoda, the sailors got on well with each other. The only temperament tolerated belonged to the cook, Abdul-Hussein, who also was the ship's folk singer.

There was plenty of alternative entertainment. How strange is my world today, I reflected, sitting with men garbed in headcloths and robes. There we were, perched high on crated air conditioners and refrigerators, searching shortwave radio bands for Arabic music, or listening to cassette tape recorders while the never-ending sunsets of oil flares burned on distant shores and the timeless lateen sail gusted overhead.

The four-day voyage to Abu Dhabi, where we were to off-load much of our cargo, ran smoothly. At the wheel, grizzled Ali Mehinna peered shortsightedly at the compass, sharing the helm only with Hassan, who doubled as *serang*, or boatswain.

At night I slept, or dozed, on the wheelhouse shelf, where the helmsman sat. There was no room to stretch out. I never knew where, amid all the boxes jammed on deck, everyone else slept.

We ate at 7 o'clock, 11:30, and 5 in the afternoon. Khubz and tea began the day. The other meals consisted of rice and a spicy stew, eaten with the right hand in good Moslem fashion. Sticky dates were laid on two eating mats with the platters and bowls of food.

After every meal, and at frequent intervals between meals, came black sweet tea and the water pipe. I found the smell of the coarse tobacco pleasantly pungent and the gurgling of the water in the bowl soothing. But I declined—as a nonsmoker—a turn at the pipe.

Captain Can Afford Two Wives

One day Ahmed Jassim brought out from the bulging breast pocket of his long *dishdasha*, or gown, his ship's manifest and other papers. Talking about weights and tonnages led to more personal statistics.

"He has three wives," said one of the men, nodding toward our 27-year-old nakhoda. It was unlikely that any of the sailors would ever be able to afford more than one wife.

"No, I have two now," said Ahmed Jassim, correcting him. "One in Kangan—her name

Hand of responsibility guides the *Aziz* on orders of the captain. Of the ten-man crew, only Ali Mehinna (**left**) and the boatswain share helm duty.

During the second half of her voyage, aboard *Mihandust*, the author suddenly found herself at the wheel. When a fishing line astern began dancing with a catch, the helmsman told Miss Kaplan to take over, and dashed to grab the line. "By the time the crew noticed the new hand at the helm," reports Miss Kaplan, "I had improved on the first reckless turns and, spoke in hand, was looking nonchalant."

is Mariam, like yours. And one in Qatar, where my brother runs our business. The first wife"—with a dismissive wave of the hand—"I divorced long ago."

"And how many children do you have?" I asked him. "Seven," he said.

We arrived late one afternoon in Abu Dhabi, and spent a week there—much of the time trying to collect the money for our cargo. Evenings we sat around a tray of embers on the deck; tarpaulin drapes made it cozy. Tea was poured, the water pipe passed round.

What kind, always considerate men these sailors were. I had at first thought them a band of rogues. Yet they always gave me the choicest dates and fish, the first glass of hot tea, a cushion to sit on, and the only warm place to sleep on the chill winter nights.

We parted company after the last cargo had been discharged in Sharja and Dubai. This time, in gratitude, I gave them the largest goat I could find—bringing the poor thing in the trunk of a taxi.

In Dubai I counted more than 200 dhows along the *khor*, a creek that forms the dhow port—an Arab "Grand Canal" as busy and enthralling to me as Venice's (page 337). There Ahmed Jassim introduced me to Issa Abdullah, nakhoda of the Mombasa-bound boom *Mihandust*. Issa had a bony, hollowed-out face and seemed a dour man. He was reluctant to take me as a passenger. A letter of introduction I carried, by chance from and to agents he worked with, helped change his mind. "Clearly it is God's will," said Issa, speaking Swahili, "that I should take you."

All the dhow sailors who call each year at East African ports speak Swahili, the major tongue of the area. They also know Arabic and Urdu. The Iranians' first language is Persian. As time went by, my own Swahili improved and I learned a little Persian.

New Voyage Requires a New Goat

Mihandust—a Persian phrase, the sailors said, for "I want my homeland"—was a much bigger vessel than *Aziz*. More than a hundred feet long, she had a registered capacity of 170 tons; loaded, she drew 16 feet. Sturdy compared to most dhows, *Mihandust* was only 12 years old. She was powered by a 250-horsepower engine, installed four years before.

Issa Abdullah told me, in the now-familiar manner, that we would be sailing in three days, in five days, in seven days—"*Inshallah*—God willing." Then I got a message: We were leaving—Inshallah—that afternoon.

It was evening, of course, before I embarked. I even had time, with the help of friendly port policemen and their Land-Rover, to track down the necessary goat in a suburban market. On top of whatever other cargo *Mihandust* carried stood two cars, two pickup trucks, two motorbikes, and a miscellany of bedsteads, plywood, and poles. My gear was soon stowed in the roomy

Curiosity bridges two cultures as the author talks with a visiting dhow captain aboard the *Aziz*. Because she is a woman, she can ask about wives and children, a topic avoided by Moslem men.

To communicate with the *Aziz*'s crew, Miss Kaplan learned Arabic; on the *Mihandust*, she spoke Swahili. To gain acceptance, she provided goats for good luck—and food. The men were impressed when they saw her reading an English Koran. Miss Kaplan slept here in the wheelhouse, curled on a shelf behind the helmsman.

wheelhouse; a carpet was put down for me on the deck beside the wheel.

Now I followed a route that dhows have sailed each year for more than twenty centuries. My companions were descendants of Sindbad, men in headcloths and robes, whose deep-rooted ways I would find infuriating, frustrating, and, ultimately, reassuring. These were sailors and ships firmly holding to the rules of the past.

Issa's son Mohammed, 27, was the second captain—even, according to ship's papers, the captain. This arrangement, Mohammed told me, makes for a certain flexibility with authority. Issa's younger son, Yusuf, 18, was aboard to learn something of ship's administration. This was only his second voyage.

Hassan Ahmed, biggest of the 15 crewmen, with broad back and great hands and feet, was boatswain. While professing total exhaustion, his attention to ropes and tackle, chain and anchor was unfailing.

Aboard *Mihandust*, four *sakunis*—helmsmen—shared the wheel according to a complicated rotation of four-hour, three-hour, or two-hour tricks. The youngest sailor, 15-year-old Mohammedu, served as ship's boy and cook's helper, and turned out to be a more than passable cook himself. Like everyone else, he never missed his prayers. He was not, however, as experienced as the older seamen at pinpointing Mecca. More than once I heard laughter as the sailors noticed little Mohammedu praying in the wrong direction.

Navigator Has Few Instruments

I grew attached to the crew over the next few months; they were unfailingly good to me. And I came to cherish the gracious *Mihandust;* she was stout and seaworthy, for all that she lived by a curious assortment of equipment.

There was a clock with an aggressive tick and a loud chime that was set at twelve each sunset. But there was no ship's bell. There was a sextant—Mohammed would point it at the horizon each noon, according to his wristwatch—but there was no chronometer.

We steered by two compasses, one in a binnacle by the wheel and another, from an older dhow of Issa's, on a shelf in the wheelhouse. We had well-thumbed charts, used with cardboard compass rose and cord, to get us from point to point, all the way from Dubai to Mafia Island off the coast of Tanzania. There was no derrick; the mast, rigging,

Crammed with deck cargo, the large boom *Mihandust* spares little space for sailor-craftsman Hamud, who weaves baskets to sell at ports during the ten-week voyage to Mombasa. Cargo ranges from Japanese cars to Finnish cement and South African Groovy cola.

Haven for small sails in a sea noted for supertankers, the old port at Dubai welcomes dhows. The author counted more than 200, and her ship was berthed in a group eight deep. Vessels once filled the broad estuary, an old captain recalled. Most dhows now have diesels to power them when winds fail.

and capstan served to off-load heavy gear.

Our "saving equipments," as the Iranian registration certificate put it, consisted of our longboat. We had no life belts or flares. The only medical equipment on board was what I brought with me. I kept busy coping with sore throats, runny eyes, burns and minor cuts, and, with the older men, rheumatism.

After weeks of the flat sands along the Persian Gulf, it was refreshing to wake to a stunningly beautiful and rocky coastline. We were heading north to round the Musandam Peninsula, and we moved with a gentle breeze, which freshened later. We raised no sail as we went down the Gulf of Oman and into the Arabian Sea. The wind was ahead, therefore unsuitable.

The work of the ship, apart from watches, was not then strenuous. The older men wove baskets, and Mohammed spent hours making fishnets and attaching weights and floats. The younger sailors chatted and smoked cigarettes, usually packing themselves into one of the cars. Hassan Ali, the young second engineer, often retired to a car seat to read his Koran. The slamming of car doors was an odd sound at sea.

Issa began to confide his problems to me, dwelling especially on the heavy cost of a voyage to Mombasa. "Diesel fuel is expensive," he said ruefully, and I could not help glancing at the tall mast and empty yard. "I hope to sell many carpets in Mombasa, but Kenya now imposes a heavy duty on them. And I am supposed to buy Kenya goods with the money I receive, but there is little profit in the gulf for most Kenya products.

"There are many changes lately, too many," he went on. "Aden used to be a good port. Now there is no money there. It is dead. Trade in the whole Arabian Peninsula is dying. Djibouti is still good because it is a free port. The people there still want our dates. But Kenya and Tanzania—their independence has brought us trouble. Since the British left, trade is finished, finished."

No Cargo Moves During Four-day Holiday

Africa still lay weeks away. First we had to dispose of our cargo on Oman's Dhofar coast. We arrived in mid-January and anchored late one night in Salalah Bay. On shore sparkled a few lights and the handsomely illuminated sultan's palace. There was little else.

Nobody came near us the first day. On the second day, Mohammed went ashore. When he returned, we learned why no one had paid us any attention. "It is Id al-Hajj," explained Mohammed, "an important holiday. Nobody works for four days."

So we waited, fished, played dominoes, draughts, and the radio. Hassan and Mohammed wove handsome new coats of rope for the worn fenders. Issa improved our stock of leaders for the heavy fishing lines.

At nine in the morning on the fifth day, with a cold wind blowing, we saw many boats push off the beach into the surf and head toward us. As they drew near, I made out men in vivid shirts and turbans pulling noisily at the oars. *"Kelele sana!"* exclaimed Issa. "What a racket!" But we needed these men. They would relieve us of our cargo.

Then they were upon us, a horde of perhaps forty invaders, pressing, poking, punching, smoking, spitting, staring. We served them handfuls of dates, dishes of *halwa*—a delicious sticky sweetmeat—bread, tea, coffee. When everyone finally disappeared, we found a burn hole in one of the carpets.

Unloading by surfboat is picturesque but impractical. It takes a long time to handle a small amount of goods. The boats, made of planks sewn together, are equal to the pounding surf (pages 340-41). But if the wind is high and the sea is swollen—and it was on many days—the boats do not put out at all. Completion of a new harbor under construction at Risut, west of Salalah, will mean the end of the stitched surfboats.

Little by little our cargo went, the vehicles and motorbikes first at Risut, onto platform floats. Though the cars were padded, the ropes still cut into the metal and dented it. Then the surfboats took off bags of onions, wooden shutters, window frames, doors and bedposts, Chinese vacuum bottles, U. S. dishwashers, South African Groovy cola, Iranian rose water, a vast number of bursting bags of sugar—which occasioned much dipping of fingers—300 bags of Finnish cement, and, finally, a seemingly endless spate of canned vegetables, fruit, and juice.

Our three-week stay in Salalah helped considerably to improve Issa's opinion of his female passenger. The English community there was very kind to me—and bought thirty of Issa's carpets without bargaining.

We visited neighboring vessels in Salalah. We took on drinking water. Issa worked on carpentry chores. I indulged in a couple of freshwater showers. The crew too improved

their lot. Now that the ship was empty, except for more carpets and some brassbound chests, there was plenty of room to move about, even though our longboat, which we had previously towed, had been hoisted aboard.

And so one sunny day we weighed anchor and set off for Africa, riding high in the water. At sea, Issa and Mohammed took a bearing on the island of Socotra. We were heading south. At last we had the *kaskazi*, the winds of the northeast monsoon, behind us.

Ritual From the Past: Hoisting Sail

The crew bent our great lateen sail to the yard and hoisted it aloft. Yusuf and Hassan Ali, who had been darting along the yard, leaped for the halyards. Mohammed was halfway up in seconds, climbing nimbly to add his weight to the ropes. Hussein, at the wheel, handed over briefly to Issa, so that all hands were hauling. The men sang and sweated, and the yard rose and the sail billowed. I saw the classic movements of an ancient ritual in that raising of the sail; to everyone else, it was all in a day's work.

Though the seas became steep and we pitched and rolled for days, we began to catch sizable fish. Sometimes we put out as many as seven lines; usually we had five. Mohammed, dynamic and restless, was always first at a jumping line. Leaping into the *zuli*—the ship's privy, which projected from the stern—he would haul strongly until the wire leader appeared. Then a quick lift and into the *kashtil*, the small washing space aft, would go a fat tunny. The sailors filleted, salted, and packed fish in empty 40-gallon oil drums. A lot we ate fresh.

The fish were never left long in the kashtil but were soon carried forward. If they lay aft more than a few moments, thumb-length cockroaches with long antennae emanated from the woodwork in droves and began crawling on dead eyes and bleeding mouths.

My efforts to keep the horrible insects at bay by spraying amused the crew hugely—until one night off Somalia when the sailors saw for themselves the vileness of the roach.

It was Mohammed's watch. He and big Hassan and Hamud talked quietly on the poop. Hassan Ali, the second engineer, was in the engine room. Suddenly the engine began making an odd sound. Mohammed looked down the hatch and saw a pool of blood. Hassan Ali had been pulled by his trapped gown into the drive belt. His injuries were frightful. It seemed as if he must be dead.

Mohammed switched off the engine, and cries of horror and grief sounded through the ship. Deeply shocked, I stayed aft on Issa's orders. I did not learn for hours that Hassan Ali had survived, though the sailors came to me for bandages and tapes. They also asked for my insect spray. The monster cockroaches were arriving like vampires. That night there was not one roach on the poop.

A day's run later we put into Lamu, an island off Kenya's northern coast, where the medical staff at the little hospital said blood

Precarious perch lets a sailor work on the hull of a ghanjah as it sails the coast of Dhofar. On the jack staff at the stemhead flies a model airplane, a favorite ornament since the early days of flying in the Arabian Sea.

poisoning was setting in. Radio messages brought a plane, and Hassan Ali, escorted by Issa, was flown to Mombasa for treatment.

The journey from Salalah had begun in high spirits, but it proved a difficult one. The *upepo mzuri*—pleasant breeze—that drove us gradually grew too strong. We changed our lateen sail for a smaller square sail and finally lowered even that. We rolled and pitched for days, apparently alone at sea. Chests and brassware on the poop, though tied down, worked loose. The men, as they knelt for prayer, found footing unsteady. It was difficult to sleep. Gloom settled over us.

Mohammed took both his own and his father's watch that last night at sea as we ran down the Kenya coast, and on a dull gray morning piloted *Mihandust* neatly into Mombasa's old dhow harbor. Issa waved to us from the jetty and, with the health officer, was aboard in moments. Hassan Ali, he said, was doing reasonably well. Our downhearted mood lifted. The sun appeared—and Mombasa welcomed *Mihandust*.

The dhow season—January to April—is the highlight of Mombasa life. Arab dhows

Final surge lifts a surfboat onto the beach at Salalah, in Oman. These boats, fashioned by

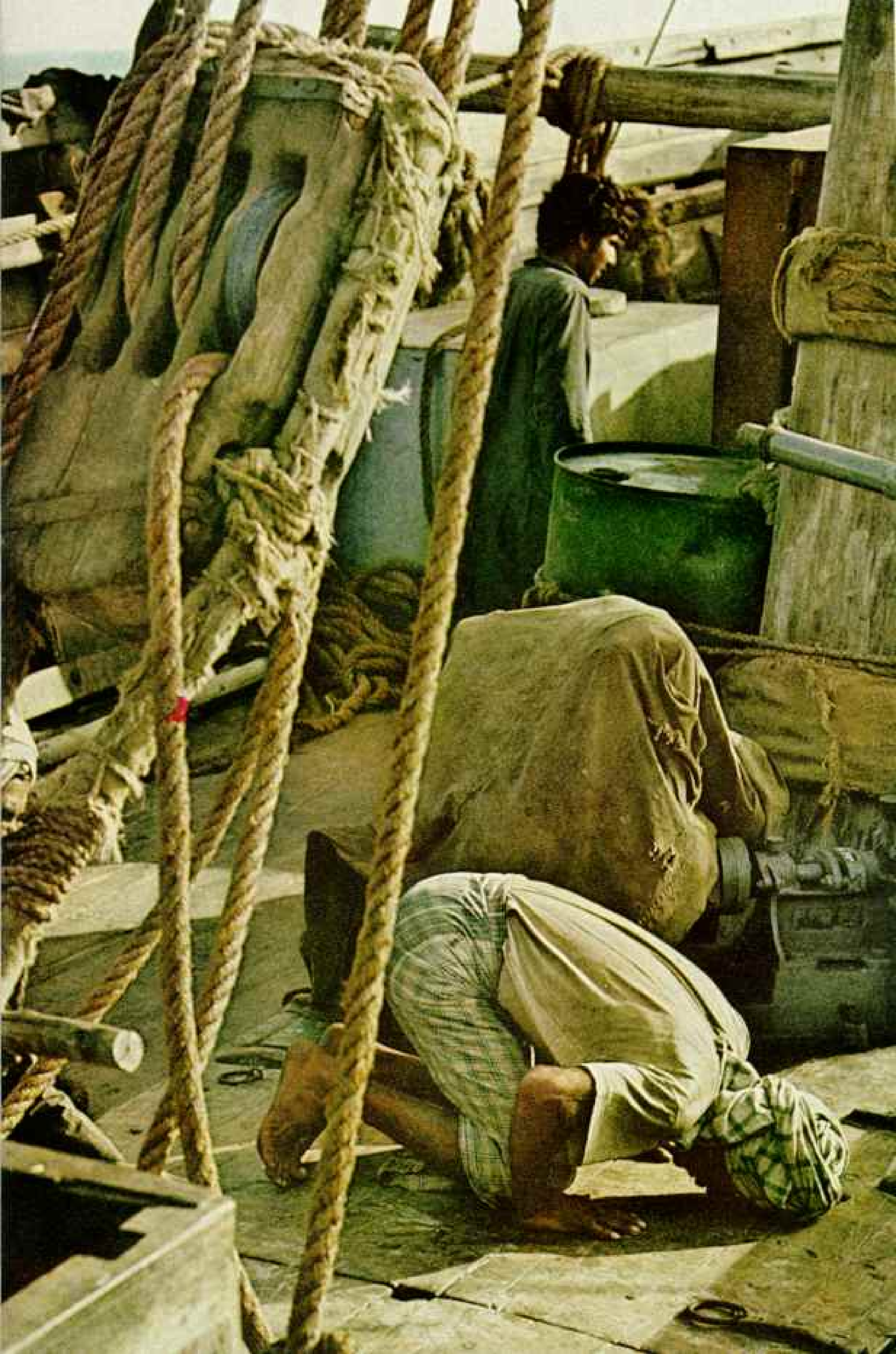
from Oman and Yemen bring salted fish or sometimes arrive empty, as do many Somali dhows, because Kenya imposes a 50 percent duty on fish. Dhows are no longer permitted to carry salt. Water pots still come from India. The Iranians, nearly all from *Mihandust's* home port of Kung, bring carpets and chests, on which the duty is 40 percent.

"The nakhodas are unhappy about this, of course," said Ali Surur, Mombasa's affable Old Port dhow registrar. "But everyone likes it here, and there are good facilities. The seamen are allowed to trade a little, and many captains tell me that the good treatment they get helps to compensate for the high duties."

Mihandust was among the first ships into port. Soon Issa's fellow nakhodas from Kung arrived in their big dhows, one of 225 tons. Everyone, I found, seemed to know everyone else, and in many instances were closely related. Each day the nakhodas brought carpets and chests to the customs warehouse. Dealers and visitors thronged and haggled.

One East African commodity alone makes the long voyage worthwhile—*boriti*, mangrove poles. *(Continued on page 346)*

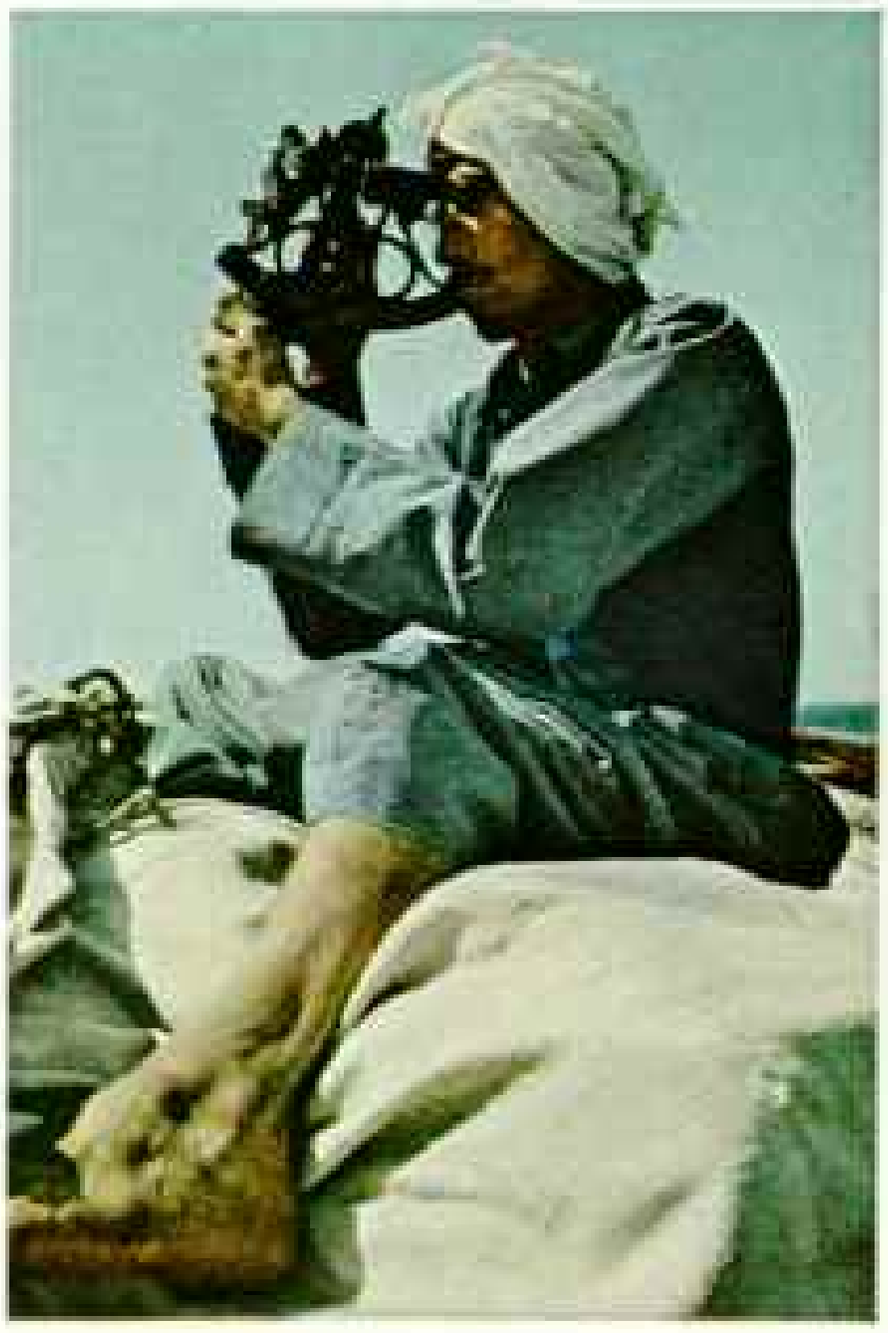
sewing the planks with fiber, survive the beat of the waves as long as nailed vessels.

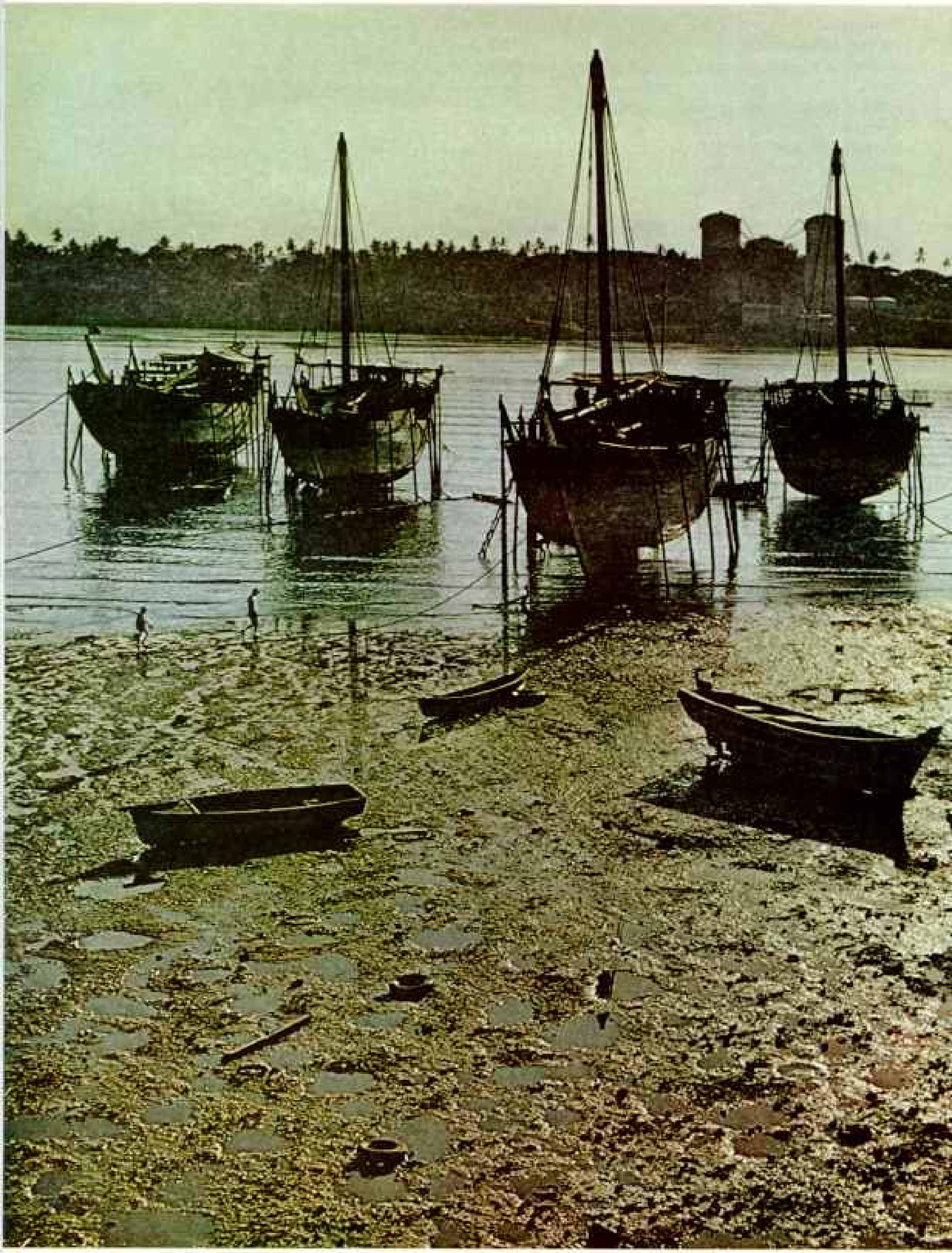


Seaborne chores give way to devotions on the *Mihandust* as Hussein kneels beneath the dhow's massive halyard block (**left**). The crew prayed five times daily.

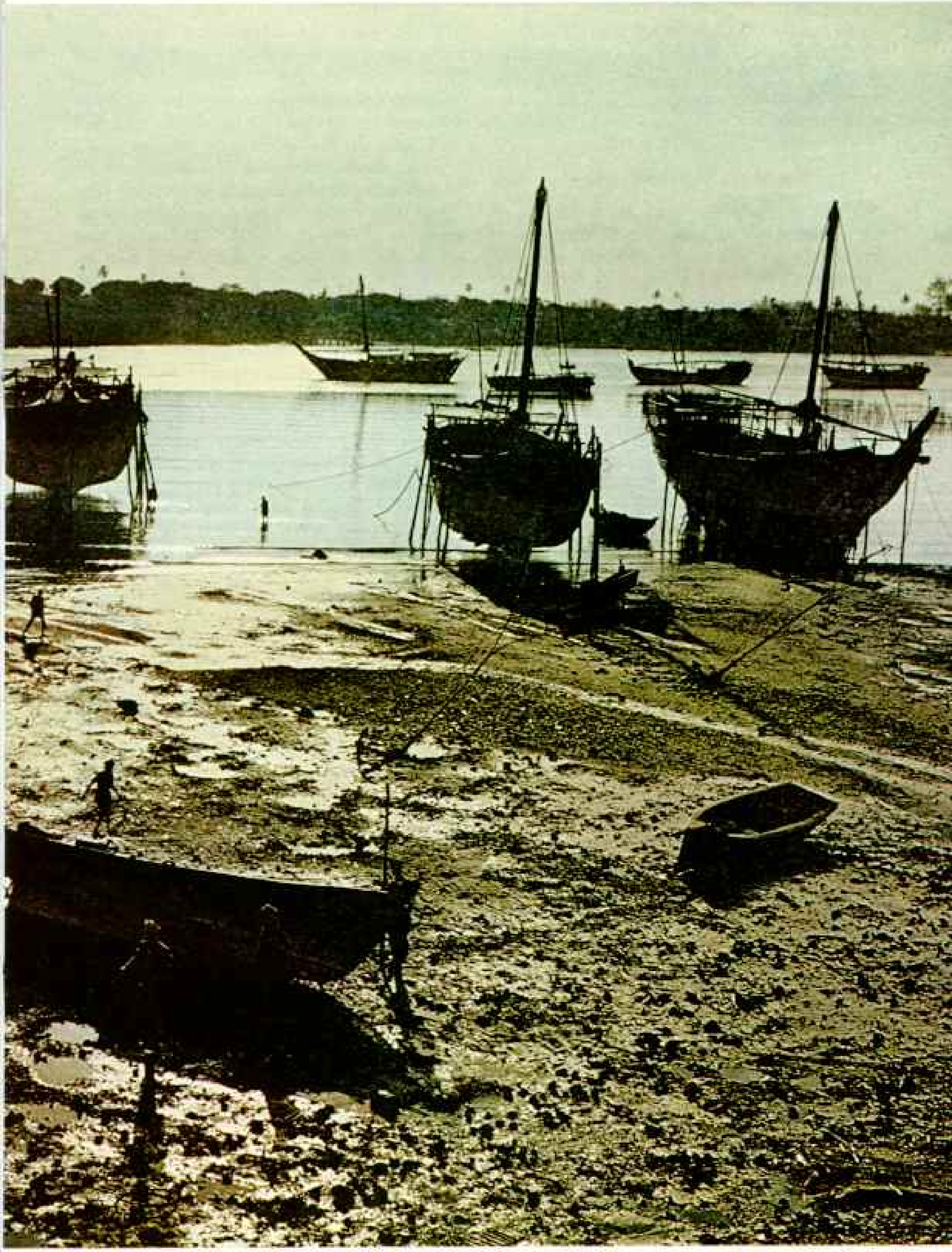
Like all on board, second captain Mohammed performed multiple duties—shooting the noon sun (**below**) to help set course for Mombasa, then later lending his weight to help hoist the mighty yard up the mast. Usually constructed of three spars lashed together, such a yard nearly equals the length of the ship.

Cramped between firebox and food chest (**bottom**), the cook prepares rice, the daily staple. Spices add zest to fish or goat stew. Breakfast is always sweet tea and unleavened bread, with Iranian honey added for a special treat.





Like giant water bugs, booms sit astride mud-anchored stilts in Mombasa's Old Port.



While the tide is out, crews will scrape the boats' hulls for the ongoing voyage.

In the long history of the dhow trade, slaves, ivory, and boriti have been profitable cargoes. Slaving ceased around the turn of the century. Ivory, while still poached and smuggled, is no longer a major dhow cargo. Cement is generally used for building in Arab lands, but boriti remain in demand in Iran.

Bound for "a Terrible Place"

First the nakhodas had to decide where they would go for their boriti. Some opted for Lamu off Kenya, where they could buy ready-cut mangrove poles. But these, said Issa, were expensive and too thin. He chose to sail south to the Rufiji River near the village of Kiasi in Tanzania, not far from Mafia Island. The area is called Simba Uranga.

"Simba Uranga," Issa said, "is a terrible place—*mbaya sana*. It rains all the time. There are sharks in the sea and crocodiles and snakes upriver. You cannot walk on the banks without sinking deep in the mud. You are welcome to come. But it will be very tough—*taabu sana*."

He said the trip would take twenty days. We were gone more than thirty. And he was right about the miseries and torments of the Rufiji River. One aspect even he had failed to mention—the hazardous reefs near the mouth. One unfortunate boom, *Ahmediyya*, hit a reef and sank. All the sailors were rescued.

Four dhows, including *Mihandust*, set off in a fleet for Simba Uranga. On arrival near Kiasi, the headquarters of a copra cooperative, the dhows anchored. Mohammed and Abdul-Aziz, nakhoda of the 199-ton *Kurchi*, went off in a longboat to the village to order quantities of boriti from the village headmen.

The sailors waited several days before the first tally of stacked logs was made. To keep busy, they chopped firewood for the journey home and bought up sacks of limes in the village. Hour after hour they cut, squeezed, and bottled lime juice. Eventually, bottles were stacked in every crevice of the boom.

Issa had been making progress checks on the boriti cutting and complaining loudly that the poles were too thin, too crooked,

Blueprint in his mind and with eyes for level and plumb bob, a Qatar shipwright uses an adz to fit strengthening ribs to a nearly completed hull. To discourage teredo worms and barnacles, the hull below the waterline is rubbed with goat fat and lime. While the *Nasri* is beached at Mombasa (**right**), the boatswain treats the rudder while standing atop a rusty barrel before the newly painted propeller. Above the waterline, shark oil is used as a preservative, turning the hull reddish brown—the mark of a well-kept ship.

too costly. At last, forestry officers in Kiasi announced: "*Kesho, piga nyundo.*" Tomorrow would be the day of the hammering, when poles would be counted, marked by the hammer, and bought.

Heavy downpours accompanied the day of reckoning. The crowded longboats went from bank to bank where cutters had ferried, in their slender canoes, poles from farther up the creeks. Nakhodas, sailors, African officials, and cutters scrambled through knee-deep mud to the piles of boriti, stacked in lines of 20 poles, one above another, for marking by the hammer. Cutters clustered round the cashbox and carefully counted their earnings: less than $4 for a score of poles—and a tax was levied on that.

At the end of the long, wet, chaotic day, the nakhodas agreed that there were far too few poles and ordered more. Then, day after day, they boated up remote creeks carrying dates and maize meal to the cutters and locating sailboats—*tishalis*—that would bring the poles to the dhows.

"*Taabu sana,*" said Issa every evening when he returned, rain-soaked and frustrated. But slowly the dhows began to fill. The sailors kept careful count as each pole came on board, sonorously chanting the number in Arabic, Swahili, Persian.

"*Wahid, ithnen, thelatha, arbaa.*" "*Moja, mbili, tatu, nne.*" "*Yek, do, seh, cher. . . .*" At twenty, both sailor and tishali captain tied a knot in a cord, looped perhaps round a toe, and began again (page 351).

Finally, the nakhodas met with officials for the *hesabu*, the total tally that had to be recorded and approved by customs. Between them, our four dhows had bought more than 2,000-score poles. The word was: "We go tomorrow—Inshallah."

Provisioning for the Voyage Home

A month after we had sailed south we returned to Mombasa. Issa rushed to coffee merchants, to the city market, to the small stores. He bought tea, coffee, pineapple chunks, tamarind, sesame oil, coconut oil, ghee, charcoal. *Mihandust* was carrying home half the crew of the sunken *Ahmediyya*, an

Lounging amid the splendor of Persian rugs and Arabian chests, dhow captains wait to haggle with tourists and traders from Kenya in the cool recesses of Mombasa's Old Port customs warehouse. Offshore, a Lamu dhow (**right**) drives south before a northeast monsoon, shuttling cargo between African ports.

extra nine men. They had lost everything when their boom went down. Issa gave them money so they could buy presents.

All around Mombasa, the men in robes from the foreign dhows made their final purchases. The Old Port resounded with shouts as the last goods went on board, the last oiling and liming of the hulls was done to ward off marine borers, the farewells made. The monsoon had changed. Now it was the *kusi*, and the breezes from the south freshened. Before the winds became too strong and the weather worsened, the dhows must be home.

The big booms from Iran, low in the water from the weight of the poles they carried, the kotias and dhangis from India, the sambuks, the little Somali dhows, the bright-painted craft from Yemen, the Lamu dhows that had been speeding south and pushing slowly north right through the kaskazi—all were ready for the homeward passage. Within a few days all had gone.

Ancient Way of Life Appears Doomed

The Arabs understood and made good use of the monsoons centuries ago. They knew how to build and sail fast ships long before the days of pirate brigantines and tea clippers. My *Mihandust*, the lovely boom I sailed for four months and now bade farewell in Mombasa, is a descendant of sailing craft going back to ancient times.

But few like her remain. Arab shipwrights find better-paid work building launches.

Wrapped like mummies against the wet (**left**), crewmen of *Mihandust* sleep on a corrugated bed of mangrove poles harvested near the mouth of Tanzania's Rufiji River. To get the poles, the cutters faced crocodiles, snakes, and steady rain that breeds malarial mosquitoes. "Mold got into my clothes, my mind, everything," wrote the author. The crew finally loaded 10,000 poles, keeping tally by the 20's with knots (**right**). Hauling anchor (**below**), they catch the monsoon wind, northbound for the Persian Gulf and home.

Today bureaucracy's restrictions and the economic pressures of new nations confound *Mihandust*'s captain and crew.

Issa comprehends the need for change—after all, he installed an engine and is talking about adding a derrick. But his thinking, like that of all dhow men, is not attuned to engines. The timing of the annual voyages to and from Africa is fixed by the monsoons. New harbors in Kuwait, Oman, and elsewhere will modernize the loading and discharge of cargoes. But habits change slowly.

Perhaps this conservatism gives some small hope for the future of dhows, at least for a few years more. On riverbanks north of the gulf, the annual ripening of the dates begins an ancient cycle that will not suddenly cease. The great dhow fleets no longer exist, yet wooden vessels carry on, shuttling busily from port to port on the winds of the gulf.

On the longer voyages, the good men of the dhows lead a simple, well-adjusted life. They do not plan their tomorrows, they demand nothing and are awarded little. They do not concern themselves with what may happen. And their time—of which they are so heedless—has almost run out.

As I mourned *Mihandust*'s departure, I found comfort in the words of dhow registrar Ali Surur: "I have known these nakhodas for years. They like it here, and they have told me they expect to come back again next year. You will see *Mihandust* and your friends again—Inshallah." □

PERHAPS it's her prevailing color, the rose madder of old brick in the late sun, that gives to Boston's sons and lovers the impression we all have of her wisdom, her silent understanding of man's affairs, her willingness to put up with us, sinner and saint alike.

Perhaps it's her ambience, one of youthful vitality, as when a May day declines in haze and the sound of drums and tambourines fills Brimstone Corner, where saffron-robed Buddhists dance solemnly but joyfully, their exotic music mingling with the odd oompah-pah of a one-man band.

People flow through the place. Boston people: stout women with shopping bags; a gang of young blacks releasing laughter like a string of firecrackers; briefcase-toting men with regimental ties; bearded students in faded field jackets considering the scrawled

Those Proper and Other Bostonians

By JOSEPH JUDGE
ASSISTANT EDITOR

Photographs by
TED SPIEGEL
BLACK STAR

A bit o' the green and a bandwagon of pretty faces help drum up support for a local politician in the annual St. Patrick's Day Parade through the Irish section of Boston. Home to waves of immigrants since the Puritans settled here in 1630, the historic metropolis remains a patchwork of communities knit together by a pride and a zest strictly Bostonian.

remarks on the public graffiti boards, a bold hand proclaiming "God is Dead—Nietzsche," and a fine, thin hand just below with the ultimate truth of it: "Nietzsche is dead—God."

From this crossroads in the heart of Boston you can walk up the hill, dead reckoning by the gleaming golden dome of the State House, and let yourself drift through narrow streets where gaslights are just coming up to illuminate the purple panes and mellow brick of Beacon Hill. Or, you can turn off the other way, past the old Granary Burying Ground and the bones of Paul Revere, Sam Adams, and John Hancock, and downhill toward the vast red-brick plaza where old Scollay Square used to be, and consider Boston's modern symbol, City Hall, a gray edifice that looks like an inverted Maya pyramid. From there you can cross under the expressway into the early-20th-century tenement district of the North

Rooted in the old city, skyscrapers loom above the docks and quiet water of Boston Harbor; below the giants of Government Center gleams the golden dome of the State House. Encircled by ribbons of

asphalt and traffic, the old North End forms the heart of the city's Italian community. Unchallenged domain of grazing cattle until 1830, Boston Common, at upper right, now feeds the spirit's quest for space.

End, with its rich odors and its dialects of Rome, Naples, and Sicily.

Or, you can turn south, past the honky-tonks and girlie shows, through Chinatown and the surprise of the Bay Village and its restored Federal-period houses, then beyond to the South End, where middle-class whites and poor Puerto Ricans struggle for possession amid the roar of urban-renewal bulldozers.

Or west, along the edge of Boston Common and the Public Garden, past the Ritz-Carlton Hotel and up Newbury Street with its elegant shops, keeping on your left the 52-story Prudential Tower, whose shadow sweeps central Boston like a huge sundial.

Then, when the lights come up in front of the bookshops and singles bars of the Back Bay, you can go by Charley's or Copley's and talk poetry or the stock market. And later on, as a cool mist begins to flow in off the sea, you can seek out a wharf and look out into the encompassing dark of the far waters, from which the first Bostonians came, not so long ago as to be out of man's memory, and you will find yourself believing that this city, through luck or fortitude, knows how to occupy that shifting no-man's-land between the American past and the American future.

THE CITY LOVES its stereotypes, the talk of beans and scrod, Boston Light and Back Bay Brahmins, Irish pols and Italian contractors, the sacred cod and blue-nose culture, and a famous caste of three—the Lowells (somehow confused in the popular mind with Lodges), the Cabots, and God, speaking to one another in that order.

But it is all a mummer's show. Behind those cardboard props Boston has always been a chaos of humanity, today no less than yesterday, and, contrary to accepted doctrine, its ethnic pot has never really melted.

Consider the firstcomer, the now Proper Bostonian, that Anglo-Saxon, well-heeled, educated Protestant, tracing his descent back, back, back. It is a great (and attractive) simplification. The man whose work for the arts and the less privileged best exemplified Boston civic life in recent years was a Jewish businessman from Cleveland, the late Eli Goldston.

Massachusetts General Hospital, that Parnassus of Boston medicine, is run these days by a lanky Texan, Charles A. Sanders. But if one *has* to find a Brahmin, I can think of none more engaging than Mrs. Harriet Ropes Cabot, curator of the Bostonian Society, whose offices occupy the Old State House; outside its windows occurred the "Boston Massacre," and under it runs the subway.

"I certainly wish they would get their trains out of my basement," said Mrs. Cabot as we met in a hall decorated with the society's relics, antiques, prints, and memorabilia: a lantern, for example, that once hung on the Liberty Tree; the black tricornered hat worn by Maj. Thomas Melville, of whom Oliver Wendell Holmes wrote *The Last Leaf*.

A large woman of independent mind, Mrs. Cabot radiates intelligent goodwill. When I remarked that she seemed to be connected to a goodly number of Boston Brahmin names, she squinted a bit and replied: "Yes, I suppose that's true. I worked at the Boston Museum of Fine Arts, then on the Adams family papers, now this. I've just been proceeding through institutions."

As we sat in her jam-packed office and chatted, the conversation was punctuated by the subterranean rumbling of the trains.

"Actually, this building belongs to the city," said Mrs. Cabot, "but people have always discriminated against it because they regard it as a British, as opposed to an American, building. They are fonder of Faneuil Hall, the 'Cradle of Liberty,' and all that."

I asked Mrs. Cabot how the old Bostonians were bearing up under modern times.

"The city is not as comfortable for us as it once was," she acknowledged. "But change is good for people. Why, right after World War II there was nothing left for Boston but to fall into the harbor. If it had not changed, it would be gone. I must admit though that I like Old Boston parties. Some people regard it as *Sa*-ciety, with a big S, you know, old 'cold-roast Boston.' But it is just people who have been around here longer. When I was young the world seemed very much smaller, and we thought we were the only people in it."

When I commented on the fact that almost everyone listed in the Boston Social Register now lives outside the city, Mrs. Cabot smiled.

"The only social register in Boston that I use is the telephone directory."

Despite the egalitarianism of recent decades, old George Apley, John P. Marquand's fictional hero, still haunts the Boston popular imagination. And at times old George seems very much alive again, especially in the precincts of Boston's clubs, such as the Somerset, the Tavern, St. Botolph, the Union, and the Algonquin.

These are still-placid and well-cushioned arenas where, as one aging Brahmin told me, "Bostonians enjoy pursuing a favorite pastime, doing business with one another."

I SETTLED BACK one evening with a distinguished PB (Proper Bostonian) who agreed to express his opinions on the condition that he not be named: "Not that I am afraid of expressing an honest opinion, it is just that here everyone is in his proper career line—banking, insurance, medicine—and public statements are for politicians; the briefer the better, too.

"This is a very understated town," he went on. "It likes things to be comfy, cozy. It likes its leadership to be strong, and silent. No wave making. A hard driver here would go down in a hurry. While a *man* may embark upon public service, *corporate* risks on behalf of a cause are practically unheard of.

"The citadels of privilege, however, have been slowly yielding. The Country Club, the Somerset, and others have been admitting Irish and Italians in increasing numbers. The day of the Hopi is passed."

"The Hopi?"

"Yes. A visitor at City Hall once noticed a man of exceptional energy, and was told he was a Hopi.

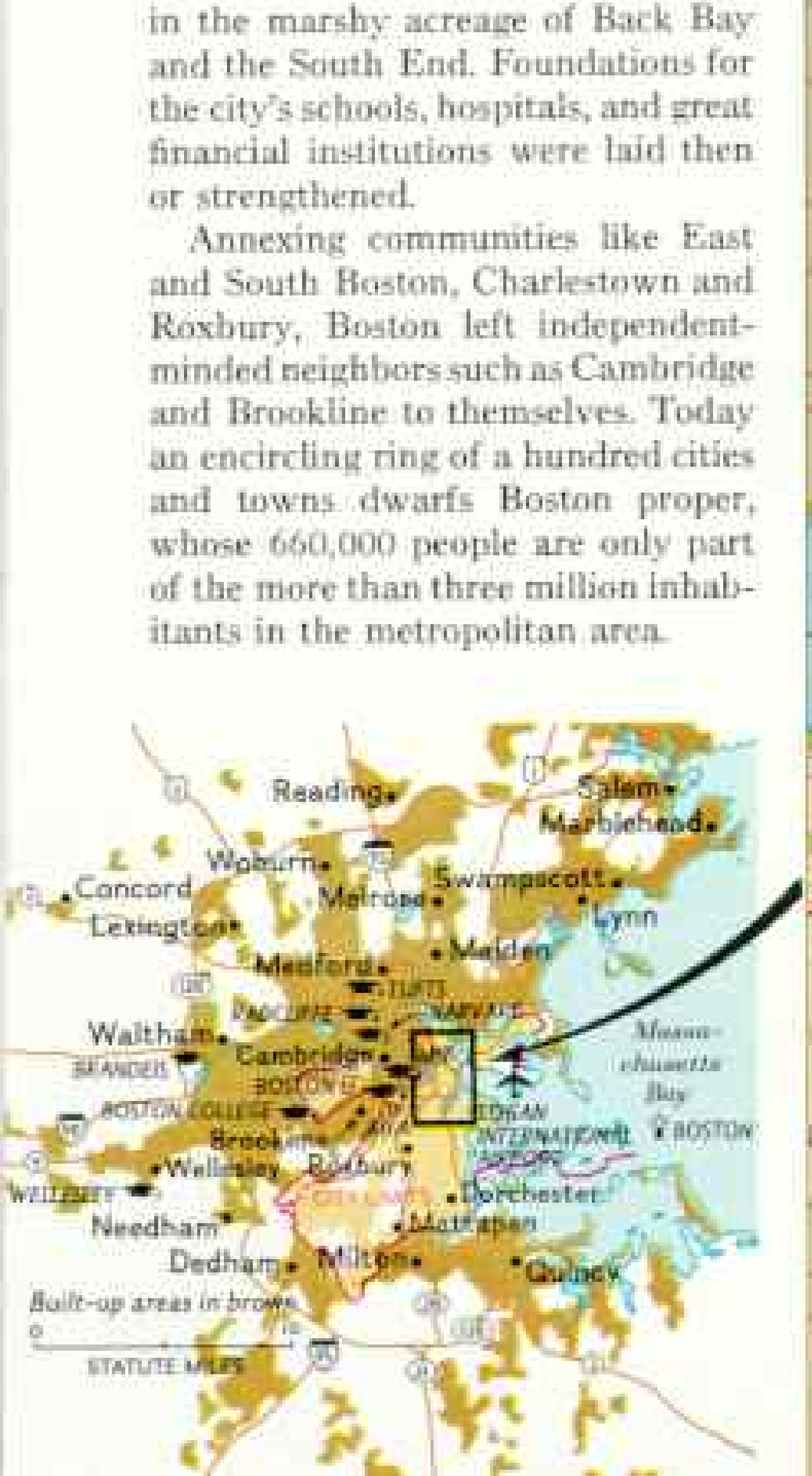
"'You mean an Indian?' asked the visitor.

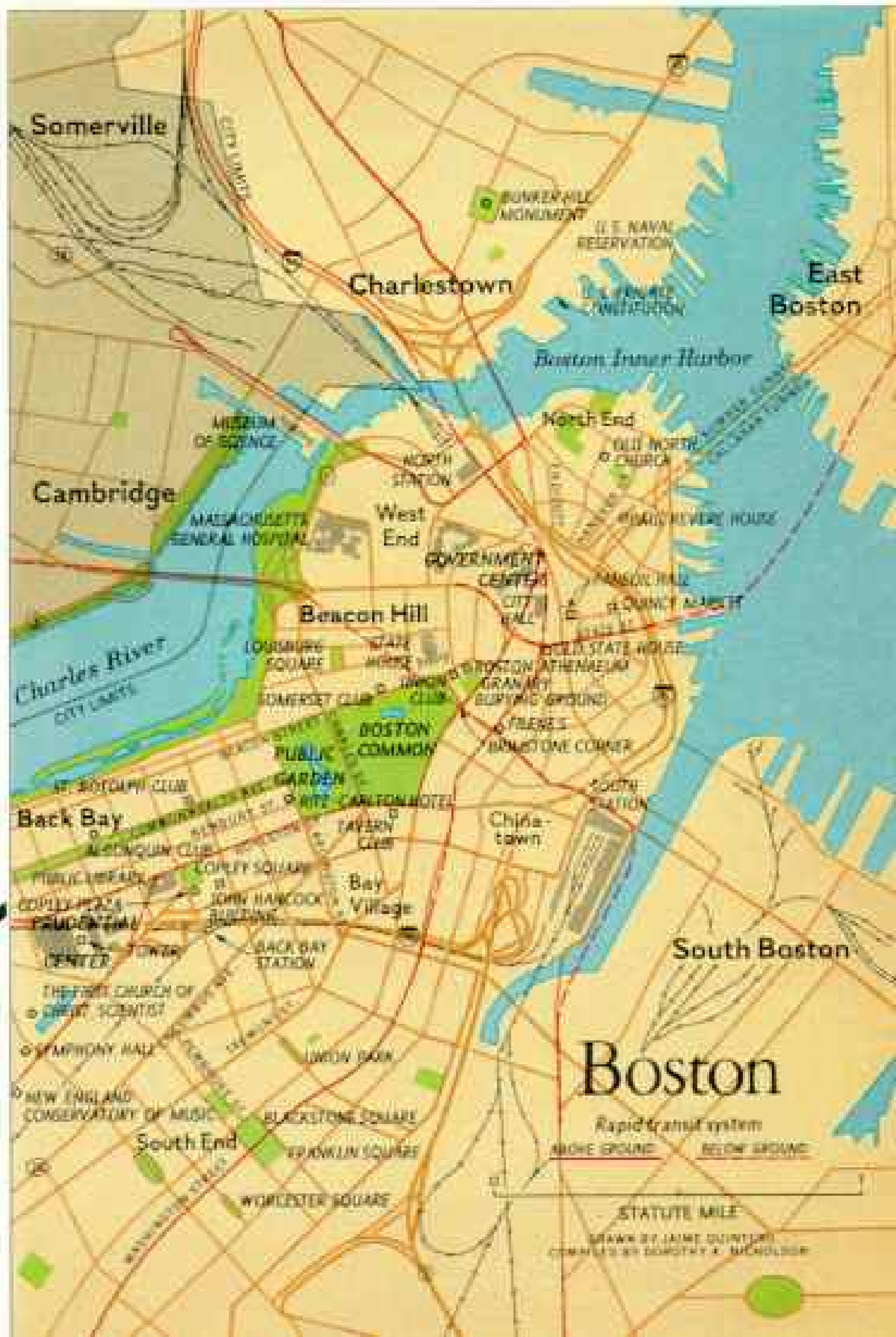
"'No,' came the reply, 'An Irish Catholic, but when he goes to bed he hope 'e wakes up as a Boston Brahmin.'"

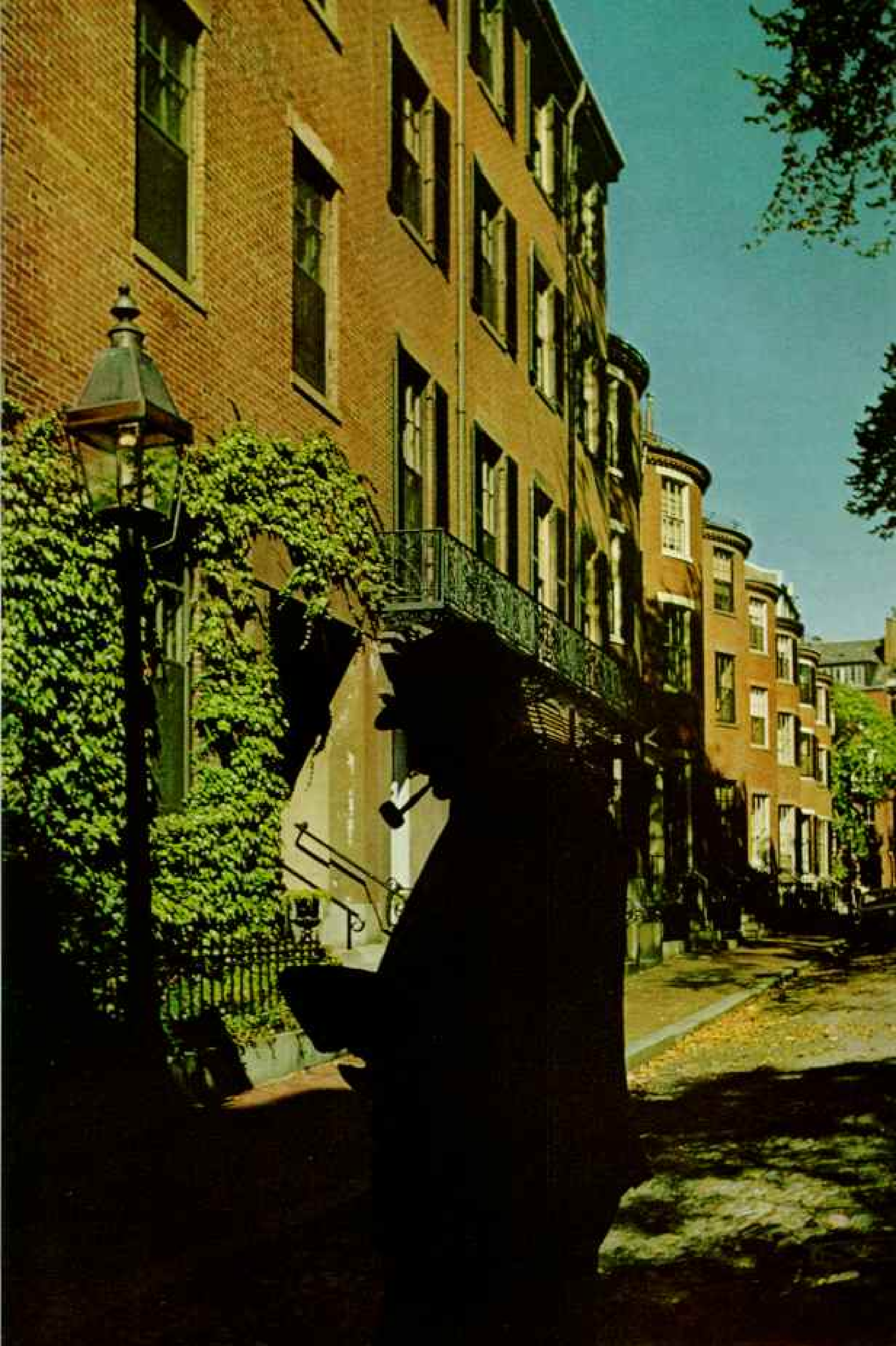
In fact, many of them think they have. But not enough, perhaps, to dissipate that certain agreeable stuffiness that goes with aboriginal rights, like that exuded by the two gentlemen rattling their papers in the Somerset a few years back, and noting that President Eisenhower had appointed a fellow member as a special assistant. "Well, I see here," one

"Hub of the universe," Bostonians call their city, magnifying Oliver Wendell Holmes's more modest assessment that its State House was "the hub of the solar system." Originally a scrawny neck of land poking seaward, Boston fleshed out during the 19th century as developers filled in the marshy acreage of Back Bay and the South End. Foundations for the city's schools, hospitals, and great financial institutions were laid then or strengthened.

Annexing communities like East and South Boston, Charlestown and Roxbury, Boston left independent-minded neighbors such as Cambridge and Brookline to themselves. Today an encircling ring of a hundred cities and towns dwarfs Boston proper, whose 660,000 people are only part of the more than three million inhabitants in the metropolitan area.







Proper as they come, the venerable homes of Louisburg Square form the backdrop for a Beacon Hill gentleman out for an afternoon constitutional (**left**). The highlight of the city's old residential section, Beacon Hill fights commercial encroachment, and state law now protects the harmony of its bricks and cobblestones. Less lucky, the Old State House in nearby downtown bears a gilt eagle that seems to cry defiance of the towering buildings around it (**right**).

Overwhelmed in the last century by Irish and Italian immigrants—nowadays among the largest elements in the city's population—Old Boston abandoned much of its Puritan reserve. The modern city's sense of neighborhood and its tolerance of different ways have sparked a new migration of the young to Boston, and elegant bars like Copley's set the fashion for singles and the light of heart (**below**).

Angel from above, Mary DeGrandis asks blessing on the opening of the Festival of La Madonna del Soccorso in the Italian North End (**left**). Sponsored by clubs of emigrants from Sicily, the weekend celebrations raise money for churches and provide aid to newcomers from the old country. On the Feast of St. Anthony (**above**), an apartment-bound believer lowers a pennant of dollar bills as an offering to the saint.

remarked to the other, "that Bobby Cutler has gotten himself a reputation."

"Yes," the other harrumphed, "but only nationally."

BOSTON CAN BE A SULTRY PLACE on a summer Saturday; most of those with means have fled to Cape Cod, or Martha's Vineyard, or the North Shore, or the Berkshires, leaving a cement-and-steel oven behind. These are the long, hot hours when archaic Fenway Park roars with the clamor of baseball's most exuberant fans.

Copley Square is full of young people with shirts and shoes off, sitting by the plashing fountain under the towering John Hancock Insurance Company's new headquarters. (The building, whose 60 stories of tinted glass were designed to mirror the city around it, mirrors imperfectly, for hundreds of its 4½-by-11½-foot window frames hold temporary plywood panels while experts attempt to solve the riddle of why the glass cracked and fell on windy days.)

Other young people wander the Common, skimming Frisbees, or idle along Charles Street window-shopping for posters, exotic or erotic, stopping at Romano's for coffee.

Many left-behind Bostonians will wander toward the harbor, a tatterdemalion army with coolers and knapsacks and collie dogs and brown bags and tennis rackets and bikes, to board a boat bound for Provincetown.

On more than one summer weekend, you can go all the way to Italy—not by boat but by a short walk into the North End and its old tenement buildings.

There the rhythm of the days is punctuated, as in Italy, by feasts of saints—elaborate, explosive ceremonies that sweep the people up in a torrent of emotion, like the 54th Grand Religious Festival of St. Anthony of Padua Da Montefalcione.

On Endicott Street one August day, I found a statue of St. Anthony reposing in a red and pink and gold sidewalk chapel. People lined up to attach dollar bills to one of the streamers that flowed down from the saint. Across the street, in the upstairs quarters of the St. Anthony's men's club, a few members sat in the warmth, drinking bottles of cold beer.

"This is a working-class neighborhood," Jerry Diprizio, the club president, told me. "Plumbers, electricians, carpenters, we're better off than a lot of communities."

The Society of St. Anthony has functioned

In their afternoon of life, condemned tenements look emptily down a Charlestown hill toward a commuter train hurrying people homeward from the city. Boston built the nation's

for years as the Italian-American Naturalization Club, like others of its kind, it was created to care for immigrants.

The club has 13 charter members still alive, all in their eighties. I met one, Amadeo Fortulati, leaning on a white cane along Endicott Street.

"Once," he said in a firm voice, "you had to be a Monty, a man from Montefalcione, to get into the club. Now," he extended his hand, palm open, "we have an Irishman!"

For 43 years, the statue of St. Anthony lived with shoemaker John Piccone and his family. Year in and out the men carried the statue out into the streets, and brought it back home to the shoemaker's house. And the saint gave them the blessing they sought—the security of a united people, an identity in a hard industrial world, a reminder of who they really were.

In those days they often lived two families to a room, and they went out from the North End by way of old Haymarket Square, into a world of roistering Irish and severe Yankees.

"There wasn't no place to go," said Mr. Piccone.

first subway line in 1897, and its trolleys stitched the suburbs to the center city. Now the Massachusetts Bay Transportation Authority on an average day transports 500,000 passengers.

AROUND ONE O'CLOCK the statue of the saint was deftly lifted from the sidewalk altar and hoisted onto the stout shoulders of six men to begin its slow procession. Through the streets of the North End, it was preceded by bands wailing in brass, little girls in white dresses, and old ladies bearing candles, grateful for a favor that prayer had rendered. The saint's procession was both tumultuous and triumphant. He paused at individual homes to receive bouquets of money, some lowered on strings and ropes. At some windows, a mother held up a child who kissed the saint's face and wrapped a wreath of dollar bills around it.

Confetti fell as heavy as snow, drifting in the streets, and the bands playing and people shouting almost drowned out an old man with watery eyes who said, "Italy in exile!"

It was 10 o'clock at night before St. Anthony came home to a wildly applauding crowd, a crush of humanity moving as inexorably as a glacier. The saint's impassive face rode atop a huge parka of money, perhaps $20,000 for the coffers of the club.

"This is one of the last real neighborhoods

in the country," Joe Mercurio shouted in my ear. "But we had to fight for it. We could see urban renewal was coming. We said—wait a minute, we want to hold onto this place. No knocking down, no ripping out. Many, many people do not want to see the North End disappear for a lot of high-rise nothings for rich people, like what happened to the old West End. I think they learned something. Now they talk about enhancing the community, and not so much about tearing it down."

THAT BOSTON APPRECIATES its heritage more than most cities seems clear during a stroll down always beautiful Commonwealth Avenue on a mild early autumn afternoon. It was that critic of cities Lewis Mumford who cast a deciding judgment on the Back Bay. Excluding only the L'Enfant Plan for Washington, he called it "the outstanding achievement in American urban planning for the nineteenth century."

A vast rectangle of commodious old row houses, displaying decades of architectural history as one walks from Arlington Street westward, this former stronghold of the Proper Bostonians has been given over to rooming houses, junior colleges, and a troupe of bearded, blue-denimed young men and women who play guitars, loud and soft, next door to the former home of Henry Higginson, who founded the Boston Symphony.

Along a few blocks of Newbury, it's a lively young scene—Indian crafts in shop windows, booksellers specializing in Yoga, Tantra, and astrology, rooming houses with notices tacked on outside bulletin boards, quick laundries, print galleries, singles bars.

In a rare, diffused light that filtered through the ragged trees, two bearded young men sat on a spread blanket while two girls watched. One counted off from a pile of yarrow stalks, while the other placed remainders adroitly between the second and third fingers of his left hand. After each addition, the one with the mild blue eyes wrote down a number, and from the numbers he made a figure of solid and broken lines. Then he opened the *I Ching*, the Book of Changes, and read: "Your figure is Sheng—an advance to the south will be advantageous."

"He's going to move to Washington and join the Establishment," one of the girls said, "but he can't break his lease."

She assured me that September first is "a feast day in Boston. That's when leases are up." She had never seen her landlord, rent checks being dispatched in the direction of Bar Harbor and West Palm Beach.

But there is also a more stable group—young lawyers and other professionals, housewives who give a damn—organized into the Neighborhood Association of the Back Bay, and so far they have kept out the high rises.

Diggory Venn, an affable and charming administrator at the Boston Museum of Fine Arts, has lived in a handsome Back Bay townhouse for two decades. I joined other Back Bayers in his high-ceilinged living room furnished with antiques.

"It is true," Stella Trafford said, "that the people who once used the term 'out of towner' for someone not born in Boston have in large part disappeared from the Back Bay."

Stella, an association activist, has had a frantic few years fending off the developers.

"There's always a struggle," she said, "but I've lived everywhere, and I wouldn't live anywhere else. My husband has the pleasure of walking down Commonwealth Avenue and across the Public Garden to work."

"By the way," Diggory said when I was leaving, "meet me for lunch tomorrow at the museum and I will introduce you to Boston's most beautiful woman." And he did.

"I SHOULD HAVE MENTIONED that she is 2,400 years old," Diggory said as we stood before an incomparable head of Aphrodite, known as the Bartlett Head. It is perfection of the classic form, and one of the prized objects displayed in the echoing marble galleries of the famed MFA.

"She will tell you something about the old Bostonians," my host went on. "They were a remarkable crowd. In two generations they filled in the Back Bay, founded the Museum of Fine Arts, the Boston Symphony, the New England Museum of Natural History. They went forth on their clipper ships to all the far places, especially to the Orient, and more or less ransacked the world. They considered it a civic duty to bring the stuff back and deposit it in the MFA. They knew the meaning of noblesse oblige. Mr. Bartlett, who had made his fortune, wanted to do something for the MFA, so he gave it $100,000. They asked him what he wanted done with the money.

"'Please look upon me as though I were dead,' he said, 'and do what you choose.'

"This is what the museum chose," said Diggory, indicating that glorious marble.

BOSTON HAS NEVER CLAIMED that it is "the Athens of America," but it has never denied it either. Assuredly it is a mother country of the eastern Establishment. The region does have, for openers, that formidable phalanx of schools, among them some of the world's finest, such as Harvard and the Massachusetts Institute of Technology and Radcliffe and Wellesley and Brandeis and Boston College and Tufts and Boston University, and so on and on and on, to the impressive total of 61 degree-granting educational institutions.

And there is that incredible music everywhere. Some comes very expensively—and some is simply given away free, by places like the New England Conservatory of Music, which presents almost 200 free concerts each year. Who does not know the Boston Pops Orchestra, and the Boston Symphony Orchestra that has been there for almost a century and still remembers Serge Koussevitzky, who brought it greatness? Want to experience a sense of value? Then line up with the ladies with their campstools and students with their chessboards on Friday morning, waiting for the dollar tickets that go on sale at 11 a.m. for the 2 o'clock concert.

Boston's past hangs upon it like a fine but faded Chesterfield coat, and here and there about the city are scattered remainders of influence and importance in stone and bronze, like family pictures on a mantelpiece. They show a penchant for the reformer, the upright, the righteous of the world.

I do not know another town, for example, that displays the figure of an eminent bishop —Phillips Brooks—with the hand of the

Bargains worth a-baring: In the frenzied atmosphere of Filene's basement, shoppers try on the wares before buying. Attracted by Filene's discounts, even the most established of Boston's families often spurn fancier stores for the warehouselike basement, where articles unsold after 30 days are given to charity.

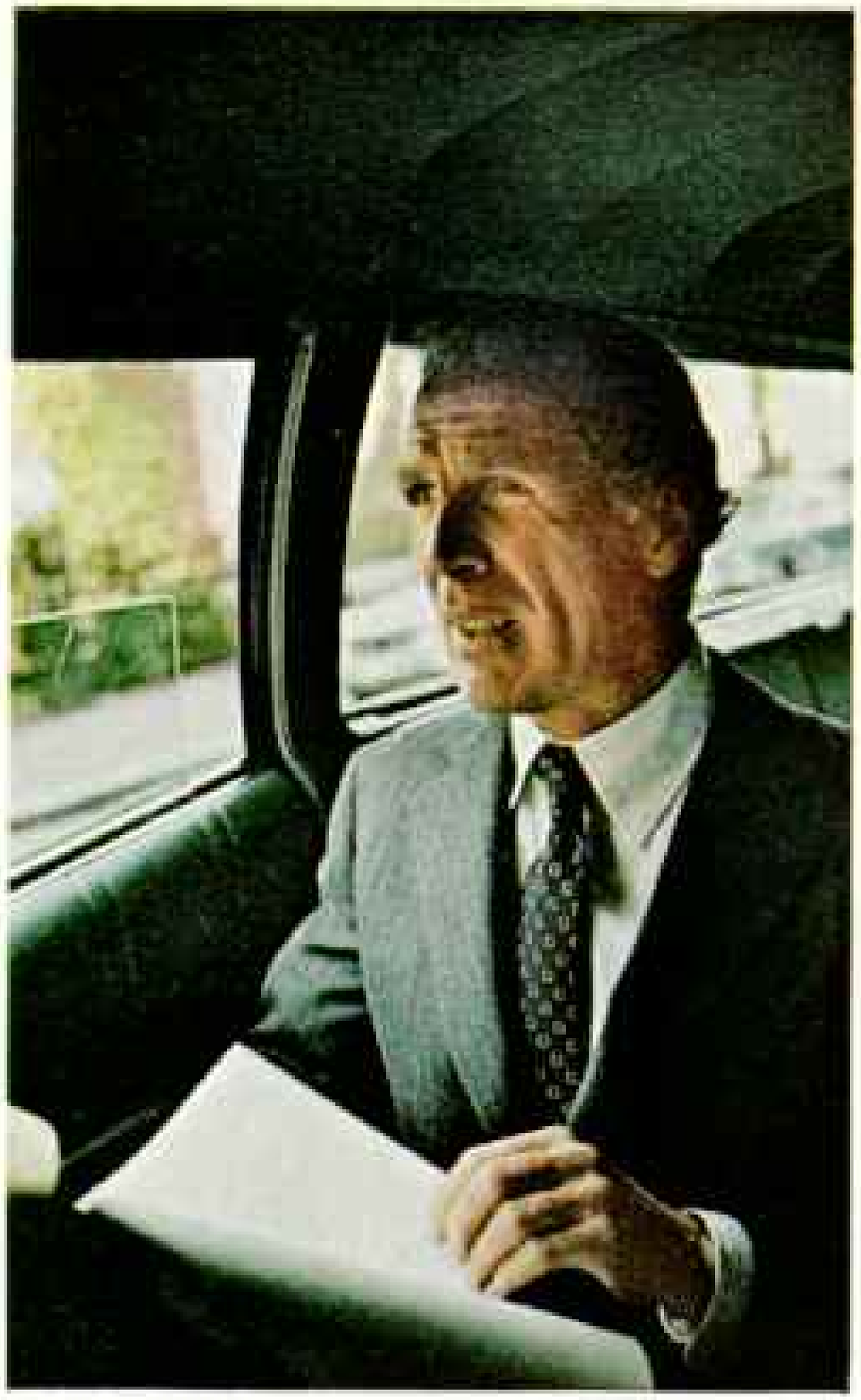
Lord Jesus resting on his shoulder in approving intimacy. Boston memorializes Mary Dyer, a Quaker who was hanged on the Common because of her obstinate religious beliefs, and not only abolitionist William Lloyd Garrison but reformers Theodore Parker, Wendell Phillips, and Charles Sumner (twice!).

And there are those institutions where people think, and read books, and converse, such as the Lowell Institute, the Boston Art Commission, the Massachusetts Historical Society, the American Academy of Arts and Sciences, and the Boston Athenaeum.

Few places on earth are as civilized as the Athenaeum. Nor are many men as civilized as its now-retired librarian, historian Walter Muir Whitehill.

Founded in 1807, this privately owned library since 1849 has occupied a fine old once-enlarged building on Beacon Street, not far from the State House. So unassuming was the institution that until 1965, when the building was declared a national historic landmark, the only exterior designation was the address, "10½," painted on the glass panels of the leather-covered doors.

It truly is, as it has been called, a *rus in urbe*, a place where the peace and calm and



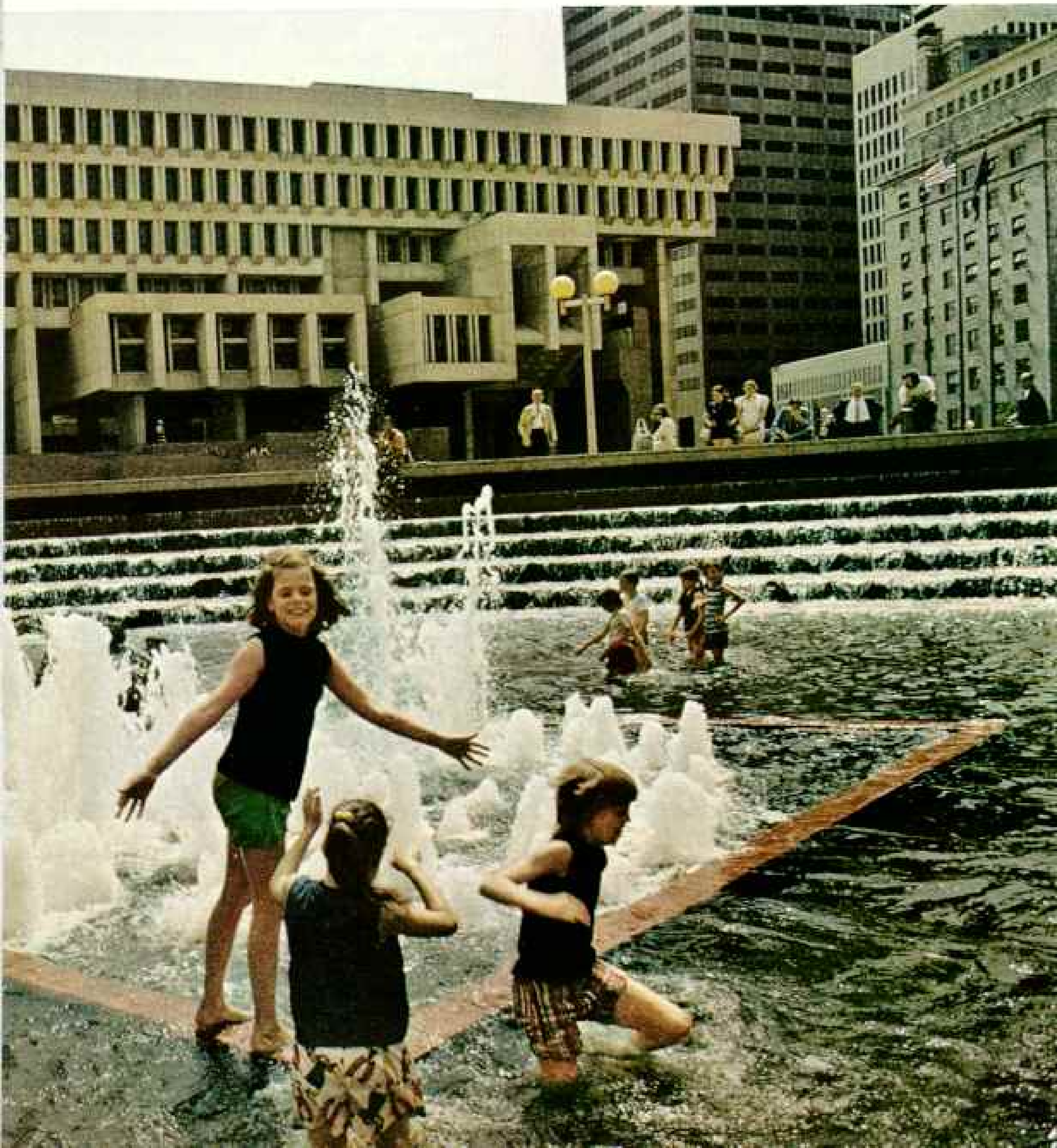
Boston's top official since 1967, Mayor Kevin H. White has sought to decentralize the municipal bureaucracy. Centerpiece of a new downtown, City Hall looks out across the plaza of Government Center (**right**), where visiting schoolchildren take a quick splash in the fountains. The mayor has established 16 Little City Halls in Boston's different communities, where neighborhood residents can take their complaints. "Our point," says a city spokesman, "is that, yes, you *can* fight City Hall."

sunshine of the country flow into the city. Its five floors, each with a distinct character, hold stacks containing more than 460,000 volumes—but it is not the message of the books but the mood of the building that makes the Athenaeum such an uncommonly pleasant place.

Perhaps it's the view over the old Granary Burying Ground, spread with an early snow, animated by squirrels, the old tombstones saying all there is to say about the brevity of life. Perhaps it's the company—men who you feel talk in a whisper even at home. Or the finesse of thought when Mr. Whitehill notes Thomas Crawford's sculptured Adam and Eve, "who, placed without the swinging doors, are looking rather plaintively towards the Delivery Desk."

Today, as before, the library is owned by 1,049 proprietors who are, Mr. Whitehill says, "like its founders, sound individualists, not only in their inclination to follow their own tastes but also in their disinclination to mind their neighbor's business."

My favorite Athenaeum incident occurred a few years ago, when the Hindu scholar Swami Nikhilananda, while touring the spacious floors, offered a Sanskrit aphorism:



"There are, verily, two sweet fruits in this poison-tree of the world: one is the taste for good literature, and the other, the company of good people." To which Mr. Whitehill, a Boston-type sage, responded: "This seems a felicitous note on which to enter the next half century."

AFTER SO SERENE A PROSPECT, imagine my surprise when I drifted down Beacon Street and turned into a welcoming bar and found there a living sweet fruit in the poison-tree—a big, raw-boned, bearded lion of a man whom I shall call Zorro, quaffing beer and reciting poetry, his own, which was superb.

"I am," he said, "one of the best writers in the world. I can't help it, I am. Call my publisher and ask him."

Zorro's lady friend had been living in a commune that had recently broken up. The group had produced six children, and they had been distributed without much regard to parenthood. I thought that the children might have an identity crisis.

"They call three of us mother and two of us father," the girl said. "They have more love and attention than I ever got."

"We'll play darts and I'll recite a poem," said Zorro. He was better at poetry than darts, the throws being hard but crooked and the poems being hard and straight.

"What's your book about?" I asked him.

"Prison."

"You've been there?"

"No. I *am* there. I am in a work-release program, due for parole soon. They have *rehabbed* me, knocked all my bricks down, and bulldozed me. They have come to regard me as not dangerous, but you bet I am. Any man armed with poems is dangerous."

It might have been Hemingway's Paris or Edna St. Vincent Millay's Greenwich Village or Baudelaire's Left Bank, but it happened to be Zorro's Boston, and I had a feeling that culture would somehow survive.

MY FRIEND ZORRO, for all his contemporary vigor, stands in the long and honored tradition of the Boston eccentric. Meeting one is something like reading Joshua P. L. Bodfish spelled backward.

Bringing help to Puerto Rican families, Daniel Soltren (**above**) explains how to get rent support for an apartment in the South End's proposed Pembroke Street housing project. Organizer of the Low-Cost Housing Corporation, Rudy Waker (**right**) supervises a plasterer in one of the houses his nonprofit company is refurbishing. Utilizing volunteer help and donated supplies, Low-Cost can renovate run-down homes at a price the residents can afford. An amalgam of nationalities and income levels, the South End has become a cultural battleground, as young professionals seek to move into the bow-windowed Victorian homes long occupied by the city's poor and dispossessed.

They are the thorns in the otherwise orderly garden of Puritan mores—but, between us, Boston's reputation for being the country's biggest bluenose is undeserved.

The strippers and bookies and sellers of prurient literature, dispossessed by progress, have relocated in a downtown area known as the "combat zone." Alas, it does not have the crummy charm of old Scollay Square.

Of all the books once banned in Boston, James Joyce's *Ulysses* is probably the best known; some of the same language is used today in Boston's two underground newspapers, the *Real Paper* and the *Boston Phoenix*. In a city almost totally dominated by the liberal *Boston Globe*, these two once-ragamuffin journals are strong on women's lib, tough on waffling politicians, not plussed at all by columns advising how to defeat bad landlords or by sizzling sexual personal notices. These two outspoken street-sale papers say they are trying to keep the Establishment honest; at least, they keep a lot of it disgusted.

NOT MUCH DIFFERENT, I suppose, from the lambasting of Brahmins late in the last century by ambitious Irish pols, in precincts where anti-Establishment views were redeemable at the polls for votes.

When the city's northern expansion was blocked by the existence of towns in that direction, including next-door Cambridge, and movement to the west was blocked by Brookline (and many a Boston mayor has lusted after Brookline's tax base), the city

proper fell away to the south, over 12 square miles of residential development that today resembles a vast wooden three-decker tundra—down through the neighborhoods of Roxbury, Dorchester, and Mattapan (map, page 357), relieved only by the occasional green expanse of a park or cemetery. It was this sweep of low- and middle-class wooden housing that the Irish claimed as their own. I traversed this old section of the city, in the murk and gloom of a winter night, on my way to an Irish wake.

The deceased was a very, very old lady. Two equally old women knelt at the casket, keening through black veils that mournful banshee sound that chills the Irish blood. They paused for a moment as I entered, examined their departed friend, and one of them remarked: "She was hell on wheels, all right."

The deceased had come over as a young girl, worked as a maid in the houses of Boston Brahmins, saved every penny she ever made, and every enemy, and had known only struggle and labor. Her first husband, a railroad man, had the misfortune to be struck by a train, an accident that cost him a leg. The story had been around for years that the red-haired spitfire had run him off after that, yelling from the window, "What good's a one-legged man!"

The surviving relatives had assembled in a back room to fight over the will and drink and tell riotous lies. I took one of them aside and asked if the story about the railroad man was true.

High-kicking street fighter in Chinatown's Festival of the August Moon parades his martial skills. An island in a commercial sea, Chinatown's tight-knit community of 3,000 continues to attract immigrants from the Orient, new arrivals squeezing into the already crowded homes of friends and relatives.

Sharpening their stick play, the Elder Street Bombers (**left**) practice for the tough competition in Boston's playground hockey league, where asphalt replaces ice and players slap a rubber ball instead of a puck. Staple of South Boston and Dorchester housing, a row of wooden "triple-deckers" rises in the background.

"True, lad. Why, 'twas a marvelous good time we had out of it."

"How can that be?" I was baffled.

"Well, in those days, the Irish buried any parcel, arm or leg or hand, that happened to become detached. It was given a proper burial—thinking, you know, that a person wants to walk into paradise with all his parts on. Well now, I went to the hospital where the man was lying there so sad, and he said to me, 'Patrick, me leg.'

"I said to him, holding my hand up, 'The leg's been buried,' and I showed him the receipt from the funeral home, certifying to the proper burial, at a cost of $36.00. He paid me then and there, reaching up behind the pillow for an old black wallet, and he thanked me most heartfully. And my, did we ever have a party with that $36.00!"

"But didn't you have to pay that money to the funeral home?"

"For what? Michael O'Neill worked there and he had come out with the receipt all made out. That's where we had the party, in the back of the funeral home."

"What did you do with the leg?"

"Heaved it in the incinerator, lad! We figured St. Peter would let the poor man through after the life he'd led—leg or no. Why throw good money into the ground?"

THEY WORKED on the railroad, and they worked on the docks, and they worked on the police force, and as nurses and servants and hod carriers. They were poor, the children of famine back home. They were illiterate, the offspring of centuries of suppression.

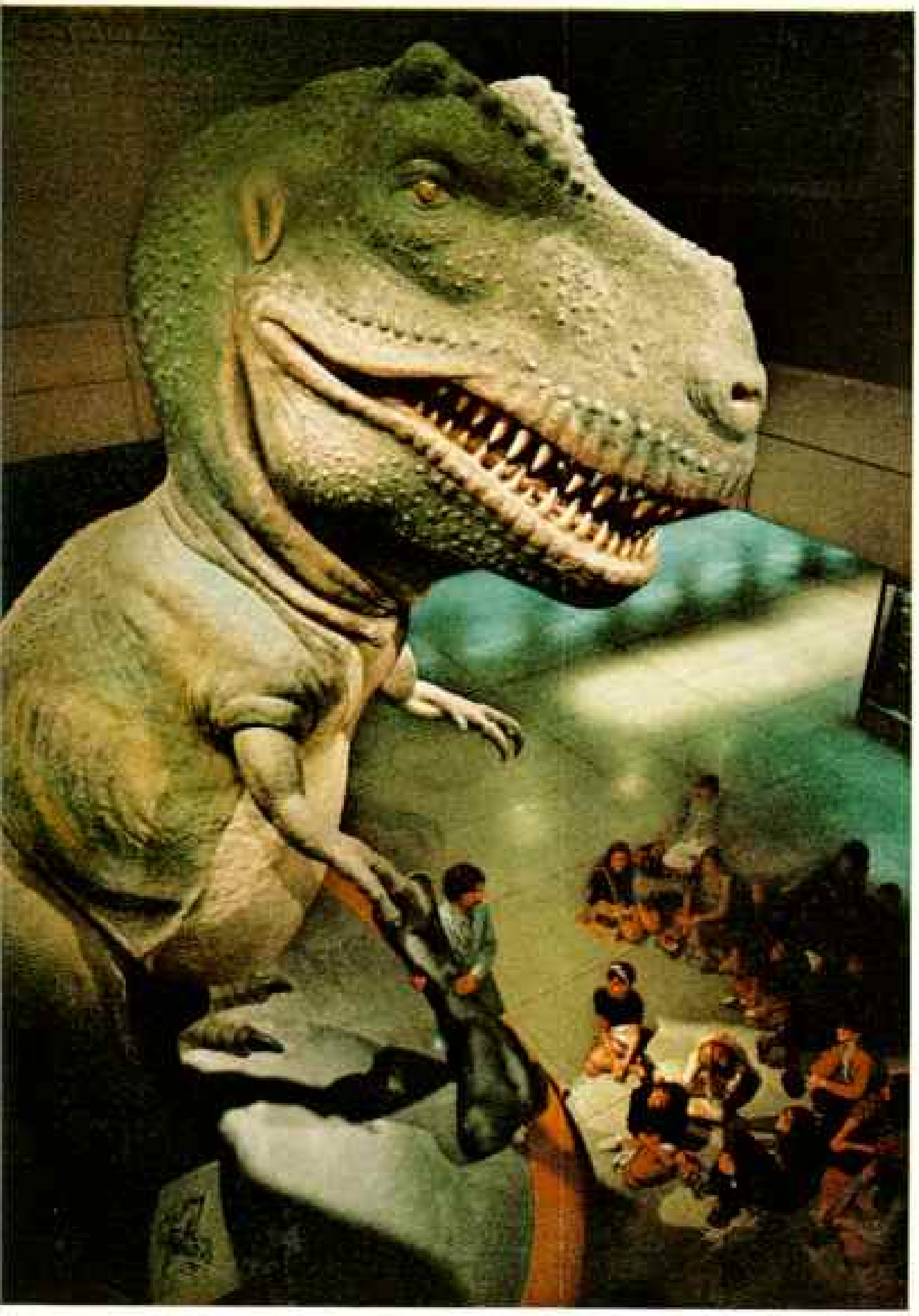
One old Irishman told me, "They had a room over in East Boston, where the boats landed, and a pole in that room, where they tied the poor lads while they put on their first pair of shoes."

But they were quick and fay and loved the political game, and they had Holy Mother the Church with her comforting embrace to give them birth in the Lord, wash their souls of sin, marry them, educate their young, and send them off into the next life, when all was said and done.

The Irish multiplied, turned their numbers into votes, did battle with Lodges and Saltonstalls, and established a rousing political tradition from which sprang the McCormacks and the Kennedys.

Dorchester still has its Irish, within the sound of St. Gregory's bells, along streets named Clancy and O'Connell, where stores like the Green Leaf have shamrocks in the windows and sell Irish imports. The last of them are leaving Roxbury to the blacks.

Charge of the blister brigade, the 77th annual Boston Marathon sets out from suburban Hopkinton (**left**) for Boston, 26.2 miles away. More than 1,500 hardy amateurs entered the body-punishing event—including 65-year-old Johnny Kelley (**below**), who won in 1935 and 1945 and seven times finished second. Their legs pounding and lungs aching, contestants gulp water and encouragement from friendly spectators, stealing the thunder—for at least one day—from the city's professional baseball, hockey, football, and basketball teams.



On the prowl—or so he looks—Rex the dinosaur rears above a group of high-school admirers; a mock-up of one of his leg bones underscores the monster's size. Built for Boston's Museum of Science with donations from visitors and Filene's Department Store, the fiberglass *Tyrannosaurus rex* stands head and fangs over competing exhibits in the esteem of the museum's younger patrons.

With Yankee pride, Boston views its cultural riches: the Symphony Orchestra and the "Pops," the Museum of Fine Arts, and the book collections of the Public Library and the Athenaeum.

Taking the zoo to the people, Boston's Zoomobile brings a tolerant, four-foot alligator within the reach of surprised youngsters, whose cheeks are daubed with paint for a neighborhood church fair. Touring the city's streets, the Zoomobile enables children to make friends with animals they may never have known existed.

I fell in with a young policeman, Roxbury bred. "I moved my mother out of here not long ago—to Dorchester. She's only waiting for the day she can go back to Roxbury. But she's 86. . . ."

BOSTON HAS SOMEHOW found a man for each of its seasons. When it was ready "to fall into the harbor," reform Mayors John B. Hynes and John F. Collins came to the rescue. Under Collins, and a group of bankers and businessmen quickly nicknamed the "Vault," the skyline began to grow for the first time in many decades.

With their backing and planner-developer Edward J. Logue's impetus and direction, 14 skyscrapers soared above the narrow downtown streets, bearing assertive names like One Beacon and One Federal, ten of them occupied by banks or insurance companies. The new City Hall, a restoration of the Quincy Market and waterfront areas, redevelopment of the South Station—the construction goes on, all of it crowned by the Prudential Center in the Back Bay, and its younger rival, the John Hancock building.

"Such tremendous growth had taken a social toll in neglect of the other needs of the inner city," Mayor Kevin H. White told me. White, a handsome, dynamic, and strong-minded man (page 366), seems to draw an invisible charge from the pavements he loves to walk. His office, a well-furnished living room, has a huge window framing Faneuil Hall and the restoration work going on at the Quincy Market, a constant reminder of the tradition of which the mayor of Boston has always been custodian.

"The tax problem," he said, "is Boston's Achilles' heel. More than half our land area is taken up by religious, educational, and governmental institutions, everything from the State House to the largest federal center in New England. Governments are the city's largest employers, but they pay no taxes. So 70 percent of the city's income comes from the property taxes paid by less than half the city's property holders, with the result that our property tax—$196.70 per $1,000 of assessed valuation—is the highest of any major city in the country."

White's philosophy is partly the result of a baptism of fire. He had been in office only a few months when the assassination of Dr. Martin Luther King, Jr., rent the city, as it did so many others.

"On that day," he told me, "my real education as a city politician began."

His response has been to spend money on the inner city. In the shadow of Collins's skyscrapers, for example, White built 20 new schools in a single year. "The whole attempt," he says, "is to keep a middle class in a livable city and not let it turn into a place for the rich and the poor."

The poor it has—black poor, Spanish-speaking poor, white poor. Toward Roxbury spreads a wasteland of old houses filled with them, and beyond, Blue Hill Avenue is still distinguished by the hulks of large wooden houses, once resplendent, by abandoned shops whose Jewish clientele long ago left for the suburbs, by still-boarded windows and blackened walls that mutely testify to the violence of racial disturbances in the late 1960's.

ONE WELCOMES THE SNOW because it gently covers the wounds and poverty of places like the old South End, where the forces that go to make a modern city, or unmake it, are most directly locked in battle.

The South End started life with every expectation of being a better sort of place, but it had bad luck in the depression of 1873.

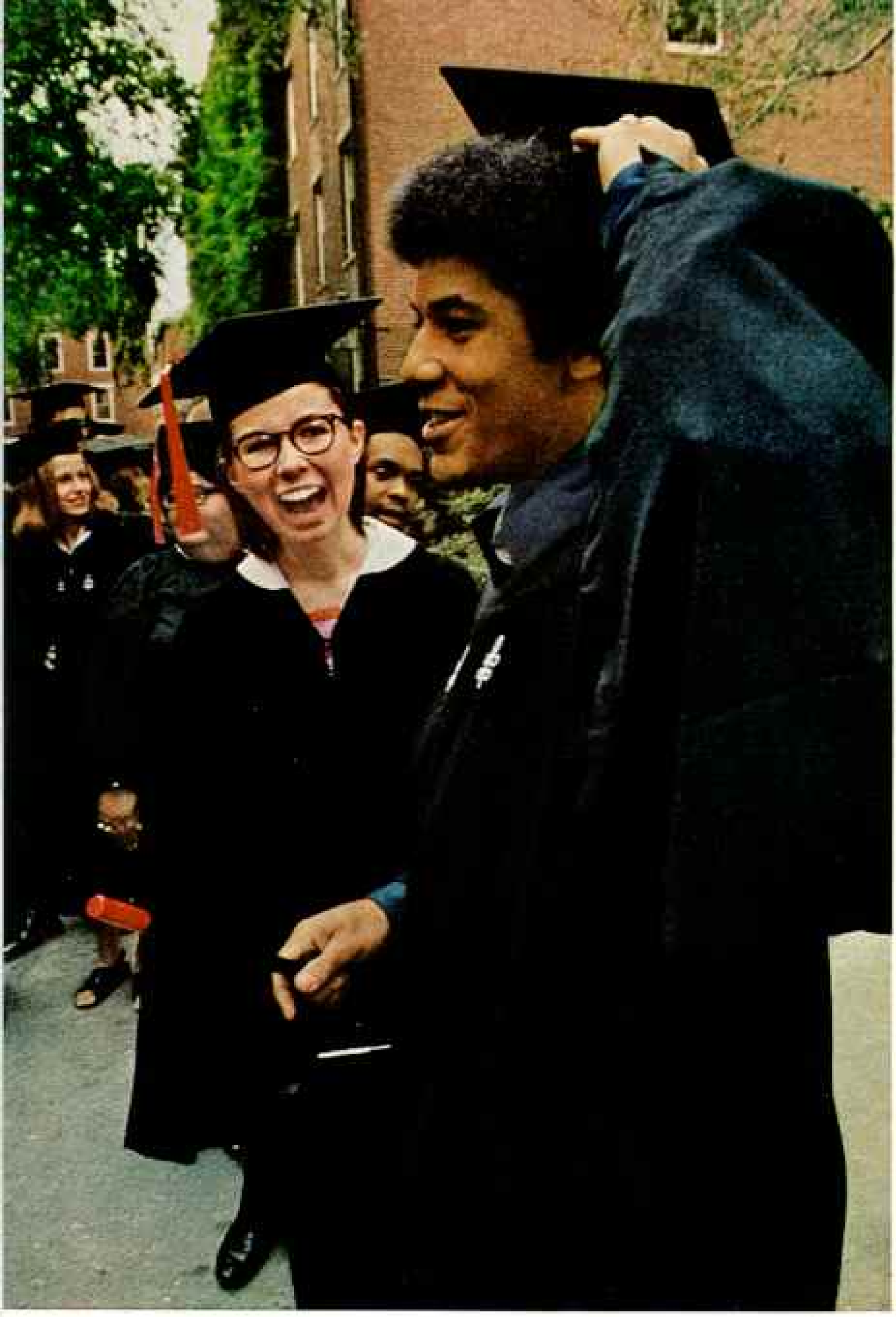
The fictional George Apley remembered his father, who had moved to the developing South End, going out onto his front porch one morning.

"'Thunderation,' Father said, 'there is a man in his shirtsleeves on those steps.' The next day he sold his house . . . and we moved to Beacon Street."

A lot of his kind went with them, and the South End became and remained "rooming-house Boston." Nevertheless, many of the area's streets that once tried to be elegant are in fact elegant, especially Union Park and Worcester Square. The South End is famous for its large collection of beautiful bowfront Victorian row houses.

Its potential has not escaped the Boston Redevelopment Authority or the speculators catering to young professionals and white collars. From the Prudential Center southward, many of these houses are being gutted and rebuilt.

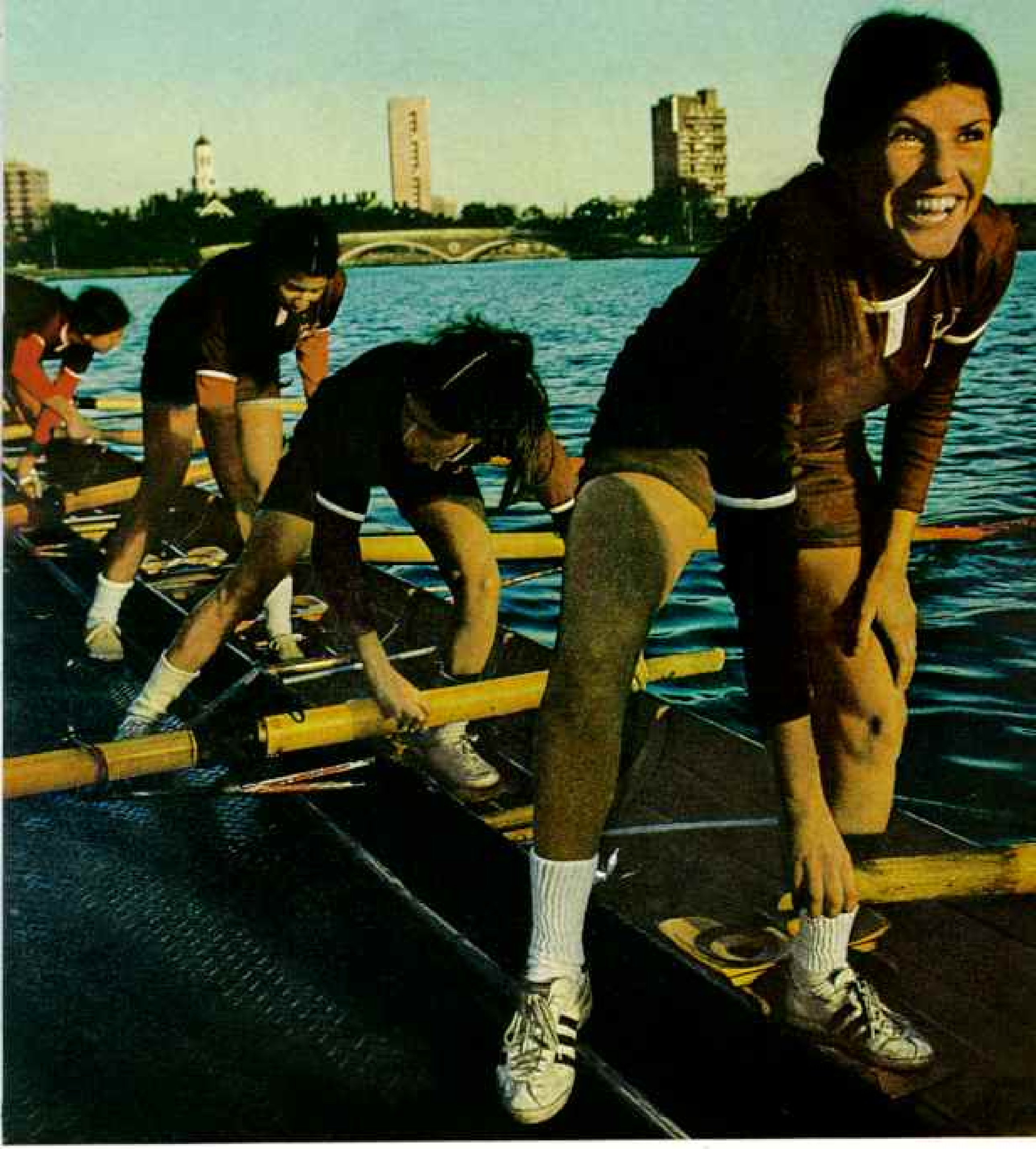
I stopped by to see Sam Hatchett, a tall, well-spoken black who runs the Little City Hall on Blackstone Square. Sam earned a Harvard degree for the price of a few bushels of wheat. In 1836 John Lowell, Jr.,



Baton in hand, Emile Godfrey, the First Marshal of his Harvard class, adjusts his mortarboard (**above**). One of the area's 61 degree-granting institutions, Harvard was founded in 1636, when Boston was barely six years old. On Harvard's distaff side, the Radcliffe crew sets its oars for an evening workout (**right**). Explains one girl of her participation in the traditionally male sport, "I got tired of not understanding what all the guys were talking about."

left a bequest to pay for adult education, specifying that the fee per course charged by the school be "the value of two bushels of wheat," for convenience considered by the school to be worth about $5. Related fees have raised the cost now to about $30 per course.

"I love languages," Sam said. "I'm learning Chinese. I'm a curiosity, a black man speaking Greek and Chinese. It knocks them out." And he smiled a smile so wide and pleasant that it gave us both pleasure.

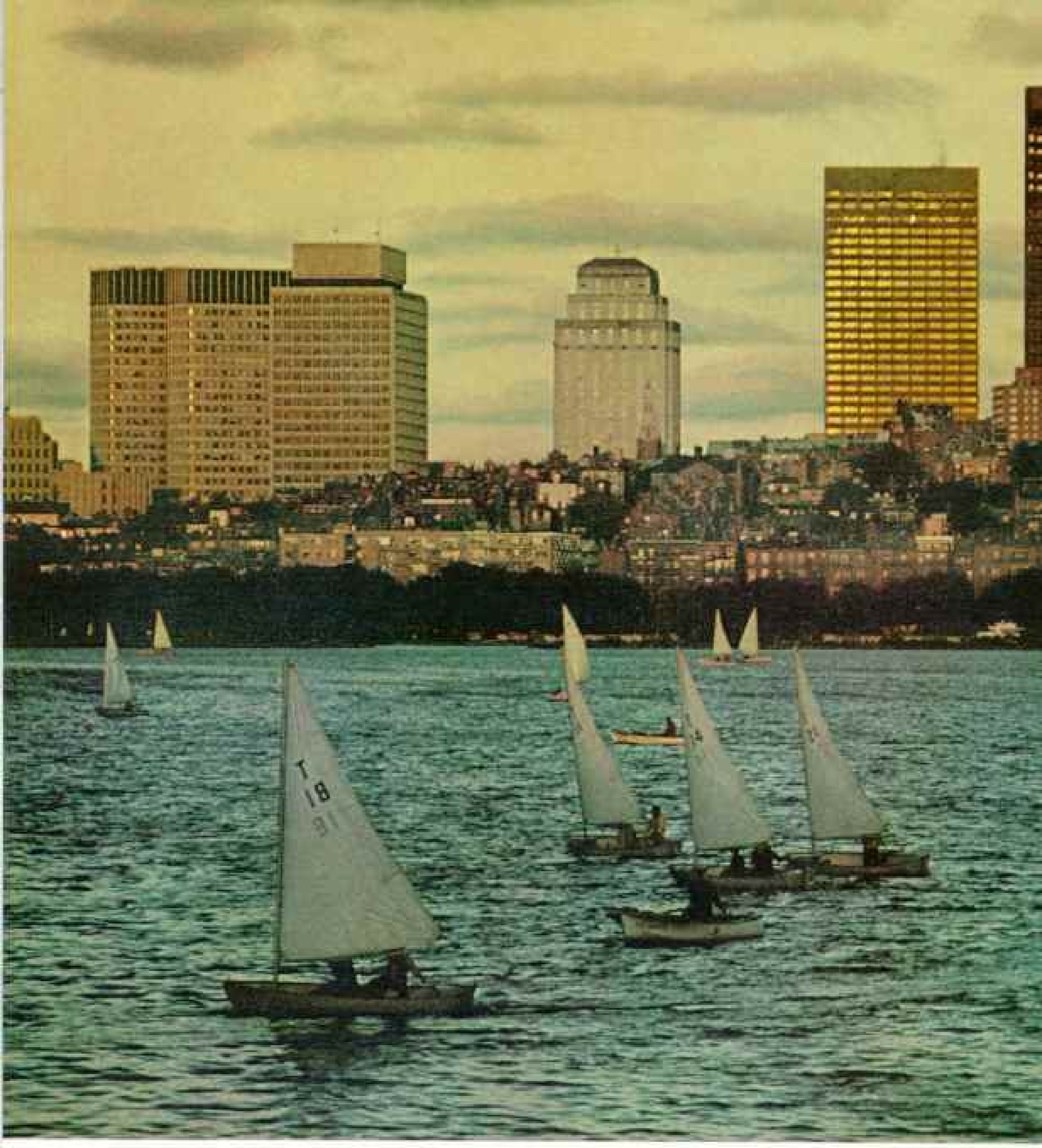


"Down here, you've got to talk everything. We've got 10,700 whites, about 9,000 blacks, a little over 6,000 Puerto Ricans, and almost 3,000 Chinese, Koreans, and Japanese, with a few Syrians and Armenians."

People have been steadily leaving the 600-acre region since the start of urban renewal. As the population declined, the value of real estate rose; a house that sold for $10,000 in 1960 now may run as high as $35,000, and up to $90,000 if "rehabbed."

"The city's South End faces the familiar whipsaw of urban renewal," Sam told me, "casting the poor out in a process that rehabilitates the housing for the well-to-do. Pembroke Street, for example, is Puerto Rican south of Tremont Street, and white upper-middle north of it. We call that other side Pembroke *Other*."

I went up to Pembroke Other and Pembroke Nether as well, where I found young Danny Soltren and his wife with their small



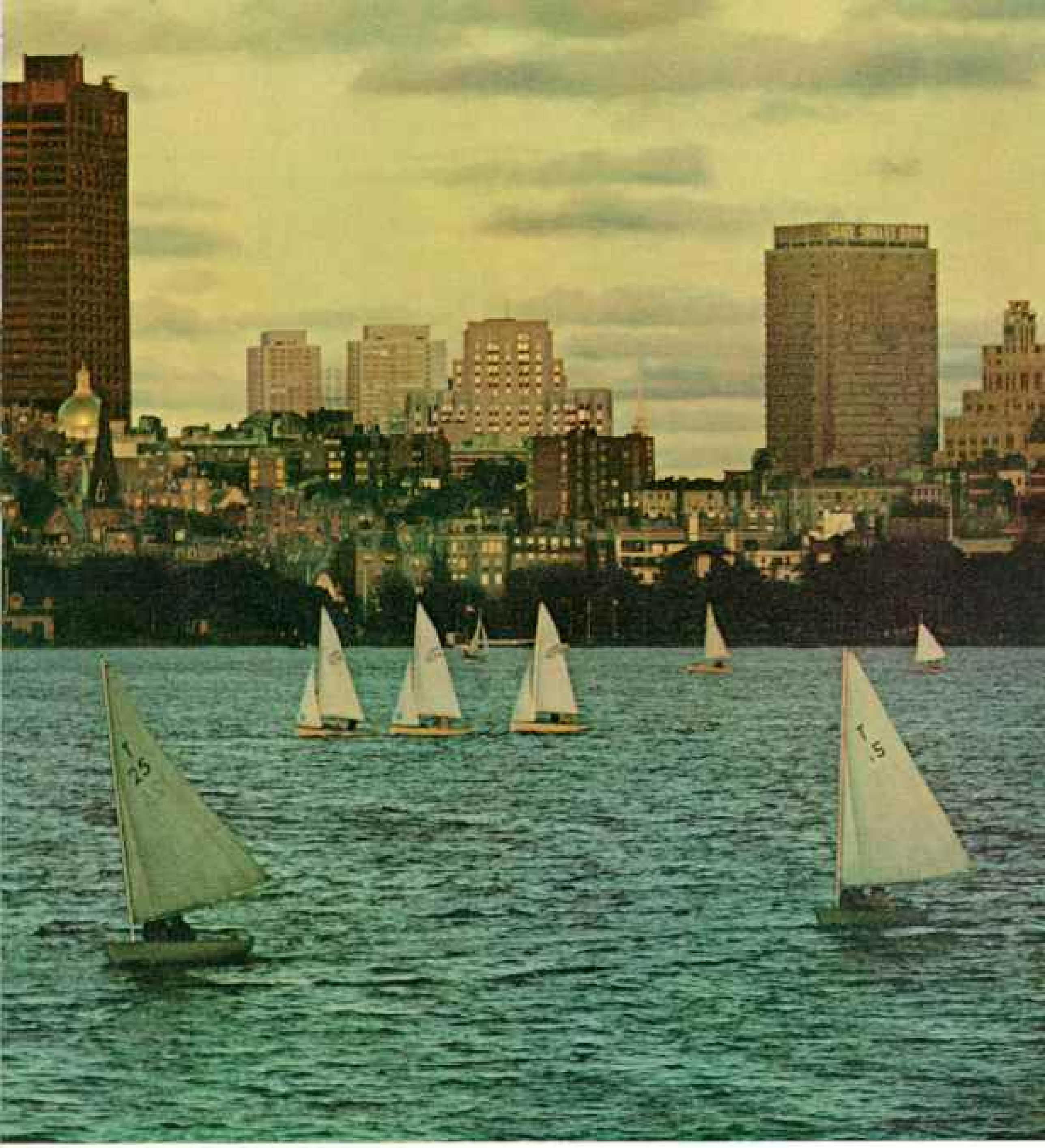
White canvas blown taut in an evening breeze, sailboats slide across the

daughter almost literally holding the fort.

They occupy the third floor of an elderly house. The kitchen windows look out on a devastated landscape of brick piles, blackened, snow-streaked lots filled with rubble, and broken streets.

"You see the building there to the left," Danny said. "It burned last Friday night. They evacuated us at 5 a.m. because the sparks were flying onto our roof here. That building is privately owned. We have had eight fires in the path of the renewal since summer. That is too many for accident. We suspect arson."

Like so many other things in the South End, the event reminded me of Mary Antin, who wrote so movingly in *The Promised Land:* "While the great can speak for themselves



Charles River Basin below Beacon Hill and the towers of downtown.

. . . the humble are apt to live inarticulate and die unheard."

But Daniel Soltren intends to be heard (page 368). He is active in the Emergency Tenants Council, predominantly Puerto Rican, as well as the South End Area Project Committee that deals with the federal and city housing bureaucrats.

Danny interprets the events in the South End as a struggle between a resident people and powerful forces of profit. He knows the men who hire out to so-called "Andy Boy agencies"—work today, get your pay today, try again tomorrow—and knows the statistics: as many as four out of five jobless in some sections of the End, and a lot of welfare checks being paid.

And he knows, too, other men who "know

Homeward swing of a young office worker adds a fresh lilt to a time-mellowed street (**facing page**). The city remains receptive to newcomers and their ways.

"Boston had earned its good name," author Van Wyck Brooks once wrote, "and, as for the unkind things that were said about it, one usually found some Boston man who had said them first and better."

Starched fronts and studied elegance mark Waltz Evening at the Copley Plaza (**above**). When the swaying Viennese dance step made its Beacon Hill debut in 1834, Boston was already 204 years old, and the now-staid waltz seemed a scandal.

how to push good paper through a bank," to buy up properties for sale to the well-to-do.

It seems to him that the redevelopment forces assume that no one is out there, or at least no one worth caring about. But, he says, "Government planners, and the private speculators and developers who are camp followers, do not live in the South End. I do."

BOSTON'S FUTURE is as difficult to read as that of any other American city, especially with its growing ethnic awareness, its restrictive tax base, its urge to grow and contrary desire not to, and the dwindling amounts of federal money now available for urban problems.

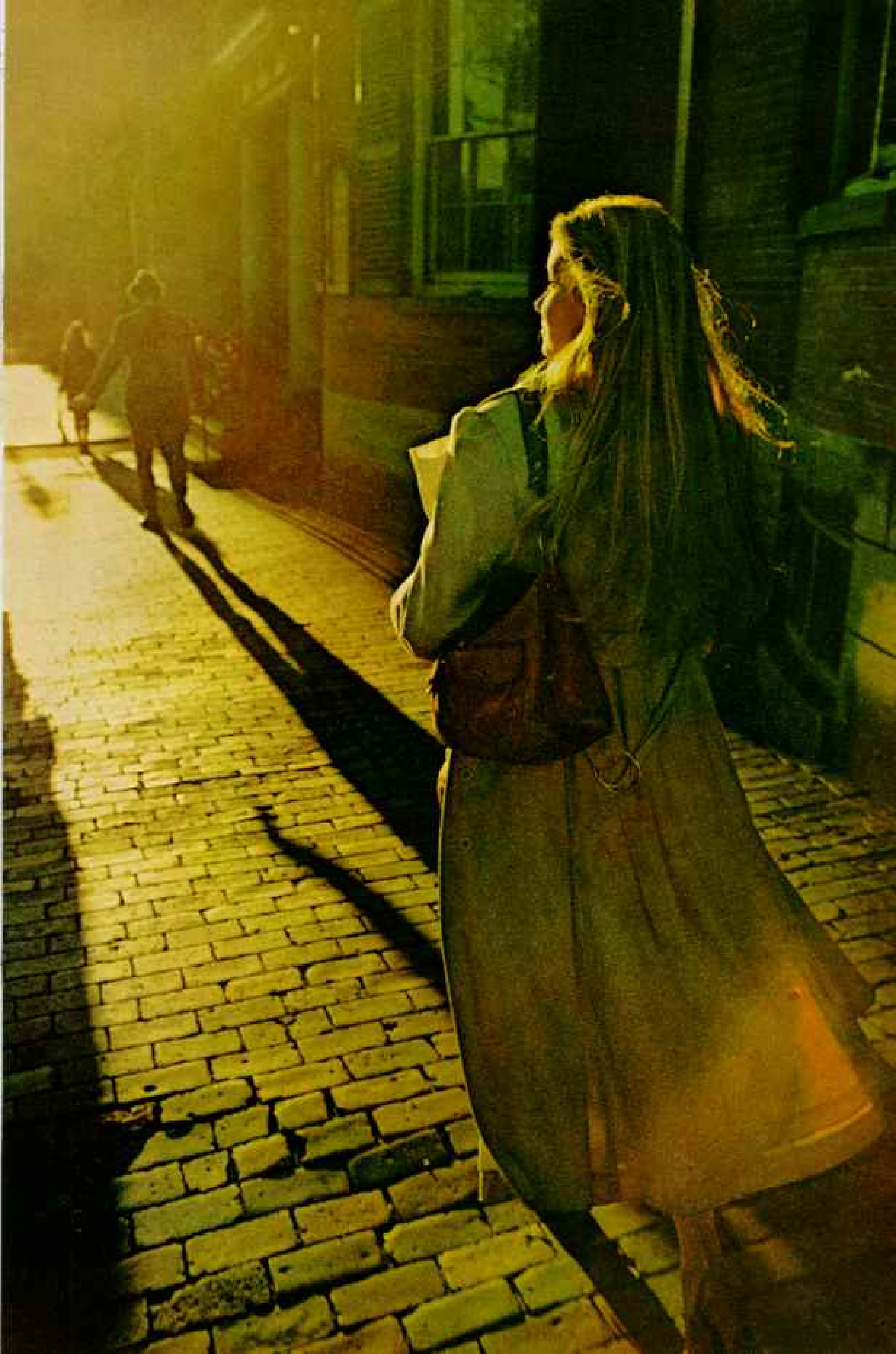
I went one rainy morning over to the Harvard Yard to talk with Hale Champion, now a Harvard vice-president but formerly head of the Boston Redevelopment Authority during times of growth and stress. I found him still full of fight and optimism.

"Boston continues to be a very attractive place, and for the same reasons it always has," he said. "There is a continuing vitality, even through the current stresses and distresses. We have kept on going as a vital commercial center, and are now maintaining a substantial residential population. The city's problem is not financial—there is great wealth—but fiscal, how to raise the public revenues and translate them into amenities that keep a city alive and growing.

"I doubt if Boston could take much more of the super-development we had. It was time we paid attention to the neighborhoods and needs of people, to the questions of education and opportunity, to competing in the world and living as a city. Boston has a lot going for it. We still have a chance."

Well, Danny Soltren thinks he has a chance, and so does Mrs. Cabot, and so does Zorro, once he is finally sprung and in hard covers, and so do Diggory Venn and the guys and dolls at Charley's, and so do the Red Sox and Bruins and Celtics fans—they think they might even *win*.

Boston has accepted, sheltered, educated, put up with, put down, and made some kind of citizen out of all of them. As she has for countless others, that warm brick mother of human aspiration, that bearbaiting ring of local politics, that quiet library of the mind and subtle uplifter of the human spirit—that bawd, that fake, that outrageous flirt of a place that makes a man feel so young. □



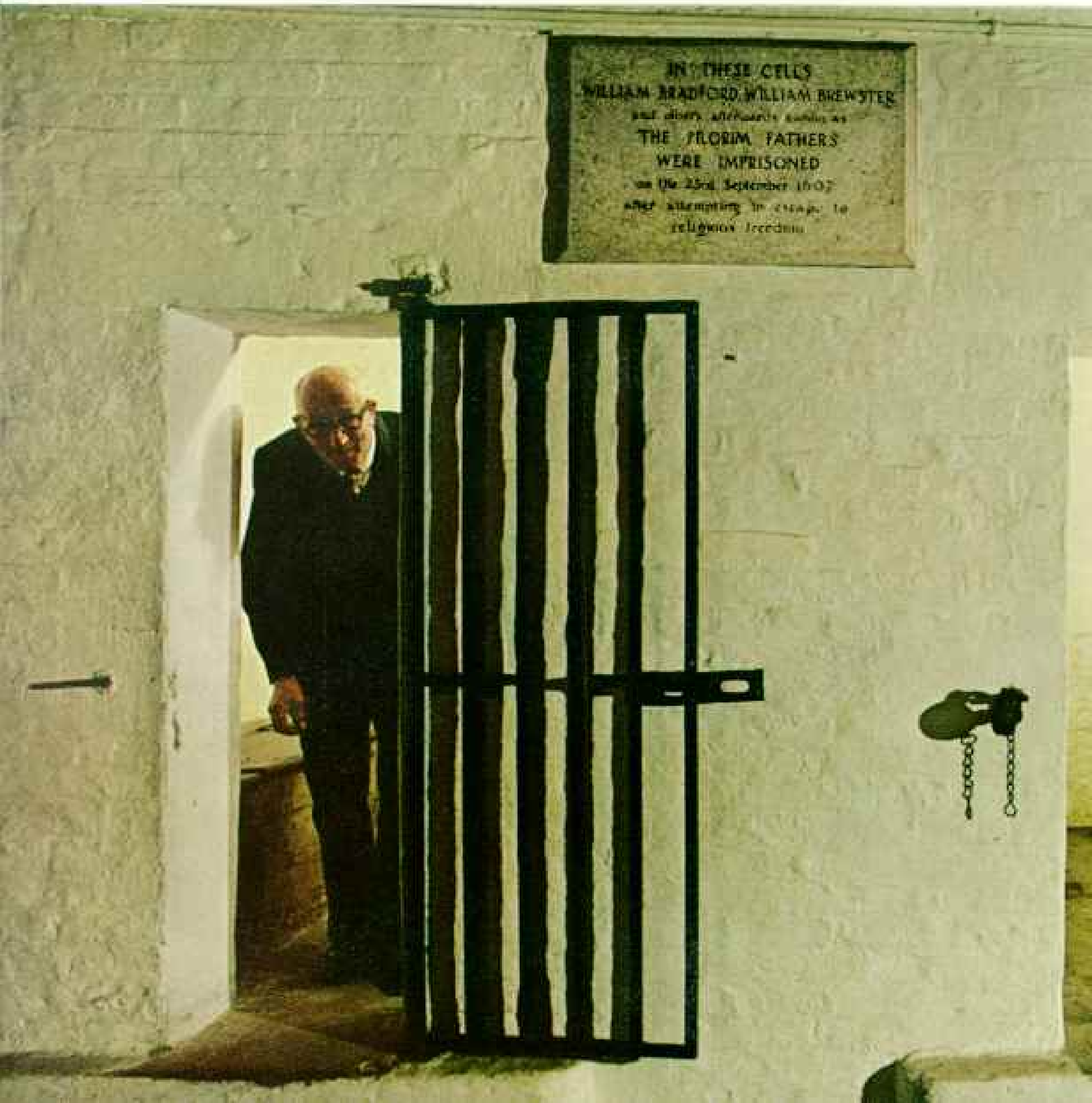
ST. BOTOLPH'S TOWN

The Original Boston

By VERONICA THOMAS

Photographs by JAMES L. AMOS

NATIONAL GEOGRAPHIC PHOTOGRAPHER



"YOU'RE WANTING THE CELLS, I expect," said the friendly attendant in the Guildhall. "Mind you, they weren't part of the original building." He added this conscientious footnote as he explained that the Guildhall, a narrow, chapel-like structure of brick and stone, dated from the 1400's. "The cells are quite a bit newer; they were put here in 1552."

Tiny, windowless, with doors of heavy iron bars, the two cells in the cellar of this venerable edifice are one of many links between England and New England, links that include two cities named Boston.

Thirteen years before the *Mayflower* sailed for the New World, a small band of Puritans languished in these cells, betrayed as they tried to flee to Holland. Among the prisoners were two Pilgrim Fathers whose names would be written large upon the accounts of Plymouth: William Bradford, governor of the colony in the struggling early years, and William Brewster, wise elder statesman.

Pilgrims slept here—behind bars. Prison doors of Boston's Guildhall clanged shut briefly on William Brewster and his followers when they tried to flee England in 1607. Some of them ultimately set sail on the *Mayflower* for America and founded Plymouth in 1620. Other Dissenters, including Puritans from Boston itself, set out a decade later and, led by John Winthrop, established the namesake town in Massachusetts Bay Colony.

Freedom Quest Leads to Jail

What's in a name? This one was long St. Botolph's Town, for a Saxon monk who founded a monastery in the area in 654. Eventually, Saint was dropped and Botolph's Town became Boston, as usage smoothed off the rough edges of a few consonants.

"All the way from New York, are you?" inquired the freckle-faced receptionist when I checked in at the White Hart Hotel. "There's a New York in these parts, too. And a Bunker's Hill." (She pronounced it the local way: "Boonker's.") "But you've got to be quick or you'll miss them—they're that small."

Boston itself is a town of 26,000 people rising out of the watery Fens of Lincolnshire on the eastern edge of the Midlands, 93 miles north of London. Center of good farming country, it also is a port, joined to the North Sea by the River Witham, which meanders through the town (map, opposite).

One day I went down the Witham a few miles to the spot where Brewster, Bradford, and their friends are believed to have embarked in September 1607 in their ill-fated first attempt to find religious freedom.

These Separatists, as the Pilgrims were often called, came from hamlets to the northwest: from Scrooby and Austerfield, where the reward of their convictions had been suffering and oppression. Tolerant Holland offered refuge. But they had to depart England by stealth; a license was required to leave, and Dissenters had no hope of such a favor.

They sought out the master of a Dutch vessel. Would he take them down the Witham and on to Amsterdam? Yes, he would.

"So after long waiting, & large expences

Narrow Wormgate street, walled by old houses, shows little change since the days of religious persecution of the Puritans. The town they fled from, seven times larger today with 26,000 inhabitants, took its name from a Saxon monk, St. Botolph, who built a monastery in the area in 654—according to one legend on a spot near today's bustling Market Place (**below**). Some produce, such as bananas, is imported; vegetables and flowers come from the "kitchen garden of England," as the county of Lincolnshire is known.

. . . he came at length & tooke them in, in the night," Bradford wrote years later, in his *History of Plymouth Plantation*. "But when he had them & their goods abord, he betrayed them. . . ." Catchpoles, the rough-and-ready 17th-century equivalent of sheriff's deputies, boarded the vessel. They arrested the Pilgrims, searched them for valuables—"yea even the women furder then became modestie," Bradford wrote—and took the group to the Guildhall cells. Released a month or more later, some reached Holland the next year—from where both Brewster and Bradford began the epochal journey to the New World.

"The Stump" Dominates the Countryside

A granite monument, moving in its simplicity, stands on the Witham's north bank, with open fields behind. Many American Bostonians were present in 1957 when it was erected by the General Society of Mayflower Descendants and the English Boston's Borough Council. From that spot I looked upriver and saw the Gothic tower of St. Botolph's Church—a sight the Pilgrims knew.

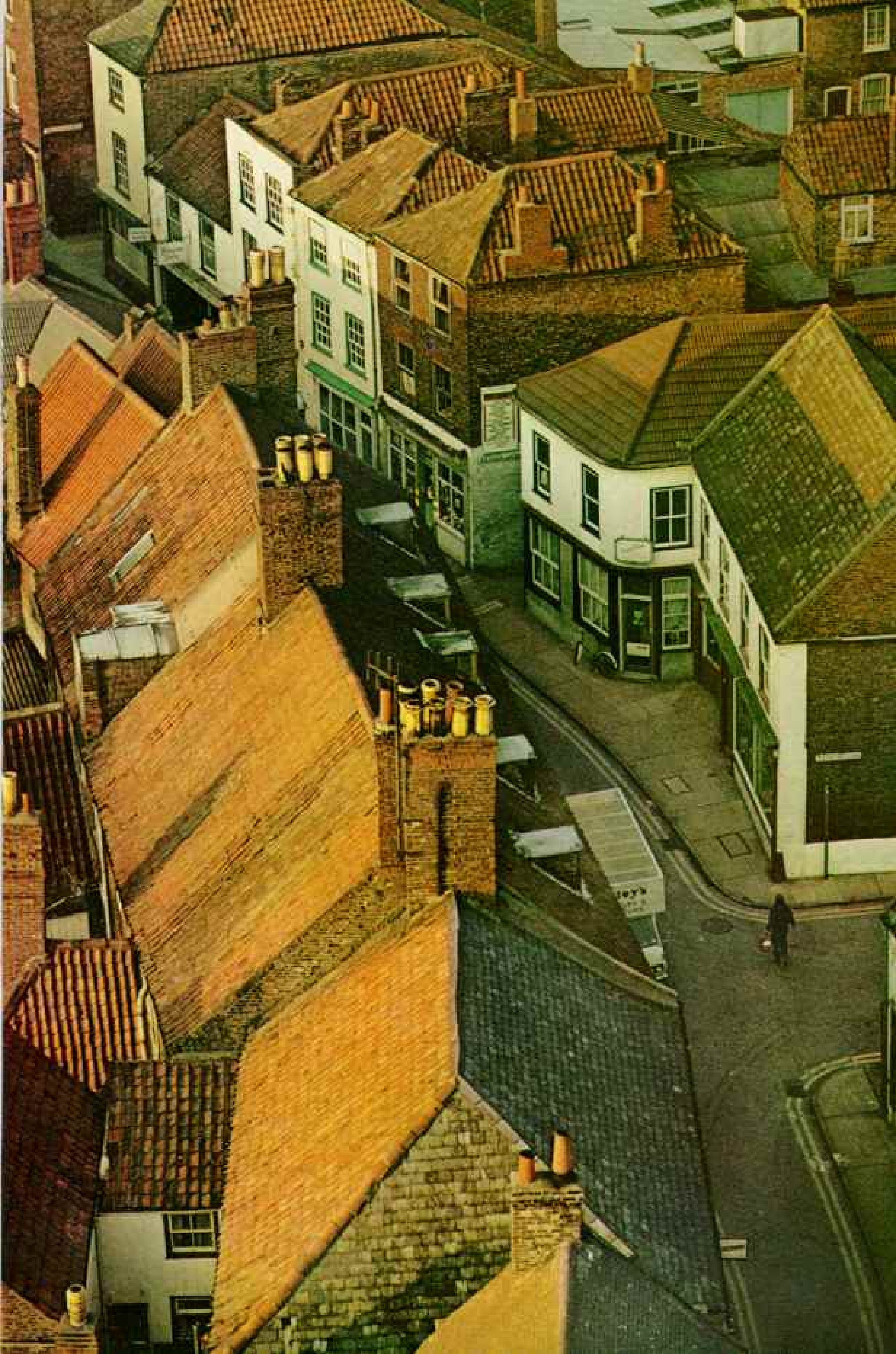
In fact, no matter from where I looked upon Boston, there was lofty St. Botolph's, dominating the crooked streets and red-brick houses (pages 388-9).

All about Lincolnshire the tower is known as "Boston Stump" or simply "the Stump." The nickname may have been inspired by the shape at the top; instead of tapering like a proper church steeple, it ends in a flat octagonal lantern tower, from which a light once guided sailors.

To me, St. Botolph's tower is anything but stumpy; it soars to 272 feet and remains a familiar landmark to mariners. One rainy day I stood on the bridge of a German ship approaching the mouth of the Witham. Through a rent in the gray murk a familiar shape appeared, far off. Exclaimed the captain softly: "*Ach, der Stumpf!*"

On another day, almost under the Stump, I discovered the Britannia, a small white-faced pub that squats by the river. Its orange pantiled roof is typical of old Boston; a chimney springs out of one corner like a cocked ear. Inside, a gray-haired man was polishing glasses behind the bar. To one side several customers were absorbed in a game of dominoes.

"Hel-*lo* me dear!" The gray-haired man spoke as if he'd been expecting me. "Now what is your pleasure?" We chatted as I sipped a mild-and-bitter, that traditional English mixture of ale and beer. I learned that he was Roy Smith, the pub's manager. He



Tide's out, and cockle fishermen go in to harvest the broad sand flats of the Wash (**left**). With short-handled rakes (**lower**), a two-man team can gather almost two tons a day.

Ships of the Hanseatic League, a medieval association of German merchants, plied this bay to and from Boston, whose wool exports made her a leading English port by the 13th century. But in the 15th century, shipping channels began to silt up, a series of destructive floods occurred, and the town went into decline. Now, with the Witham dredged and the docks rebuilt, Boston exports steel, grain, and cattle. Timber and paper are the principal imports.

Mug of "mild" brings a smile of pleasure to George Green, 68 (**above**), native Bostonian and once foreman for one of the area's commercial farms. The Britannia pub was a favorite haunt of townspeople in Puritan days.

poured himself an ale and took a long swallow. "We get quite a few Americans coming through Boston," he said. "Sometimes they'll stop off here for a drink and a yarn. Our little pub seems to interest them—because of its age, I suppose. This place was an alehouse when they were building the Stump."

That was in the 15th century, when Boston traded heavily with cities of the Hanseatic League, the German trade association that controlled much of the commerce of Europe. Boston was a major English port, for a decade even rivaling London, and local merchants, grown rich on the wool trade with the Continent, put up the money to provide the town with a splendid church. The foundation stone was laid in 1309, though the tower was not begun until a century later. It is today one of the largest parish churches in England—almost like a cathedral.

I entered the church by the south door, made of slabs of oak that dovetail. The interior seemed deserted; the sound of my footsteps echoed off the fluted columns and stone arches. Bits of light, fragmented and colored blue and crimson by stained glass, danced among gray shadows.

Powerful Pulpiteer Stirred Dissent

The ties that bind St. Botolph's and the Boston of New England are strong.

As Puritanism gained adherents in the 17th century, many English Bostonians were indoctrinated at St. Botolph's by their vicar, the Reverend John Cotton. I walked toward the altar and stopped in front of the carved oak pulpit. "That has been here since 1612," said a young man in clerical clothes. Thus I met the Reverend Mark Spurrell, who is lecturer of St. Botolph's. "That pulpit was built the same year John Cotton became vicar of this church," he added.

Cotton preached a particularly vigorous form of Puritanism, Mr. Spurrell related, and his congregation risked persecution. Some decided to found a new colony in New England. In March 1630, the first party of Bostonians sailed in the *Arbella*, led by John Winthrop of Suffolk. Before that year was out, the community in which they settled in New England was officially named Boston.

Cotton did not go with Winthrop's group, but, as Mr. Spurrell explained, "Eventually his Puritan beliefs made it necessary for him to resign as vicar and get out of England. In 1633 he joined some of his flock who had already settled in the other Boston. Whereupon, having been vicar of Boston, Lincolnshire, for 20 years, John Cotton became vicar of Boston, Massachusetts, for 19 years—until he died in 1652."

In all, some 250 English Bostonians voyaged from the mother city to the New World offspring—including five men who were chosen governors of the Massachusetts Bay Colony and eight who were involved in founding Harvard College.

Spicy Talk by a Butcher in a Boater

I explored Boston streets with such fascinating old names as Liquorpond, Shodfriars, and Wormgate, and visited small family-run shops. In one I met Jack Mountain, a jovial man in his late fifties who wore a straw boater and an apron of navy pinstripes. "Well, it's your sign of a master butcher, isn't it?" he said in explanation of the apron. The boater is an embellishment of his choosing.

"I use only fresh herbs, luv—different ones for the different things I make," Jack said. "Sage for me pork sausages. Parsley for me stuffed chines. A bit of sandalwood for me haslet—that's like a paté. All of these are local specialities. And rosemary. I use rosemary too." He winked. "They say if rosemary thrives in the garden, mum is the boss." Jack tilted his boater rakishly. "Let me tell you, luv: No matter what I turn me hand to, it's bound to be delicious!"

Jack's father, Tom Mountain, was mayor of Boston in 1938 when a New England Bostonian, U. S. Ambassador Joseph P. Kennedy, dedicated the American Room of Fydell House, a Queen Anne-period mansion next door to the Guildhall. Since then the mansion has become Pilgrim College, offering adult-education courses. But the American Room is kept ready for use by any visiting Yank who wishes to sit and relax for a while.

The outdoor market, held every Wednesday and Saturday, is a Boston tradition. For color and variety it is surpassed only by the annual May Fair, when swings and roundabouts (as the British sometimes call merry-go-rounds) are added to the fun.

I toured the stalls set up for market day. Fresh fish stared at me from marble slabs. Costume jewelry glittered on black velvet. I wandered past stacks of shirts and handbags, past birdcages, used sports cars, pens of livestock, and wooden crates of cabbages and other vegetables. "Quality caulies, 6P each,"

proclaimed a sign on a mound of cauliflowers. Lincolnshire is known as the "kitchen garden of England," and the local vegetables are superb. Flower bulbs also are an important crop, and every spring fields are bright with daffodils and tulips.

Some of the produce and merchandise is sold at auction. "Coo-whoa! Blinkin' blimey!" shouted a young man in a turtleneck sweater. He stood on a box, holding a large bunch of bananas before a small crowd. "Now whose are they? Twenty-one bananas, count 'em, go on! If you priced them in the supermarket, you'd have a blinkin' heart attack! But here I won't ask ten bob, I won't even ask nine bob. I'll do better than that. Four and six! Now who's interested?"

He pointed a finger at the crowd and moved it slowly around, stopping when he came to me. "*Dar*-ling!" he said, grinning, "I'm yours. I mean *they're* yours. Come and look into my dark blue eyes!"

Now the crowd turned toward me. "Hey luv!" he bellowed, "Don't be shy. I'll *give* 'em to you. Honest! Won't cost you a penny!"

Up shot a man's hand. "Then I'll have 'em off you, mate!" He pronounced it "mayet."

"*You*, guv?" cried the auctioneer. "Not bloomin', blinkin' likely!"

The Wash Proves Costly for King John

Five miles from Boston, the Witham joins the Wash, a shallow bay opening onto the North Sea. "King John lost the crown jewels in the Wash," a river pilot told me one day. Actually, the king lost treasure looted on Scotland's border—and nearly lost his life—when the inrushing tide overwhelmed his baggage train on that shallow bay in 1216.

Though an important Hanseatic port, Boston gradually declined as the Witham's estuary, called the Haven, silted up. But in the past century a new channel has been cleared into the Wash and new docks have been built. The town exports steel, grain, and cattle; the major imports are timber and paper, from Scandinavia. Pilots steer about 1,200 vessels through the shallow waters of the Witham and the Wash every year, and the docks give employment to a thousand people.

But the sea, while providing a measure of prosperity, also guards its own. For centuries

Lincolnshire farmers have tried to dike the coastal areas so they could drain the marshes. This battle makes particularly apt the name of the district for which Boston is the center; it is called the Parts of Holland. (Lincolnshire's other administrative districts are the Parts of Kesteven and the Parts of Lindsey.)

"It is every farmer's dream to reclaim land from the sea," declared John Saul. A tall, bearded farmer, he is more than a dreamer; he has diked off 528 acres of salt marsh.

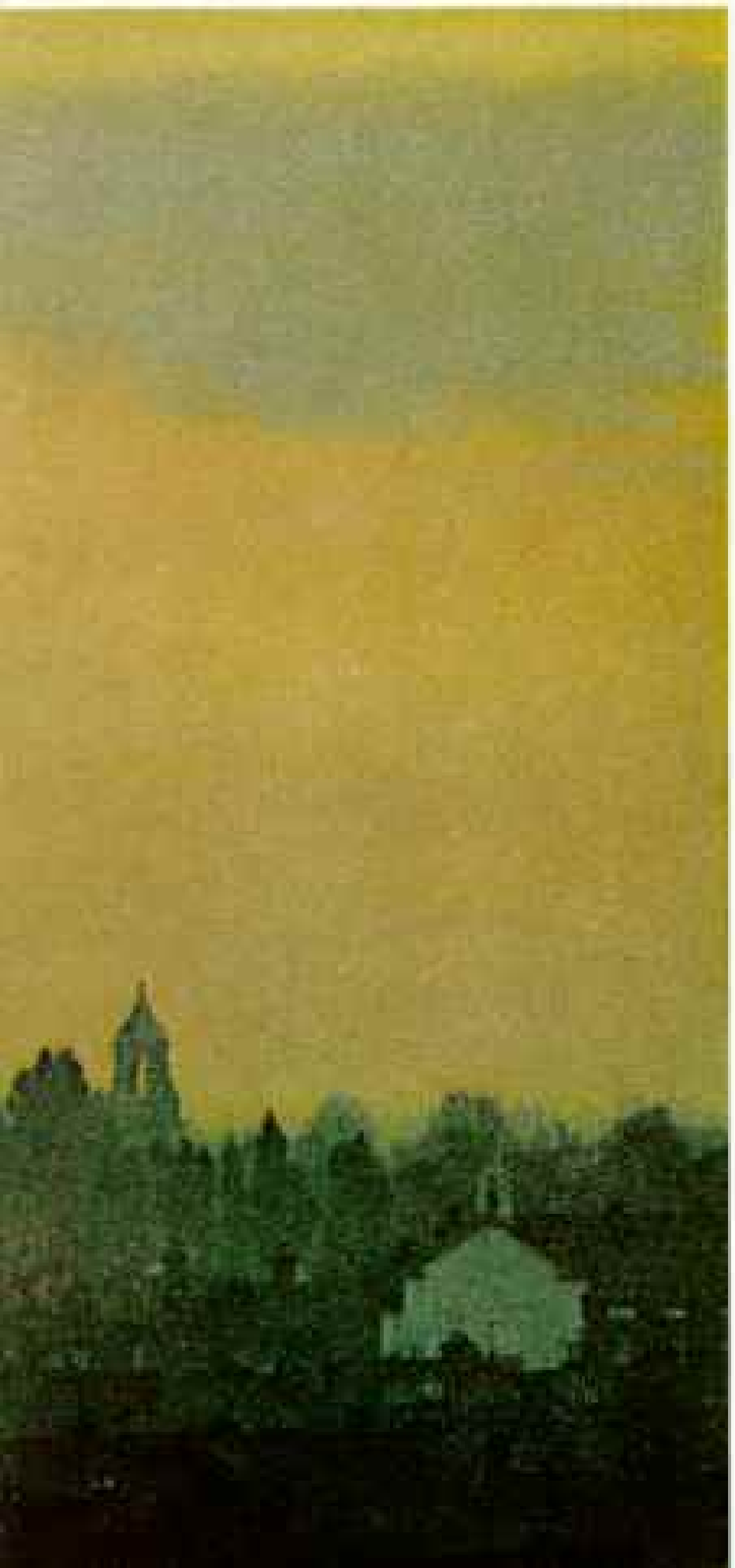
I drove to Mr. Saul's 3,500-acre farm, about six miles northeast of Boston, across marshlands that stretched for mile after level mile. He welcomed me at his sprawling, elegant old house, then drove me out for a look at the land he is wresting from the sea. His car bumped over a rough stone road atop a 3½-mile-long bank built in 1971 to stem the tidal floods. The sky hung low in shades of pearl and smoky gray, and the wind bore the tang of salt. Beyond the embankment, hundreds of oystercatchers flitted over unclaimed marsh, crying shrilly.

"The sea has all the minerals and silt deposits that make up good soil," Mr. Saul said. "It's taken more than 150 years for this field to silt up, and it will take five to seven years for the salt content to go down enough for crops to grow." Meanwhile, sheep and cattle graze on the reclaimed marsh.

Bunker's Hill Tour Doesn't Take Long

Returning to Boston, I detoured in order to see the local New York and Bunker's Hill. You *do* have to be quick, as I'd been warned, or you'll miss them. New York consists of one short street. Bunker's Hill is even smaller—half a dozen two-story houses and a shop-cum-bar—drowsing amid potato fields. Strange that this little hamlet should share its name with the first major battle of the Revolutionary War. The stubborn American defense on June 17, 1775, showed the colonists that British regulars, though they at last prevailed, were not invincible—and thus encouraged the fight for independence.

As I continued on my way, a familiar shape appeared. The Stump of St. Botolph's, symbolic of the strong links between the two Bostons, rose sturdy and indestructible against the evening sky. □



Last remembered sight of home for Boston's Puritans as they departed for a New World, the 272-foot tower of St. Botolph's Church (**left**) thrusts skyward. From its 600-year-old choir stalls, boys (**above**) sing glory to God. Preaching by Puritan John Cotton, a vicar of the church, helped spark the exodus to Massachusetts and the settlement of Boston. Later, Cotton also fled to the new Boston, where he continued his ministry.

The Family Farm Ain't What It Used To Be

ARTICLE AND PHOTOGRAPHS BY
JAMES A. SUGAR

AT 5:30 A.M. a pool of yellow light splashes from the kitchen window onto the frosted grass outside. Earl pulls on his work clothes and goes to the barn, which smells richly of hay and animals. "Don't think I'm rude," he says as he switches on the radio, turning the volume high. He explains that his cows are accustomed to music and news at milking time—a familiar spiel, and one that blots out unsettling noises. Besides, station WMT at Cedar Rapids offers a complete report on farm prices.

Earl spreads a shovelful of grain in front of each empty stall, then puts a shoulder against the barnyard door, admitting 26 black-and-white Holsteins.

While Glen Campbell sings and the cows munch their grain, Earl flushes a chlorine solution through his milking equipment. Everything was cleaned after last night's milking, but Earl means to keep the Grade A certificate posted in his dairy. With soap and a brush he scrubs the udders of the first cows to be milked, Pride, Paula, and Kitten, and attaches the soft rubber cups of the milking machines. A suction pump does the rest. In two or three minutes he is pouring white liquid into a stainless-steel receptacle. It steams in the November chill.

Eight yellow cats and one black tom bestir themselves from the rafters and a pile of feed sacks. Some follow Earl, purring and rubbing against his legs. He splashes fresh warm milk into two pans—a modest payoff to keep his barn rid of mice.

Sunday—Just Another Day?

Thus for Earl Zumbach of Prairie Township, Delaware County, Iowa, has begun almost every morning for 26 years. His boyish face suggests he is much younger than 47—or that long hours outdoors are the true secret of youth. The workday on his 320 acres of rich dark plain rarely ends before 7 or 8 at night. "It bothers me every which way to do more than the minimum chores on Sunday," Earl told me. "I think that day was meant for rest for more than one reason. But if I'm not careful, I find I'm working as hard on Sunday as I do any other day of the week."

When planting corn—racing both the calendar and the capricious weather of spring—Earl may see two sunrises in succession from the seat of his tractor. Morning and night, he did not miss a milking for 13 years; then neighbors spelled him while he took his

Purring sidekick surveys the dairy barn of Earl Zumbach, who with his family runs a 320-acre farm near Manchester, Iowa. Son Daniel (**facing page**) helps give iron shots to newborn pigs. Increased mechanization enables family farms to compete with huge agri-corporations and to set six of ten meals on U.S. tables.

family on their first vacation, to Disneyland in California.

Earl arranges to take on high-school youngsters to help bale hay in summer. Otherwise he depends for labor upon his family: his wife, Edna; four of their seven children who live at home; and the older son, 25-year-old Doran, who has a nearby farm and shares chores with his dad.

"Sometimes I get to feeling awful sorry for myself out here day after day," Earl confesses as he shoos the cows out. "Days when the temperature is 20 below zero, and I have to climb up in the silo and fix the auger motor—it's almost beyond endurance. And there are jobs out here that you couldn't make a slave do." He shovels manure from the barn floor. "But I like farming. If somebody told me I had to leave this farm, I'd be awful sad."

In the jargon of agricultural economists, a family farm like the Zumbachs' is a business "in which the operator is a risk-taking manager, who with his family does most of the farm work and performs most of the managerial activities." In the matrix of vast technological change, the triple requirements of risk taking, management, and hard work have been, for many farmers, overwhelming. "My dad was a good farmer," Earl told me. "But I can't survive by doing what was good for him 30 years ago."

He talked as he went about his chores, and I followed him to and fro across the farmyard—from hay barn to dairy barn with bales of

Crunch of corn stubble shatters the icy twilight as Denise and Dorothea—two of the seven Zumbach children—ride across December-weary fields. The Zumbachs schedule

fragrant green-gray grass, from grain bin to brood-sow shed with buckets of ground corn. I had to almost run to stay abreast; Earl does not waste time.

"The reason a lot of farmers fall by the wayside is that they don't keep up with trends," he said. "Like more mechanization, better seed, more nutritious feed for livestock. Somebody once said farming is like being in a silo when the silage is coming in. You have to keep climbing to stay on top."

Literally millions of small farmers have succumbed to the frustrations of long hours, low returns, and plain hard times. Since 1940 the United States agricultural census has been one long downhill slide: from 6 million farms with 30 million people on them to 2.8 million farms and 9.6 million people today. Last year farms continued to vanish at a rate of about seventy a day.

The winnowing process goes on even in the great cornucopia of Iowa, which possesses 10 percent of all our Class I cropland—the richest soil, least subject to erosion. Iowa leads the nation in production of corn, hogs, and most livestock products, ranks second to California in total cash value of farm products, and is, in sum, the source of nearly a tenth of the nation's food. Yet in Iowa one farm in five vanished in the 1960's.

"I'd say that about a third of the farms in this township began to disappear twenty years ago," remembers the Zumbachs' neighbor Walter Streif. Overalled, white-haired,

work and play to a calendar of crops, grown to feed a dairy herd and 2,000 pigs. The farm represents an investment of 25 years of labor and a third of a million dollars.

Heart of the Zumbach home is the kitchen table, where everything winds up: tax forms, homework, 4-H blue ribbons. Here Earl and his wife, Edna, gather with daughter Jolene, center, elder son Doran, and Doran's wife, Billie. Exhausted after a day in his father's fields, Doran signals that it's time to go home to his own farm nearby.

bespectacled, Mr. Streif claims at age 68 to have retired—although on the night I talked to him, he had spent all day helping a nephew harvest corn. "I bought the farm right north of me," he continued. "My neighbor bought the one to the south."

Thus family farms—95 percent of the nation's—have become larger across the country. And, made vastly more efficient by technology, they grow 62 percent of all farm products sold.

Land Awash in a Sea of Corn

If you climb to the top of Earl's silo, about the tallest thing on the gently rippled landscape, you seem to be suspended in an immense spheroid, half earth, half sky. As far as the eye can see on this November day, the land is in corn: corn, corn, and more corn, tawny under the clabbered autumn sky, patched here and there by pastures of faded green. Everything seems to be fastidiously rectilinear. Arrow-straight gravel roads intersect fences strung by perfectionists.

The roads streak off to other farmsteads much like the Zumbachs'—with white frame houses, large barns, and several smaller buildings, large grain bins made of gray steel, and a silo or two with metal roofs that gleam in the sun. There are few trees; nearly all those in sight are clustered around the farmhouses—like the fifty pines planted in an L around the Zumbach home, a screen against snow-laden winds sweeping out of the north and west (pages 408-409).

This land is too valuable to be devoted to woodlots. Glaciers that pushed across Iowa beginning a million years ago endowed an

"**Grandma never measures,** but everything always turns out right," brags a granddaughter about Edna's mother, Emma Kray, right. When she and Edna's sister, Marie Hein, left, drive over from nearby Monticello, they like to help out. Talk flows freely as the women prepare apples from backyard trees to make 20 pies for the freezer.

inland seabed with rich soils, darkened to the color of charcoal and further enriched through the millenniums by decaying vegetable matter. Settlers arriving in the 1840's and 1850's found another sea—of grass. In a drainage ditch on the Zumbach farm I observed the heavy soil in cross section. The dark top layer was about 18 inches thick.

Snowplows Keep Farms in Business

Winter storms bury the farm in a white cocoon, often waist-deep, though not stilling life. Plows clear the road so the milk co-op's truck can get to the dairy barn, so Earl can haul his hogs to market, so the school bus can take the Zumbach children seven miles to Manchester, the county seat.

In spring the landscape becomes black, as the soil is exposed, turned, smoothed, and furrowed. The three apple trees in the yard flower in profusion. Summer burgeons with promise. The grass grows thick and high before the mower, and the corn marches off in precise rows, taller than a man.

Moving in cadence with the seasons, the Zumbachs coax from their half a square mile a torrent of provender: 27,000 or so bushels of corn, plus oats and hay, all to be fed to their stock. The hog house yields pork enough to supply 3,725 Americans with ham, bacon, tenderloin, roasts, chops, ribs, and sausage for a year; the dairy, a quart of milk a day for 600 youngsters. And cows culled from the herd provide hamburger for 30,000 quarter-pound patties.

Through the Zumbach bank account flows each year, depending on prices, $100,000 to $200,000, from which Earl is frank to say he

Golden payoff for skillful methods and good weather, 27,000 bushels of corn pile up in Earl's wagons. He jockeys a combine, part of the costly fleet of machines essential to efficient modern farming.

Bareback rider Marilyn prefers raking straw as "a great way to get a tan," but her father frowns when he finds suntan lotion in his toolbox. During her high-school years, Marilyn also served as labor boss, recruiting town boys to help with the harvest. Now 20, she lives and works in nearby Cedar Rapids. With changing seasons and interests, the young Zumbachs switch from baling hay to raising calves to painting picnic tables.

hopes to make a profit. Recently he has. "But a lot of years I would have been better off working by the hour in a packinghouse," he said. "If I didn't have a good year to balance out the poor ones, I wouldn't be in business very long."

Plaques and trophies in the Zumbach den testify that Earl indeed has done a lot more than merely stay in business. One honors him as the top Iowa corn producer of 1970, with a yield of 188 bushels an acre; another cites him as one of the state's outstanding dairymen.

Dad Calls On Younger Son in a Clutch

The weather forecast that November morning mentioned snow, and I think it made Earl tense. Most of his corn was still in the field; if a bad blow came, the stalks would fall and the combine could not pick them up. Over a breakfast fit for a farmer—half-inch-thick slices of ham, eggs, toast, orange juice, and, of course, milk—Earl looked across at Daniel, his 13-year-old son, and said, "I think you'd better come along today."

Daniel seemed pleased. He put on jeans and boots, a heavy denim jacket and a yellow baseball cap. At his belt he hitched a leather holster that held pliers—a handy tool when you're around a tractor and wagons. Later I noticed that it was exactly the same outfit, even down to the pliers, that his brother Doran wore.

Early that morning in the farmyard I had asked Daniel if he wanted to be a farmer when he grew up. Earl, passing us on a tractor, heard the question and shouted: "Tell him you're going to be a beauty operator, Dan! The ladies love to have a man's fingers in their hair!" Earl laughed. But it is a matter of deep pride to the father that his young son has an interest in the farm. Home that weekend on a visit from Cedar Rapids, 20-year-old Marilyn told her father she was dating a farmer; that pleased him, too.

"I was never one to make a hired hand out of my wife," Earl remarked later. We were in the corn now, standing beside his combine, an ungainly green monster fitted with four great curving metal teeth. The wind was gusting out of the west, driving dark clouds over the sun and rattling the dry stalks—rustling the tawny skirts of Iowa. "But a family on a farm just has to be part of the operation," Earl went on. "Whenever I need help, I call on one of the boys first. If I need two helpers, I send for one of the girls. Marilyn was my chief

Hardest chores coincide with the dog days of August. Swinging a 60-pound bale, Doran loads 30 tons of straw from his fields; the temperature hovers at 100° F. Grime and exhaustion seem to age him beyond his 25 years (**right**). With 13-year-old Daniel, who drives the tractor, Doran rests—and dreams of owning an automatic bale thrower.

Three years ago Doran turned down the high wages of a town job to farm. "I'm one of the lucky beginners—with a successful father and a sympathetic banker to extend credit for seed and machinery."

As tension-ridden as any young executive,

Doran works his brains more than his muscles—keeping records, attending agriculture extension classes, choosing what to plant, and when, and how, even guarding against cattle rustlers. The rewards are clear to Daniel, who announces, "I want to be a farmer, too—for sure."

hay-baler driver for years. Judy, our eldest daughter, was more involved with helping Edna around the house, but she baled some and always kept the lawn mowed."

Earl climbed the steps to the combine cab. "You can't say all farm kids are good and all city kids are bad," he said. "But out here they learn to take responsibilities."

Pheasants Flushed by Dragon's Teeth

In the glass cubicle of the combine Earl seemed a part of the machinery, seated erect between two sets of levers, gloved hands on the steering wheel, eyes resolutely ahead as the four dragon's teeth mowed the corn, three rows at a time. Pheasants exploded out of the stalks. Behind the cab, golden grain piled up in the hopper.

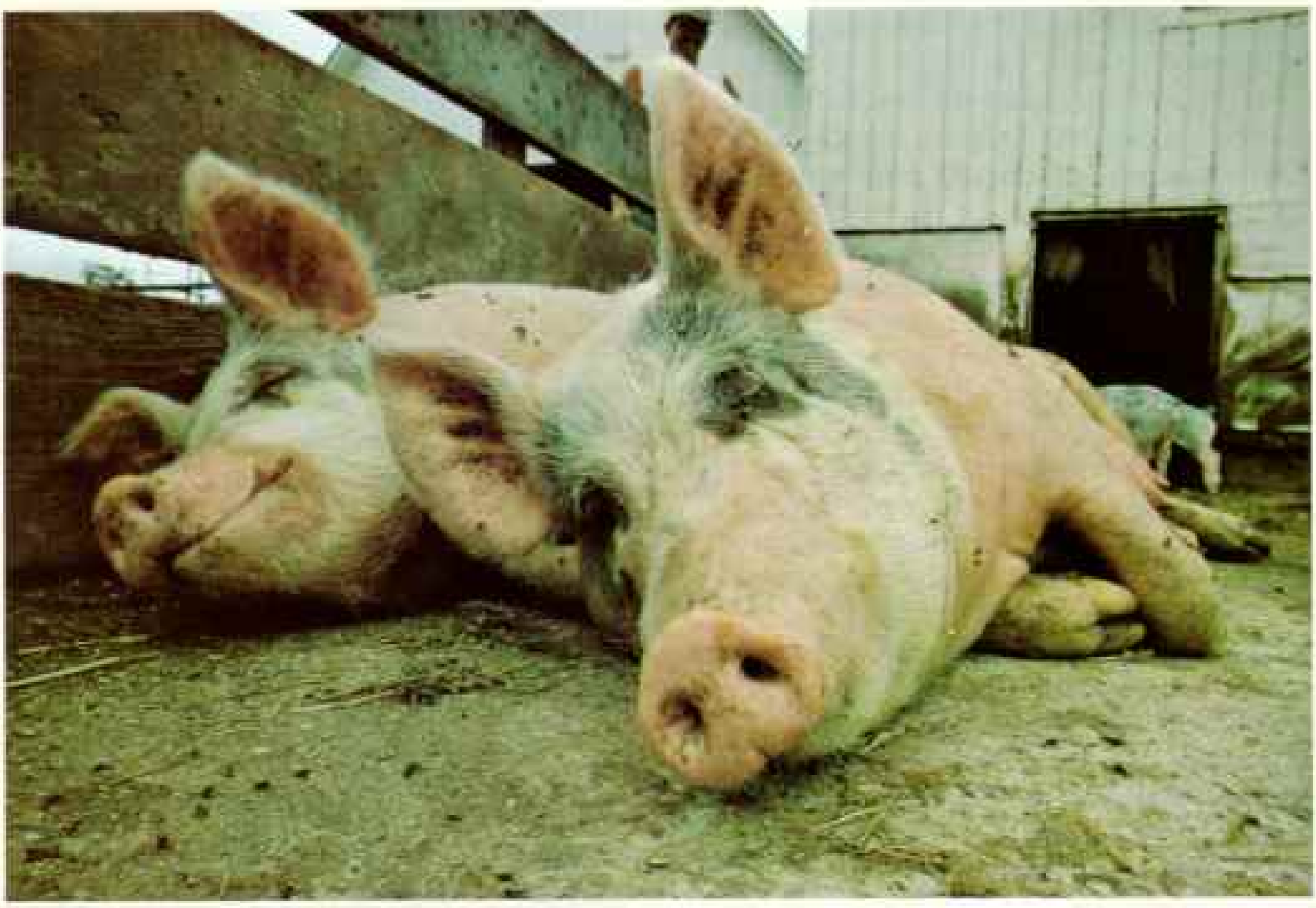
On a tractor, a wagon in tow, Daniel cruised alongside as the combine's auger emptied the hopper. Expertly he timed the transfers so that his dad never had to wait with the hopper full of corn. Doran shuttled the brimming harvest from the field back to the farmstead.

It had been dark an hour when we returned to the house. The three youngest Zumbach girls—Jolene, 16, Dorothea, 14, and Denise, Daniel's twin—had spread hay in the dairy barn, cleaned the cows' watering troughs, and put together the milking equipment. Everything was ready for milking.

"Twenty-five years ago a farm like mine would have had three, maybe four hired hands," Earl observed one morning in the dairy. "Even with the family working." But hired labor has almost vanished. Factory pay is better, and so are the hours and working conditions.

The explanation of the Zumbachs' self-sufficiency was apparent the next day when I happened to see, propped in the kitchen window, the previous month's electric bill. It came to $151.

When I asked Earl about this bill, he sat down and counted all the electric motors on the farm—the 7½-horsepower fan motor for



Porkers on an assembly line: Earl breeds 100 Yorkshire-Hampshire sows so that litters arrive every month except during the busiest planting and harvest seasons. Four-week-old piglets go into the modern confinement facility (**left**), where automation supplies water and grain. Wastes drop through the slotted floor to holding pits. At six months of age, 220-pound top-grade hogs go to market. Brood sows (**above**) take a cool siesta after slopping water from drinking troughs onto the concrete of their farrowing house. Each may bear twenty offspring a year.

circulating heat in his corn dryer, the 7½-horsepower motor that drives the belt in his elevated grain-handling system, the 1/4-horsepower bench grinder in his workshed, the motors that cool milk, dispense silage, pump water, and all the rest—and came up with a total of 79. And that does not include motors on Edna's appliances in the house!

Earl remembers that when the Rural Electrification Administration lines reached his family's home in 1940, his father cautioned against using more than 40 kilowatts, which would be covered by the minimum monthly bill of $3.50. With his electrical equipment going full blast, Earl has paid as much as $260—a figure that may well increase. "But it's still cheaper than hired hands."

800 Hogs Under One Roof

Thirty-nine motors are inside a new building of concrete and shiny aqua-tinted metal siding. "My swine facility," Earl grandly calls it. We went in and walked down an aisle dividing 26 pens. Eight hundred hogs snorted and snuffed at us (preceding pages).

Earl showed me a timer that causes feed to be dumped every three hours into each pen. Pressure switches shut off the motors when the feeders are full. Beneath the slatted floor, Earl can suck up manure with a pump; he spreads the droppings on his fields.

In an adjoining building, other motors mix corn, oats, soybean meal, minerals, and antibiotics according to Earl's prescription: extra soybean meal to provide protein for young pigs, more corn for porkers approaching good marketing weight, which is about 220 pounds. Still other motors grind the mixture and auger it into two bins beside the hog house.

"So I have a lot more time for other things," he summarized. "I can take better care of my animals." Spying a listless shoat—a young hog—he fetched a syringe and administered a shot against pneumonia.

"Before I got all this equipment," Earl said, "I was out here shoveling corn into the grinder until ten o'clock at night. I remember those nights I'd go to bed and couldn't straighten out for half an hour because my back muscles were so tight. I'd just lay there in a kind of aching trance."

On the quarter of an acre that holds his swine facility, grinding equipment, corn dryer, and the elevated pipe system that shuttles grain from bins to grinder to hog house, Earl has invested $56,000. "That's a lot of money

"We're in town a lot," explain the girls, admitting the attractions of Manchester, the county seat, where they attend public school. After a Saturday swim at the municipal pool, Marilyn stops for a snack at Goodie's Drive-in (**right**). Following a family tradition, Jolene plays in the school band (**below**). The girls also participate in student councils and cheerleading, girls' basketball and track. Still they enjoy rural life—"Having horses is the best thing."

Canine rations of love are doled out to Buster by Denise, Daniel's twin sister. Dorothea, near right, shares a late-night light with Jolene, who says of the slogan on her headboard, "I don't really mean it."


HONDA


boys
ugh

"This is it, buddy!" Maid of honor Marilyn, left, gives a send-off to her eldest sister, Judy, before her marriage, the highlight of the Zumbachs' summer of '72. Suppressing their bubbling spirits for the candlelight service (**far right**), the sisters quietly enter Peace Lutheran Church at Ryan, where many parishioners are Zumbachs. Meanwhile, youngsters are "decorating" the newlyweds' car, smearing peanut butter on the windshield, replacing washer fluid with grape juice. Days later, back at the farm, Judy tries bear-hug persuasion on her husband, Jeff Hannes (**right**), to help pack for their move to Missouri, where Jeff would serve in the Air Force. For both Christmases since their wedding an anonymous friend has sent them a jar of peanut butter.

for a family farm. But it's the only way to beat the labor problem if you're going to raise livestock."

The investment also is a gamble.

A dairy herd is bread and butter; the cows demand regular attention and the profit is not great, but prices—government-regulated—are dependable.

"But hogs. . . ." Earl looked around at the 800 porkers and scratched his head, as bewildered by the wildly fluctuating prices of recent years, I think, as any housewife at the supermarket meat counter.

"In the 1960's we sold hogs for 14 and 15 dollars a hundred pounds. We barely made money. A couple of years ago, hogs went up to 21 dollars and we did pretty well. Last winter we sold hogs for 37 and 38 dollars and made little profit." Market speculation and overseas demand had driven the price of soybean meal—the major feed ingredient that Earl does not supply from his own fields—from 140 to 440 dollars a ton.

"But everybody thought prices would come down," Earl said. The investment in the swine facility weighing heavily on his mind, Earl decided to gamble in the futures market. He contracted with a meat-packer to deliver some of his hogs four months later at $24.85 a hundred pounds. "It looked like a good deal," he said.

He remembers that some of the fun of farming vanished because he knew exactly what he would get for his porkers. More than fun vanished when prices, instead of falling, climbed still higher. "And here I sat with a ceiling on what I could get for my swine." He grimaced as he told me he missed a profit of almost $7,000.

Edna later confided that Earl asked her to deliver the hogs to the packer. She said, "I think his pride was hurt."

What Price a Grain of Seed?

Besides his new buildings and their automated machinery, Earl has spent roughly $30,000 in the last half-dozen years on such major equipment as a combine ($12,000) and tractors ($12,000). He estimated that investment and taxes pile an annual overhead of $100 an acre on his land before he buys a grain of seed. Propane gas for drying his corn cost $1,200 last year.

He pays cash whenever he can—partly to save on interest and partly to keep in the good graces of his bank, from which he must borrow for major investments. He coaxed 21 years of service from his stake-body truck before seeing a dealer about a new one.

"This isn't just a farm," he reminded me. "It's a business, and good management is what keeps you going. I work hard, yes, but you can work hard and still starve. I spent five years thinking about that swine facility. Just figuring out what I wanted, making sure I was doing the right thing before I invested all that money. I've always thought a guy should just sit down on a feed sack in the barn every so often and try to set some goals."

Farm Wife Puts First Things First

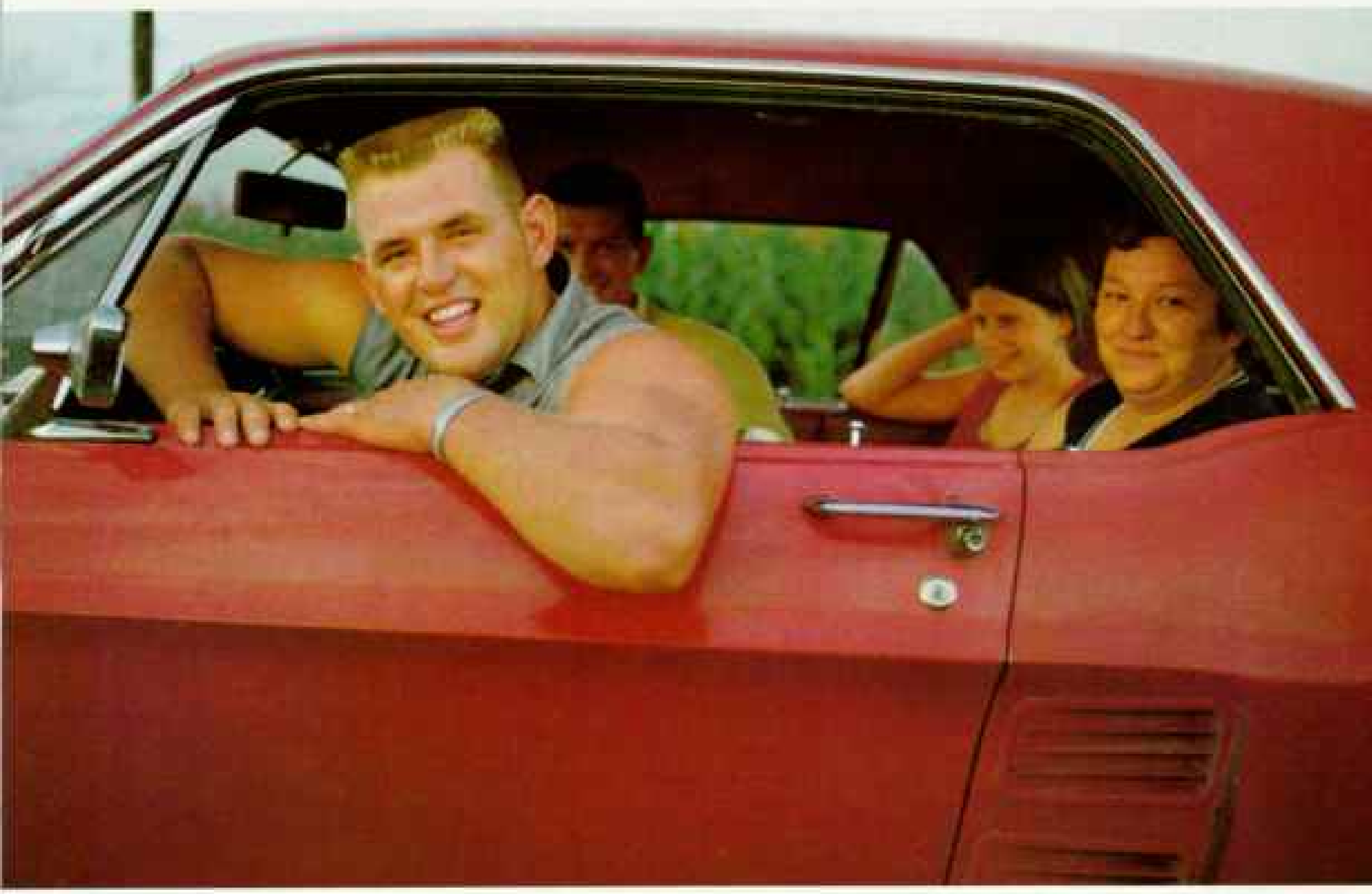
Edna often thinks about new equipment too—for the house. "I've always wanted a bigger kitchen," she told me one morning. "And a dishwasher. But the farm comes first. That's a farm wife's pet peeve, I guess."

We were having coffee at the kitchen table. Though it was just 7:30, a roast was in the oven; Earl would want a big midday dinner. Now quiet, the house had been a beehive only a few minutes before. Denise had overslept, Daniel had misplaced his school books, Jolene needed help dressing; she'd broken a wrist at basketball practice. Dorothea wanted to know if her cheerleader's skirt was clean. Four pairs of sneakers bounced in the drum of the clothes dryer. Then, at 7:15, the youngsters sped out the door, just in time to meet the school bus.

Edna poured another cup of coffee. "Just last week," she said, "one of my neighbors was talking about some friends who live in town. She said, 'You know, their house is their whole life. They're always buying new things.' We have to have the outdoor things first—the equipment for the farm. When I say I want a dishwasher, Earl tells me I already have four portable models. Maybe when all the girls are gone I'll get one. But then I won't need it."

She thought a minute. "But there's a balance in here somewhere. I don't feel my kids are lacking clothes or nice things. We live all right."

In summer Edna cans beans, tomatoes, corn, and pickles—about 50 quarts of each—and she freezes countless apple pies. Once a month she serves as an assistant leader at a 4-H meeting. Both Edna and Earl regularly teach Sunday school at Peace Lutheran Church in nearby Ryan, and she is treasurer of the church women's group. She sews most



The challenge in Farming is
1. Rear a Family That is an Asset and not A liability to OUR Community Country & God

2. Stay [redacted]-n
B[redacted]ss
2. Stay healthy so that you are able to work to stay a week

3 Stay Solvent So you Can Remain in business

3. the above Mentioned Requires Some Profit which is a dirty word to Some People

4. Profit Requires Proper Business [redacted]

"**Dad and I like to look at farms;** my wife and mom like to talk." Thus Doran explains the seating arrangement for a Sunday drive. Farm prices reached an all-time high in 1973, but Earl must average them out against years when he did not break even; "It's always a gamble." Pondering his goals, in answer to the author's question, Earl quickly scribbled these lines (**above**).

Tamed and tended for a century, the prairie yields a good life to the Zumbachs, whose home nestles behind a pine windbreak, lower right, amid March-brown fields. Roughly one farmer in

two along this six-mile stretch of gravel road has bought up a neighbor's land, making the average farm size 240 acres. "Only by expanding," Earl declares, "can the family farm survive."

of the girls' clothes and pays the various bills.

Earl sends her to town for a battery for the electric fence, a tractor part, medicine from the veterinarian. When a neighbor calls and says the Zumbach heifers are in the neighbor's corn, it is Edna who usually must help chase them back to the pasture.

"But my biggest job is being patient," she said. "I have to wait for Earl to come in around noon for dinner and then for supper; if he's busy, the time may vary by an hour or more. At 3:30 the school bus comes. I'll have one, two, three, or four kids on it, depending on what's going on after school. The ones not on the bus I'll have to pick up."

The handsome junior and senior high schools in Manchester, serving much of Delaware County, are a window on the world for the Zumbach children, providing the opportunity for them to know town as well as farm.

Studiously considering my question as to which she preferred, Denise said she'd rather live on the farm. "In a city you can't have animals, except maybe a cat or a dog." Then she told me about her cow, Tracy, raised for a 4-H project, about Misty, a horse that is "mostly Dorothea's, but some mine," and about the two Shetlands.

This day the youngsters returned after dark. Daniel, a member of the school wrestling team, had won his first match that afternoon. Jolene went to basketball practice, cast and all. Denise and Dorothea led cheers at junior-high games; girls' basketball is a major sport in Iowa. Now they set about chores. Daniel joined his father in the dairy, while

Dorothea and Denise tended to the horses.

It was almost eight when Earl and Dan came in for the evening meal.

"Everybody sit down," Edna said. The family gathered around the kitchen table.

"Your turn to pray, Jolene," Earl said.

"I did it last time."

"OK, then you do it, Dorothea."

"ComeLordJesusbeourguest'nletthesegiftstousbeblessed. Amen."

Dorothea was hungry.

All in the Day's Work

Before sunup the next day I joined Earl in his morning routine. After milking and cleaning the dairy barn, he hauled hay and grain to the brood sows, checked the hogs, cleaned the barnyard, spread manure, fixed a fence. Then we went over to Doran's farm to help move 18 heifers half a mile up a road to a new pasture.

"Holsteins!" I heard Earl shout as the two men rounded up the animals. It was a joyful cry, exuberant, spontaneous, an expression of pride in the registered stock.

"Holsteins!" Doran shouted back.

As we shooed the heifers up the road, several found a break in a fence and ambled into a neighbor's corn. There was a lot of running to and fro and waving of arms before all were on the road again.

"What time is it?" Earl asked when the animals were finally in the new pasture.

I looked at my watch. "Eleven-thirty."

"OK," he said cheerfully, "now we can get to work." □

"Some are talkers—some are listeners," Earl characterizes 60 relatives at the annual Zumbach family reunion. Here the deadpan manner of jokester Carol Zumbach, in white kerchief, sends cousins into gales of laughter at Buffalo Creek County Park on a lazy August Sunday. Carol, wife of one of Earl's first cousins, keeps up to date a family history that reaches back to the 1880's.

Three Zumbach brothers immigrated from Switzerland to work in Iowa as farmhands, marry, and eventually buy farms. Now descendants follow a range of agriculture-related occupations from trucker to meat-packer to banker. But the majority, both men and women, proudly proclaim: "We're farmers."

Plummeting missile of turquoise the shy and spectacular kingfisher

PHOTOGRAPHS BY CARL-JOHAN JUNGE AND EMIL LÜTKEN

BULL'S-EYE! Beak open, eyes closed, a European kingfisher *(Alcedo atthis)* plunges beneath the surface, snatching a tiny trout from a pond. In this remarkable bird study, two Danish photographers capture the grace, beauty, and private life of the elusive, solitary hunter.

CATAPULTING with wings and tail, the kingfisher whooshes into the air, the trout firmly in its beak (**right**). Ascending to a perch above the pool, the bird kills the catch by repeatedly smacking it against a limb, then swallows it headfirst.

Unjustly accused of endangering trout populations, the kingfisher faced extermination by sportsmen in some countries until protected by law. Actually, trout account for only a small fraction of the bird's diet—largely such fish as the minnow and stickleback. In fact, kingfishers help trout by eating insect larvae injurious to fish eggs and young.

In northern Europe, where frozen streams make fishing difficult in winter, kingfishers often migrate to ice-free estuaries.

"The secret splendour of the brooks," as Lord Tennyson called the kingfisher, so intrigued Danish teachers Carl-Johan Junge and Emil Lütken that they spent two years making these photographs along a rivulet near their home in Jutland.

They set up their equipment close to an old stream-bank nest before the birds' arrival. Then in early May, when a kingfisher pair chose the site, the preparation paid off. From a blind above the stream they caught the kingfishers' acrobatics, most of them too fast to spot with the human eye. Photographing the birds on the wing with electronic flash, they often shot at speeds of 1/10,000th of a second.

ENEMIES square off. With heads rigidly cocked sideways, two male kingfishers hide their conspicuous white neck patches, accentuating their swordlike beaks as they vie for rights to a fishing and breeding ground. When threats fail, the feathered gladiators pitch into battle (**below**). Turning and twisting, they tumble into the stream, beaks clamped together. Gaining a toehold on a branch, one tries to drown his adversary (**lower right**), but losing his footing, splashes back into the water.

The struggle finally ends when one exhausted bird flies off in search of a new fishing and breeding ground.

A rarely seen phenomenon, this duel lasted seven hours, seriously weakening both birds and frightening away the loser's mate.

Several days later another female appeared, and she and the victor began to prepare a nest.

Though a fierce guardian of hunting and nesting territory, the kingfisher has long been a symbol of peace and serenity. In classical mythology the bird, named *halcyon* in Latin, built its nest upon the sea, which the gods calmed until the eggs hatched. The Roman scholar Pliny perpetuated the legend: "They breed at midwinter, on what are called the halcyon days, during which the sea is calm and navigable."

For centuries Europeans have hailed the bird as a sign of good fortune. Some collected feathers for luck and used dried skins to repel moths. Another fable held that if the kingfisher were suspended by a string, its beak would point north.

FEAST fit for a kingfisher: Father pokes his head into the tunnel nest (**above**), bringing a fish to chicks snuggled close to their mother. With noisy cries and open mouths (**left**), the young birds signal their hunger. One chick contends with a fish too large to digest all at once. Only five days old, it struggled for an hour to finish the meal.

To focus on daily nest life, the photographers carefully cut out an opening in a wall of the burrow to accommodate a camera and flash attachment.

Kingfishers usually raise two broods a year. At each nesting the female lays six or seven glossy white eggs that hatch about 20 days later. The adults share the chore of feeding the young for three to four weeks. When the mature chicks wing away, they roam the countryside alone, like animated jewels. The following spring they seek out mates and start broods of their own. □

Nature's Gifts to Medicine

By LONNELLE AIKMAN

Paintings by
LLOYD K. TOWNSEND
and DON CROWLEY

"I USE AN OLD INDIAN REMEDY for poison ivy," said a friend. "You boil sycamore bark in water and sop it on. It works like magic."

"My wife has a 90-year-old pal who claims he keeps arthritis away with a daily cup of alfalfa tea," a NATIONAL GEOGRAPHIC editor remarked at a luncheon chat.

"We have an aloe plant in our kitchen," a photographer told me. "It exudes a living lotion, and if I burn my hand, I pull off a leaf or two, squeeze out a kind of jelly, and it stops the pain."

Such plant remedies, or "simples" as they used to be called, seem out of this world of modern pills and potions, with their tongue-tripping chemical names. They recall days when our grandparents and great-grandparents dosed themselves with teas and tonics from the garden, and bought patent medicines guaranteed, like Hamlin's Wizard Oil, "to heal all sores, subdue all pain."

Good for what ails you: Impending dose of castor oil clouds a youngster's face. The familiar purgative comes from the crushed seeds of a medicinal plant used since the time of the ancient Egyptians. In every culture and every age, man has looked to the plant world to cure his ills. Modern pharmacologists still turn to flowers and herbs. From folk remedies to wonder drugs to enslaving narcotics—nature's medicine bag holds them all.

NATIONAL GEOGRAPHIC ARTIST LLOYD K. TOWNSEND

Yet a surprising number of present-day drugs (one analysis of prescription ingredients puts it at nearly 50 percent) still come from natural products. From *Aloe vera* commercial firms make sunburn lotion. And in this same herb—which the Bible says was brought to prepare the body of Christ—radiologists have found a substance to ease external atomic-radiation burns.

Moreover, side by side with the universal use of laboratory-created synthetics, we see a growing scientific interest in returning to nature's healing handouts.

"In the next five years I look for a big increase in natural-product medicines," said Dr. Norman R. Farnsworth, professor of pharmacognosy at the University of Illinois. Pharmacognosy is that branch of pharmaceutical science dealing specifically with the chemistry and geography of plants and other raw materials that go into drugs.

"The time is ripe," he added, "partly because of public interest in natural foods and environment. But new sources of crude drugs and better extraction methods also are factors. Our vegetable and animal kingdoms have hardly been touched, and marine biologists and drug companies are just beginning to look for compounds in undersea plant, animal, and microbial organisms."

In 1961 Dr. Farnsworth himself led in clarifying the then little-understood botanical and pharmaceutical nature of the Madagascar periwinkle, which has since yielded priceless agents against some forms of cancer.

He believes that in the United States, no less than in remote jungles, grow many other medically useful plants. He and his students often drive out on mini-expeditions around Chicago, gathering wild plants to cultivate on the university's 40-acre farm.

They make up "voucher specimens" of dried and pressed plants—the all-important proof of a species' correct botanical identity—and carry out intricate chemical and biological procedures in the laboratory to extract and test the active medicinal elements.

To some talented student now starting out in that class, or in one of some seventy other American colleges of pharmacy, may come the thrill of taking part in discovering and developing a new miracle drug.

The drug might even rate a place beside history's great cures and comforts for ailing humanity: pain-killing morphine, for instance, from the double-edged gift of opium poppies; quinine, tamer of malaria, from cinchona bark; or oil pressed from seeds of the chaulmoogra tree, which was long the only drug considered effective for arresting the frightful progress of leprosy.

WHERE DOES the U. S. drug industry get all the raw plant materials that go into the capsules, liquids, and ointments rolling off assembly lines of pharmaceutical manufacturers?

I caught a whiff of the answer to this question on a visit to the Lyndhurst, New Jersey, warehouses of one of the world's largest dealers in botanicals, S. B. Penick and Company.

A medley of tantalizing smells met us at the door of one building piled high with bumpy bales, bags, and bundles.

"What's that . . . and that . . . and that?" I asked my guide, Edson F. Woodward, as my nose picked up a spicy, sweet, or musky odor.

To Ed Woodward, then head of the company's Basic Botanical Division, the assembled bits and pieces of vegetation were as familiar as roses and marigolds in your garden.

Pulling out a few leaves, roots, or bark chips, he called names, origins, and uses: digitalis, or foxglove, leaves produced on a Pennsylvania farm to treat failing hearts; ipecac roots from Brazil to relieve amoebic dysentery and to induce vomiting in cases of accidental poisoning; gum myrrh imported from Ethiopia. *(Continued on page 426)*

WARNING

Although plants have been utilized in medicines for millenniums, many are poisonous in whole or in part. "The layman who doses himself is gambling with his life," says Dr. Norman R. Farnsworth, a leading authority on the use of natural products as drugs. "Only specialists can tell the difference between potentially useful and harmful substances."

Children particularly should be warned against eating the enticing berries of such common plants as lily of the valley and mistletoe, or sucking nectar or eating fragrant blossoms like those of yellow jasmine, oleander, or autumn crocus. The same beans that yield castor oil (opposite) can kill if as few as two are swallowed.

Potions and poisons

PERILOUS GARDENS BLOOM amid the jungles of primitive societies, where medicine remains entwined with religion and the tools of death grow close at hand.

Plucking innocent-seeming plants, tribesmen obtain toxins both for hunting and to try the accused, as at top left. Those who drink and survive are held innocent. Adapted by modern science, these poisons can become beneficial medicines.

African hunters, top right, tip arrows with ouabain, strong enough to stop an elephant; it is also used today as a heart stimulant. South American Indian, at center, fires blow-gun darts tipped with curare, now valued as a muscle relaxant. Less exotic but more widely used, ipecac has been employed as cough remedy and emetic by city dweller and aborigine alike. Cola yields flavoring and caffeine for soft drinks.

Blaming evil spirits for human ills, witch doctors, such as the one at lower left, often give or take hallucinogens in hope of contacting the other world and finding relief for ailments. Aztec worshipers revered the mushroom teonanacatl, as they did the plant ololiuqui, still employed by Mexican Indians to escape the bonds of everyday ills. Waika shaman of Venezuela blows virola snuff into a patient's nostril, lower right, causing nausea followed by a vision-filled stupor. Priests in India 3,000 years ago, it is believed, deified the toadstool fly agaric for its intoxicating juices. The mescaline-rich peyote cactus, still a religious tool of the Navajo and other tribes, sends users into a euphoric state, where reality seems a distant dream. Psychiatric researchers study these mind-benders, seeking help for the mentally ill.

LLOYD K. TOWNSEND

Ancient pharmacy

FAVORITE REMEDIES of an unknown physician are inscribed on the world's oldest medical textbook, a Sumerian clay tablet, top center. It records plant drugs of forty centuries ago.

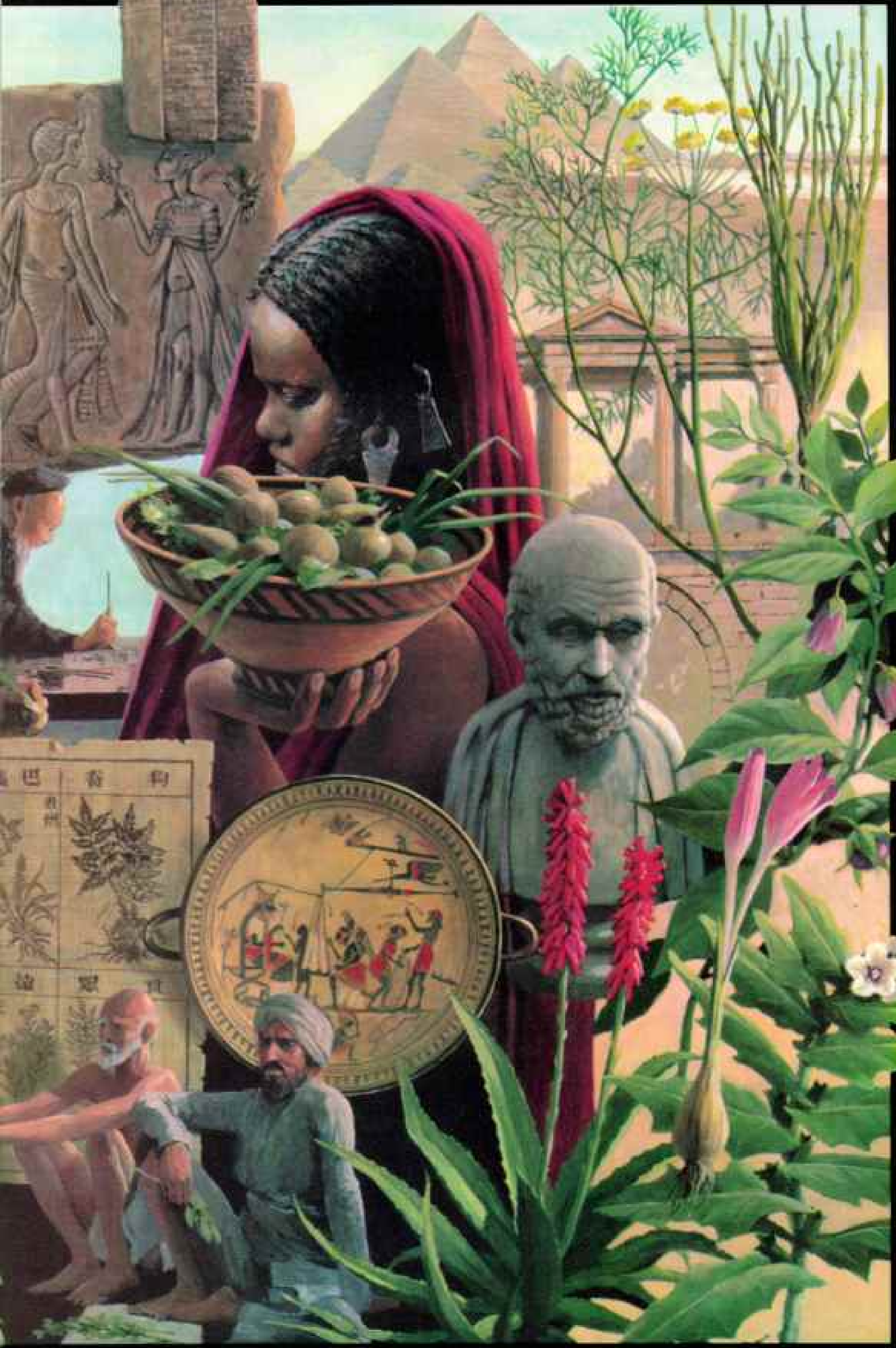
Though handicapped by superstition and limited technology, early civilizations amassed a wealth of knowledge about medicinal plants. Egypt's Queen Nefertiti, on the bas-relief, offers what appears to be mandrake, a pain-killer, to her ailing husband. Egyptians used the humble onion, center, in the treatment of scurvy among slaves as they toiled to raise the pyramids. The inhabitants of the Nile Valley used aloe to ease intestinal troubles, and henbane as a sedative.

Chinese physicians, left center, cataloged thousands of herbal cures in the delicately illustrated pharmacopoeia *Pên-ts'ao Kang-mu.* Ephedra soothes coughs today as it did 4,000 years ago. Long recognized as a laxative, rhubarb was found growing in China by Marco Polo. Indian doctors calmed disturbed patients with the "medicine of sad men"—rauwolfia, the forerunner of modern tranquilizers.

Ancient Greeks and Romans imported North African herbs, which were weighed as the painted dish at center shows. Their plant knowledge included the use of colchicum to treat gout. They gave squill as a heart stimulant, and tansy for worms. Overfed noblemen aided digestion with fennel and senna. Plotters poisoned their enemies with belladonna, deadly nightshade, which later provided the medicine atropine.

The Greek physician Hippocrates, bust at right center, set the stage for the world's turn from charms and chants to practical medicine.

LLOYD K. TOWNSEND



to serve as an astringent or irritation-healing mouthwash.

I saw burlap bags filled with seeds of Italian colchicum, or autumn crocus—the source of a merciful drug used by the early Greeks for the tortures of gout.

We passed a shipment of so-called Peru balsam, actually collected in El Salvador forests. It would yield a viscous liquid to soothe skin ulcers and hemorrhoids.

Here, too, were sassafras roots, wild cherry bark, and goldenseal roots. Gathered by mountain families in what Woodward called "America's wild herb garden of the Blue Ridge," they showed that indigenous Indian herbs still have commercial value in spring tonics, diuretics, and purges.

Many bags contained cathartics. Among these were rhubarb roots and psyllium seeds from India, aloes grown on Caribbean shores, cascara sagrada stripped from Oregon trees, senna leaves from Egypt and elsewhere.

The senna reminded me of a hieroglyphic inscription found at the tomb of an Egyptian court physician who lived more than 4,500 years ago. It listed his official title as "Guardian of the Royal Bowel Movement."

I was particularly intrigued by one bag full of what looked like flat, round buttons.

"With a few of these big seeds you could commit suicide," said Mr. Woodward. "It's nux vomica. It holds strychnine, and is used as a nerve stimulant and in emergencies such as surgical shock and drug poisoning."

Later I saw giant machines that chop, grind, sift, percolate, and finally spray-dry up to 10,000 pounds of plant extract at a time, or make 3,000 gallons of liquid in a single operation.

The big percolator tanks perform the most sophisticated of the mass-production tasks. Emptying into mazes of glass tubing, they turn crude substances into thousands of drug extracts, using a succession of chemical solvents and ingenious separation equipment.

From then on, the products of once-living things belong to the pharmaceutical chemist, to be purified, modified, and compounded into medicines sold in your corner drugstore.

THE SEARCH for newer and better products goes on, not only in rain forests, deserts, and test tubes, but also in old medical texts, herbals, and world folklore.

In China, home of herbal medicine for thousands of years, the People's Republic is

LLOYD K. TOWNSEND

Concocting mysterious potions, a Moslem pharmacist prepares medicines for a voracious market in the disease-plagued Europe of the Middle Ages. Men paid fantastic prices for remedies produced by Arabs, who controlled the drug and spice trade.

Indispensable to pharmacists, mortar and pestle remain the druggist's symbols. This 16th-century bronze bears in Latin the motto, "May it be lucky and fruitful."

pushing a mass rural campaign to modernize the use of medicinal plants.

Fortified by strong doses of Chairman Mao Tse-tung's revolutionary philosophy, scientifically trained physicians from big-city hospitals cooperate with provincial committees to collect and process herbs prescribed by multiplying legions of "barefoot doctors" of the countryside.

One of the country's most successful herb remedies comes from ground pumpkin seeds. A well-known worm ridder, the seeds have proved effective in treating victims of schistosomiasis, or snail fever, caused by blood parasites carried in waterborne snails.

Closely linked with its herbal program is China's no less ancient practice of acupuncture, the technique of inserting needles into key points of the body. To complement acupuncture, Chinese doctors often give patients

herb drugs to help correct imbalances between the body's yin and yang life-forces, which they believe cause all illness.

At the National Cancer Institute in Bethesda, Maryland, I talked with the author of a series of studies of drug plants that have been used against cancer through the ages. This work provides valuable background for one of the many facets of the multibillion-dollar U.S. research program seeking the causes and cures of the affliction that kills some 350,000 Americans each year.

"The idea came to me in the mid-1940's," said Dr. Jonathan Hartwell, an organic chemist who heads the Natural Products Section of the cancer institute's Drug Development Branch. "I was isolating chemical compounds from the American herb mayapple, when I learned that the Penobscot Indians of Maine had long applied it to cancerous growths.

"Why not compile a list of folklore remedies, I thought, together with other drug plants mentioned in medical and botanical works from ancient times on. These could then be scientifically evaluated for efficacy."

Out of the painstaking labors that followed, Dr. Hartwell has so far assembled data on more than 3,000 plant species. Several have produced extracts that give anticancer promise in tests on laboratory animals and cell cultures. Mayapple itself, or a close botanical relative, is the basis for a drug produced by a Swiss company to treat human brain and lymphoid tumors.

Herb doctors, pharmacologists, and many amateur plant collectors continue to offer specimens to Dr. Hartwell. The material is passed on for investigation in chemical and biological laboratories holding NCI contracts.

"Most of our work, however," said Dr. Hartwell, "starts with random selection of worldwide plants. We get about 75 percent of such plants from botanists of the U.S. Department of Agriculture. Dr. Robert Perdue, chief of the department's Medicinal Plant Resources Laboratory, has recently returned from a field trip to East Africa."

"MY MAIN HUNTING GROUNDS have been in Kenya and Tanzania," said Dr. Perdue, when I reached him at his Beltsville, Maryland, station, "but I've gathered botanicals on almost every continent.

"My latest trip was the most successful," he said. "With two African assistants and a carryall truck, I got some 1,700 plant samples to be screened for anticancer activity. After fifteen years of experience, I also had my first adventure in the wilds.

"I had stopped for a lunch break beside a stream in the Ruaha National Park, a game preserve deep in Tanzania, when I heard a terrific snort. A huge elephant was approaching in a cloud of dust. I jumped behind a big acacia tree, then peered out cautiously and found myself facing him. This happened several times as the elephant and I shifted positions, before I bolted for the truck. It sounds funny now, but I wasn't laughing then."

Such job hazards are less interesting to

DON CROWLEY

Seeking to preserve fragile mixtures, ancient drug dispensers devised special containers. Greeks of the sixth century B.C. used a gracefully curved earthenware vessel called *lecythos* (**far left**) to hold medicinal and cosmetic oils. Fifteen hundred years later, the Persians combined artistry with utility in their *albarello*, whose nonporous glaze vastly improved storage of liquid medicaments. An 18th-century Belgian jar differs only in its decorative form. The blown-glass tincture bottle reigned supreme in American shops until 50 years ago. Today, apothecary jars have disappeared before the onslaught of cheaper and more-versatile plastic containers.

Bob Perdue—or to other government and private plant hunters, with whom I spoke—than are the problems of shepherding their hauls through steps of drying, packing, and transporting them from foreign ports to U. S. quarantine entry. Most exciting of all is getting a favorable verdict on a specimen.

"Of the 70,000 plant products screened under our collection program," Dr. Hartwell told me, "around 1,800 have revealed substances of potential value. One of the latest was found in several species of the East African shrub *Maytenus*, and is being moved vigorously through preclinical tests.

"A few other plants, including purple meadow rue native to the U. S., yield drugs that have reached the stage of human trial. But there are disappointments. *Camptotheca acuminata*, a rare tree from mainland China, gave us a once-promising chemical against solid-tumor malignancies, but after intensive testing we had to drop it as ineffectual."

FOR HODGKIN'S DISEASE and childhood leukemia, the most successful drugs to date grew out of research begun independently in the late 1950's by Dr. Robert L. Noble and his co-workers at Canada's University of Western Ontario, and Dr. Gordon H. Svoboda and his associates at Eli Lilly and Company of Indianapolis.

Both investigations focused on a charming and unlikely rose-and-white ornamental—the Madagascar periwinkle—known to gardeners as "bright eyes." Ironically the researchers were checking widespread folklore that leaves of this tropical plant were good for diabetes. Instead, they discovered an anticancer weapon in alkaloids (organic alkaline substances) extracted from *Catharanthus roseus* (formerly *Vinca rosea*).

Outstanding among many valuable pharmaceuticals eventually developed from the pretty little periwinkle were vinblastine for Hodgkin's disease, which attacks lymph glands, spleen, and liver, and vincristine for leukemia, a disease of the blood.

At Lilly headquarters in Indianapolis, I visited pharmacognosist Svoboda—a slight, intense man, whose discovery and study of 40 "vinca" alkaloids won the American Pharmaceutical Association's 1963 Research Achievement Award in Natural Products.

Dr. Svoboda's accomplishments are the more notable for the minute amount of active material found in the plant. I watched Lilly workmen grinding and processing great piles of crushed leaves imported from periwinkle farms in India. It takes 12 *tons* to make one ounce of vincristine sulfate.

How effective are the periwinkle drugs?

"Vinblastine, given alone or with supporting compounds to treat Hodgkin's disease," says Dr. Stephen Carter, associate director of NCI's Cancer Therapy Evaluation Division, "has given 65 to 80 percent remission; that is, two years' or more relief from symptoms.

"Vincristine, when combined with other drugs, has an even higher remission rate—up to 90 percent—for once terminal cases of childhood leukemia."

AT A CONVENTION of psychiatrists in Washington, D. C., Dr. E. Fuller Torrey of the National Institute of Mental Health, gave a provocative talk on nature's gifts to modern medicine in his field.

Although the Western term "witch doctor" implies black magic, he said, such healers of other cultures are no more related to witchcraft than to witch hazel. In fact, they use some of the same drugs and psychology as other therapists. For example, Dr. Torrey cited rauwolfia root as the source of a drug that has been prized as a tranquilizer by centuries of folk healers in India and Africa.

"In 1925," he said, "a famous Nigerian witch doctor was summoned to England to treat an eminent Nigerian who had become psychotic. Armed with his rauwolfia root, the witch doctor certainly had better medicine to offer the psychotic patient than did any English psychiatrist of that period."

How this bitter, twisted root gave the world its first natural drug to calm violently disturbed patients—as well as the still popular remedy for high blood pressure—makes one of pharmacy's best success stories.

The crude drug came from a far-flung shrub of the same dogbane family as the Madagascar periwinkle. Botanists call the genus *Rauwolfia*, for the 16th-century German physician and plant explorer Leonhard Rauwolf.

For at least 2,500 years before Dr. Rauwolf, Indian medicine men had used their "snakeroot" to treat anything from snakebite to cholera. They prized it especially as a cure for "moon madness," or lunacy.

Tribal societies of tropical Africa and Latin America found similar uses for related rauwolfia species. But it was not until the late

1940's, after Indian scientists had isolated active substances from rauwolfia, that Western chemists took to the field.

Beginning with reserpine, developed by the Swiss CIBA company, rauwolfia alkaloids are now made from both natural and laboratory products. Out of India's old moon-madness root has grown a global industry estimated in the United States alone at an annual 80 million dollars.

MORE IMPORTANT, the rauwolfia breakthrough inspired a worldwide field and laboratory hunt for other mind- and mood-altering drugs.

In 1956 the U. S. Congress voted funds to launch a long-range research program under which the National Institute of Mental Health (NIMH) would seek and test such drugs to fight the nation's mental ills. One phase of the program is carried out by the institute's Psychopharmacology Research Branch—a jawbreaking title that means working with medicine for the mind.

In practice, this branch awards grants and contracts for preclinical and clinical studies by qualified outside botanists, chemists, psychopharmacologists, and researchers in mental hospitals.

Another phase of the work goes on within the institute itself in evaluating the safeness and efficacy of psychotropic drugs.

At the National Institutes of Health in Bethesda, Maryland, I visited one of four wards in which the relationship between biochemical abnormalities and depressive, manic, and schizophrenic illness is studied. Here records are kept of patients' reactions to psychoactive drugs. Sensitive tests measure changing levels of chemicals in the body, and psychiatrists and nurses check shifting behavior patterns.

In the animal laboratory I saw how preliminary techniques check drugs on mice, rats, and monkeys. From the head of one white rat protruded a tiny tube that had been implanted, under anesthesia, to withdraw brain fluids without harming the animal. Another rat bore a crown of electrodes to monitor its brain impulses.

"Only about 5 to 10 percent of our drugs come directly from natural products," said Dr. Frederick K. Goodwin, who heads this psychiatric research unit of NIMH. "But nature is more important than it seems, for chemists often start with a natural product that affects the central nervous system, and go on to develop a new class of synthetics.

"Among our natural drugs are some the public hears more about because of abuse. Cocaine from the South American coca bush is one. Mescaline from peyote cactus, and derivatives of marijuana are others. We prescribe these because of their euphoric or antidepressive qualities," he said, "and use reserpine for the opposite effect of calming the excited manic patient."

A powerful psychiatric tool is LSD (lysergic acid diethylamide). It can temporarily derange a mind when a mere speck is absorbed, leading to serious problems when it is taken for thrills. Its highly publicized use by a few

Lost in thought, an alchemist of the 16th century ponders a formula. Such forerunners of modern chemists spent most of their time trying in vain to change base metals into gold. But some thought their science should focus instead on the preparation of medicines. Though primarily interested in chemicals, Paracelsus, a Swiss, used tincture of opium as a drug. He also revived the "doctrine of signatures," which held that plant remedies could be identified by their resemblance to the afflicted body part. Many plant names like liverwort and heartsease recall that belief.

DON CROWLEY

experimental psychiatrists to induce a "controlled psychosis" is now waning.

LSD, however, is a man-made drug, first synthesized in 1938. It rates mention here as an offshoot of ergot, a common fungus growth on rye and other grains, which yields medically active and useful alkaloids.

The story of ergot is as strange as the fantasies of an LSD user. Though grain bearing the purple mark of an ergotlike blight was feared by such ancient peoples as the Assyrians, midwives of many lands and times have made crude preparations from the fungus to control bleeding after childbirth. Modern doctors still prescribe ergot derivatives for such bleeding, as well as for migraine —a practice that followed the isolation of ergot's active principle at the Swiss laboratories of Sandoz Ltd. in 1918.

Yet the effects of ingesting crude ergot can be appalling. In the Middle Ages mysterious plagues swept the rye-growing regions of Europe. The victims suffered hallucinations, convulsions, and burning sensations called St. Anthony's fire. In severe cases, constricted blood vessels caused dry gangrene, making extremities—hands and feet, even sometimes arms and legs—shrivel and drop off.

Even in recent decades contaminated food has produced outbreaks of ergot poisoning. In 1951 dozens of villagers of Pont St. Esprit in southern France were stricken after eating "the scorching bread." Five died, and survivors are haunted by scenes of sufferers jumping from windows under the delusion they could fly—a recognized symptom of a "bad trip" today with LSD.

DEEP IN THE WORLD'S shrinking wilderness, a new breed of plant hunters is searching for more intoxicating and vision-producing drugs that may furnish clues to the mysteries of mental illness.

The quest has led to aboriginal societies that use such drugs in mystic rites and healing arts. And its pursuit brings together a remarkable range of research scientists, including ethnobotanists, who study primitive peoples in their natural environments; archeologists, who dig up evidence of ancient plant medicines; biochemists, looking for active plant components; and psychiatrists, who prescribe the finished drugs.

In a small specimen-cluttered office of the Botanical Museum at Harvard University, I interviewed a pioneer in the field, Professor Richard Evans Schultes, director of the museum and a leading ethnobotanist specializing in both psychoactive and general medicinal plants.

A tall, tweedy Bostonian, Dr. Schultes has spent 40 years exploring for and disseminating information on tropical New World plants, from rare orchids and wild rubber to exotic narcotics of Indian tribes.

Before rauwolfia made medical headlines, Dr. Schultes studied three drugs sacred to Mexico's pre-Columbian Aztecs: peyotl, from the dried tops of the peyote cactus *Lophophora williamsii;* ololiuqui, brewed from the vine *Rivea corymbosa;* and teonanacatl, the magic mushroom that the Aztecs called "flesh of the gods" and the Spaniards attributed to the Devil. He rediscovered the last two after three centuries of obscurity.

On plant-collecting trips up and down the Amazon Basin, Dr. Schultes has lived and worked for months at a time with some of South America's most primitive tribes.

During one visit, he told me, he was initiated into the Yukuna tribe of eastern Colombia, and when he returned years later, he took along his 10-year-old son to join in the reunion with his friends.

Paddling the tributaries of the upper Amazon and Orinoco Rivers, Schultes suffered malaria, beriberi, and other hardships to gather thousands of specimens for the Harvard botanical collections. But he had the satisfaction of following the trail of his boyhood hero, the 19th-century British botanist Richard Spruce, whom he respects as one of the greatest explorers of South America.

"Nearly a hundred years ago," he said, "Spruce was first to describe several species of the *Virola* genus, an important but then almost unknown group of Amazon trees related to the common nutmeg of the Far East."

Dr. Schultes's own discoveries have carried on the Spruce tradition. In the 1950's he encountered still other *Virola* species, and learned that Indian tribes of Brazil, Colombia, and Venezuela use the trees to make a potent hallucinogenic snuff.

"They scrape a bloodred resin from the inner bark," he said, "then boil and pound it into a powder they snuff to enter the spirit world at sacred ceremonies. In large doses it causes wild intoxication, complete with hallucinations in living color."

Many tribes also make washes and ointments from *Virola* bark, leaves, and seeds,

Fine grind by an 18th-century drug mill helped prepare plants for medicinal use. To stabilize the nine-inch wide box, the pharmacist sat on the base's extension.

DON CROWLEY

Schultes learned, to treat skin diseases, wounds, rheumatism—even bad breath.

"Perhaps some future wonder drug may come from these jungle plants," he said.

One *Virola* product of potential value is the deadly resin that Waika tribesmen smear fresh on arrow tips. The prospect is not as improbable as it sounds, for science already has converted similar poisons.

Curare, the most famous of South American arrow poisons, now serves as a muscle relaxant in surgery and certain forms of paralysis. Ouabain, an arrow and spear poison of tropical Africa, has yielded a powerful stimulant for cardiac cases. And the sinister Calabar beans of West Africa, once brewed into lethal drinks for testing guilt in tribal ordeals, gave ophthalmologists a drug against glaucoma.

ON A SUMMER DAY at the University of Mississippi, I visited an Alice-in-Wonderland garden maintained for the benefit of students in the College of Pharmacy.

I had flown south to consult Professor Maynard W. Quimby, an outstanding economic botanist who had recently joined the expanding pharmacognosy staff of "Ole Miss."

With the delight of a nature lover, Dr. Quimby showed me his research gardens, bright with examples of medicinal plants. I felt as if I were back in college Botany I, sniffing such pungent herbs as tansy, fennel, and peppermint, steeped by centuries of "wise women" to banish sore throat, colic, and other simple ailments.

There were tall castor bushes, from whose seeds castor oil has been pressed since the early Egyptians discovered childhood's hated physic. And twining vines of the velvet bean, a common fodder in which chemists found the active ingredient for the original L-dopa drug, prescribed to relieve symptoms of Parkinson's disease, a nervous-system disorder.

Handsomest of all drug plants blooming in that pharmacy of nature was the purple foxglove *(Digitalis purpurea)*. It owes its place in medicine to William Withering, the 18th-century physician and botanist of Birmingham, England, who found in its dried leaves the world's leading heart stimulant and regulator—digitalis.

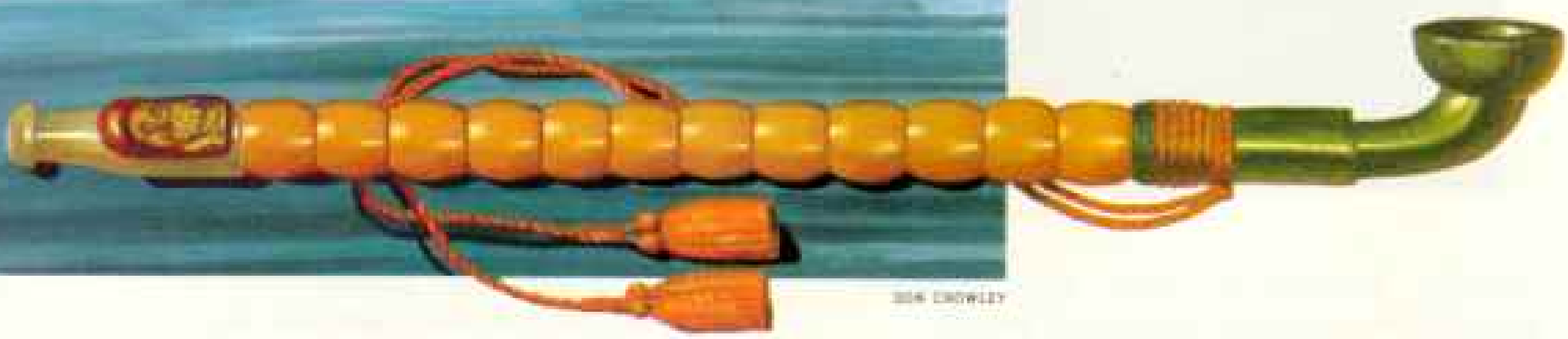
After our tour of the gardens we went to a university storeroom filled with specimens from Dr. Quimby's latest plant-hunting trip into the Nigerian bush of West Africa.

"These fragments represent 30 different species of trees, shrubs, and other plants used in tribal medicine," he said.

"Here's the root of a shrub the Hausa people call *faskori;* they infuse it into a drink for stomach complaints or pound it into a powder applied to open sores. Over there is a woody climber that provides both the Hausa and Twi tribes with fruits they feed to sick children to lower fever, or boil into a decoction to treat jaundice."

But the big surprise of my university visit was to find there a legal marijuana farm, set up by NIMH to supply research projects. Armed men, watchtowers, and barbed wire guard the long rows of this tall, weedy annual,

Closing for action, a British ship meets fire from a Chinese junk in the opium wars of the mid-1800's. The conflict erupted over Britain's smuggling of opium from her Indian colonies to China. No match for the British fleet, China was forced to cede Hong Kong and open her ports to trade. Opium, though remaining illegal, continued to be shipped in, yoking millions to the pipe. Today, the People's Republic has put a stop to the illicit use of opium.



JOE CROWLEY

a hemp plant that botanists call *Cannabis* and smokers call pot or grass.

Scores of marijuana strains grow on the university's tract. The mature plants are harvested, dried, and stripped of leaves and other parts, which are then analyzed by complex electronic and chemical devices to reveal the amount of psychoactive compounds each specimen contains. Finally, marked samples are distributed among research groups to test physical and mental effects on volunteer subjects, and thus obtain data on which to base legal controls deemed necessary.

Whatever the prospect for pot smokers, their controversial weed is being seriously studied for its possible medicinal value.

FOR MILLENNIUMS many peoples, especially in the Middle East, have drunk and eaten hashish, the hallucinogenic resin in hemp's flowering tops. But medical use of cannabis is equally old. The earliest Chinese herbal, attributed to the legendary Emperor Shen-Nung of about 2000 B.C., listed the plant as a tonic source. Later herbalists cited other Chinese uses—for female weakness, gout, malaria, and absentmindedness.

Cannabis medication to ease pain and relax taut muscles finally reached England from India in the 1840's, then spread to the Continent and the United States, where physicians prescribed it for such complaints as insomnia, stomach ulcers, migraine, and toothache.

Cannabis went out of style when chemists in the 20th century developed more effective and standardized drugs. But the recent isolation of the plant's active constituent, THC (tetrahydrocannabinol), has led drug concerns to seek derivatives that would offer physical benefits without the mind-affecting drawbacks of the ancient herb.

"The desire to take medicine is perhaps the greatest feature which distinguishes man from animals," quipped Sir William Osler, noted physician and professor-historian.

Certainly the art of pharmacy has fascinated mankind since the first savage nibbled at an herb to relieve an injury or disease.

In the University of Pennsylvania Museum at Philadelphia, I held in my hand a small clay tablet bearing the world's oldest known prescriptions. Inscribed in cuneiform 4,000 years ago, this tablet came to light when one of the university's archeological expeditions excavated it with other relics of the library buried at Nippur, religious and commercial center of Sumer in ancient Mesopotamia.

Beside me, as I gazed upon that tangible evidence of the practice of some unknown Sumerian physician, stood the erudite cuneiform scholar who had translated the tablet's mysterious hen-scratch symbols.

Dr. Miguel Civil, from the Oriental Institute of the University of Chicago, had joined me on one of his periodic research trips to the museum, and kindly agreed to interpret.

"Here are 15 prescriptions," he said. "They were prepared as poultices, or given by

mouth, or made into washes and salves."

Most of the ingredients came from plants, he explained. The Sumerians squeezed and ground, infused and decocted seeds, leaves, fruits, roots, and bark of such plants and trees as thyme, mustard, fig, pear, myrrh, camel thorn, pine, and willow.

Choosing solvents of water, wine, milk, or beer, they mixed vegetable bits with salt, oil, and river silt; with pulverized turtle shells, bird and bat droppings, powdered snakeskins, and "hair from the stomach of a cow."

IF IT SEEMS STRANGE to put such things in medicine, remember that our ultra-modern drug, the hormone cortisone, was first isolated in the 1930's from the adrenal glands of slaughtered cattle. After animal sources proved inadequate, a worldwide search for plant substitutes turned up a Mexican yam of the *Dioscorea* genus that now provides the starting material for nearly all cortisone.

Any similarity between primitive and present-day doctoring is, of course, purely coincidental. Since ancient societies usually blamed illness on demons that invaded the body, it followed that disgusting and foul-tasting materials, plus prayers and charms, could drive them out.

Gradually, however, as enterprising medicine men experimented with vegetable and animal products, they built up a rude but sometimes effective materia medica. By trial and error they learned which herbs were poisonous, and that even lethal ones might be helpful in minute doses.

From Babylonian and Assyrian tablets, we know that the heirs of Sumer used deadly nightshade, henbane, mandrake, and thorn apple. We know, too, that these toxic plants have therapeutic value, which scientists now explain by the presence of atropine and scopolamine—still standard drugs to relax eye muscles, relieve spasms, and stimulate the heart.

Egypt's oldest medical records reveal no less inventiveness. In the rambling collection of "recipes" and incantations that make up the hieroglyphic scroll called the Ebers Papyrus, the Egyptians included many drugs that have stood the test of time.

To soothe a crying child, goes one, "take pods of the poppy plant and add fly dirt that is on the wall . . . strain." Except for the fly dirt, this prescription calls for the same paregoric that pediatricians give colicky babies today in tincture form.

The Nile people also devised a remedy for night blindness from roasted ox liver—a quite reasonable practice in the light of modern knowledge that liver contains vision-aiding vitamin A. The Egyptians even pressed moldy bread to purulent wounds and swallowed it for internal maladies—thus anticipating penicillin and other 20th-century antibiotics from mold cultures and soil bacteria.

One of your doctor's most popular drugs goes back to ancient China. The drug is ephedrine, still prescribed in natural and synthetic form for ailments from asthma and hay fever to low blood pressure and heart block. Its original source was a green-stemmed shrub, *Ephedra sinica*. Native to China as *Ma Huang*, the plant was recommended against respiratory infections long before the learned physician and

Battlefield Samaritan lends a hand to a malaria-stricken comrade during the U. S. Civil War. Quinine—at that time the only effective drug against malaria—saved thousands during the bloody conflict.

Powdered bark of the South American cinchona tree, source of quinine, first reached Europe via Catholic missionaries in the 17th century. Fearful of being "Jesuited to death," Oliver Cromwell and other arch-Protestants refused to be treated. Europe's horror of the deadly "shaking fever" finally overcame the prejudice, and quinine was gradually accepted.

IRIN CROWLEY

Fraud vs. folk wisdom

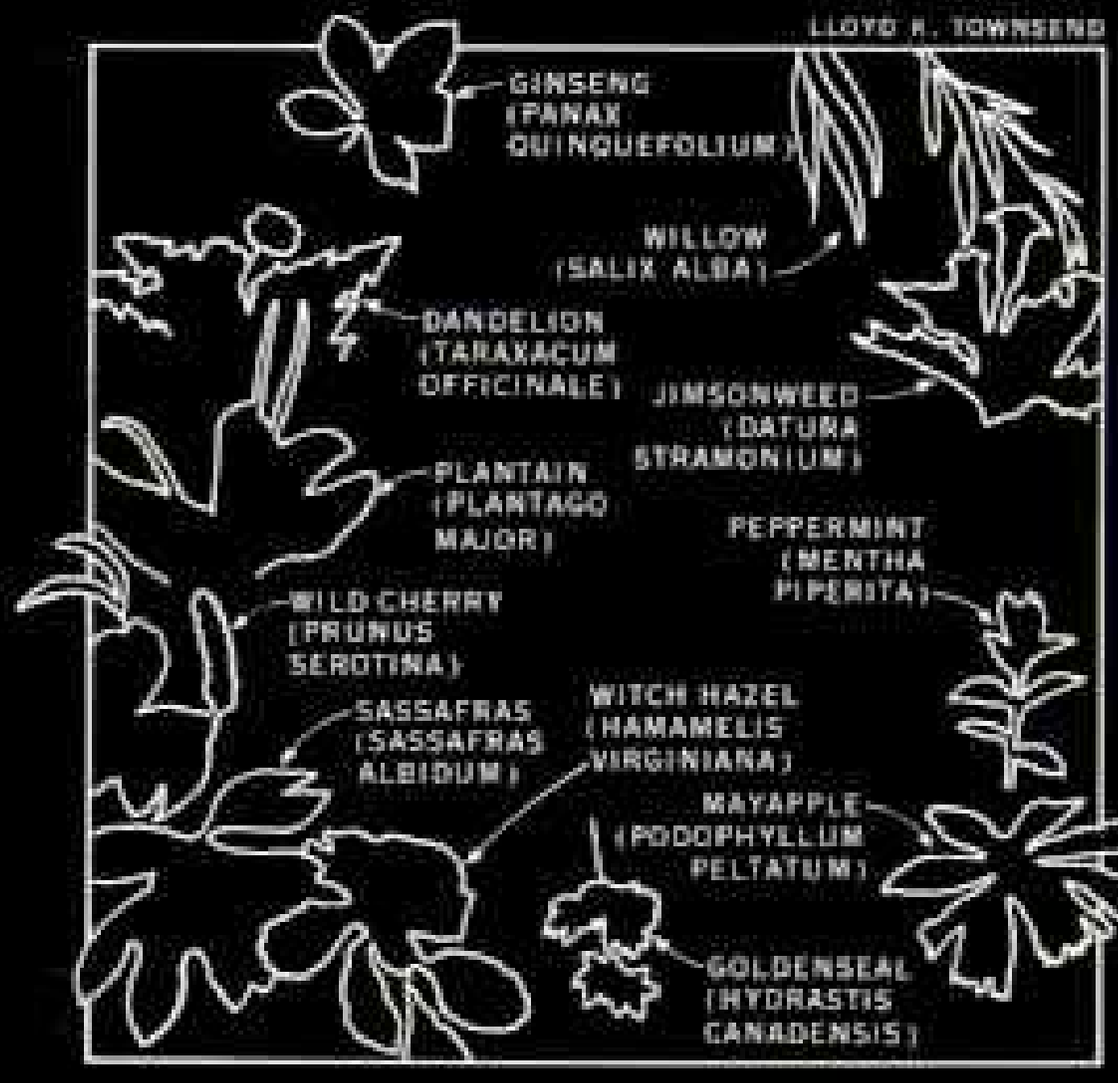
"SURE CURE FOR EVERY COMPLAINT!" went the patter of traveling quacks who peddled their nostrums to a growing America. Hundreds of patent medicines like Cream of Olives, Hooper's Pills, and Keuchen Cura found widespread acceptance through outlandish claims often coupled with a high alcohol or opium content. One of the best-known remedies, Dr. Morse's Indian Root Pills, promised to cure anything from kidney disease to bad breath.

Showmen's panaceas often included ingredients from the plant world such as sassafras, whose pungent oil has antiseptic properties. But many Americans, unswayed by painted banners and hard-sell tactics, preferred "simples"—homespun preparations of medicinal plants.

Early settlers learned much herbal lore from the Indians, who introduced them to such diverse remedies as mayapple, a cathartic, and goldenseal, whose powdered roots dried the runny noses of overall-clad countryfolk. Wild cherry bark still flavors cough syrups, while witch hazel remains a favorite lotion for insect bites.

Pioneers brewed tonics from dandelion and peppermint to soothe stomachs jounced by covered wagons rumbling west. The people of Appalachia still fashion poultices of plantain for snakebite and jimsonweed for wounds. Ginseng root, an alleged aphrodisiac, remains a favorite ingredient for an all-purpose tonic.

For many years, rural folk treated fevers with a decoction of willow bark. In the 1820's its active principle, salicin, was isolated; in 1899 a synthetic derivative gave the world aspirin.




PILLS.
Kenyon Cure
CREAM OF OLIVES
THE HOUSEHOLD REMEDY

naturalist Li Shih-chên listed it in his 52-volume *Pên-ts'ao Kang-mu* in 1590.

Yet even as Li Shih-chên completed his life's work, the Western Hemisphere was uncorking a brand-new array of plant drugs. In the wake of the 15th- and 16th-century voyages of discovery, a Spanish physician, Nicolás Monardes, compiled a detailed account of medicinal herbs arriving from overseas to stock the shelves of European dealers.

His book, telling how the Indians used wild roots, barks, and fruits, was "Englished" in 1577 by London merchant John Frampton under the engaging title *Joyfull Newes out of the Newe Founde Worlde*.

Dr. Monardes was fascinated by the coca shrub, whose leaves Peruvian Indians mixed with lime and rolled into balls held in the mouth on long treks over the high, bleak plateaus of South America. "The use of these little Bawles dooe take the hunger and thurste from them," he reported with wonder.

Andean Indians still use coca to escape the harsh reality of their lives. But the "Joyfull Newes" was nearly 300 years old before science isolated the plant's key constituent and called it cocaine. Later (1884) a young Viennese doctor showed that cocaine, used as a local anesthetic, would take the excruciating pain out of cataract and other eye operations.

The discovery touched off one of the first and most far-reaching expeditions of modern medical exploration. In 1885 the pharmaceutical firm of Parke, Davis & Company in Detroit—already active in seeking plant materials as far away as the Fiji Islands—dispatched Dr. Henry Hurd Rusby to South America to collect coca and other drug plants. After months of horrendous hardships and adventures in the jungles of the Amazon headwaters, Rusby brought back not only coca supplies but also some 45,000 other botanicals for medical research. Many provided new sources of worthwhile drugs.

THE SAME ANDEAN SLOPES on which Spanish pioneers found coca growing also produced the world's first real cure for the curse of malaria, which has killed more people than any other disease in history. The secret lay in the bark of a flowering evergreen that Linnaeus would mistakenly name *Cinchona* for Countess de Chinchon, wife of a 17th-century viceroy of Peru.

The great Swedish botanist erred in believing that the countess introduced the powdered bark after it cured her own chills and fever. But the drug's power was no myth. Exported to Europe about 1645, it eased the torments of malaria for thousands.

How the Peruvian bark worked its wonders was learned in 1820, when pharmaceutical chemists extracted one of the alkaloids and dubbed it quinine, for the old Indian term *quina-quina*, "bark of barks." Seventy-seven years later Sir Ronald Ross, a British bacteriologist in the Indian health service, proved that malaria was caused by a microscopic organism transmitted by the *Anopheles* mosquito. The two epochal discoveries led to the draining of vast mosquito-breeding areas, to insecticide spraying, and the marshaling of an arsenal of synthetic antimalarials. But the war is far from won.

"Resistant strains of the parasite, like those that infected American troops in Southeast Asia, have driven us back to quinine," said Col. Ray Olsson, director of the Division of Medicine of the Walter Reed Army Institute of Research in Washington. "Since the appearance of the virulent Viet Nam type of falciparum malaria in the 1960's, the best treatment has been quinine combined with supporting synthetics."

THE CHEMICAL REVOLUTION that made such progress possible began in 1806, when a German apothecary apprentice named Friedrich Sertürner isolated the first active alkaloid of a natural drug.

The drug was raw opium from the poppy *Papaver somniferum*. Its essence was a narcotic component that Sertürner called morphine after Morpheus, the god of dreams, and doctors know as a great pain-killer.

But medical science will be forever indebted to Sertürner not just for controlling pain, but also for pointing the way to the later separation of other alkaloids such as cocaine and quinine that could be prescribed for specific ills. Gradually biochemists developed more effective natural drugs, and eventually, by chemically modifying molecules, created synthetics mother nature never knew.

Consider the willow tree. For thousands of years, willow bark and leaves yielded resins and juices to ease the aches and pains of rheumatism, neuralgia, and the like.

The active ingredient in such remedies was revealed in the 1820's and called salicin, for the willow genus *Salix*. Chemists, however, continued to seek improved derivatives and

finally came up in 1899 with a related synthetic product they named acetylsalicylic acid. Another name is aspirin.

YET ALL DRUGS, even the synthetics, go back to nature. And so did I. When the spring rains and hot summer sun greened the Appalachian highlands, I went up into the hills where the borders of North Carolina, Virginia, and Tennessee meet.

I chose this section because it lies in the heart of the region that provides most of America's wild plants for the drug trade.

"Appalachian dealers buy and sell more than 125 species of medicinal plants," economic botanist Arnold Krochmal, of the U. S. Forest Service, told me when I visited his office in Raleigh. Dr. Krochmal himself has the rewarding job of expanding use of forest resources while helping mountain people augment their meager incomes by harvesting nature's bounty.

From Boone, North Carolina, I rode one of the collecting trucks of a leading dealer—the Wilcox Drug Company, founded in 1865 by the great-grandfather of the present owners, Kenneth and Gary Wilcox.

"On a good day we make up to fifty pick-ups of herbs, roots, barks, and berries," said the Wilcox driver, Ralph Proffit, as we bounced along a twisting road past small weatherworn mountain homes. "On a real fine haul, we've carried almost nine tons."

At nearly every house, it seemed, men, women, children, dogs, and cats came out to meet the honking truck. Jumping down with Mr. Proffit, I admired his efficiency as he swapped greetings with his clients, weighed their big burlap bags of dried vegetation on his portable scales, tossed the stuff in his truck, wrote a check, and drove on.

But the cash-and-carry bundles were disappointingly light on that trip, chiefly because of rain that had left drying sheds piled with plant materials too wet to sell.

"Been feelin' kinda puny, too," said a woman who had filled only two company bags with witch hazel leaves and sassafras bark.

On the other hand, a small ridgetop store yielded a neighborhood collection of 17 bags, many weighing more than 100 pounds. Mr. Proffit told me that his annual account with one country store in Virginia comes to $50,000.

Back at the Wilcox warehouse in Boone early next morning, I studied the company's price list. Most of the desired items—angelica root to wahoo bark—brought from less than a dollar to as much as $5 a pound. Topping everybody's list, however, as I learned on visits with other dealers in Coeburn, Virginia, and Bristol, Tennessee, is ginseng, or "sang," as mountain folk call it.

Wild ginseng roots, sometimes forked in the shape of a man's body, have been prized from

Prescriptions and sundaes: mainstays of the drugstore of the 1930's. A familiar landmark across the nation, this singularly American institution came into its own as 19th-century patent medicine succumbed to 20th-century science.

With the advent of radio, over-the-counter drugs found a growing marketplace. Manufacturers seized the opportunity to spread their sometimes ambiguous messages to millions of listeners. Today, mass advertising comes under the government's watchful eye.

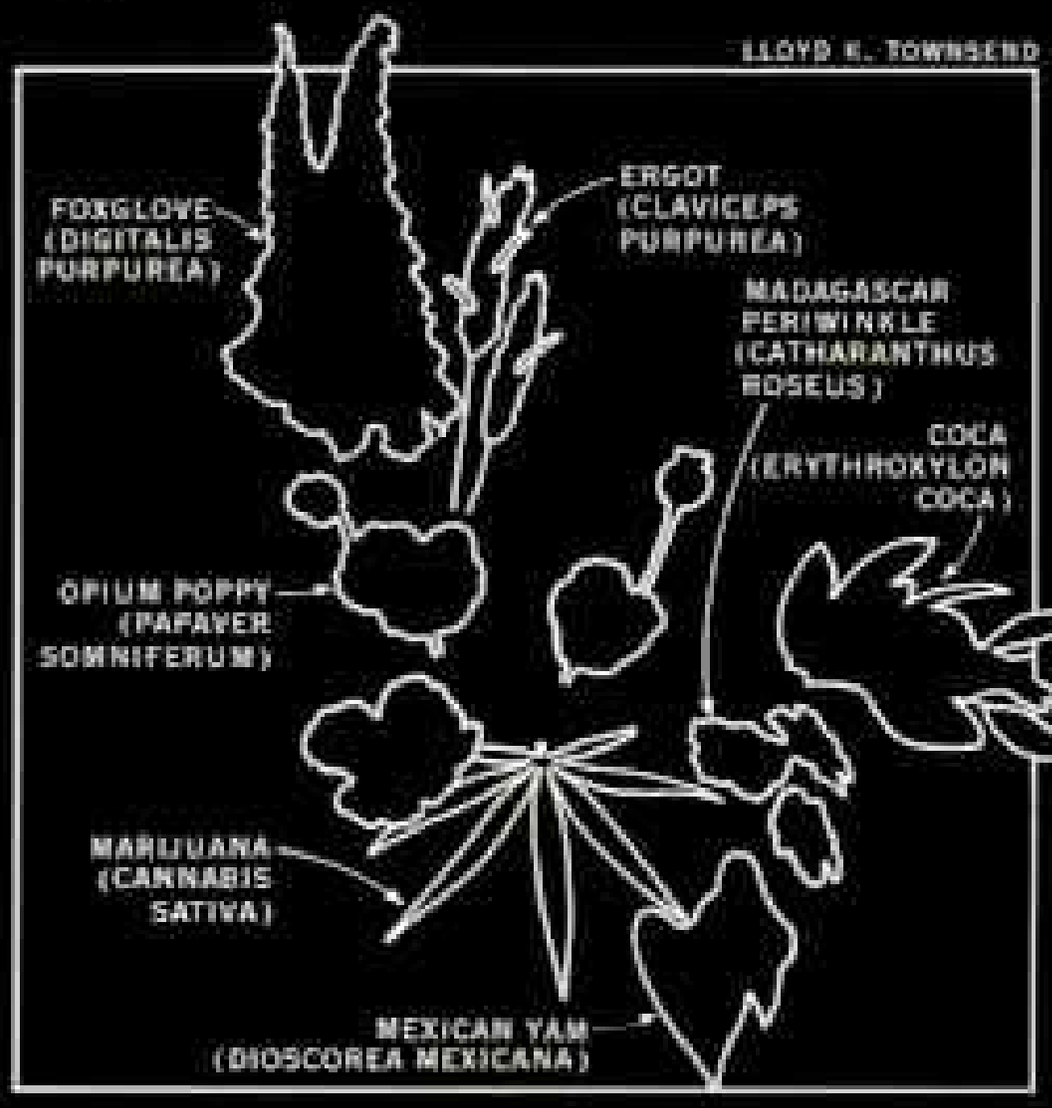
Drugs—helpful and hazardous

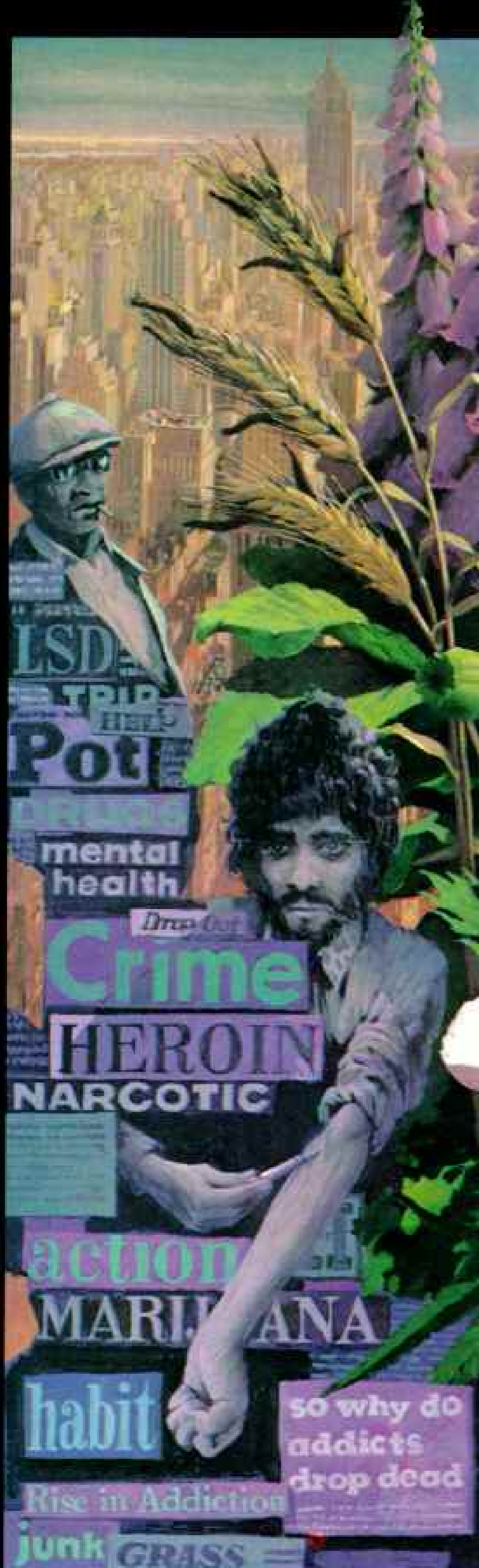
MIXED HEADLINES reflect two faces of nature's bounty. Helping to save lives in hospitals, plant-derived drugs become a scourge on city streets. Its tentacles snaking toward America from Asia and the Middle East, heroin gains new strangleholds on youthful victims. Yet morphine, a first cousin, remains an unexcelled vanquisher of pain. Both drugs stem from the same source: the seed pod of the opium poppy.

Indians of the Andes chew leaves of the coca bush as a hunger-reducing stimulant. This divine plant of the Incas yields cocaine—a valuable tool in local anesthesia, but a danger to growing ranks of abusers. Controversy surrounds the use of marijuana, prescribed for pain until 40 years ago. Though its long-term effects remain undocumented, millions of Americans have experimented with the weed. Extracts from ergot, a rye-attacking fungus, can relieve migraine and control hemorrhaging at childbirth; the mold is closely related to mind-blowing LSD.

Not all plant remedies have such ominous overtones. A wild yam holds starting material for cortisone, used to ease crippling arthritis. "Power over the motion of the heart" wrote an 18th-century British physician of foxglove-derived digitalis—today a major weapon in combating congestive heart failure.

From the Madagascar periwinkle come anti-cancer agents. Chemists process 12 tons of the herb to obtain one ounce of a drug that may prolong the life of a leukemia-stricken child.






SURGERY
Wonder Drug
Heart Drug
PENICILLIN

What does the future hold? Computers may help answer unresolved medical questions. Now, for example, the electronic brains tell doctors what to expect if they combine one drug with another. Though technological advances allow chemists to create synthetic drugs, research continues on plants as scientists hope to uncover still more cures for man's ills.

remote times as a stimulant, aphrodisiac, and cure-all for ailments, including hangover.

Long one of the most expensive ingredients of Chinese medicine, these roots now command ever-higher prices. Last year Appalachian dealers in American ginseng *(Panax quinquefolium)* were paying local diggers nearly $70 a pound for good-quality material.

Yet the significance of the root lies not in its cost or persistent folklore mystique, but in the possibility that it may actually contain chemical substances of therapeutic value. Though Western physicians still regard ginseng's benefits as largely psychological, scientific tests in the Soviet Union and elsewhere indicate that infusions of the root may, indeed, increase energy and resistance to infection.

According to a recent article in Chicago's Field Museum Bulletin, "... research with ginseng is being actively pursued in science labs the world over; its effect on tumors, corneal opacity and bacilli ... are just a few of the areas of research being explored...."

As I talked with mountain herb collectors and world-famous pharmacognosists, I kept thinking of lines found among the field notes of a plant hunter and quoted in Margaret Kreig's book, *Green Medicine:*

"I wonder what's around the bend?
said the explorer.
I wonder what that plant is?
said the collector.
I wonder what's in it?
said the chemist.
I wonder what activity it has?
said the pharmacologist.
I wonder if it will work in this case?
said the physician.
I hope she lives!
said the father.
Please, God!
said the mother.
I think she'll be all right in the morning,
said the nurse." □

SIX-MONTH INDEX AVAILABLE

As one of the benefits of membership in the National Geographic Society, an index for each six-month volume will be sent free, upon request, to members who bind their GEOGRAPHICS as works of reference. The index to Volume 145 (January-June 1974) is now ready.

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COVER: A European kingfisher erupts from the water with a fish dinner (page 415). CARL LUCHARS JUHOS AND EMIL LUTHER

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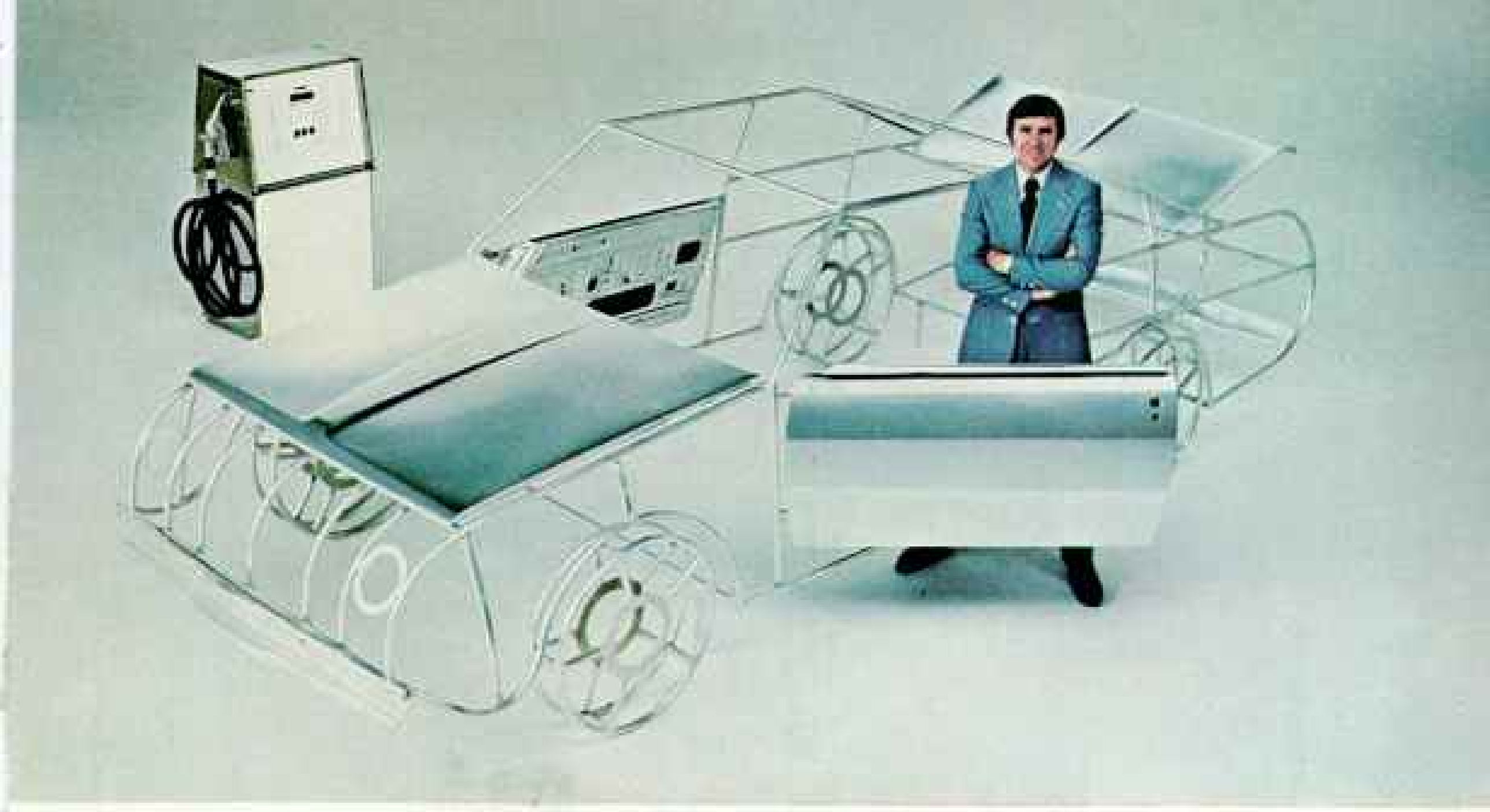

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NATHAN BENN

Skylab's embarrassment of riches

CAN TWO EDITORS with subjects as broad as the earth and the sun suffer from too many pictures from which to choose? Such a pleasant predicament confronted illustrations men Jon Schneeberger, left, and O. Louis Mazzatenta, center, as they set about sifting the astonishing treasure of photographs brought back by astronauts from the orbiting space station Skylab in 1973 and early 1974.

Stationing themselves for days before a light table, the pair patiently pored over some 42,700 pictures of the earth. They finally narrowed their choice to 30 of the most interesting and striking. Then they turned their attention to Skylab's 163,000 pictures of the sun.

The results of their toil—two breathtaking portfolios showing our planet and its star as never seen before—will appear in next month's GEOGRAPHIC. Staff writer Thomas Y. Canby, right, will tell the exciting story of Skylab's mission. Let your friends take part in that adventure; nominate them for membership below.

HOW MUCH ENERGY CAN BUSINESS REALLY SAVE?

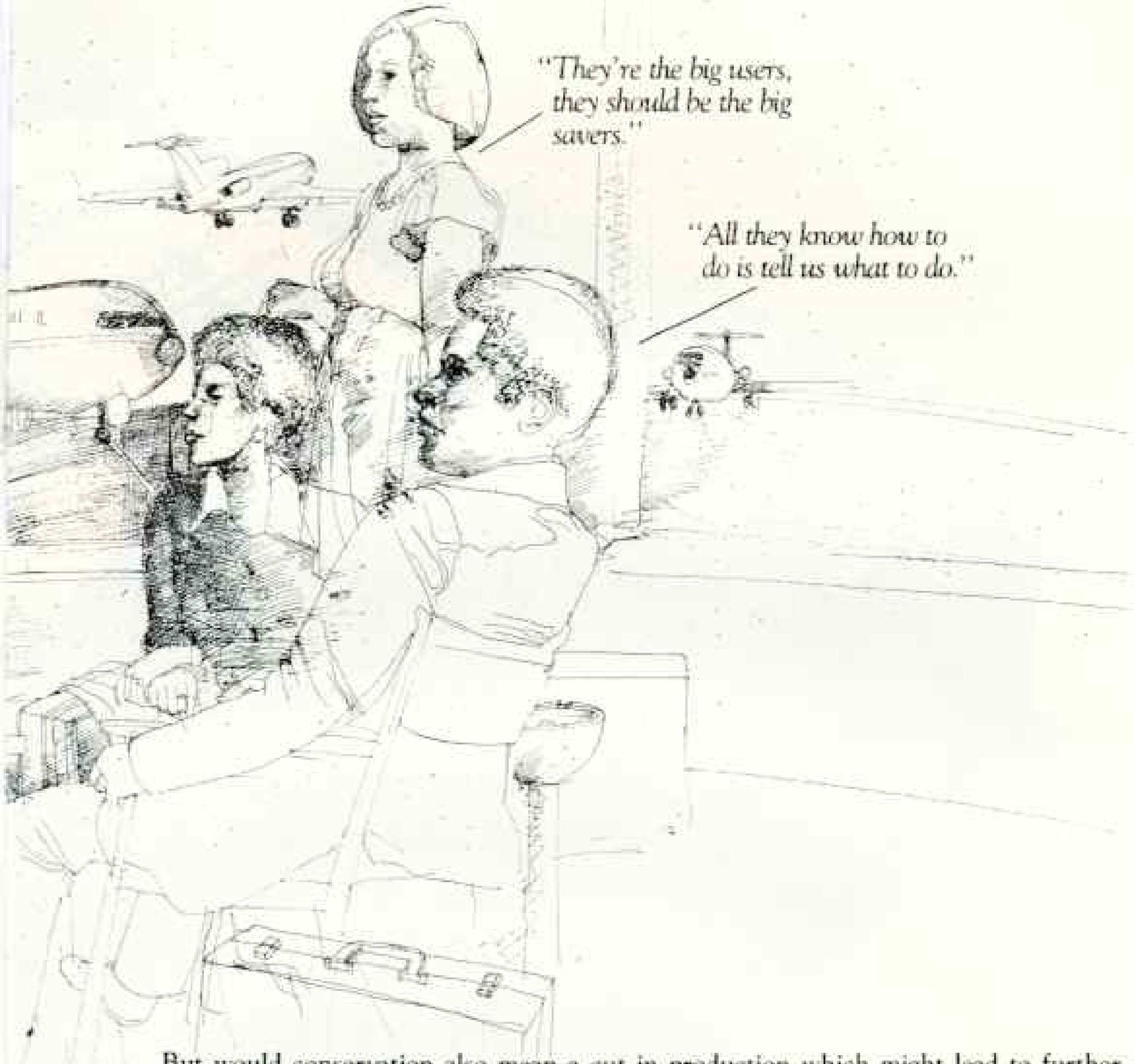
Business and industry account for nearly 70 percent of all the energy used in our country.

With over 12 million businesses operating today, it's no wonder they use all that fuel. If they can be more efficient in their use of energy for commercial, industrial and transportation activities, we could save a huge amount of oil.

For example:

A 15 percent efficiency increase would save the equivalent of about four million barrels of oil a day. That's more oil than we are importing from the Middle East right now—even with the embargo lifted!

Conoco believes that business and industry should shoot for efficiency savings of at least 15 percent in their use of energy. Along with continued conservation of energy by the public, this is the best way we know to help avoid another energy crunch in the next couple of years. And, by holding down energy costs business will be taking an important step in the fight against inflation.



But would conservation also mean a cut in production which might lead to further unemployment?

Conoco thinks not. We know of several large companies that have managed energy savings of more than 15 percent per unit of production while they have increased both output and employment. And at Conoco our goal is to improve energy efficiency by at least 15 percent, even as our business and payroll are growing.

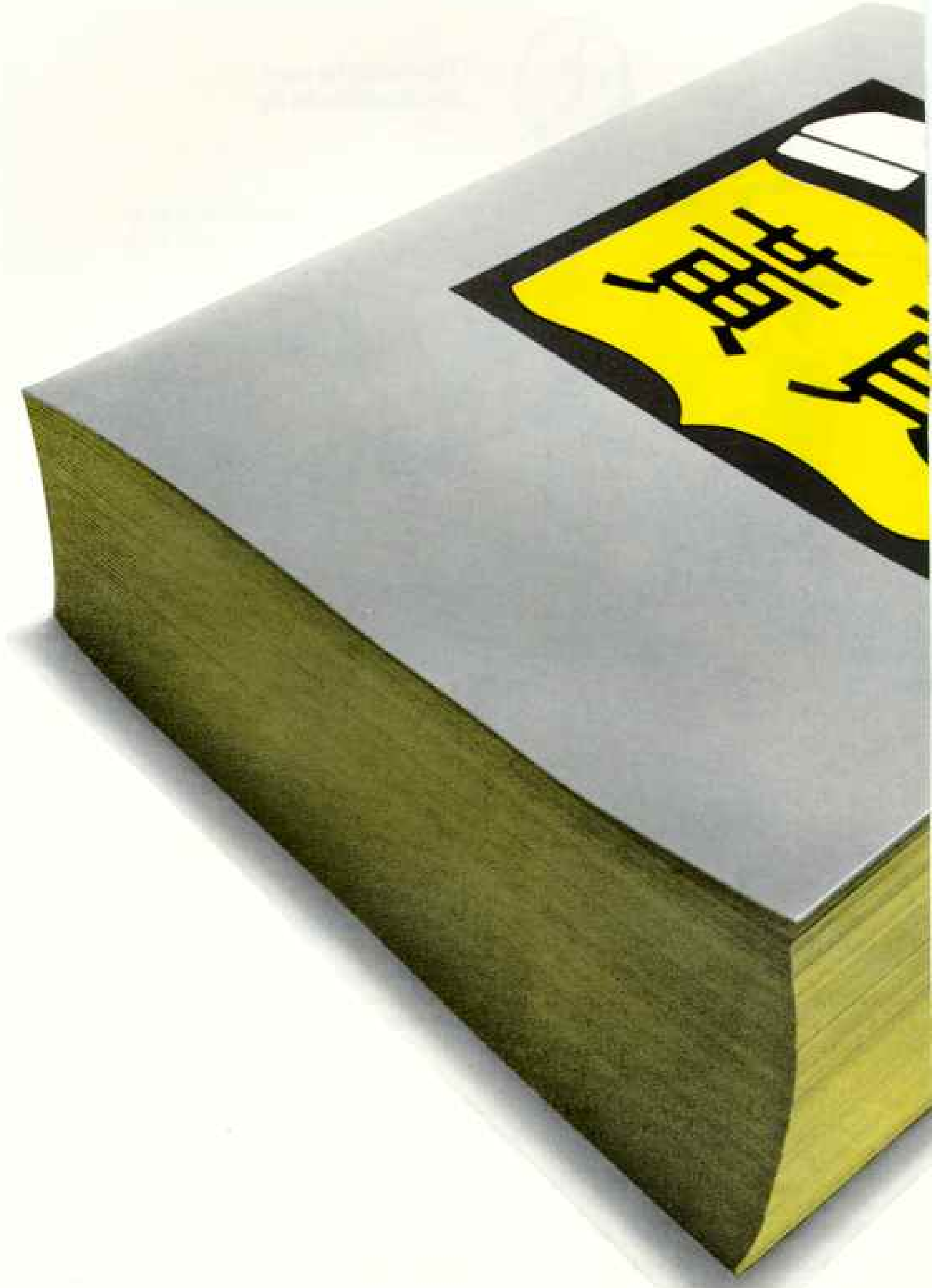
Can any business do it?

Yes. Large and small. It's not always easy, but there are no deep secrets to it. Conservation can be as simple as turning out lights or as complicated as developing totally new manufacturing processes. But it can be done.

If you're a businessman who wants to know how to start a conservation program, write us and we'll send you three government booklets on energy management: the "Energy Conservation Handbook"; "How to Start an Energy Management Program"; "Economic Sense for Retailers".

Write Conoco, Dept. A41, GPO Box 29, New York, New York 10001.

Continental Oil Company CONOCO



(If you want a pizza in Hong Kong, you might try La Bella Donna at 51 Gloucester Rd., Wanchai.)

We can help you find a pizza in Hong Kong.

Or mangos in Melbourne, tacos in Tampa . . .
Or practically anything, in 4,241 cities and towns around the world.

Our General Telephone Directory Company publishes the telephone directories for these places. The Yellow Pages . . . the "classifieds." The pages you turn to whenever you want to find anything, anywhere.

We publish Yellow Pages not only for the 23 million people who call us their phone company. We make them also for others in the U.S. and Canada, the Caribbean, Central America, Australia and the Far East.

There's good money in yellow journalism.

General Telephone & Electronics, One Stamford Forum, Stamford, Conn. 06904

SOONER OR LATER, YOU'RE GOING TO GET STUCK.

There's nothing more aggravating than having your car break down on the road. Except maybe paying a twenty-mile towing charge and finding out the trouble was just a loose connection, like a coil wire or a battery cable.

People have been going through this kind of aggravation for years. And we at Gulf think it's time something was done about it. We think that, in a country where people spend so much time behind the wheel of a car, they ought to know a little bit more about one.

That's why we've compiled a little 24-page booklet called "How not to get stuck when you get stuck."

In this little booklet we tell you the things to look for when your car breaks down. And we explain, in layman's terms, how a car works, how so many unexpected things can go wrong, and what can be done about them.

It covers everything from a loose electrical connection to a blown-out muffler.

Of course we're not suggesting that the booklet will make a master mechanic out of you. Some things you're going to have to leave up to someone who is. And that's also covered in the booklet.

You'll find chapters on starting, stopping, tune-ups, tires, fuel & oil, and all kinds of repairs and maintenance, and lots more.

It's clear, informative, up-to-date, useful and free.

If you'd like a copy just write to: Gulf Consumer Information, Box 1403-A Houston, Texas 77001. We'll mail it to you right away.

It won't stop your car from ever breaking down. In fact, you're almost certain to get stuck sometimes. But when you do, at least you'll know your coil from your rear-end differential.

GET TO KNOW GULF AND YOU'LL GET TO KNOW YOUR CAR.

Gulf

GULF OIL CORPORATION

"It's still the same Bermuda. The same white roofs and pink buildings. The same good times."

Jean and Jim Schaeffer vacationing in Bermuda again after 18 years.

"I wish I were a fish. It's as pretty under water as it is above."

"Melody Hill...Shangri-La... every house has a quaint, pretty name."

"The shopping is more fascinating than ever. And you don't have to change your money."

"You always have a nice breeze."

Bermuda

Unspoiled. Unhurried. Uncommon.

See your travel agent or write Bermuda, Dept. T-24:
[illegible] Fifth Avenue, NY, NY 10020 or 211 Statler Office Bldg., Boston, Mass. 02116

Minolta helps you discover a new world.

A Minolta SR-T can help you share the wonder of discovery by not holding you back.

You're comfortable with a Minolta SR-T from the moment you pick it up. This is the 35mm reflex camera that lets you concentrate on the picture, because the viewfinder shows all the information needed for correct exposure and focusing. You never have to look away from the finder to adjust a Minolta SR-T, so you're ready to catch the one photograph that could never be taken again.

And when subjects call for a different perspective, Minolta SR-T cameras accept a complete system of interchangeable lenses, from "fisheye" wide angle to super-telephoto.

Look into the fast handling Minolta SR-T and discover your own new world. For more information, see your photo dealer or write Minolta Corporation, 101 Williams Drive, Ramsey, New Jersey 07446. In Canada: Anglophoto Ltd., P.Q.

Minolta SR-T 100/Minolta SR-T 101/Minolta SR-T 102

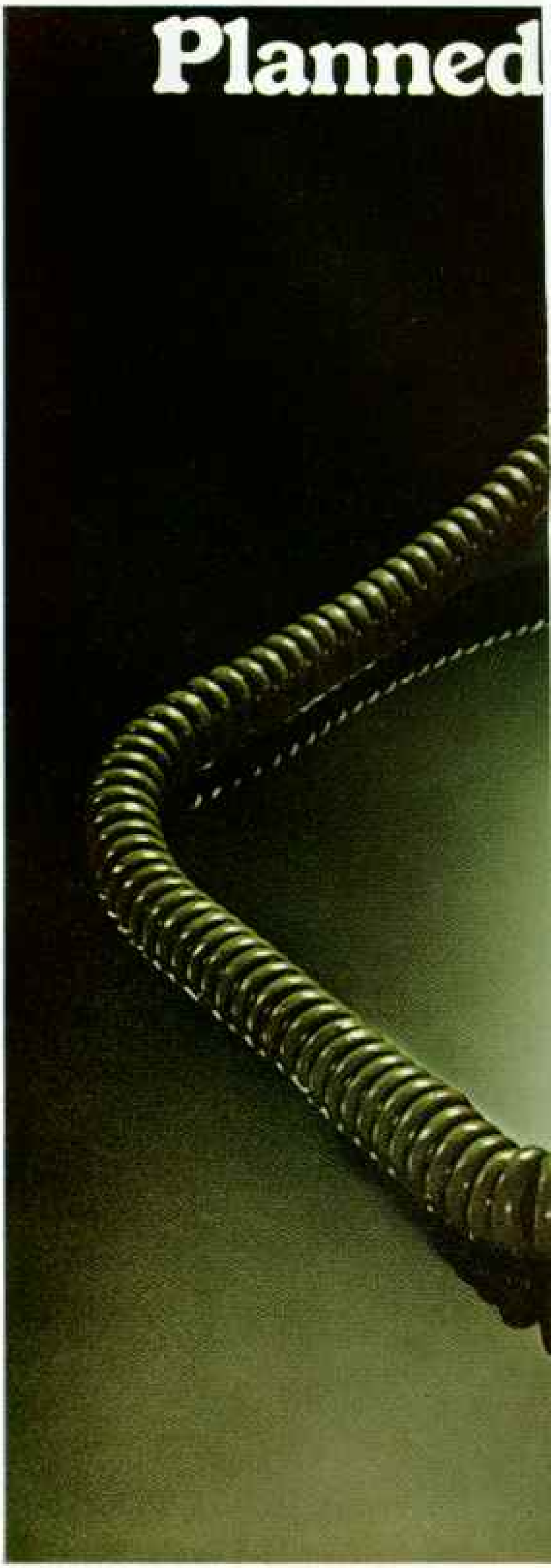
Is your camera a means of self-expression? If so, enter the Minolta Creative Photography Contest. Grand Prize: two weeks in the South Sea islands for two, $1000 cash, and a Minolta SR-T 102. 1428 other valuable prizes will be awarded. Nothing to buy. Minolta equipment not required. See your Minolta dealer for details and registration. Or write: Minolta Creative Photography Contest, Box 1831, Blair, Neb. 68009.

In the Nation's Capital

VISIT EXPLORERS HALL

SEE THE GIANT STONE HEAD of the lost Olmec civilization . . . two globes crafted by America's first globemaker . . . the tattered U. S. flag that accompanied Peary on his Polar expedition . . . the balloon gondola that held a manned-flight altitude record for 21 years . . . the largest unmounted globe in the world, and other fascinating exhibits of National Geographic researches and explorations. *Explorers Hall* is open every day but Christmas at the NATIONAL GEOGRAPHIC SOCIETY, 17th & M Streets N.W., Washington, D. C.

Planned



un-obsolescence.

Your phone is built to last...and last. Bell System phones are designed and built to withstand "torture tests" equal to 20 years average use. Of course, you may not need your phone that long because you'll move, or want to get a newer model.

Also, the phones we collect, we recycle. Practically nothing goes to waste.

The Bell Telephone Companies know you want a dependable, reliable phone.

We hear you.

In 1906, Union Oil sent out..."a young man of some geological knowledge and experience as a mountaineer" ...to find likely sites for new oil wells. Today, getting more oil from the ground isn't so simple.

How can America get more oil out of its existing oil wells? It's a crucial problem, and for years, the researchers at Union Oil Company have pioneered in the search for solutions.

Two of these pioneers are Paul Fischer and Roland Krueger. Working with other scientists and technicians, they developed Unibeads,® small waxy beads that are pumped into oil wells along with chemicals that dissolve rock to free trapped oil.

Without Unibeads,® the chemicals are dissipated ineffectively in already productive zones. Unibeads,® however, prevent that by temporarily sealing these zones to divert the chemicals to plugged zones. After the chemicals have done their job, the Unibeads® dissolve completely in the oil.

There are several oil companies bigger than Union Oil, but few that have contributed more to efforts to get the best and fullest use of our country's petroleum resources. What makes Union Oil different? Perhaps it's our spirit. A spirit that appreciates and encourages pioneering.

Union Oil Company of California.

union 76

The pioneering Spirit of 76 lives at Union Oil.

Today, the pioneering Spirit of 76 is men like Fischer and Krueger getting new oil from old wells with little wax beads.

We were married during the worst
blizzard that winter. (Your father didn't mind
Hardly anyone made it to the reception.)

On the third day in our new house,
it rained and the roof leaked. (I never knew
I had a fear of height.)

The twins were born on the warmest
May night on record. (Wasn't that a
long, hot summer.)

Through it all, you've managed to be
fair and sunny. That's what I remember most
Happy Anniversary.

Diamonds make a gift of love

A gift of diamonds need not be expensive. Your jeweler can show you many exciting pieces starting as low as $100.
De Beers Consolidated Mines, Ltd. A diamond is forever.

Only Mazola is made from corn. And it's the highest in polyunsaturates.

Of America's three most-used cooking oils, only Mazola is corn oil.

Neither Crisco nor Wesson have any corn oil at all.

Of these three oils, Mazola is highest in polyunsaturates.

And foods fried in Mazola get the delicate, digestible lightness of corn oil.

Only Mazola is corn oil. Wesson and Crisco are not. That's a big difference.*

Mazola: Good for your food because it's Corn Oil.

*Taste the difference in Mazola Margarine, too!

COLOR

TRANSPARENCY

If you've got a favorite slide

you can get a beautiful color print made from it.

Color slides can be really great, sharp and clear, and shown big as life. But maybe you'd like to share that scene with a far-off friend, or have a print for your own album. No trouble—and the cost is less than you might think. Just take the slides you like to a photo dealer. He'll take it from there. Prints-from-slides service is available from Kodak and other photofinishers.

A message from Eastman Kodak Company on behalf of photo dealers and finishers.

"Let it begin here"

Open this engrossing Special Publications volume—*The Revolutionary War*—and years roll back to the stirring days when Sons of Liberty risked all for a new, exciting ideal. You have never read a history book like it! Go with the author and his family to the historic sites, seeing each in its most appropriate season. Visit Independence Hall in July, Valley Forge in the dead of winter . . . and relive these historic times. Your children, too, will love every page and picture . . . gain an understanding that will be valuable throughout their lives.

Other equally exciting books in the series take you *Exploring Canada From Sea to Sea*, to the *World Beneath the Sea*, and to the enchanting *Isles of the South Pacific*. Each hard-bound 7" x 10" volume contains 200 or more pages, and scores of brilliant color illustrations. The cost is only $4.25 per volume, plus postage and handling. Use the order form below.

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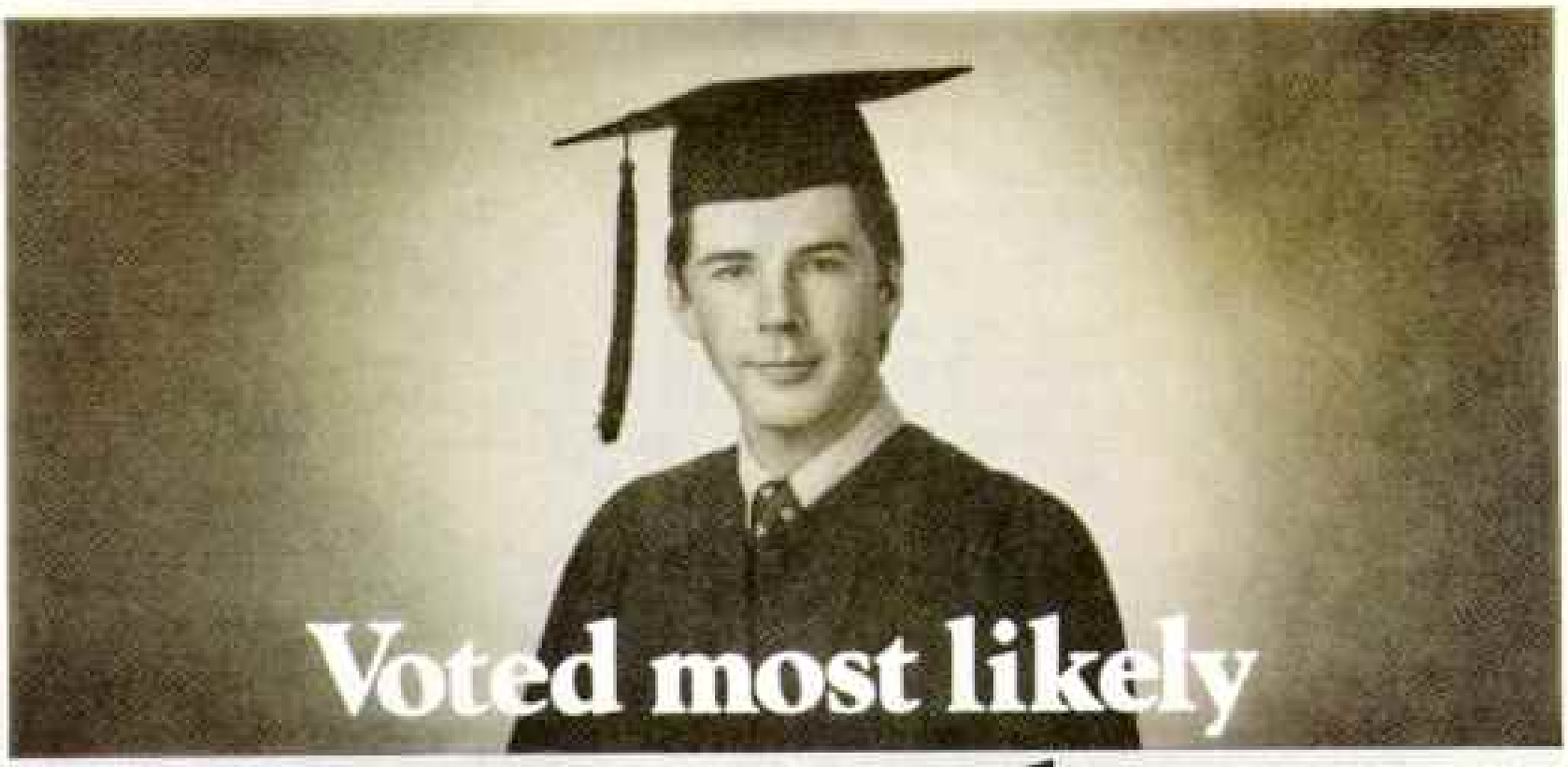

Voted most likely to succeed.

His classmates voted for him and he didn't let them down. He chose the Air Force as his road to success. Thousands of other young men and women make the same, smart decision.

Why? Some are seeking the educational opportunities the Air Force offers. There are 3700 separate courses. 80,000 men and women graduate from these courses annually. There's also the Community College of the Air Force which combines accredited Air Force and civilian college courses that can lead to a Career Education Certificate.

Travel opportunities and the 30-day paid vacation every year attract others to the Air Force. Equal opportunity for both men and women is another important factor filling the ranks of the various Air Force programs, such as Health Care, ROTC, Reserve, Academy, Officer Training, Women in the Air Force.

Elect the Air Force, pick a program and vote yourself most likely to succeed. For complete details send in the coupon. Or, for the location of your nearest Air Force Recruiter, call 800-447-4700, toll free. In Illinois call 800-322-4400.

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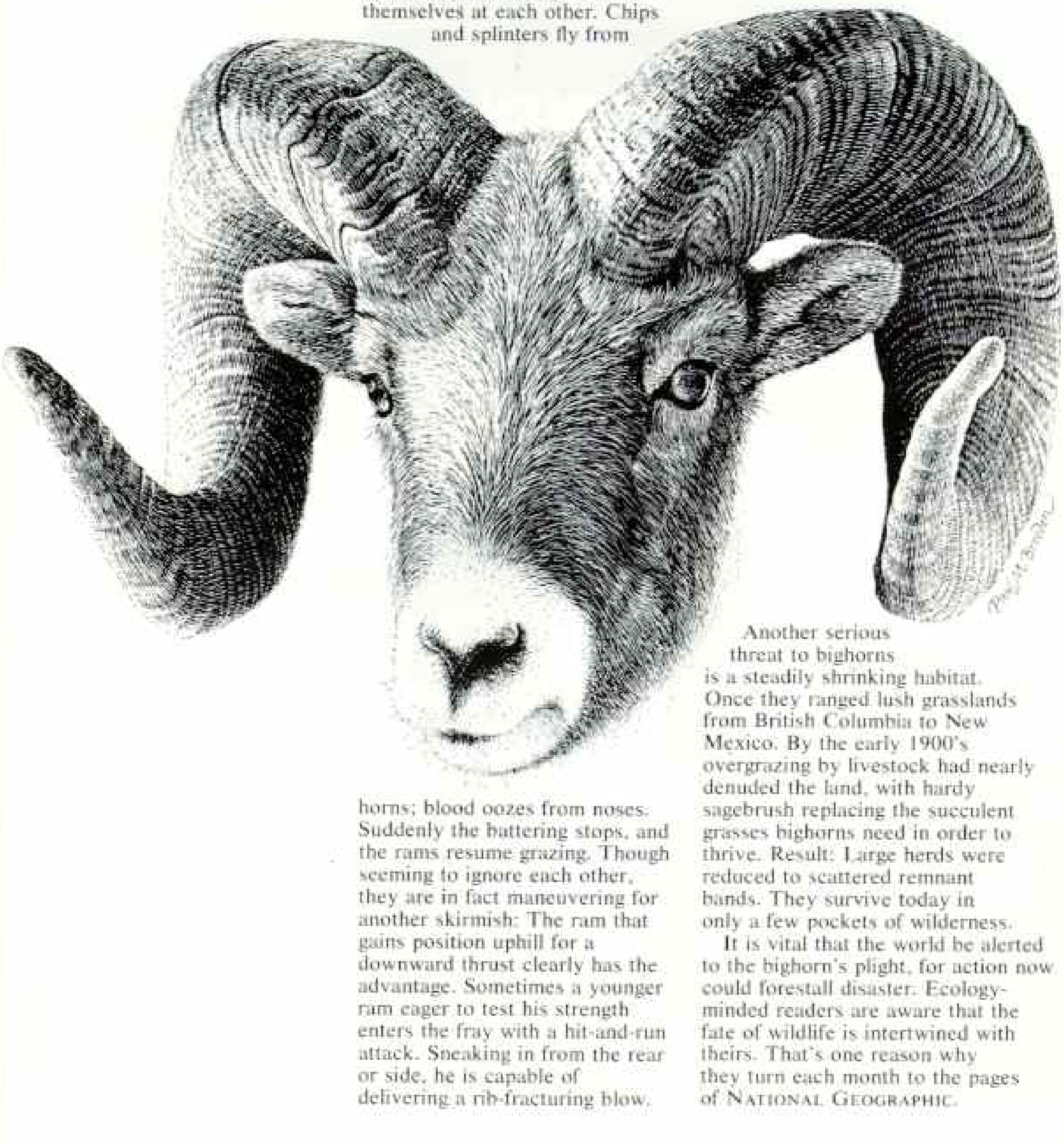
Phone _____ Sex M ☐ F ☐
Soc. Sec. # _____ Date of Birth _____
Education Level _____
Date of Graduation _____

Look up. Be looked up to. Air Force

Heads crack as bighorns duel in the Rockies

Rocky Mountain bighorn sheep use their massive horns as percussion instruments. During the fall rutting season, when hormone changes bring on the breeding urge, 250-pound rams square off in violent head-butting matches to determine which gains leadership of the herd and pick of the ewes. Duelists rear on hind legs, then drop to all fours and, heads down, charge at full speed.

Crack! Horn crashes against horn, and the sound carries as much as a mile. Shock ripples the combatants' bodies. They bounce back, stand still, dazed by the impact, and again hurl themselves at each other. Chips and splinters fly from



horns; blood oozes from noses. Suddenly the battering stops, and the rams resume grazing. Though seeming to ignore each other, they are in fact maneuvering for another skirmish: The ram that gains position uphill for a downward thrust clearly has the advantage. Sometimes a younger ram eager to test his strength enters the fray with a hit-and-run attack. Sneaking in from the rear or side, he is capable of delivering a rib-fracturing blow.

Headstrong rams have porous double-layered skulls that serve as shock absorbers and prevent serious injury. Most damage is to noses—hence the familiar "roman" look—and to horns. Few ever reach full curl. Those that do present inviting targets to hunters shooting for a prize trophy.

Gunners legally take some 300 bighorn rams each year in the United States, but many more than that are killed. Poachers goaded by fat fees—$3,000 or more for a head—are even invading one of the animals' last strongholds, the national parks.

Another serious threat to bighorns is a steadily shrinking habitat. Once they ranged lush grasslands from British Columbia to New Mexico. By the early 1900's overgrazing by livestock had nearly denuded the land, with hardy sagebrush replacing the succulent grasses bighorns need in order to thrive. Result: Large herds were reduced to scattered remnant bands. They survive today in only a few pockets of wilderness.

It is vital that the world be alerted to the bighorn's plight, for action now could forestall disaster. Ecology-minded readers are aware that the fate of wildlife is intertwined with theirs. That's one reason why they turn each month to the pages of NATIONAL GEOGRAPHIC.

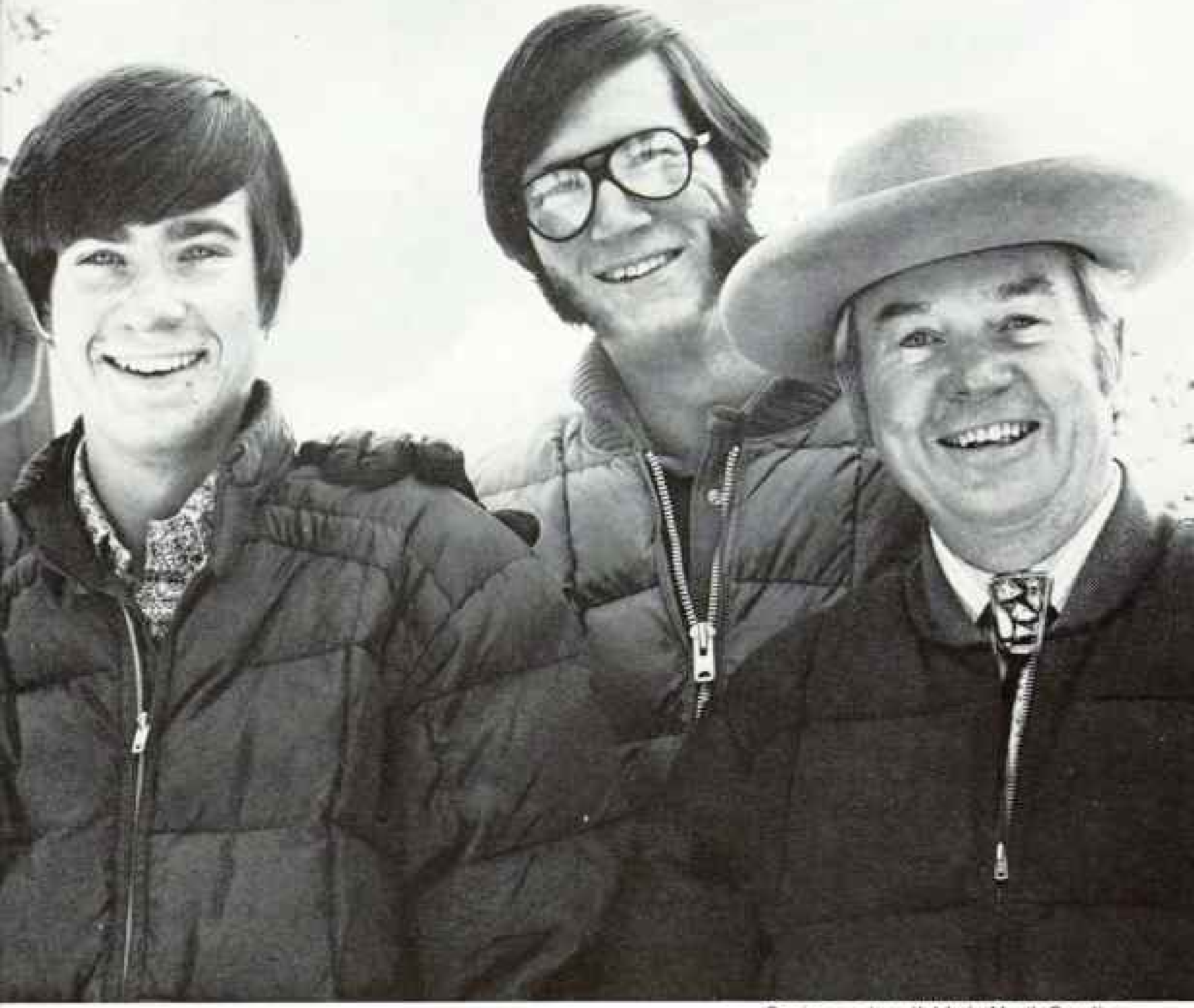
There are lots of small, windy roads in the Colorado mountains where Headlee Grimes lives. So, there are two things he relies on—a good solid car, and good solid car insurance. That's why Mr. Grimes came to Safeco. We showed him how he could save $180 over what his old insurance company was charging. We gave one of his boys a discount because he'd taken a drivers' training course, and his other son got a 25% discount because of good grades.

Now Headlee Grimes first came to us because he heard we were fast and fair when it came to claim service. We surprised him by also being less expensive.

So, look up your local independent Safeco agent in the Yellow Pages. He'll try to save you money on any kind of insurance.

"With two kids of driving age, I care about the car insurance we get. I switched to Safeco and got a better policy and saved $180 to boot."

You can smile when you're with Safeco.



Savings not available in North Carolina.

Smith-Corona ushers typewriters into

The Cartridge Age.

With the cartridge you can change to a fresh ribbon in just 3 seconds.

With the cartridge you can change to a color ribbon in just 3 seconds.

With the cartridge you can change to a correction ribbon in just 3 seconds.

The most significant advance in typewriters since the electrics came along has come along. Smith-Corona Electric Portable Cartridge Ribbon Typewriters.

If you had one right now, you could change from one typewriter ribbon to another faster than you could read this sentence.

In 3 seconds you could change from a worn ribbon to a fresh ribbon.

In 3 seconds you could change from a black ribbon to a red ribbon or a green ribbon or a blue ribbon... there are five different Smith-Corona color ribbons in cartridges.

In 3 seconds you could change from an ordinary fabric ribbon to a carbon film ribbon. (That's the one students like to use for essays and reports. It makes typewriting look like professional printing.)

In 3 seconds you could change to a correction ribbon that allows you to correct errors more neatly and with less effort than ever before.

If you've been thinking about a new typewriter as a back-to-school gift, or for yourself, or for anyone...see what we've been talking about. Ask a Smith-Corona dealer for a demonstration of our unique Cartridge Ribbon Typewriter.

SCM SMITH-CORONA
SCM CORPORATION

"Landfill sites are terrible eyesores."

Overly simplistic arguments usually contain elements of both fact and fancy. They're seldom all right or all wrong.

Take sanitary landfill waste disposal for instance.

No reasonable person contends working landfill sites are attractive. But properly engineered and managed, the nuisance is minimal and temporary. When completed, a landfill can represent a valuable community asset.

The South Coast Botanical Garden in Los Angeles and the Mile High Stadium complex in Denver are two examples.

That's not to say sanitary landfill is the ideal waste disposal method for all time. Right now, it's the most economical and generally most convenient of the acceptable systems. But a lot can be said for the project in metropolitan St. Louis where they incinerate refuse and garbage to produce steam for electric power.

And waste recycling must be considered. Every year, we throw away 12 million tons of reusable metals, 12 million tons of glass, and 39 billion tons of paper and countless tons of plastics. We need to start putting those things back in circulation as soon as we can find practical ways of doing it.

One thing is certain. Any method is better than open dumps. We still have more than 160,000 of these in our country.

Until the costs of recycling and incineration are brought down, sanitary landfill will remain the most practical approach to our waste problems.

Caterpillar is concerned because we make machines used in sanitary landfill. And because waste disposal is an issue vital to the well-being of the nation.

There are no simple solutions. Only intelligent choices.

CATERPILLAR

Caterpillar, Cat and the Cat are Trademarks of Caterpillar Tractor Co.

"Landfill is the best way to get rid of solid waste."