VOL. 148, NO. 4 OCTOBER 1975

NATIONAL GEOGRAPHIC

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THE NATIONAL GEOGRAPHIC MAGAZINE VOL. 148, NO. 4

October 1975

"NOBODY CARED ABOUT US before the oil came, nobody will care about us when it is gone." Thus staff writer John J. Putman, quoting a government official, concludes his searching report on the Arab world. One of the last Western journalists to interview King Faisal of Saudi Arabia (above) before he was assassinated, John and photographer Winfield Parks spent five months traveling through Persian Gulf nations and to European capitals, seeking the answers to plain questions: What are the Arab nations doing with the wealth accumulating as a result of increased oil prices? Is the spending of these small desert kingdoms a boon or a threat to themselves and to others?

John's even-handed, dispassionate reporting holds, at least for me, a valuable insight into the psychology of rulers faced with the problem of managing an economy based on a single, expendable resource—one that is crucial to the survival of national economies everywhere. In the end, of course, the Arabs want what everyone else wants—the "good life" that education and progress and medical care and leisure can provide.

At some point, on some future day, the oil *will* all be gone. The Arabs have decided to prepare against that day. So must we.

Gilbert M. Grosvenor

COVER: *Orphan orangutans accept a helping hand as they learn anew to live in their native forests (pages 444-473). Photograph by Rod Brindamour.*

Partners in discovery, primatologist and

Orangutans, Indonesia's

By BIRUTÉ GALDIKAS-BRINDAMOUR

I HAD LEFT THE FOREST and was limping back to camp in the rain. My left leg was soaked with blood from a wound made by my machete, which had slipped as I cut a vine.

Suddenly I stopped. I could scarcely believe my eyes. In the tall grass less than thirty feet from me an orangutan was warily crossing a *ladang*—a dry-rice field gone to grass and fern—to reach the distant trees on the other side. This "person of the forest," as orangutan means in Malay, didn't see me through the drizzle. He moved silently across the path and then disappeared into the grass.

The orangutans I had observed during many months in Borneo's jungle had confirmed the traditional view of their behavior —they had stayed up in the trees. Now this encounter was my first clue that not only do wild orangutans spend more time on the ground than anyone had ever suspected, but also that they sometimes venture out of the tropical rain forest that is their home.

My leg quickly recovered, and so did my spirits, which had been despairing since my husband, Rod, and I had first reached the lowland jungle of the Tanjung Puting Reserve in the Indonesian sector of Borneo (map, page 448).

I never imagined in those first months that during the next four years Rod and I would spend more than 5,000 hours observing wild orangutans. We studied not-so-wild subjects too, for we became a "halfway house" through which young orangutans, accustomed to captivity, were returned to their natural life in the forest.

In social behavior the orangutan has always been considered very different not only from man but also from all other monkeys and apes, including its African cousins, the gorilla and chimpanzee. Primates have been

orphan join hands to search Borneo's jungle for wild orangutans, rarest of the apes.

"People of the Forest"

Photographs by ROD BRINDAMOUR

characterized as social animals par excellence, but the wild orangutans Rod and I saw in those early months were almost invariably solitary: lone males, or adult females accompanied only by their dependent young. Yet I knew that orangutans must meet and interact —if only to breed—and I longed to know the full extent of such relationships.

Leeches Welcome New Blood

In the course of our research we occupied three campsites in our 14-square-mile study area. The first camp, by the Sikunir Kanan River, we called Camp Leakey, in honor of the late Dr. Louis S. B. Leakey, who encouraged me to study the wild orangutan and who helped me obtain funding. The other two camps we named, in time, Camp Wilkie and Camp Dart.

We reached Camp Leakey in November 1971. The swamps, swollen by rains, were waist deep and impassable. Leeches were everywhere. Bloated with our blood, they fell out of our socks, dropped off our necks, and even squirmed out of our underwear.

The camp itself was simply a small bark-walled, thatch-roofed hut surrounded by a swamp forest. To afford better access to our study area, Rod began cutting a crisscrossing network of small trails through the forest.

My earliest observations were of orangutans feeding, moving through the trees, and nesting. Generally they made a new tree nest each night out of branches and leaves; sometimes they built nests during the day too, for naps and to sit out rainstorms. Also, unlike the other great apes, orangutans made overhead platforms or covered themselves with

At ease at last, a once-wary 150-pound wild male named Nick sits on the ground calmly eating termites, despite the presence of the author and her photographer-husband, Rod, only 15 feet away. When orangs first sight intruders they smack their lips loudly and shower the newcomers with branches. Now Biruté and Rod have won the tolerance of dozens of the red apes, long known to be more arboreal and solitary than Africa's great apes: gorillas and chimpanzees. Logging 5,000 hours of observation—more than any other observers—they have gained new insights into wild orangutans' behavior. Males descend to the ground to forage for as long as six hours, travel long distances on all fours, and even nap on the ground.

branches as protection against downpours.

Orangutans seemed to prefer fruit, but they ate considerable quantities of young leaves and the soft material on the inside of bark as well. One fruit that intrigued us was *banitan*, a perfect sphere encasing two pits so hard that nutcrackers won't open them. Inside each pit is a tiny bit of substance that reminded me of coconut. The orangutans would spend endless hours crushing these pits with their teeth. Juveniles and infants, lacking the enormous jaws of their mothers, could not usually open them, so instead took bits and pieces from their mothers' mouths.

Youngster's Rage Leaves Mother Unmoved

Sometimes a mother would refuse to share, causing the youngster to throw a violent tantrum. I thought one squealing juvenile might just hurl himself out of the tree headfirst in his fury. When he returned to his mother, she nonchalantly allowed him a piece as though nothing had happened.

Perhaps my most vivid memory, though, is of that scorching day I came face-to-face with a large adult male on the ground. It was almost a showdown. I was rounding a turn in a ladang path when a huge orangutan appeared, heading straight toward me. He was just ambling along, head down, oblivious to my presence. Then he stopped dead in his tracks less than twelve feet away. For long seconds he stared and stared. I guess he was evaluating the bizarre sight in front of him—a pale-faced primatologist with large black sunglasses, clutching an enormous bag full of dirty laundry.

We were on a collision course. The narrow path was fenced in by tall ferns that formed an arch overhead. But, strangely, I felt no fear. I simply marveled at how magnificent he looked with his coat blazing orange in the full sunlight.

Abruptly, he whirled around and was gone. There was nothing but the sound of his feet padding off along the path.

My confrontation with this big male seemed to bear out a traditional belief that the wild orangutan is mild and retiring. Back at camp, though, our workman, Ahmad, told us of a

Threatened refuges, Borneo and northern Sumatra are the last homes of Asia's only great ape, *Pongo pygmaeus*. Clearing of land by farmers and lumbermen now threatens orangs with extinction. Biruté, here with helpers and orphaned animals (**right**), keeps track of the red apes in a 14-square-mile study area within Tanjung Puting Reserve.

relative in Kumai who had lost half his hand and part of one foot to an orangutan male he had encountered in a ladang. But it turned out that the relative had been chasing the animal with dogs. A full accounting of incidents like these always led to the same conclusion: Humans who were bitten or wounded had invariably provoked the apes.

Orang Forgoes His Penthouse Bed

By now, meeting an orangutan on the ground came as no surprise. One mature male sometimes spent as long as six hours a day traveling and foraging on the ground, though on other days he stayed totally in the trees. Another large male came down from the trees daily and did almost all his long-distance traveling along the forest floor.

I was, however, amazed to see a subadult male sleep for 45 minutes on the ground during the day. He didn't make a nest but merely bent a sapling under him as he lay down. This was the first time that anyone had seen a wild orangutan sleeping on the ground. Since then we have found three actual "ground" nests. In these instances the nests were built on fallen logs less than a yard off the forest floor.

Rarest of the apes, wild orangutans are restricted to diminishing ranges on the islands of Borneo and Sumatra. It has long been illegal in Indonesia and Malaysia to own, kill, or export them, but until recently the laws were not strictly enforced. The threat of extinction still hangs over the orangutan because of the slaughter of mothers by poachers trying to capture their infants and the wholesale destruction of their habitat by logging and agricultural land-clearing operations. For years captive orangutans have brought high prices from zoos and laboratories around the world, though lately conservation

The author, a doctoral candidate in anthropology at the University of California, Los Angeles, received grants for her study from the L. S. B. Leakey Foundation of Los Angeles, National Geographic Society, Wilkie Brothers Foundation, Jane and Justin Dart Foundation, Herz Foundation, New York Zoological Society, and the Van Tienhoven Foundation of the Netherlands. The Indonesian Institute of Sciences and the Nature Protection and Wildlife Management Service acted as sponsors for the study.

groups have reduced the illegal trafficking.

When the Nature Protection and Wildlife Management arm of the Indonesian Forestry Service began confiscating captives, it asked that our camp in Tanjung Puting Reserve be developed into an Orangutan Rehabilitation Center, where captive youngsters would be reintroduced to life in the wild. There are other such centers in Malaysian Borneo and northern Sumatra. Ours was to serve Kalimantan (Indonesian Borneo).

But what do you do with "repossessed" young orangutans? Without expert guidance these unfortunate animals usually die from disease, malnutrition, and neglect. Rod and I hoped to teach them the ways of the forest, and how to become "wild" again.

The first orangutan youngster to reach our camp was year-old Sugito, who had been kept in a small crate before he was confiscated. Normally, orangutan infants cling almost continually to their mothers until they are 1½ years old. Sugito decided I was his mother.

Determined to give him as normal an upbringing as possible, I allowed Sugito to cling to me. I had little choice. Even shifting him from one part of my body to another involved much fighting and howling. Changing clothes became a major undertaking, with Sugito screeching and clutching at whatever was coming off. He slept curled up next to me and would not abandon me even when I bathed in the river.

Released Pet Becomes a Raider

At first Rod and I had the idea that ex-captives, if only old enough, would eagerly return to life in the forest. The first one we freed, 4½-year-old Sinaga, ran off into the forest the moment he was freed.

"We'll never see him again," I predicted—naively, as it turned out. Sinaga was back the very next day, raiding our camp for food. His raids continued. He would lurk in the trees until we went to the river to bathe. Then he would strike. We would return to find our hut a shambles.

After about a month Sinaga stopped his forays into our camp. We assumed he must have been finding enough wild fruits and young leaves to sustain him on his own. We saw him again a few times foraging in the trees near camp, but he never came back. He was our first successful rehabilitant.

Next came Akmad, a small 2½-year-old female confiscated from a logging camp. Akmad

Slow-motion acrobatics bring the adolescent Georgina to a treetop larder. Hanging by a leg and a much longer arm, she employs her weight—about sixty pounds—to bend a fruit tree within reach of another support (**facing page**). Scattered distribution and varied ripening times of the tropics' hundreds of species of fruit dictate the dispersal of the orang population, and hence, the author believes, the individual's solitary existence.

With spadelike incisors, Ellen (**above**) scrapes the fleshy inner surface of bark she ripped from a tree trunk. An old male, Pointed Pads (**below**), feasts on termites. Biruté never feeds her wild subjects, for fear of unduly modifying their behavior.

was a gentle creature with dainty hands and refined manners. She never grabbed—she reached. Finding a package, she would make a neat tear in one corner instead of ripping it to shreds as other orangutans did.

I remember watching Akmad put a bottle down after drinking from it. Because the floor was slanted, the bottle kept rolling away. Akmad would quickly retrieve it, looking around guiltily as if to see whether anyone had caught her faux pas. She must have placed that bottle on its side a dozen times before finally standing it upright.

The establishment of our second outpost, Camp Wilkie, just inside the forest, marked a turning point in our research. We no longer had to walk through the ladang or go through the swamps. The camp consisted of a small raised platform with a thatch roof. There were no walls. We slung our hammocks from the roof supports. Later we added another roofed platform to serve as a kitchen hut where we cooked over an open fire.

Sounds Betray Orangs' Presence

Early every morning I went out in search of wild orangutans. As I walked I listened. The wild orangutans sometimes disclose their presence by the snap of a twig or the regular dropping of fruit stones as they eat, sometimes by the crashing of branches as they move through the trees.

Once I had located an orangutan, I followed it, if possible, until it nested for the night. Next morning I'd be back before sunup, hoping to find the orangutan still in the nest, so that I could continue to follow and observe its behavior. I would sometimes walk three miles to reach a nest by the first glimmer of dawn.

On one such search I encountered a pregnant female and her juvenile son. We named them Cara and Carl and started a continuing study of them. Cara was a problem. She had a dangerous habit of breaking off branches and dropping them without any of the usual vocal warnings. One dead branch—a veritable log—missed me by about an inch.

Cara, unlike most females, also toppled branchless dead trees. Once, when I was tangled up in a windfall below her, she suddenly started rocking one such enormous snag in my direction. Had she the strength of the much heavier males, I would have been killed. As it was, the snag teetered but didn't fall.

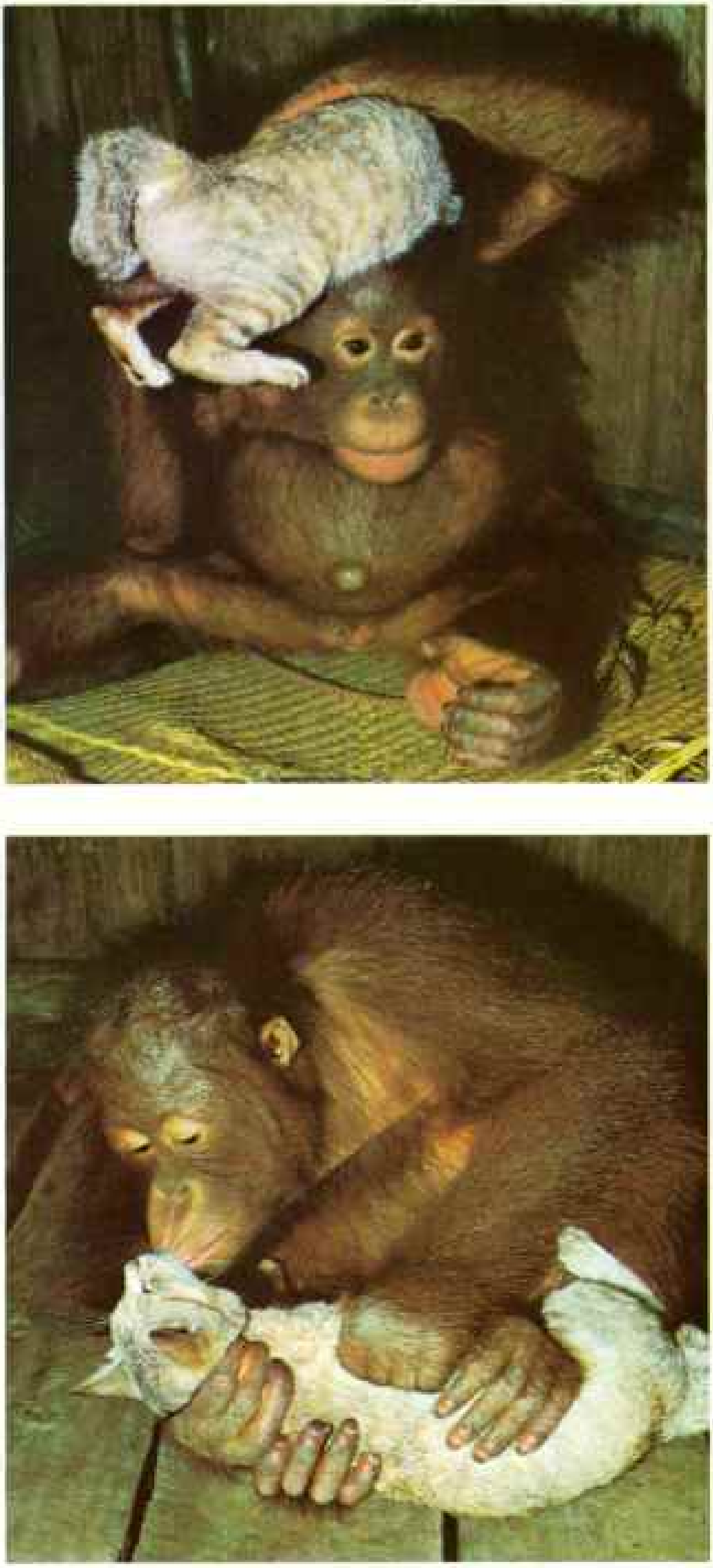
Despite Cara's initial hostility, she and Carl

Ex-pet on the road to freedom

"CEMPAKA IS LIKE MY OWN CHILD," said Mrs. Mastora (**upper left**) upon giving up the pet she had babied for seven years. Enforcing an old law against owning orangutans, forestry officials in two Indonesian provinces now confiscate illegally held apes. They asked Biruté and Rod to prepare the animals for return to the jungle.

In camp, adolescent Cempaka (**far left**) grabbed rags and soap powder, and began to wash clothes in a bucket of water. She dipped into rice with a spoon (**above**) or any handy utensil. The apes imitated their former owners, even fashioning crude tools —a skill never observed in the wild.

During a checkup, 7½-year-old Cempaka obediently mounted a hanging scale (**left**); her 62 pounds approaches the normal 75-pound weight of an adult female.



When a cat's in the way, a little orang will play—and play and play. In Biruté's bark hut the 3-year-old orphan Sugito quickly makes a toy of a new housemate. The tolerant female tabby accepts the orang's predilection for placing just about anything on his head, and doesn't even mind a wet kiss. But when Sugito stretches the cat between his hands and feet, as on a torture rack, enough is enough. Baring claws, the feline wins instant freedom.

Sugito came to the rehabilitation

center as a bald, skinny yearling confiscated from a poacher. To obtain such infants—worth hundreds of dollars on the black market—poachers ordinarily shoot the mother; thus every captive represents one less female to breed in the wild.

For the first year, Sugito clung to Birutė, who noted that his behavior was like that of infants in the wild. When Sugito was in tow, several wild orangs seemed to accept the scientist more readily, perhaps, she believes, as Sugito's "mother."

after about a year and a half came to accept us more fully than did most of the others. And they gave us our first glimpses of social interaction among wild orangutans. One instance sticks in my mind. The two had been joined by a subadult male, one of several who occasionally followed Cara when she was in heat. The newcomer romped good-naturedly with Carl and feverishly examined Cara's genital region. At the end of the day the animals bedded down close together. Cara and Carl occupied one nest, the male another.

All was still. It was slowly becoming darker. Suddenly some trees began to shake as if in a hurricane. Snags crashed and there was a piercing bellow as an adult male emitted his "long call"—a hair-raising, minutes-long sequence of roars and groans that can carry a mile. The subadult male didn't hesitate; he leaped out of his nest and dashed down to a perch a yard above the ground. He listened until the call ended, then slid to the ground and vanished in the undergrowth.

Toe-tickling bout with tame orangutans temporarily distracts Biruté from her study of wild apes. She brushed the hair of her charges, but they never tried to groom her. Wild orangs, unlike the more social chimpanzees, rarely groom one another.

Despite the Sound, Little Fury

Amid wild shaking of trees and snapping of branches, a gigantic male emerged. He had the pronounced cheek pads and throat pouch that males acquire when they reach adulthood at age 12 to 15; the throat pouch probably acts as a resonator for the long call. He peered over the edge of the occupied nest. Cara and Carl could not have slept through the commotion, yet their bed never once quivered or shook. Satisfied this was only a female and her offspring, and not a sexual rival, the big male moved away.

Subsequent observations began to fill out the patterns of orangutan distribution and organization in the study area. Adult males were almost invariably solitary. In 3½ years we witnessed only two meetings between lone adult males not in the presence of females. Not only did adult males generally avoid each other, but they also were intolerant of subadult males—which usually fled when a big male appeared.

A good example of the solitary ways of grown males in the wild was given us by the first animal that accepted our presence; we named him Throat Pouch, or T. P. (page 473). During 23 days of continuous observation, T. P. met other orangutans only four times, and these were females and their young. The encounters totaled only a few hours.

At times, of course, adult males found females willing to mate. During T. P.'s consortship with Priscilla we gathered probably our most significant single set of observations.

Priscilla and her son, the ugly Pug, were with a subadult male. T. P. appeared and the smaller male prudently vanished. T. P., Priscilla, and Pug slowly traveled on, foraging. Suddenly another male orangutan appeared low in the trees ahead. T. P. immediately charged the slightly larger stranger.

They grappled furiously, biting one another; they fell repeatedly and chased each other into the trees again to resume the fight. Their backs glistened with sweat, its pungent odor lingering on the ground long after they were back in the trees. A few times they pulled apart and stared intently at each other. Then,

after more than 20 minutes, they separated and sat in adjacent trees. With a mighty heave T. P. threw a snag and roared. The other male disappeared.

We were absolutely elated: We had observed the first and only combat ever recorded between two mature wild orangutan males.

Three days later T. P. and Priscilla mated, and approximately nine months later Priscilla gave birth to a male we named Pete. We are almost certain T. P. was the father.

We never did see T. P.'s reaction to his putative son. We did, however, discover through a frightening incident that T. P. was irritable with infants. Sugito, by this time, had reached a stage of development probably analogous to that of a crawling, inquisitive year-old child. He would climb higher and higher into the forest canopy, oblivious to everything. I marveled at his audacity as he swung around and played in the branches, practically under the nose of the feeding T. P., who seemed unaware of him. I suspect naive little Sugito thought this big orange fellow would make a fine playmate.

Unsuccessful in attracting T. P.'s attention, Sugito started climbing toward me. Halfway down he emitted one tiny squeal. I barely

Clown in a stolen costume, Sugito naps in an improvised nest, an old dress and hat swiped from Biruté. "If we didn't provide rags," she reports, "the orangutans would bang around all night looking for nesting material."

Hairy nestlings who never fly: Subarno (**right**) bends and tucks fronds of a betel palm to form a springy platform 50 feet above the ground. Feet hold branches while powerful arms complete the roost in five minutes or less. Like chimps and gorillas, orangs build a new sleeping nest every evening. During daytime rainstorms, the red apes nest again and may make an overhead platform or hold up branches as umbrellas. This 3-year-old rehabilitant acquired his skill prior to his capture by poachers. After a few months in Biruté's camp, he returned to the forest.

In contrast, 3-year-old Sugito—raised in captivity—had to master construction techniques by trial and error. Here on the ground (**below**) he playfully decks himself with branches. Eventually, by watching experienced builders, he managed to create his own aeries and could spend nights in the forest.

NATIONAL GEOGRAPHIC PHOTOGRAPHER ROBERT E. OAKES (BELOW). ACTUAL SIZE

***Silver coin** with a face value of 5,000 rupiahs ($12) displays the animal it seeks to save. Indonesia issued it in 1974, kicking off a 24-nation effort to raise money for conservation, in cooperation with the World Wildlife Fund and the International Union for Conservation of Nature and Natural Resources.*

heard it. T. P. instantly became incredibly enraged. He flew down the tree after Sugito. Sugito was terrified. He slid down the last few feet of the tree as though it were a greased pole and leaped into my arms. T. P. was right behind him.

I stood up, panic-stricken, and backed away. Had Rod not been there, I think I would have run for my life. And, doubtless, T. P. would have chased me. But Rod calmly stood up with machete in hand and, looking directly at T. P., sliced through a small sapling just in front of him.

At this T. P. stopped; he was about six feet directly above us. He glared menacingly, climbed to a more secure perch, and bellowed. This was the closest that a wild orangutan ever came to attacking us.

Then one day during the month that Pete was born, January of 1973, T. P. abruptly vanished. We searched and searched throughout the study area and listened for his particular call, which we had learned to recognize. We found no trace of him, and reluctantly concluded he was dead.

Five's Company, Seven's a Crowd

Adult females were more social than the adult males, but they too led what seemed to us rather lonely lives. However, we did occasionally see two or three adult females and their assorted offspring traveling together or foraging in the same vicinity.

Once again it was Cara and Carl who introduced us to this new situation. We were following them early one morning when they joined five other orangutans: Beth, carrying infant Bert, and Priscilla, followed by her son Pug and an independent adolescent. They stayed together for several hours, but the peaceful camaraderie didn't last.

The seven were quietly feeding in one tree when suddenly horrible sounds began to emanate from the forest canopy—noises I had never heard before. The uproar came from Priscilla and Cara, who tumbled down out of the branches, chasing and jostling each other. An hour later the two were at each other again. Then Priscilla moved away, followed only by her son. The remaining five roamed together the rest of the day, nested together, and split up the next morning.

Beth and Cara never touched each other, but upon meeting, Beth would sometimes follow Cara closely and Cara would wait for her. Twice they and their offspring traveled together for the better part of three days. Such long periods of association were never observed among other adult females.

Compared with the adults, the immature orangutans were almost gregarious, although they too often traveled alone or with their mothers. The large adolescent Georgina (page 450) sometimes traveled with one or two smaller friends, Maud and Fern, as well as an occasional subadult male. They would sometimes play, touch, and even briefly groom.

Maud and Fern had different mothers, so Georgina could be the sibling of one but not both. It was obvious that age group as well as kinship ties determine associations among immature orangutans. Pregnancy and the birth of her first infant ended Georgina's adolescence and these friendly relationships.

Youthful males occasionally played together, but more often sought the company of females. Indeed, we observed a friendship between a subadult male and an adolescent female that lasted for years. We began thinking of Mute and Noisy as a unit, although occasionally we saw each of them alone.

Mute's Partners Not Always Willing

Determined to investigate the precise nature of this regular association, we followed them into the inland swamps. We were exhausted after ten days, but Mute and Noisy were still close together. This relationship was not sexual. Mute, in fact, liked to mate forcibly with unwilling females and would do so while Noisy hovered in the background. Once while Mute was attempting to mate with a very uncooperative partner, Noisy attacked her. Jealousy? We don't know.

Later we followed Noisy out into the dark waters of the river-edge swamp where even the local latex tappers didn't go. We watched for five days, often wading waist deep. My mind kept turning back to crocodiles, which were found in the open pools near the river.

"**A gentle independent creature,**" the author characterized Akmad, a juvenile female placed in her care after being found at a nearby logging camp. In the wild, females occasionally forage together or with a subadult male. At about ten years of age they begin to bear young, one every four or five years. Captive orangs have lived 55 years.

Kiss for a substitute mother stretches the orang's unusually flexible mouth into a funnel. Sugito came in from a rainstorm and draped the scarf over his head. At night he insisted on blowing out candles (**below**); after a week he abandoned the practice. Increasing rambunctiousness of the former pets practically destroyed Biruté's and Rod's bark-hut home, forcing them to build an ape-proof house of wood.

Noisy must have been in heat, for she had abandoned Mute for Nick, a large, fully adult male. Nick had moved into T. P.'s home range after T. P.'s disappearance. Nick and Noisy mated several times, each time apparently at eager Noisy's instigation.

Mute appeared occasionally, only to be chased off by Nick. He slunk around in the trees about fifty yards from the couple, sneaking looks from behind tree trunks. Neither Nick nor Noisy, feeding close together in the same tree, seemed to be aware of him.

Biggest Males Get the Nod

The evidence was piling up that competition between males for females was an important factor in orangutan adaptation. All the adolescent females we met preferred large mature males as sexual partners to the smaller subadult males who were their more frequent companions.

This female preference combined with male competition would go far in explaining the size difference between males and females. If males had to fight or chase other males before they could reproduce, the larger and fiercer males would have an obvious advantage and probably leave more descendants. The females have probably remained smaller because largeness gives them no reproductive advantage and a small female can find sufficient food more easily than a large one.

Apart from our scientific curiosity about orangutan mating preferences, we had a practical interest in the processes by which the young became independent of their mothers. If we could find out how the wild mothers taught their offspring to fend for themselves, we could do the same for the young apes reared in captivity that were sent to us for rehabilitation.

Wild orangutan Cara, as always, was a ready source of information. We knew that she had weaned Carl before the birth of her infant Cindy. After the birth she tried, not always successfully, to prevent Carl from sharing her nest. Carl was persistent. But Cara became downright mean. Occasionally she attacked Carl when he followed her into small trees, as if she were saying, "This tree isn't big enough for both of us."

Carl sometimes winced and squealed if Cara so much as looked in his direction. But, paradoxically, Cara also became frolicsome for the first time, making "play faces" as she gently grappled with her son. About a year

after the birth of his sister, Carl began wandering the forest on his own. Occasionally he encountered Cara, but he and she might have been total strangers for all the emotion either displayed. They didn't touch or make a sound; they barely looked at each other. Yet Carl often followed her for a while. At times he met other immature orangutans, but never traveled with them for long. Carl was taking the first steps toward the solitary existence of the fully mature wild males.

We wished the same could be said for Sugito and the five other human-influenced apes still sharing our hut with us. They were growing bigger and much more active. Nothing was safe from the orange monster-babies.

Akmad and Subarno, at least, were nesting in the trees nearby but Sugito, Sobiarso, and Rio still slept on the hut floor, wrapped in old clothes and burlap sacks. Then our troubles were compounded by the arrival of Cempaka —the biggest "baby" of them all.

Cempaka had been raised by an old couple who treated the 7-year-old ape almost as their own child, sometimes even allowing her to sleep with them at night. After talking with us and Widajat Eddypranoto, head of the provincial forestry, the couple became convinced that it would be best for the adolescent Cempaka to return to the forest.

At first the forest totally disconcerted Cempaka. She seemed incapable of making a nest and spent her first days sleeping propped up on a branch. But like almost every rehabilitant before her, she soon discovered the joys of our bed, climbing up the ladder to the mattress on top of the storeroom roof. Not only did she sleep on it; she tore open our pillows and mattress to get at the edible seeds in the white kapok stuffing. Time and again we climbed up the ladder to bed, only to find Cempaka sitting up there looking like the Abominable Snowman in a blizzard.

Wily Apes Lay Claim to Bed

With great effort and emulating wild orangutan Cara's meanness, we had at last succeeded in keeping Sugito out of bed at night. Now, encouraged by Cempaka's success in flouting the rules, the other rehabilitants began sneaking up the ladder in the middle of the night. We often woke to find not one, but

"**Some more, please.**" Rio politely holds out a glass for orange squash when officials from the provincial governor's office come to call. Seconds later, crafty-eyed Cempaka reached from behind and confiscated the soda, despite Rio's wails.

WHERE RIVERS ARE THE ONLY HIGHWAYS:
Birute and Sugito explore a pandanus thicket in the 800-square-mile nature reserve. The researcher had to be constantly alert for poisonous snakes, inch-long leeches, and trees whose caustic sap burns the skin.

Hair standing on end, Sugito hoots and grunts in fear as he waves a fence pole at Benny, a small watchdog just arrived in camp. Overcoming the orangutan's initial fright by a week of tail-wagging attempts at friendship, Benny wins a pal (**left**)—and probably regrets it. Sugito's "play face" indicates amiable intent.

Another day, another adventure: After piling branches in the dugout, Sugito grabs the son of an Indonesian helper. Only Rod's sharp commands caused the orang to loosen his incredibly strong grip.

four orangutans in bed with us. We were literally being crowded off our own mattress. There was little we could do. We could not prevent them from entering our flimsy bark-walled hut; they tore down the walls. Our thatch was leaky from the holes caused by orangutans walking along the roof peak. What was worse, Akmad periodically poked her head through the thatch during a rainstorm to see if it was still raining. During heavy rains, everything in the hut got soaked. We decided to build an ape-proof house.

Meanwhile we continued to live in the deteriorating old hut and to observe our house-guests. We learned that Cempaka, though not adept at the ways of the forest, was incredibly clever in learning the ways of humans. She and Sugito, raised in the closest association with people, were our best tool users and biggest troublemakers. Subarno and Akmad, both successfully rehabilitated to forest life, did not use tools. No surprise there: Wild orangutans don't use them either.

Cempaka displayed a flair for using sticks. She would sit with a long stick in each hand and dexterously manipulate everything within reach—plates, cups, other orangutans, nearby cats. She also enjoyed digging holes with sticks. Watching her, I often wondered why the wild orangutans, so laboriously clawing up termite nests from the ground with only their bare hands, never used branches or sticks to aid them.

Once Cempaka even fashioned a crude tool. She found a long stick on the ground, broke it in half and threw away one end before commencing to dig with it. I also saw her use a long stick to pull burning pieces of wood from a large fire. Once the charcoal on the end of the wood cooled, she munched on it contentedly.

But Cempaka's best performances were her attempts at "cooking." She would scoop handfuls of sugar and flour into a glass. Then she would go find where the eggs were hidden, break one into the glass, and stir vigorously. It was very similar to the procedure Bahriah, our workman's wife, followed when making pancakes.

Sugito was handy at using tools, too. He and Cempaka occasionally startled us by eating with forks or spoons (page 453). They must have picked up the idea by observing humans.

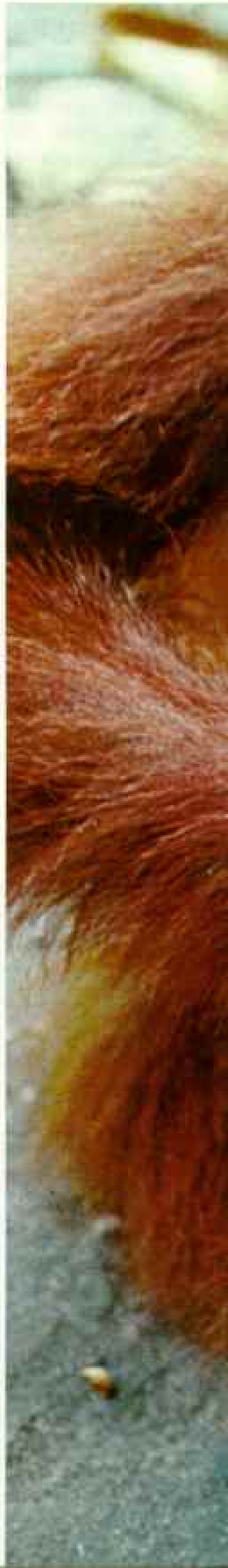
Apes Treat Garden Like a Pantry

By the time our new wooden house was nearing completion, many months later, our situation had become intolerable. Most of our garden had been demolished—despite the barbed wire we had imported to keep raiders out. It stopped the deer but not the wild pigs or the rehabilitant orangutans. What the pigs left intact, the apes destroyed.

Cempaka would raid the garden and then picturesquely eat her loot sitting atop the large "Orangutan Project" sign. Our potentially large jackfruit harvest was totally annihilated by Cempaka's practice of picking

Cat-and-mouse caper: When Sugito spied a cat skulking around camp with a tiny rodent in his mouth, he had to investigate. He nabbed Blackie, almost lost him, and finally—as meticulously as a dentist—extracted the rodent from the cat's mouth. After cautiously eyeing and sniffing the prize (**right**), Sugito flung it away, as if in disgust.

Wild orangutans have never been known to eat meat. However, they have been observed munching insects and birds' eggs. Orangs themselves have fallen victim for millenniums to the meat eater, man. In the Niah caves of Malaysian Borneo, Stone Age hunters left charred orang bones; even today in the interior some remote tribes roast and eat the red apes.



and dropping all the unripened fruit—after taking only one bite from each.

There was nothing in our hut, no matter how esoteric or unlikely, that had not been tasted, chewed, or at least mouthed by an orangutan. Everything had orangutan tooth marks on it. Nothing was immune. For nesting material, the curious youngsters ripped apart our clothes, our books, and even our umbrella. They carried our mosquito net into the trees, ate our candles, chewed on the binoculars, tasted batteries, and drank our shampoo. They found tubes of toothpaste and glue irresistible, and opening our purportedly fail-safe, toddler-proof medicine bottles was child's play for the animals.

The first time Sugito tested a bottle of antiseptic I almost went into hysterics. Bedecked with skull and crossbones, the label promised an untimely end. Sugito showed no ill effects at all. But his lips, hands, and feet remained bright red for days. He looked like Minnie Mouse wearing lipstick.

Sugito developed a curious oral habit: He took mouthfuls of any available food and transferred it into the nearest receptacle—which was often my untasted cup of tea. His capacity and patience were astounding. He would sit innocently, his mouth apparently empty, and then, as soon as my back was turned, spit out a good half cup of tepid milk or chewed rice into the most improbable place. The apes' mouths were like bottomless pits. I once took two flashlight batteries out of Sugito's mouth. Satisfied he was "clean," I was just going to leave when he rolled out another one onto his bottom lip and looked at it.

The rehabilitants never just drank their milk; they gargled and burbled it. And if it wasn't to their complete satisfaction, they would spray it out at one another. I was sometimes convinced that they were using their high ape intelligence to maximum capacity just thinking up new ways of driving me crazy. Cempaka would dump bowls of salt in my tea. Sobiarso would eat flashlight bulbs, and both she and Rio would suck all our fountain pens dry. I would find old socks in my morning coffee. It was a continual battle of wits, and they won!

Would-be Sanctuary Wasn't

We moved into the new wooden house long before it was completed, confident that the gaping holes which served as windows were too high for the apes to reach. It took a howling Sugito about two minutes to solve the problem. He dragged a stick to the nearest window, leaned it against the wall and climbed right up.

It wasn't until June 1974 that we finished the doors and all the wire screening on the windows. Now, with a relatively orangutan-proof house, we could begin rehabilitating in earnest. Sugito, Sobiarso, Rio, and Binti—all skinny, bald infants when first brought to our camp—were now big, bouncing, healthy juveniles with shining coats. It was time for them to enter the forest permanently. We built a feeding station, consisting of a small

Interrupting a bachelor's solitude, Lolita gazes fondly down at Fingers (**left**) as he snacks on a branch alive with termites. For more than three days the adolescent female pursued the unenthusiastic adult male to initiate mating. Except between mother and child, orang associations rarely last for long at a time, though they often recur.

The author's old friend Georgina (**right**), now a mother, keeps an arm free to strip off bark while year-old Gale clings to her side. The mother ignores the begging gestures but moments later will permit her firstborn to take food from her mouth.

Strangers to freedom, ex-captives had to be dragged away from the good times of camp life. The rehabilitants finally learned to forage and most left camp for good.

One who never came in from the wild, a male called Throat Pouch (**facing page**), mysteriously disappeared, only to reappear more than two years later. Here he stands and looks back as if to say, "I have more secrets to share." Perhaps he will, as Biruté now begins the fifth year of her study.

platform, 250 yards from camp. If our charges wanted food, they had to go out to the forest to obtain it.

After we moved into the wooden house, we left the old hut to the orangutans. And they demolished it within a few weeks. Once their habitual sleeping place was destroyed, the rehabs had no choice but to move into the forest to sleep as well as to feed. Even Sugito was now regularly nesting and sleeping in the trees. I felt like a proud parent whose offspring had finally graduated.

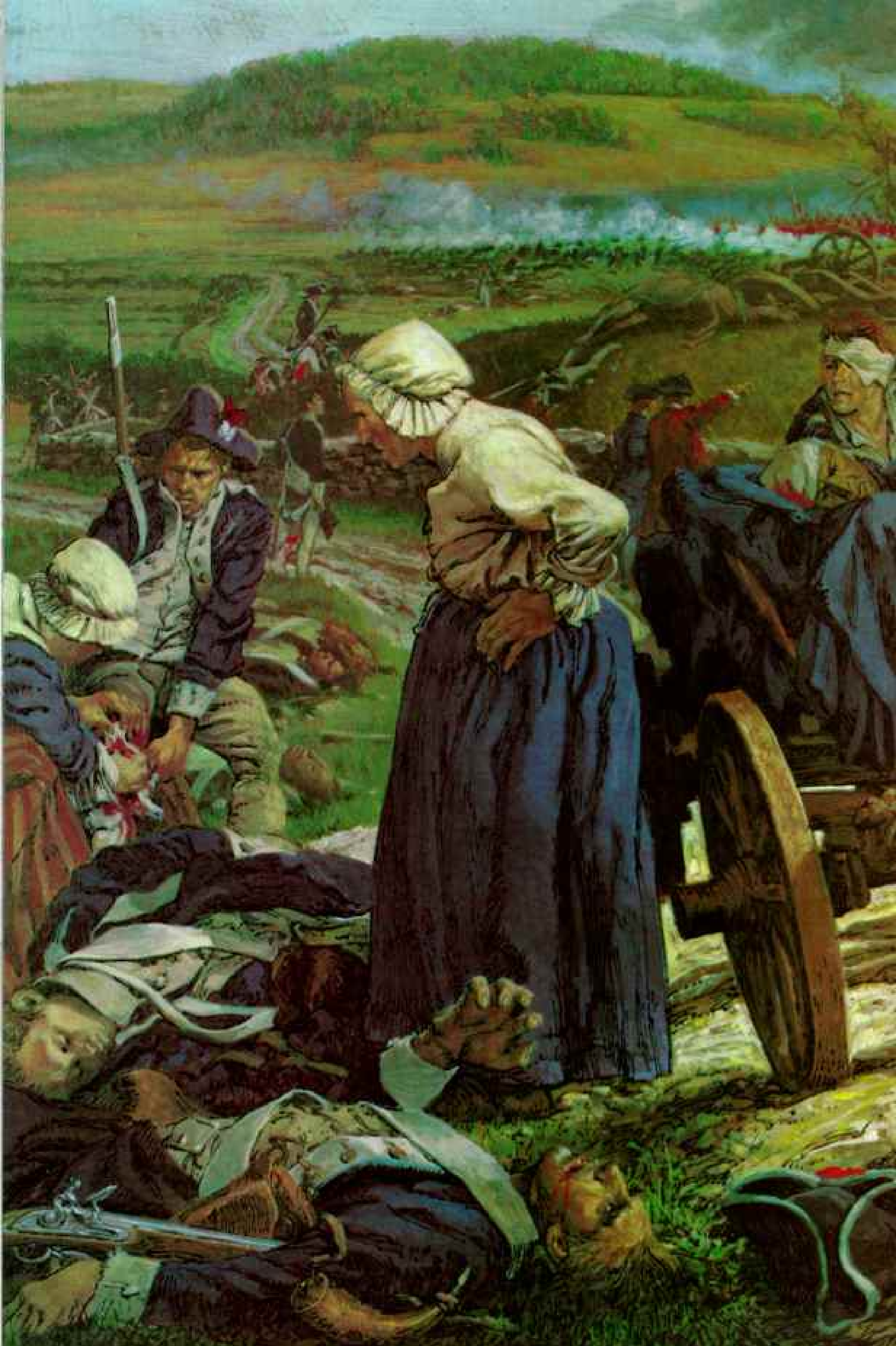
As time passed, the apes returned less and less frequently. Sometimes weeks went by without my seeing one of them. I must admit to a twinge of regret—a regret at the passing of the unique relationship we once shared. But the feeling passes whenever I see them so magnificent and free in the trees to which they were born.

In our fourth year of fieldwork, we felt there were few surprises left. But then in March wild orangutan Nick's home range was suddenly invaded by other adult males. Nick was frantically racing about. Strange calls were coming from several parts of his home range at once. One, though, seemed familiar. For days we searched for that caller. On April Fools' Day we found him. Out of a nest emerged T. P.—for more than two years presumed dead. Where had he been all this time? We don't know, but we hope to find out.

New Knowledge Brings New Puzzles

The past four years have been exciting. We have learned much about the wild orangutan and added many new facts to the fund of primatological knowledge. We have cataloged two hundred types of orangutan foods, begun charting family histories for a number of wild orangutan units, mapped home ranges, and gathered much data on the social interactions among these normally solitary animals.

But much remains to be done. The more we learn about the wild orangutan, the more questions arise. Our study sampled only a tiny fragment of any one orangutan's lifespan. We now have two Indonesian biology students working with us. We hope, with their help, to continue our study for many years. One of the big problems we have to solve is where the huge males like T. P. go when they disappear. And where did Nick come from after T. P. vanished? Perhaps T. P. himself will lead us to the answer. □



Patriots in Petticoats

By LONNELLE AIKMAN
Paintings by
LOUIS S. GLANZMAN

"EVEN IN THEIR DRESSES the females seem to bid us defiance," wrote a British soldier in Charleston, South Carolina, as the American Revolution dragged on into the summer of 1781.

"[They] take care to have in their breasts . . . and even on their shoes something that resembles their flag of the thirteen stripes. An officer told Lord Cornwallis . . . that he believed if he had destroyed all the men in North America, we should have enough to do to conquer the women."

The discouraged Englishmen had discovered the American Woman—a female of the species as exceptional as was the notion that citizens had the right and ability to govern themselves without benefit of royalty.

Schooled in a vast untamed land of hardships and hazards, the women

Roaring cannon and cries of the wounded test the mettle of American women during a battle of the Revolutionary War. Those in the field oft-times served as nurses and sometimes as soldiers. Those at home aided the fight for independence by making bullets, mending uniforms, tending farms—and spying on the enemy.

Letters from home, written by Abigail Adams, proved a potent weapon in the struggle for freedom. Thus she kept her husband, John, abreast of events in and around British-held Boston while he served in the Continental Congress. Sharp with details, outspoken on principles, she sent news of enemy troop movements while pressing for personal liberties that most male patriots had refused to grant—women's rights and freedom for slaves. Foreshadowing today's Women's Liberation Movement, she complained to the nation's future President: "Whilst you are proclaiming peace and good will . . . you insist upon retaining an absolute power over Wives."

of Colonial America were conditioned to independence and initiative. From Canada's forest-shadowed St. Lawrence Valley to the southern seaports of the Atlantic and westward to the wild frontier of the Indians, they made homes with whatever came handy.

Up at dawn, growing and preparing their own foods, spinning, making their own clothing, and nursing their sick with medicines from herb gardens and nature's field-and-forest apothecaries, most of them found that woman's work, indeed, was never done.

At the same time they were "borning" children with the regularity of the seasons. And where Indians raided or outlaws attacked, they were capable of grabbing the nearest weapon and defending their families. No wonder many women were ready to give up imported comforts and luxuries rather than submit to oppressive British taxation.

Better, they said, to wear plain homespun dresses than to flaunt gaudy, expensive ones from Europe. As for British tea, there were plenty of native substitutes—sage, currant, strawberry, loosestrife, or plantain leaves—which they brewed and served as Liberty Tea. In 1774, 51 strong-minded ladies of Edenton, North Carolina, sent London a signed resolution renouncing all taxed tea.

Other patriots in petticoats had set up tax-defying groups as early as 1766. Some called themselves "Daughters of Liberty," a gentler version of the often rough and ruthless "Sons of Liberty." After the war exploded, they stood firmly beside their men.

"Even Weamin had firelocks," wrote a British soldier ruefully of the sniping that took heavy toll of the Redcoats on the road back from Lexington and Concord. "One was seen to fire a Blunder bus between her Father, and Husband, from their Windows. . . ."

As the conflict spread, women of all classes, from work-worn frontier wives to mistresses of great plantations, flung themselves into it.

"Handy Betty the Blacksmith," born Elizabeth Hager in Boston, was noted for repairing Rebel muskets and other weapons—including captured British cannon.

Esther Reed, wife of Pennsylvania President Joseph Reed, and Sarah Franklin Bache, daughter of Benjamin Franklin, led a group of Philadelphia women who raised enough money to make 2,500 shirts for George Washington's men.

Throughout the Colonies women replaced soldier-husbands in fields and shops, and

often spied and eavesdropped on the enemy.

When the British occupied Philadelphia, one story goes, a Quaker housewife named Lydia Darragh learned at the keyhole of a coming attack against Washington at Whitemarsh, and walked miles to give warning.

In North Carolina, a monument on the site of the Battle of Guilford Court House honors Martha Bell as a heroine who rode the countryside picking up hints of British strength to aid Gen. Nathanael Greene's campaign against Lord Cornwallis.

Still other women left home to follow the Continental Army. Driven to the road by war's devastation, or wanting to be with husbands or lovers, they served as cooks, washerwomen, menders, nurses, and as companions to the troops.

True, there were frivolous or mercenary women, as well as honest Loyalists, who consorted with British officers and men. But there were also idealists who scorned "Lobsterbacks" and called such alliances with the Redcoats "taking scarlet fever." Among these stood a few fiery intellectuals who helped inflame the Revolutionary spirit.

ON A WIDE-SWINGING TOUR of places linked with America's first women patriots, I stood on Penns Hill in Quincy, Massachusetts. From there Abigail Adams had watched the British burn Charlestown and heard the cannon roar at the Battle of Bunker Hill.

Overhead a plane passed, and rows of modern city houses obscured the view toward Charlestown. But I walked the same granite rocks that knew Abigail's footsteps, and I had climbed the same long slope to the hilltop from the restored farmhouse in which John and Abigail Adams lived in what was then called Braintree.

It was a sultry, cloudy June 17, a fitting anniversary of Abigail's experience in 1775, when the Revolution was new and the future darkly veiled. To her skirts clung one of her four children, John Quincy, nearly 8; she had snatched him up to glimpse the action and hear the ominous rumbling that filled the air. John Quincy Adams never forgot the horror of that sight of rising smoke and flame, though he lived to be 80, and, like his father, became the nation's President.

A massive stone monument—Quincy people call it the "Cairn"—now crowns the summit site. Another history-seeker was taking a picture of its bronze tablet when I was there.

But the best way to recapture the scene and mood is to read Abigail's own words, penned the following afternoon to her husband, then serving as a delegate to the Second Continental Congress in Philadelphia.

"The Day; perhaps the decisive Day is come on which the fate of America depends," she wrote. "Charlestown is laid in ashes. The Battle began upon our intrenchments upon Bunkers Hill, a Saturday morning about 3 oclock and has not ceased yet. . . . May we be supported and sustained in the dreadful conflict. . . ."

To Abigail, the meaning of the struggle she had witnessed was clear. Only two months before, the first hot blood of combat had seeped into the ground of Lexington and Concord. Now open war was burying all hope of reconciliation, and sensible women might well ponder the cost of challenging the might of the British Empire.

As for Abigail and John, their sacrifice had already begun in the first of many separations the Revolution would bring. How painful these were we know from the ardent words that fill their voluminous flow of letters preserved in the *Adams Family Correspondence*.

Yet both willingly denied themselves for the cause that lawyer Adams had served with brilliant dedication since Massachusetts first resisted Parliament's hated Stamp and Tea Acts. Nor was Abigail merely reflecting the politics of her man.

JOHN ONCE TWITTED HER for being impatient with his cautious legal tactics. He called her "fiery as a young grenadier," according to one biographer.

"I long to hear that you have declared an independancy," she wrote him in March 1776, months before the Congress acted. "—and by the way," she added, "in the new Code of Laws . . . I desire you would Remember the Ladies. . . . we are determined to foment a Rebelion, and will not hold ourselves bound by any Laws in which we have no voice. . . ."

Abigail's conscience also prodded her to assail slavery, which New England found useful in an economy that turned West Indies sugar into rum to buy African labor.

"I have sometimes been ready to think," she wrote John, "that the passion for Liberty cannot be Eaquelly Strong in the Breasts of those who have been accustomed to deprive their fellow Creatures of theirs. . . ."

Such feminist and antislavery sentiments reveal Abigail Adams's own passion for justice and freedom that gave her front rank among women who helped win their country's "independancy."

Despite the terrors of war, plus a smallpox epidemic checked only by primitive inoculation, and a virulent dysentery that carried off relatives and friends, she managed to run the farm alone, care for her children, and still work for the Revolution.

Using her prestige as a member of a distinguished local family, she promoted activities from sewing uniforms for country boys turned soldier to making saltpeter for gunpowder and bullets from pewterware.

She provided food and shelter for soldiers bound for General Washington's army, encamped outside British-held Boston during the first year of the war. She filled her house with Whigs fleeing the captive city, and welcomed temporary refugees appearing suddenly from neighboring towns threatened by Redcoat forays. But nothing Abigail did proved more valuable than the military and political intelligence she sent in letters to her husband.

Living on the borderline between Boston and the rebellious countryside, she reported on enemy troops and ships, as well as on Tories, inflation, and other American problems.

John Adams and his fellow delegates, who needed just such details in voting arms and trade regulations, came to appreciate Abigail's specific and accurate information.

"There is a Lady at the Foot of Pens Hill," Adams wrote proudly to a friend, "who obliges me . . . with clearer and fuller Intelligence, than I can get from a whole Committee of Gentlemen."

SIGNIFICANT in the success of the Revolution was the powerful factor of personal relationships and sociabilities.

On visits to historic homes from Quincy, Massachusetts, to Charleston, South Carolina, I walked through silent display settings once peopled by men and women who made love while making history, and danced and dined with fellow patriots before risking, and sometimes losing, their lives for their country.

Abigail Adams, as a member of the Rebels' highest inner circle, first met George Washington in July 1775, soon after he took command of the army in Cambridge.

She was vastly impressed by him: ". . . the

National Geographic, October 1975

one half was not told me," she wrote John, of his "Dignity with ease. . . . Modesty marks every line and feture of his face."

Abigail also admired Benjamin Franklin, with whom she "had the pleasure of dining" later in the year. He was "social, but not talkative," she observed, "and when he spoke something usefull droped from his Tongue. . . ."

Mercy Otis Warren of nearby Plymouth was another intellectual activist of the inner circle, and, like her husband, an old friend of Abigail and John. The two wives, moreover, agreed that women should be free of male bondage as mere "Domestick Beings."

"He [Adams] is very sausy to me in return for a List of Female Grievances," Abigail wrote Mercy. ". . . I think I will get you to join me in a petition to Congress . . . in behalf of our Sex, who are rather hardly dealt with by the Laws of England. . . ."

As the wife of James Warren, popular civil leader and later army paymaster, and as the sister of firebrand James Otis, Mercy presided over a brilliant Revolutionary salon. She also commanded respect by her own democratic ideals and strategy, expressed in print and in correspondence with such men as Thomas Jefferson and Samuel Adams.

Indeed, her pen was never sheathed. In a different vein but with Tom Paine's zeal, she composed and published satirical plays and poems lampooning Tory leaders and sycophants as classic clowns and villains.

So effective were these works in rallying public opinion that she has come down to us as the "poet laureate" and "penwoman" of the cause. Charles Francis Adams, an Adams grandson, called her "one of the remarkable women of the heroic age of the United States."

Historians find Mercy's three-volume history of the Revolution, published in 1805, especially interesting for its contemporary views. She not only discussed the war's causes and events but also analyzed the personalities and acts of its leading characters—Washington, John Adams, Generals Knox and Greene, among others—all men, as she wrote, with whom she had been "connected by nature, friendship, and every social tie."

ANOTHER FRIENDSHIP from the fertile soil of the Revolution grew up between Mercy Warren and Martha Washington.

"I took a Ride to Cambridge And waited on Mrs. Washington . . ." Mercy wrote Abigail in April 1776, after her first meeting with the general's wife in his headquarters facing the British troops in Boston. "If you wish to hear more of this Ladys Character," Mercy continued, "I will tell you I think . . . her affability, Candor and Gentleness Qualify her . . . to sweeten the Cares of the Hero and smooth the Rugged scenes of War."

HOW FAR Martha Washington traveled to share the life and war of her hero may astonish those who think of the mob-capped mistress of Mount Vernon as a sedate homebody.

Seated in the family coach behind scarlet-clad postillions, surrounded by hams, jellies, and other plantation goodies to augment lean camp fare, she jolted over rough roads for days at a time to reach the headquarters of the Rebel commander and his troops.

Beginning with Cambridge, from which she watched the British evacuate Boston, she was with the general in New York City, Morristown, Valley Forge, and Middlebrook. Then back to Morristown in a howling blizzard, December 1779, and north, the following winter, to New Windsor, where she was with her husband through two mutinies by his starving troops to the south.

On her way back and forth, Martha usually stayed with friends in Philadelphia, and there she "took the pox" (the smallpox inoculation) as a necessary precaution in visiting frequently disease-ravaged camps.

In the Washingtons' handsomely restored mansion at Mount Vernon by the Potomac, I knelt beside Martha's worn leather-covered trunk, a gift from a descendant to the Mount Vernon Ladies' Association that owns and exhibits the estate. Inside its lid were these words, written in 1830 by Martha's granddaughter, Eliza Parke Custis:

"It was that in which the cloaths of my Sainted Grandmother Mrs. Washington were always pack'd by her own hands. . . . I have stood by it . . . distress'd at her going away —& oh how joyfully when she returned did I look on to see her cloaths taken out."

Sentiment, like a faint scent of lavender, clings to such family memories. The facts and figures of Martha's journeys I found in a yellowed expense account prepared by Washington himself on July 1, 1783, and filed in Mount Vernon's manuscript collection.

According to his meticulous accounting to Congress, Martha's eight years of travel cost him £1,064 and one shilling (perhaps $5,000).

Using words as weapons, Mercy Warren punctures Tory pomposity with ridicule, reading from one of her plays to guests in her salon near Boston. The patriots' anonymous propagandist used her sometimes off-color pen to enrage the British and win support for the war, as recounted in her lively three-volume history.

Coach of cheer, beset by a New Jersey snowstorm, brings Martha Washington to her husband's encampment at Morristown (**facing page**). A homebody by disposition, she abandoned Mount Vernon's comfort and safety each winter during the war to bring encouragement, homemade foods, and a woman's touch to the commander in chief of the Continental Army and his troops.

It was worth it, for her devotion helped the leader bear the tensions of fighting on the razor edge of defeat, while her very presence belied enemy propaganda that she was a Tory.

TWO FIRSTHAND DESCRIPTIONS of Martha Washington at Valley Forge paint a composite picture of her personality. "... a sociable, pretty kind of a woman," one visitor wrote in her diary after sitting with Mrs. Washington while waiting for an interview with the general.

"She possessed always a mild, dignified countenance, grave but cheerful," was the way Col. P.E. du Ponceau, aide to General von Steuben, saw Washington's wife. "Her presence inspired fortitude. . . ."

You can still visit a surprising number of Washington's headquarters where Martha also slept. Preserved by the National Park Service, or by state, city, or private groups, these dwellings range from the elegant Ford Mansion in Morristown and the early Dutch-Colonial Hasbrouck House in Newburgh, New York, to a modest fieldstone cottage at Valley Forge (map, page 478).

A piercing wind sharpened the reality of old hardships at Valley Forge as I came to the small building before which Mrs. Washington's coach stopped on February 11, 1778. To reach it, she and her military escort had clattered past hundreds of hand-hewn log huts in which some 11,000 hungry, near-naked soldiers chanted hopelessly from time to time, "No meat, no clothes, no pay, no rum."

The wife of the commander in chief fared better, of course, as did his staff officers and wives lodged in nearby farmhouses. But rations and clothing were scarce for all. At one officers' stag party, no guest with "a whole pair of breeches" was admitted.

In the Washingtons' cramped quarters, the post's ranking lady soothed ruffled feelings of rival staff members and comforted homesick American and foreign officers. She was especially fond of the young Marquis de Lafayette, with whom an abiding friendship then began.

Martha's heart reached out, too, to sick and wounded enlisted men whose bloody footprints stained the snow-packed roads. She organized camp and neighborhood wives to roll bandages, knit socks, and mend shirts.

"I never in my life knew a woman so busy from early morning until late at night," commented one local resident who accompanied her on rounds of the huts.

Yet good news came to Valley Forge by the end of the brutal season that took the lives of some 3,000 men by disease, starvation, and exposure. On May 5 Washington announced the long-hoped-for treaty of alliance with the King of France—thus gaining, as he put it, "a powerful Friend among the Princes of the Earth." On May 6 he ordered a celebration on the Grand Parade Ground.

It is easy to relive that scene on the same open field in the heart of the restored park: To imagine the prancing horses and smart-stepping troops transformed from a ragtag mob by Prussian drillmaster von Steuben; to hear the cannon roar, the fifes and drums and huzzas for the "Friendly European Powers," the "American States," and here and there, a cheer for "Lady Washington."

ONLY ONCE, during the eight long years of fighting, were the Washingtons together in their own home. It happened in the late summer of 1781 after the main theater of war moved south. Washington and the newly arrived French general, the Count de Rochambeau, had turned their combined northern armies south, toward a little tobacco port in Virginia called Yorktown. They stopped briefly at Mount Vernon, then galloped away with their aides to keep an appointment with destiny—the defeat of Lord Cornwallis at Yorktown in the last major battle of the struggle.

Ironically, the nation's triumph brought tragedy to Martha and the general. John Parke Custis, her only son by her first marriage, died from "camp fever" contracted as Washington's aide at Yorktown. But sorrow did not end Martha's travels.

Even after the guns were silent she was at Newburgh with her husband while both waited impatiently for news from Paris of the final peace treaty in 1783. As her grandson, George Washington Parke Custis, would recall in his memoirs, "she often remarked, in after life, that it had been her fortune to hear the first cannon at the opening and the last at the closing" of all the Revolution's campaigns.

If following the army was hard on the general's lady, it was no bed of roses for the Judy O'Gradys who trudged with the troops and often slept in the fields.

In those days, armies accepted women as a necessary evil, as drudges for their husbands and other men of the corps, and to carry water to swab cannons and ease the wounded on the battlefield. Thousands were shipped to America in British and German transports, sometimes after instant military marriages.

Rations and sometimes special work allowances were provided authorized women and their children. They might also suffer as harsh punishments for misdeeds as did the men. One female retainer with the British in Boston was found guilty of stealing and causing the slaughter of the town bull. She was sentenced to be "tied to a Carts Tail, and thereto receive 100 lashes on her bare back . . . and to be imprisond three months."

At first few American women marched with the militia, but as the war continued, more homeless or lonely wives joined the troops, as did strays, who were picked up in towns and taverns.

General Washington issued dozens of orders about camp followers. Though recognizing their contributions, he recommended that officers get rid of all unessential ones, pointing out that "the multitude of women . . . especially those who are pregnant, or have children, are a clog upon every movement."

In troop transport, women were classed with the baggage, but they were forbidden to ride if able to walk. Many flouted the regulation, causing problems of discipline. Washington once observed dryly that he was "sorry to see . . . a much greater proportion of men with the baggage than could possibly be necessary."

Yet with all the misery endured by camp followers on both sides, individual acts of heroism lighted candles in the dark.

I LEFT MY CAR on the bank of the Hudson and climbed to the highest natural point in Manhattan, overlooking the site of one such heroic act. Bennett Park, at 183d Street, was like any park on a summer day—children playing, a young mother rolling a baby carriage, an older couple chatting. But this was historic ground—the site of the Battle of Fort Washington, on November 16, 1776, during one of the blackest periods of the Revolution.

General Washington had lately suffered the disastrous defeats of Long Island and White Plains. To hamper British pursuit of his army, he left a garrison of rifle- and artillerymen at Fort Washington, commanding the Hudson. With them came camp followers, including one destined for fame.

Her name was Margaret Cochran Corbin.

Born near the Pennsylvania frontier and orphaned in an Indian raid, she had married John Corbin of Virginia when she was 21. When Corbin joined Thomas Proctor's Corps of Artillery from Pennsylvania, and it was sent to Fort Washington, Margaret went along.

She was still at his side in his two-gun battery when the fighting started. Perhaps "Moll" or "Molly," as her comrades called her, helped the gunner's team prepare the cannon. At least she knew the procedure—swabbing out the bore and ramming down the ammunition—from watching the men drill.

The American position was doomed from the time General Howe unleashed his big guns in a land-and-water attack with forces that outnumbered the defenders three to one.

Under the intense bombardment, John Corbin fell, mortally wounded, beside his cannon. Into his battle station jumped Margaret, helping to launch cannon balls that cut through ranks of Redcoats and Hessians climbing stubbornly toward the rocky height. Then she, too, went down, her breast and shoulder torn by grapeshot.

She never regained the use of her arm. Recognizing her courage under fire, Congress made her the first woman pensioner of the United States. In 1779 she was awarded the monthly sum of a soldier's half pay and later an annual allotment of "one compleat suit of cloaths, out of the public stores. . . ."

The story ends in the library of the U. S. Military Academy at West Point. Thumbing through brittle pages of the quartermasters' logs from 1784 to 1790, I read of efforts to help "Capt. Molly," who by then lived nearby, in what is now Highland Falls, New York, with an ailing second husband, and who was herself far gone in querulous misery.

You can still see the young and gallant Margaret Corbin, however, working her cannon on a sculptured bronze tablet set above her grave in the West Point Cemetery. "She is the only woman here from the Revolution," said Richard Kuehne, director of the West Point Museum, as we stood by her tombstone. "She is also the only woman buried here because of service in action."

How this distinction came about is a story strained by coincidence, for similar heroics were performed by the famous "Molly Pitcher" at the later Battle of Monmouth.

For years people confused the two Mollys. Finally, in 1926, after extensive research proved that the Captain Molly buried near

Hefting a cannonball instead of a water bucket, battle-weary Molly Pitcher helps her husband's artillery crew during the Battle of Monmouth, New Jersey. Her cool action under fire—at one time an enemy cannonball passed between her legs—earned her a place in enduring legend and a $40-a-year pension "for her services."

Highland Falls was indeed Margaret Corbin, the Daughters of the American Revolution arranged to re-inter her at West Point with full military honors.

And what of the other Molly? Curiously, she too was married to a gunner in Proctor's artillery. Genealogists now doubt her long-accepted identification as Mary Ludwig, daughter of a German immigrant. But recently unearthed evidence lends support to the cherished tradition of Carlisle, Pennsylvania, that Molly Pitcher was a local character, a buxom Irish lass whose given name was Mary.

This Mary met and married William Hays, a young barber. Like Margaret Corbin, Mary followed her husband to war. Thus she was with him on that blistering-hot June 28, 1778, when the Continentals fought the British and Hessians in the New Jersey fields and marshes near what is now the town of Freehold.

MAP AT HAND, I drove a winding country road rimming the state-owned Monmouth Battlefield. I was looking for the long-disputed place where legend says Molly Pitcher got her nickname by filling her pail with water to cool the parched throats of fighting and dying men.

Turning at a railroad underpass to which I had been directed, I came to a battered marker labeled "Molly Pitcher's Spring." But I still had not found the old well now believed to be the one used by Molly. That site, turned up after much research by historian Samuel S. Smith, lies three-quarters of a mile away, at a point where the fight raged most fiercely that hot day.

The hell of war seems remote in this quiet country setting of today. Yet it was here that Washington gained a stalemate after the eccentric Gen. Charles Lee had unaccountably ordered advancing Americans to retreat.

Her bayonet flashing, Deborah Sampson charges a Yorktown redoubt in a night action she recalled with pride. Disguised as a man, the sturdy farm girl enlisted in the Continental Army late in the war. In skirmishes along New York's Hudson River, she suffered a saber cut on the head and a musket wound in the thigh, both of which she cared for herself to avoid detection. The masquerade ended in honorable discharge when a doctor discovered her secret while treating her for a fever.

Amid the general confusion, Molly Pitcher, who stood firmly beside her husband—as had Margaret Corbin—helped keep the gun in action (page 483).

In his autobiography as a private in the Revolution, Joseph Plumb Martin describes the fortitude of this earthy heroine:

"While in the act of reaching a cartridge and having one of her feet as far before the other as she could step," he wrote, "a cannon shot . . . passed directly between her legs without doing any other damage than carrying away all the lower part of her petticoat. Looking at it with apparent unconcern, she observed that it was lucky it did not pass a little higher . . . and continued her occupation."

FROM THE ROCKY SOIL of Massachusetts came an equally sturdy woman who posed as a man in order to fight.

Deborah Sampson, born in 1760 in Plympton, came from Puritan stock that included Miles Standish and John Alden. While she was still a child, however, poverty forced her widowed mother to give her up to a Middleboro family for indentured service. Out of that hardworking but not unkind environment, she emerged a tall, strong young woman, quite able to take on man's work.

From then on, Deborah Sampson's adventures rivaled fiction, later filling a 1797 biography by Herman Mann, *The Female Review: or, Memoirs of an American Young Lady*.

Briefly sketched, it all began when she made herself a man's suit, walked to a recruiting post in another town, and enlisted as Robert Shurtleff. She was mustered at Worcester, and joined the Fourth Massachusetts Regiment, then stationed at West Point.

She was wounded twice on raids along the Hudson. In a skirmish near Tarrytown, she suffered a sword cut to the head, and at Eastchester she took a bullet in her thigh that troubled her the rest of her life.

Army records confirm these details of Deborah's military service. Her strength and firm chin, shown in a contemporary portrait, explain how she passed for a "smock-faced" boy, too young to grow a beard.

What still plagues historians is her enlistment date. Her own sworn statement says it was in April 1781, and adds that she was at Yorktown when Cornwallis surrendered. Two documents put it at a later date.

Under the midday sun, I stood on Redoubt No. 10 of the restored Yorktown battlefield and tried to imagine that night of October 14 when the Americans took this fortified hill in a furious bayonet charge (preceding pages).

According to her biographer, "Our Heroine" was chosen as one of the select corps of attackers, after days of back-breaking, hand-blistering work in digging trenches.

"At dark, they marched to the assault with unloaded arms, but with fixed bayonets," wrote Mann, "and with unexampled bravery . . . were complete victors of the redoubts."

"We'll probably never know whether Deborah was here," said Jim Haskett, chief historian of the national park at Yorktown. "Those service records must have gone up in smoke when the British burned Washington in the War of 1812. . . . Why did she do it? Maybe she hated the British for personal reasons, or was just a girl looking for adventure."

Whatever her motives, Deborah kept her secret until she went to Philadelphia as a general's orderly. There she came down with a "malignant fever" and was sent to a hospital, where a startled examining doctor discovered that the warrior was a woman.

The game was up. Around 1782, Deborah was honorably discharged from the army, and returned to a woman's world. She married a young farmer named Benjamin Gannett and in time bore three children.

But Robert Shurtleff was not dead yet. Mrs. Gannett revived the role on tour as America's "first woman lecturer." Certainly she was the only one to wear a soldier's uniform and present arms with experienced snap.

GEORGIA REMEMBERS another rifle-toting Amazon, a cross-eyed frontier woman even outsiders can't overlook.

"You are now entering Nancy Hart country," announced Dr. E. Merton Coulter, editor, author, and history professor emeritus

Running for her life, young Betty Zane dashes to West Virginia's Fort Henry with a bundle of gunpowder for the beleaguered garrison. The schoolgirl had returned home to the settlement in 1782 when British and Indians attacked. With true frontier grit, she braved enemy bullets to bring more powder from the Zane cabin outside the fort, helping the settlers withstand the two-day siege.

at the University of Georgia in Athens, who knows more about her than anybody else.

As we drove on toward the state's northeast border, we passed the town of Hartwell in Hart County, then turned south and took the Nancy Hart Highway to reach our objective, which was—naturally—the Nancy Hart State Park.

There Dr. Coulter, an engaging octogenarian who enjoys hiking as well as history, led me up a wooded hillside to a reproduction of Nancy's log cabin where she performed the most famous of her patriotic exploits.

"Aunt Nancy, as people hereabouts call her, was a real person," Dr. Coulter assured me. "She lived here with her husband Benjamin and their eight children, and the anecdotes told about what she did generally agree."

The incident itself has chilling credibility as an example of the civil strife that ravaged the South late in the war. After the King's men captured Savannah and Augusta, Loyalist and Rebel guerrillas exchanged savage raids. One day, goes the story, five or six Tories from a British camp came to her cabin after murdering a militia colonel, John Dooly, in his bed. They shot Nancy's last turkey gobbler and ordered her to cook it.

Though tough Nancy was known by the Indians as the "War Woman" for her ferocity against local Tories, she turned now to guile. While pretending to cooperate with the men, she sent her young daughter Sukey to fetch spring water, but with a whispered aside to blow the conch shell to summon her father.

Meantime, as the invaders grew jovial over flowing liquor, Nancy slipped two of their stacked guns through a wall chink. Caught in the act, she seized another gun and shot one of the advancing men dead. Another Tory, misled perhaps by her crossed eyes, moved toward her and was wounded (pages 490-91).

About that time Hart and his friends arrived and captured the Tories. They proposed shooting them, but Nancy argued that such a death was too good for Dooly's murderers. And so it was decided. The tale ends with the men hanged in the Harts' backyard.

NANCY HART may seem bloodthirsty, but frontier war was not for the squeamish. Women faced not only rape by enemy soldiers but also abduction, scalping, and torture by British-allied Indians.

The more rugged ones often fought back. "Mad Anne" Bailey—"White Squaw of the Kanawha" in what was then western Virginia—served as patriot scout, messenger, and Indian fighter. A superb horsewoman, she rode the frontier in buckskin breeches, recruiting "Liberty Men" as she went along.

On the trail of still another heroic frontier female, I drove to the site of Fort Henry in Wheeling, West Virginia. Nothing remains today of the building that once rose behind a high stockade on a steep bluff overlooking the Ohio River.

"That's where we think it was," said Dr. James Hazlett, Wheeling physician and history buff, pointing to a small granite tablet set up on the city's busy Eleventh Street Mall.

The tablet's inscription states that it commemorates the siege of Fort Henry on September 11, 1782. What it doesn't say, and Wheeling residents add, is that a young girl named Betty Zane saved the fort from an

Sybil Luddington

Once a slave, Phillis Wheatley used her literary talents to criticize colonial tyranny (**right**). "Snatch'd" from Africa as a child, she was sold in 1761 to a benevolent Boston family who taught her to read and write, schooled her in the classics, and eventually gave her freedom.

Acclaimed by antislavery leaders in Great Britain as well as in the Colonies, she was the first black American to publish a book of poetry.

Through perils of night: Racing 40 miles across rain-drenched countryside, 16-year-old Sybil Ludington musters militiamen in her father's command to save Rebel supplies at Danbury, Connecticut. Despite her "midnight ride" in 1777, the British destroyed the supplies and escaped to their ships in Long Island Sound.

overwhelming force of British-led Indians.

Elizabeth Zane, sister of one of the settlement's founders, Ebenezer Zane, was inside the fort when fighting began. As the defenders' gunpowder dwindled, she volunteered to fetch more from the Zane cabin.

The baffled Indians watched her leave without firing at her. They knew better on her return with a big bundle. Bullets spattered dust at her flying feet (page 487), but she made it and the garrison fought on until the besiegers gave up and faded into the forest.

In the rustic Wilson Lodge in city-owned Oglebay Park, I found an old print of the gunpowder-running scene at the entrance to a "Betty Zane Room." But I came closest to the original Betty when I met her great-great-granddaughter, also Betty Zane (Mrs. Nelson MacAninch) of Martins Ferry, Ohio, across the river from Wheeling.

"I was one of the schoolchildren who donated to the Betty Zane statue outside the old cemetery where she's buried," Mrs. MacAninch told me. "I was the first Betty Zane to march in the pageant when the statue was dedicated, and again ten years later. And I expect to be carrying the gunpowder next year at our Bicentennial celebration."

No doubt the nation will pay tribute to many heroines of the Revolution during its widespread Bicentennial celebration. Already the U. S. Postal Service has issued an eight-cent stamp honoring a female Paul Revere named Sybil Ludington.

This 16-year-old girl, daughter of Col. Henry Ludington of what is now Ludingtonville, New York, rode 40 miles through the perilous night of April 26, 1777, to rally neighboring militiamen to meet at her father's house (left).

The British were burning the Rebel base at nearby Danbury, Connecticut, and Ludington's men helped intercept them at Ridgefield. Although the militia fought valiantly, the enemy was able to slip back to His Majesty's ships anchored in Long Island Sound.

HISTORY-MINDED TRAVELERS can pick their own women, as I did, and play the game of tracking down the scene of the action. On the last lap of my travels, I stopped at the old Walnut Grove Plantation near Spartanburg, South Carolina, to see the girlhood home of "Kate" Moore Barry, remembered for her aid to Gen. Daniel Morgan in winning the Battle of the Cowpens. To my

Dealing out death, Nancy Hart gets the drop on Tories who had raided her Georgia cabin. After killing one with his own musket, she holds the

others—including a man she had wounded—for hanging. Nancy once feigned insanity, so the tale goes, to learn of war plans in British-occupied Augusta. Another story credits her with crossing the Savannah River on a raft to gather secret information for Georgia patriots.

delight I met there a sprightly 80-year-old guide for the Spartanburg County Historical Association who happens to be a collateral descendant of my subject.

"I was born in this house," said Mrs. Mary Montgomery Miller, as we sat in a small back room surrounded by early "up country" furnishings. "As a child I loved to hear stories about old times, told by Kate's own nephew.

"Mostly they were about the Revolution, when Kate was married to Capt. Andrew Barry and lived close by. She often acted as a courier and helped round up men for skirmishes. She did the same thing before the big Battle of the Cowpens. . . . You might say they had women's lib, but men didn't know it."

MOVING ON, I stopped at three more spots where local historians tell of women who struck blows for liberty. At Cedar Spring, at the South Carolina School for the Deaf and the Blind, I peered into a small brick building that houses a still-flowing spring near which a Rebel band camped on a July night in 1780.

Up to their campfires galloped Jane Thomas, who had covered 60 miles to warn her son and his partisans of an impending Tory raid. Thus forewarned, the Americans routed the attackers and survived to fight again.

Thirty miles south of Cedar Spring I stood on the muddy, overgrown shore of the Tyger River, near the ford into which a young patriot named Dicey Langston had plunged on a similar night mission that same summer. Though nearly swept away by the swirling current, Dicey enabled the settlement there to foil an assault by a Tory group known as the "Bloody Scout."

Racing against sundown along back roads, I came at last to Fort Motte, now an all-but-empty ghost town that was born when the British occupied the plantation of the wealthy widow Rebecca (Mrs. Jacob) Motte.

Fortified and garrisoned, Mrs. Motte's mansion was invaluable to the British as a supply depot on the river route between Charleston and the up country, and as such became a prime target for American capture.

Rebecca, exiled to the overseer's house, not only encouraged the Americans to burn her own home, but even provided arrows to set the roof afire, forcing the garrison's surrender before the flames were extinguished.

After that victory of May 12, 1781, Mrs. Motte again presided at her own table—an unflappable hostess to the Americans and their British prisoners, who had just faced one another over guns.

Rebecca Motte's mansion has long since disappeared, and a monument set up at the site is off limits, on privately owned property.

But monuments are not the only way to remember. In old Charleston, I learned that a small memorial to the mother of Andrew Jackson has vanished from its place along a suburban road. Yet everyone I asked about Elizabeth Hutchinson Jackson knew her story—how she traveled 160 miles across South Carolina to nurse sick and wounded Rebels confined to the hell-hold of a British prison ship anchored in Charleston Harbor. And how she caught there the fever that took her life in 1781, leaving to her son an undying hatred of the British.

BACK IN WASHINGTON, I met the last two women on my list in an art gallery and in an educational film, respectively.

In the National Portrait Gallery, which was presenting an exhibit called "The Black Presence in the Era of the American Revolution 1770-1800," I stood before an engraving of Phillis Wheatley and marveled.

This remarkable black woman was brought from Africa in 1761 as a child slave, and sold on the block to a Boston Quaker family named Wheatley. She soon showed such precocious intelligence and unquenchable thirst for knowledge that the family helped her acquire a classical education comparable only to that of contemporary Harvard students.

Inspired by the Bible and other great works, and conscious of the evils of slavery, Phillis found a place in intellectual circles as a poet whose themes of freedom and virtue were in tune with the patriotic and literary moods of the time. One stanza of a poem, telling how she was "snatch'd" from Africa, ends with these words:

Such, such my case. And can I then
but pray
Others may never feel tyrannic sway.

As the first American black to publish a book of poems, she sailed to London in 1773, where she was feted by antislavery nobility. John Paul Jones called her the "African Favorite of the Nine [Muses]," and George Washington entertained her at his Cambridge headquarters after she sent him a panegyric as the defender of "Columbia."

Spreading freedom's word, Mary Katherine Goddard prints the first copies of the Declaration of Independence listing 55 of the 56 signers; Delaware's Thomas McKean signed later. A facsimile of the document appears behind her. Editor of the *Maryland Journal and Baltimore Advertiser,* Miss Goddard claimed in 1779 that the paper circulated "as extensively as any Paper on the Continent. . . ."

In a fight to keep her press free and her readers informed, Mary Katherine took a stand still relevant today: She refused to tell angry Whigs the source of a letter she had published. Hers was the spirit of women of the Revolution—"a Spirit that will not be conquerd," as Abigail Adams declared.

You can still find Phillis Wheatley's name given to branches of the Young Women's Christian Association in seven cities, including Washington, St. Louis, and Atlanta. It was chosen by the individual groups as a symbol of cultural accomplishment by blacks.

Mary Katherine Goddard of Baltimore, Maryland, was born at the other side of the social scale from Phillis. Yet she, too, had a successful career so striking that one of a series of Bicentennial films produced by National Geographic with Station WQED of Pittsburgh features her role in the Revolution.

Besides serving as Baltimore postmistress from 1775 to 1789, Miss Goddard ran a printing shop. When Congress fled to the city late in 1776, she turned out the first copies of the Declaration of Independence including a list of 55 of the eventual 56 signers.

It was as editor and publisher of the weekly *Maryland Journal and Baltimore Advertiser,* however, that Mary Kate contributed most by reporting the war's ups and downs with patriotic fervor and firsthand coverage.

A few days after the opening shots at Lexington and Concord, her readers learned details from a story datelined April 19, 1775, the day it happened. After the signing of the preliminary Paris Peace Treaty, they were the first Americans to "read all about it" in her broadside of February 19, 1783—a scoop made possible by the landing at Baltimore of a schooner verifying current rumors.

Even now we can thank Mary Katherine Goddard for a stand she took on a principle that is as newsworthy today as it was then. She refused to reveal to the Whig Club of Baltimore the source of a satirical letter she had published, which club members took seriously as support for the British.

The confrontation led to threats and violence against the paper and her brother, who owned the *Journal* and who also refused to identify the letter writer. Eventually the dispute reached the Maryland Assembly and was resolved in favor of the Goddards—affirming the freedom of the American press to protect its sources of information.

Mary Kate and Phillis . . . Martha and Abigail . . . such colorful characters capture the spotlight of history. Behind them in the shadows stand all those others, the nameless Founding Mothers without whom none of it would have been possible. □

By JOHN J. PUTMAN
Photographs by
WINFIELD PARKS
BOTH NATIONAL GEOGRAPHIC STAFF

THE ARAB WORLD, INC.

Who are those oil-rich Arabs, and what are they doing with all that money?

The writing on the wall: Teletype dispatches in a hotel lobby in Doha, Qatar, link a resident of that tiny Persian Gulf state with the day's political and financial happenings abroad. Such once-poor and still little-known lands of the Arabian Peninsula ride a magic carpet of petrodollars—billions in oil revenues—to undreamed-of prosperity and influence.

HE WAS TALL, with great presence, and I sensed in him a hint of the mystic. He moved well, yet age and illness were revealed in pale, almost translucent skin, the weariness in his face, the slump in his shoulders when he sat.

I had watched him for several days: in the Riyadh Government Palace, where he listened to simple tribesmen petition for relief in land disputes; in the reception rooms of the Royal Palace, where he greeted foreign dignitaries; and in the small office where he worked alone, the only sound the scratch of his pen as he read and signed document after document.

King Faisal ibn Abdul-Aziz Al Saud was at that moment one of the world's most influential men; the ruler of one of its wealthiest nations, Saudi Arabia; and custodian of the world's largest known oil reserves.

As such, he had to make the decisions that allowed the members of the Organization of Petroleum Exporting Countries (OPEC) to raise the price of oil more than fourfold in 12 months and begin a massive transfer of wealth from the industrialized nations to those that produce the oil. Last year OPEC's oil revenues—and its petroleum bills to consumer nations—reached 90 billion dollars.

Thus to many he symbolized a world turned upside down, in which once-destitute desert sheikhdoms threatened the prosperity and power of the industrial nations.

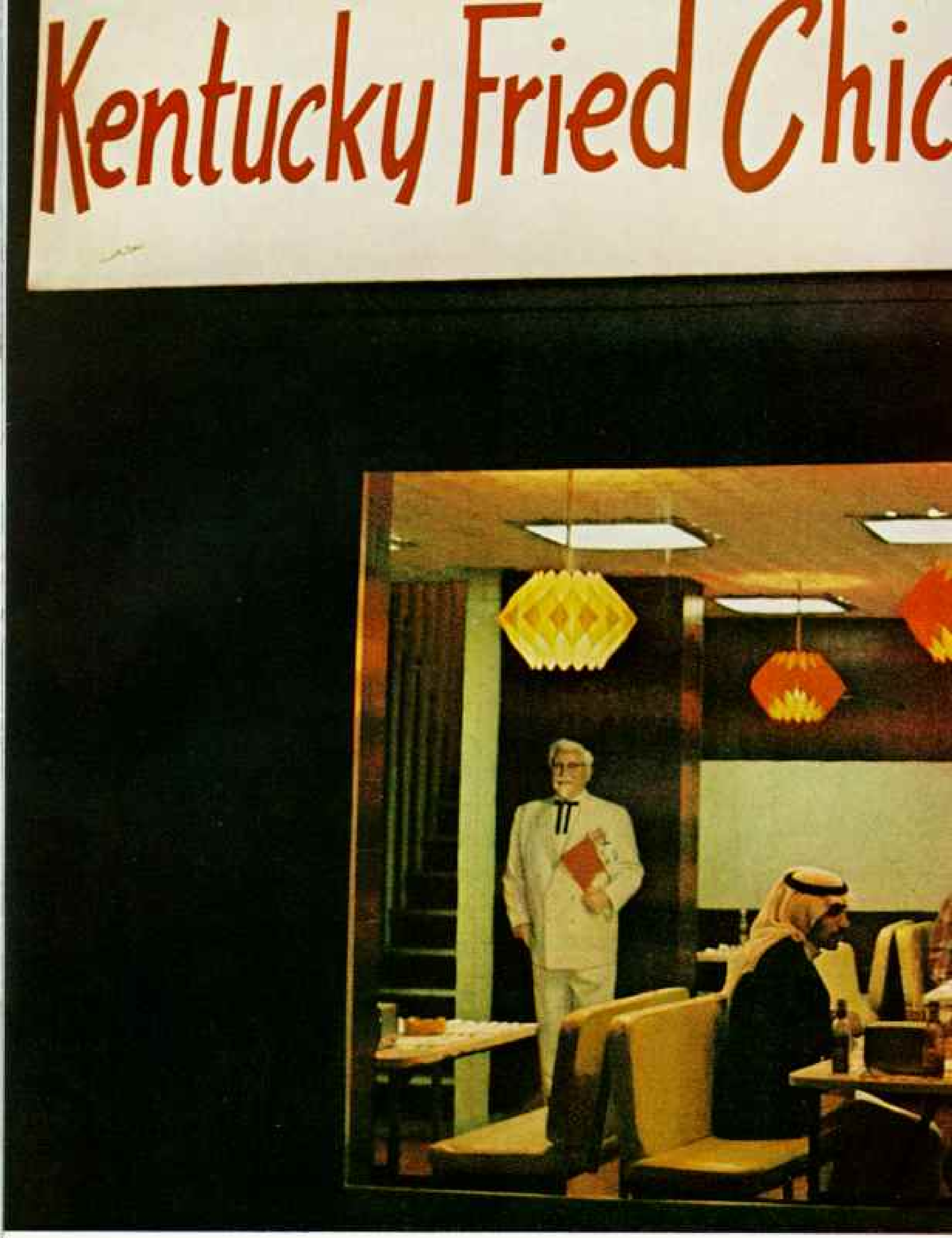
One day he motioned me to a chair beside him. We talked of his youth. At 16 he had led one of his father's armies in the campaigns to create a united Saudi Arabia. "Indeed I felt a great responsibility"—but he had no interest in recalling the excitement of combat.

"The essential thing in any role a man can play is good intentions, sincerity, a good purpose. Then, as now, I had always before my eye the interests of my people."

As for the increased oil revenues: "We have great hope in God Almighty for a bright future. We seek prosperity, a good and comfortable life. It is only just that we share in those things that our oil makes possible."

Within six weeks he was dead, shot down by an assassin. On the day that his body was borne to an unmarked Islamic grave, crowds in the streets—those who had known they could bring the pettiest of their problems to him—cried: "Where goes our knight? Where goes our protector?"

In Faisal's court I had begun my journey



Far, far from his old Kentucky home, a cardboard Colonel Sanders brings his "finger-lickin'" fare to Abu Dhabi. Customers more accustomed to rice and fish delight in the chicken, shipped frozen from North Carolina. An enterprising businessman in Kuwait purchased the area

franchise. With fattened paychecks flowing from the oil boom, many Persian Gulf Arabs now have plenty to spend on imports from the West and Japan: autos and airplanes, watches and television sets. But consumer goods sop up only a driblet of the oil money flooding Gulf-state coffers.

ABU DHABI PETROLEUM COMPANY, LTD.

on the Arabian Peninsula, a three-month journey in search of answers to these questions: What are the Arabs doing with their money? Who are the decision makers? And what may we expect of them in the future?

The search would take me the length of the "Arabian Gulf"—it is never called the Persian Gulf in these proud Arab lands—to tiny sheikhdoms with musical names like Abu Dhabi and Dubai, and to the dazzlingly rich state of Kuwait (maps, page 500). I would find answers—and more questions—in travels throughout Saudi Arabia and neighboring Oman, an ancient land troubled by 20th-century guerrilla war. And, inevitably, the trail of Arab billions led me to the banking centers of London and New York.

Mother's Wisdom Saves a Son

In Faisal's court I had learned that in order to assess the Arabian states' deployment of wealth, it is necessary first to learn something of the men who govern those lands and of the past that shaped them.*

Sheikh Shakhbut is an old man now, and dwells comfortably at the oasis town of Al Ain, ninety miles from the coastal city he once ruled, Abu Dhabi. That he is an old man—his three predecessors were assassinated—is due to the kindly nature of his brother Zayid, who took over the rulership from him, and to the wisdom of their mother, Sheikha Salama. Years before she had made her sons vow not to kill one another.

Shakhbut lost his sheikhdom because he could not come to terms with the oil money that began to flow in during the early 1960's. "A tightfisted old devil, but shrewd," one friend remembered. Another recalled "a fear of sudden change, a feeling for the old ways." The years of penury—the sheikhdom's total annual income in the 1930's was only about $75,000—had stamped him indelibly.

He kept his growing revenues in a room at his fort; some of the paper currency was later found damaged by insects. A British bank manager finally persuaded him to deposit some of it in the bank: 5,000 pounds for one week. In *(Continued on page 504)*

*Thomas J. Abercrombie, an American Moslem, explored the Arab past in the July 1973 GEOGRAPHIC.

Magic wand of money transforms Abu Dhabi. In 1960 it was only a quiet Gulf-side village of fishermen guarded by a high-walled fort (**left**). As oil started to flow and revenues skyrocketed, its ruler Sheikh Zayid began spending millions paving, planting, and raising his modern high-rise metropolis (**right**).

The Middle East: where the oil is

UNDER ITS DESERT SANDS and briny waters lie most of the world's known oil reserves. The highest concentration yet found occurs in the Persian Gulf area (**map at top**).

After World War I, Western oil companies negotiated concessions with Persian Gulf rulers to tap crude for a royalty of about 20 cents a barrel. Not until 1960 did host countries organize to demand greater returns for their resource. Then Saudi Arabia, Kuwait, and Iraq, along with the non-Arab oil nations of Iran and Venezuela, founded OPEC, the Organization of Petroleum Exporting Countries. They were later joined by Qatar, Indonesia, Libya, the United Arab Emirates, Algeria, Nigeria, Ecuador, and Gabon. Some

members have now begun to take control of operations in their countries.

In October 1973 OPEC decreed that members would set their own prices; crude zoomed from around $3 a barrel to $11.65 within three months.

Though OPEC members include nations on three continents, Arab producers were responsible for embargoes imposed on the United States and the Netherlands in 1973 in retaliation for support of Israel. The U. S., which counts on Arab wells for 13 percent of its oil needs, began to reevaluate conservation measures, alternative sources of energy, and diplomatic policy in the Middle East.

Like a desert lighthouse, a natural-gas flare (**above**) blazes above a Kuwait oil field. Arabs seek to harness the petroleum by-product, which has long been burned off simply to get rid of it because it was considered uneconomical to market.

Symbol of vigilance, a mounted tiger guards the desk of Sheikh Mohammed, Minister of Defense for the United Arab Emirates. Behind him hang photographs of his father, U.A.E. Vice-President Sheikh Rashid, right, and the federation's President, Sheikh Zayid.

Playing a game of "catch-me-if-you-can," Sheikh Mohammed, in white gloves, buzzes Dubai in a Bell JetRanger helicopter, joining photographer Parks in a friendly chase. Bodyguards accompany the 27-year-old official, a British-trained pilot. Arab nations along the Gulf turn a significant share of oil dollars into military hardware. Last year they spent 1.5 billion on U. S. arms alone.

His phone ringing constantly, Dubai's ruler hears out local officials and foreign businessmen while reviewing development plans for his mini-state. Sheikh Rashid's farsighted improvements during the past 20 years have won him popular support in his own Gulf state and a leading role in the United Arab Emirates. Bodyguards armed with Czech rifles (**facing page**) sit patiently through each business day.

seven days the manager dutifully brought the money back in a suitcase. Shakhbut counted it: "What's this extra money for?" "Interest," the manager replied, and explained the benefits of bank deposits.

Shakhbut was impressed and let the manager take the money back, this time for a month, and later for longer periods.

But Shakhbut wouldn't spend. The oil money was piling up, the sheikhdom was desperately in need of schools, water systems, electricity, every basic need. The pressure became intolerable.

And so one day in 1966 Zayid and his supporters confronted Shakhbut in his palace: He must depart quietly; his financial future would be assured. Shakhbut flew off to exile, living mainly in Iran until he was allowed to return to Al Ain.

Dynamic Leader Spends Lavishly

If Shakhbut couldn't spend, it is sometimes said that his brother cannot help but spend. On helicopter or Land-Rover tours into the desert, where he goes to persuade Bedouin to move into the sheikhdom's new housing projects, he sometimes spies a need and instantly orders it met—a well here, a road there. A widow is given three houses; the rents will provide for her old age. Developing nations seek aid: Zayid earmarks millions for loans and grants to them.

For years he dreamed of having a "proper army." On the third anniversary of the United Arab Emirates, the federation of seven sheikhdoms formed in 1971 to provide unity and strength after the British ended their treaties of protection, Zayid watched proudly as squadrons of jet fighters, helicopters, and transports flew over the city. No matter that the pilots were Pakistanis—Abu Dhabi in time would develop her own. One hundred million dollars' worth of air-defense missiles were on order.

But it is the city itself that best bespeaks Zayid's aggressive spending. Fifteen years ago Abu Dhabi was just a cluster of fishermen's houses and Shakhbut's old fort. Now with its corniche, or waterside drive, and high rises it seems bent on rivaling Beirut's seafront glitter (pages 498-9).

But what I saw is only the beginning, I was told. Town planner Abderrahman Makhlouf, an Egyptian, led me through a series of rooms crammed with models of future projects: "Our new Sports City, 250 million

dirhams [63 million dollars]; our new Summit Conference City, with 50 villas for heads of state, 20 million dirhams; our new 'Wall Street' area, already under construction; a new satellite city with free houses for U.A.E. citizens. There'll be shopping malls, lots of green. If we ever want a university, it should be sited there."

There were other plans: a new jet airport, a new beach road, a second bridge to link the island city with the mainland, a new police-and-defense-force housing complex. At Al Ain new projects include a 1,000-house development, a second hospital, a cement plant, an Intercontinental Hotel to pair with the elegant Hilton already there, and further improvements to the zoo—"which is a special interest of His Highness."

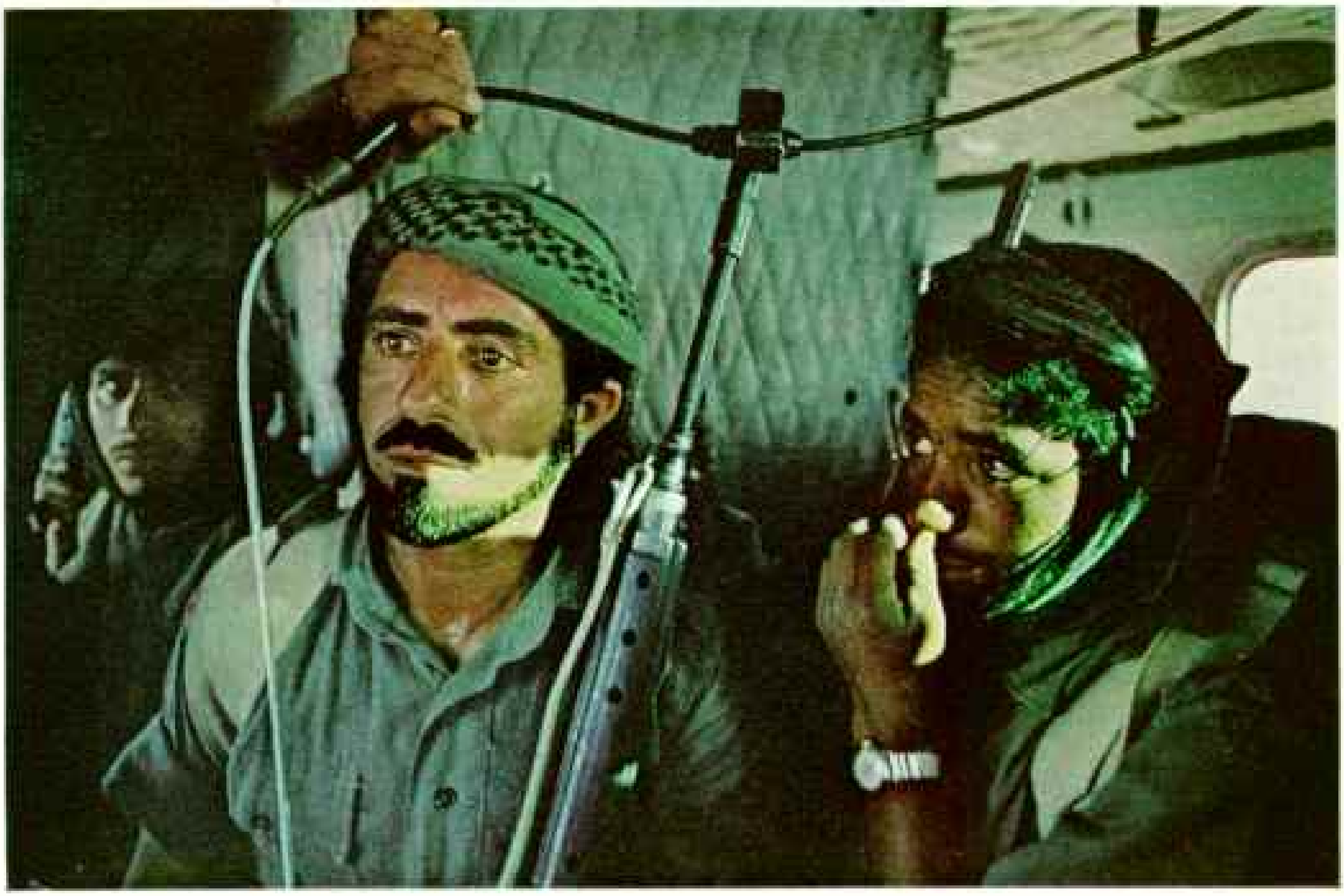
Stepping from Dr. Makhlouf's cool, quiet model rooms into the bright sunlight of Zayid II Street, I blinked. Not at the sunlight, but at the boldness of Zayid II's plans.

I wondered: How is an "instant city" created? How are monthly oil-company checks translated into buildings, wealthy families, commerce? One observer said: "Construction. When you find oil, you need facilities to get it out—roads, pipelines, a port, housing for workers. The money starts moving.

"When Abu Dhabi began to take off, the leading families—those close to Zayid—set themselves up as merchants to import construction and consumer goods. I remember one chap who for a number of years operated a dhow for a diplomatic mission and one day decided to go into business. He was close to Zayid and so could not go wrong. Today he is among the wealthiest merchants."

Much local private money goes into real estate, mainly to build high rises and villas to accommodate foreigners. Since foreigners are not allowed to own land or even a building, special arrangements are found.

The new Habroush Building is a case in



Skirl of bagpipes still echoes in Arabia when United Arab Emirates defense forces parade in Sharjah. In 1971 the British yielded control of the foreign affairs of the vulnerable sheikhdoms then known as the Trucial States, but British officers, on loan or contract, train and command units of the U.A.E.'s defense and security forces.

Hot war, bloody and prolonged, rages in southern Oman along the border with Yemen (Aden). The Sultan of Oman employs British officers to lead his troops and Baluchi mercenaries, here helicoptering to the front (**above**) in search of Marxist guerrillas. Nearly half of Oman's oil income of 900 million dollars a year goes to defend the country.

point. The foreign bank that financed it could not hold a mortgage on the building, but could hold a lien on the rents. The bank will operate the building until the debt is paid, then turn it over to Mohammed Habroush, U.A.E. Minister of State for Finance.

Like a great suction pump, Abu Dhabi's wealth has drawn in workers from poorer lands: Pakistanis to lay the concrete blocks of new buildings, Indians to man offices and hotels, Baluchis to dig ditches, Omanis and Yemenis to drive cars and trucks. You will find Lebanese merchants and contractors, Palestinian and Egyptian teachers, Americans and British staffing the oil companies and rigs. Foreigners now comprise two-thirds of Abu Dhabi's 140,000 people.

Their wages vary: A "coolie," or unskilled laborer, may claim 30 dirhams a day, about $7.50; an oil consultant with special skills, $250 or more a day. There's no shortage of banks to serve them: Abu Dhabi city has 31.

Banks Gamble on Prosperity

"Very lavish indeed," said the manager of one foreign bank branch. Was there enough business for all? "At the moment I doubt it. But we're looking to the future; as the city grows, we want to be in at the grass roots."

The ground floor of the bank was crowded with Indians sending remittances to families at home, but the serious business—providing instruments of international trade—went on upstairs.

"Say a car dealer wants to order 100 Toyotas. We supply him with a letter of credit and give him 180 days to repay: time enough for the cars to arrive, to be sold, and for him to have the money." While the manager looks to the future, "we're making money even now —we're on the right side."

Abu Dhabi's economic whirl was powered last year by oil revenues of 3½ billion dollars, according to John Butter, a Scot, Director General of the Abu Dhabi Finance Department. "Of that, one billion was spent in Abu Dhabi and the U.A.E., one billion went out in loans and grants, and the balance was either invested or added to our short-term reserves."

The investments are crucial, for Abu Dhabi has little hope of providing for the nightmare every Persian Gulf state fears—the day the oil runs out*—except for income from wise investments in other countries.

Last year 40 percent of Abu Dhabi's investment funds were placed in equities and properties through the government's Investment Board. It includes experts from New York's Morgan Guaranty Trust Company, Robert Fleming & Company of London, and the Banque de l'Indochine of Paris.

Another 40 percent was placed in bonds, and in a small amount of gold, through the Union Bank of Switzerland and Britain's Crown Agents. Most of the remaining 20 percent went in loans to foreign governments, and to institutions backed by them, in France, Austria, Finland, Spain, and South Korea.

Despite the splashy publicity attending its purchase of 44 percent of London's prestigious Commercial Union Assurance Building and smaller purchases in Europe and the United States, Abu Dhabi failed to reach its target in real estate investments. Buying property while avoiding risk takes time. Considerable sums are kept liquid so that, even with the fall in equity and bond prices, the government ended 1974 "roughly square," with long-term investments valued at about 1.4 billion dollars.

The outlook for 1975 was less certain. A drop in world oil demand had cut Abu Dhabi's revenues sharply for a time, world inflation and the continued fluctuation of some Western currencies had made investment risky, and world reaction to growing Arab acquisitions had led some nations to consider restrictive policies. These were matters I would look into more deeply later.

And When There's No More Oil?

Despite the battery of impressive financial advisers, it is Zayid who makes the ultimate decisions. What does he want? Clearly to prepare for the day when the oil runs out—but also, as one diplomat said, "to make this place livable, pleasantly so."

I glimpsed His Highness from time to time: speeding through town behind a brace of Land-Rovers filled with soldiers; at a patriotic celebration, surrounded by retainers with hawks on their wrists; on the evening TV news, opening a school with obvious pleasure.

He savors his roles as benefactor and statesman. He led in the formation of the U.A.E., serves as its President, and seeks to mediate among other Arab leaders.

I was unable to meet him. Busy, he keeps on the move. There are diplomats who have pursued him across the desert to present their

*Noel Grove wrote of "Oil, the Dwindling Treasure" in the June 1974 NATIONAL GEOGRAPHIC.

credentials. One Englishman who knows both him and Shakhbut well said: "Zayid? A very nice person, nothing unpleasant about him. We used to call him the 'country squire.' Likes to hunt. Takes his falcons and goes off to Pakistan for a month or two. He really shouldn't be gone that long."

Villages Merge Into a Modern City

If some complain that Sheikh Zayid is becoming less accessible, that complaint is never lodged against Sheikh Rashid, ruler of Dubai and Vice-President of the United Arab Emirates (page 504). The Dubai telephone directory lists a dozen numbers where he can be reached, including one for the royal bedchamber.

Even in the 1930's, young Rashid burnished a growing reputation for decisiveness. Two villages then shared the mouth of the Creek, a saltwater inlet and natural harbor: Dubai, ruled by Rashid's father, and Deira, ruled by a collateral branch of the family. There was much squabbling between them.

One day the Deira faction invited Rashid over for a celebration; they planned, according to Rashid's friends, to use the occasion for a sneak attack on Dubai. Rashid attended, but struck first. There was bloodshed, and Rashid's hosts no longer rule at Deira.

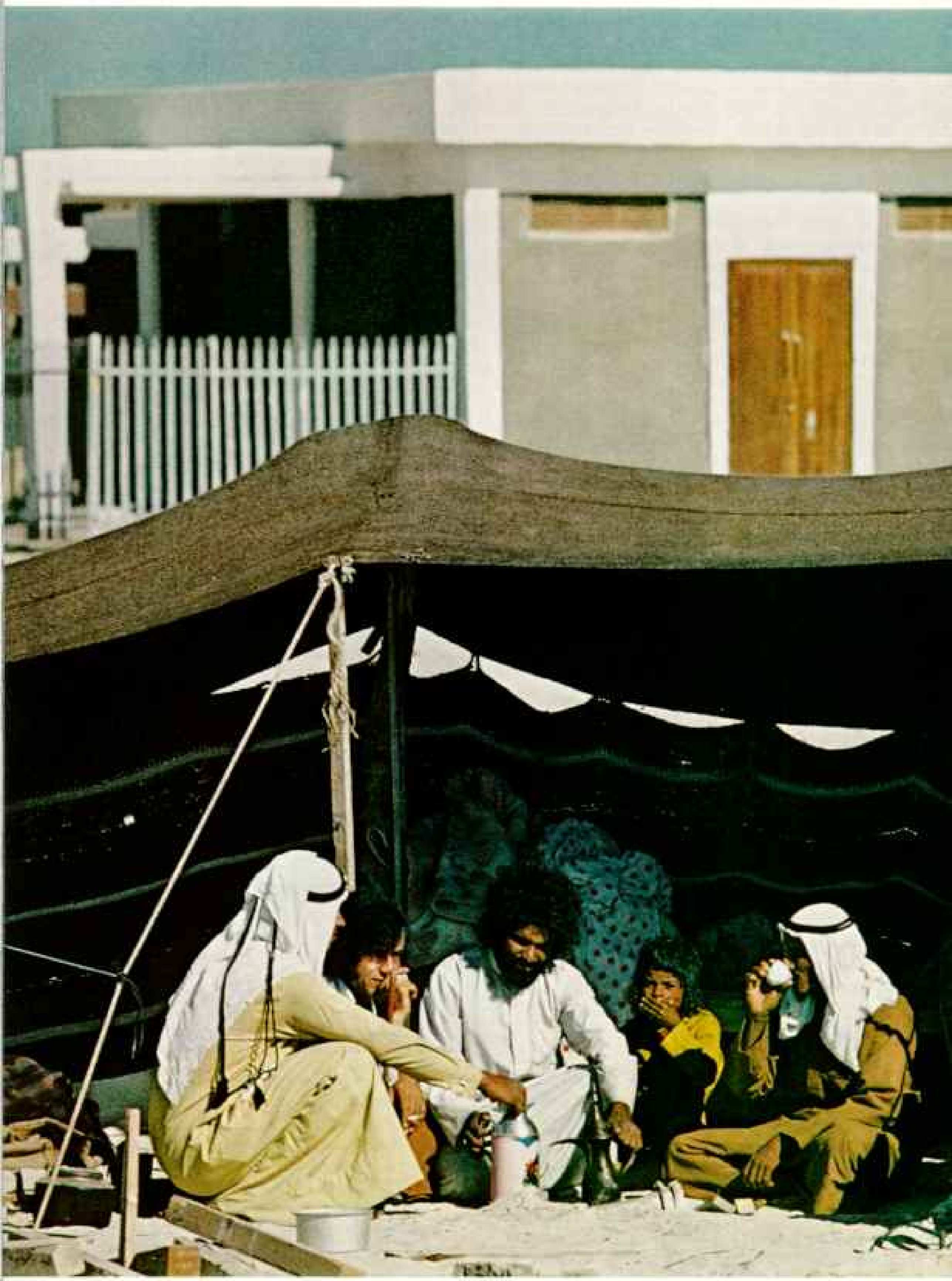
Whatever happened, the joining of the two towns speeded Dubai on the way to prosperity. And Rashid never looked back. Dubai was then, one old-timer remembers, "not much more than a fishing village. No electricity, no roads, the drinking water brackish."

Today Dubai is a modern city with every amenity, perhaps the loveliest of Gulf cities. Dhows line the Creek, taking on goods for Iran, Pakistan, India. Old Persian houses thrust square wind towers into a Canaletto sky. The taxi-boats that link the two towns come and go, their passengers standing, bringing Venice to mind. There is in the air, in the sound of voices, in the faces and strides, a pleasantness and ease seldom matched in the Gulf.

All agree that it was Rashid who brought these good things to pass: Rashid who borrowed money to begin dredging the Creek in 1958, giving Dubai a jump in the race to become the leading entrepôt in the area; Rashid who lowered and systematized customs rates, and encouraged merchants in every way.

And so Dubai prospered even before the oil money came. Merchants imported goods from some 60 countries, then reexported them.

Cash over the counter flows into the pockets of workers with payroll checks at the National Bank of Kuwait. Local men wear the flowing *dishdasha* while migrants prefer trousers. So many new jobs have opened that Kuwait relies on foreign workers—unskilled and professional—from Pakistan, India, Egypt, and Iran. Fewer than half of Kuwait's residents are native-born.



The gold trade flourished; Dubai merchants bought it in London and Zürich, then sold it legally to others who smuggled it into India and Pakistan.

Then, in the late 1960's, when the oil boom was building up, Rashid sensed a need for a new deepwater port. European advisers urged him to build four berths, then add others as the need arose. To their dismay, he ordered 15 built in quick succession. "He was right," one consultant says. "Every berth is occupied." Expansion plans now call for 22 more berths, with the breakwater placed to allow even further expansion.

And so, while freighters queue off other Gulf ports, incurring delays of as long as 100 days and commensurate penalties, there seldom is congestion at Port Rashid.

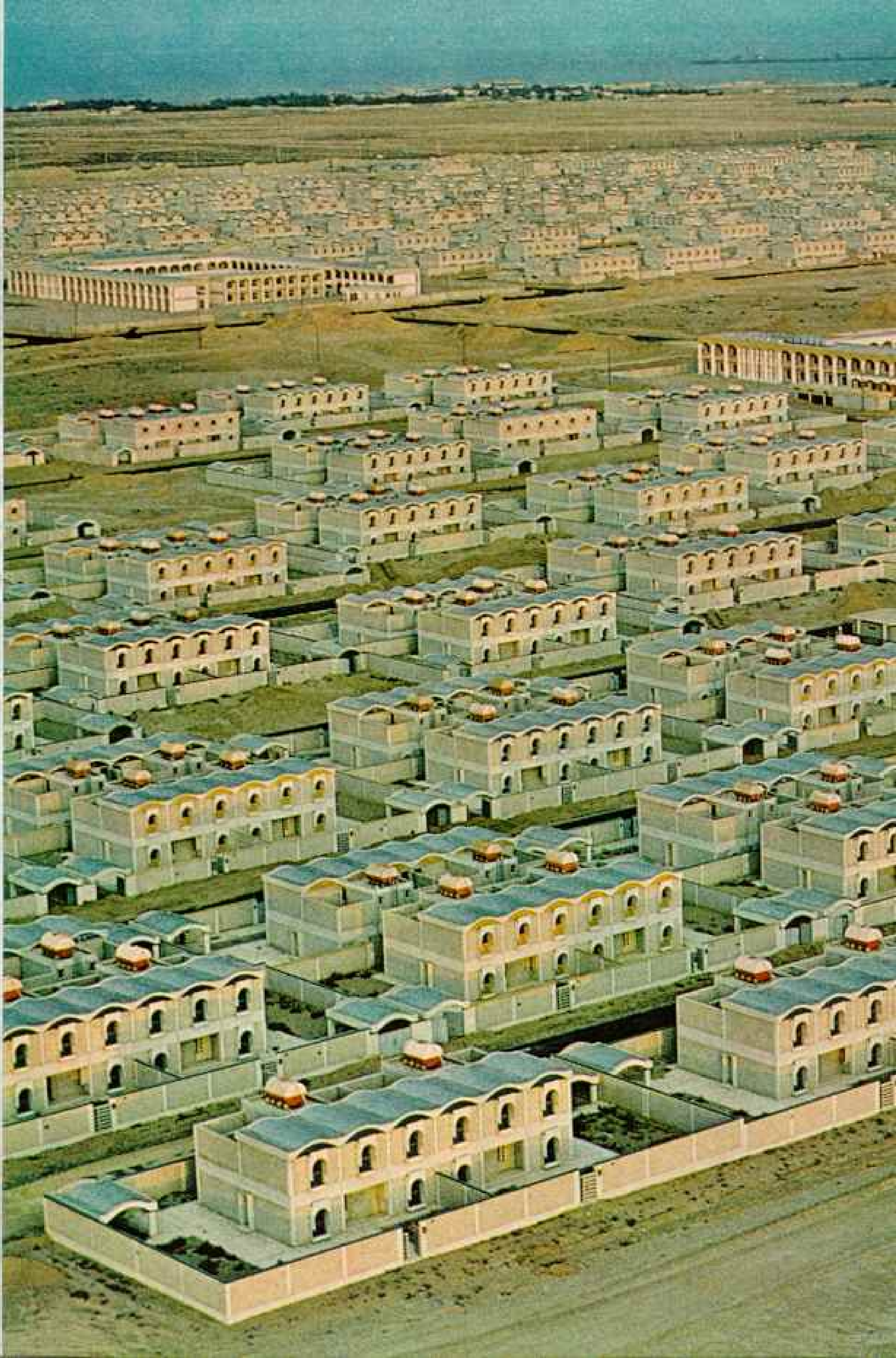
Only once last year did the port jam up. Cement became scarce; the price shot from 15 to 28 dirhams a bag; Dubai merchants and contractors sensed a killing and placed orders from the Baltic to Korea. In three months a quarter of a million tons arrived at the port. Everyone had played the game. During my visit bags of cement were stacked in the desert. The price was back to 15.

To further encourage trade, the sheikh allows importers 20 days' free warehouse storage and charges only moderate fees thereafter. Dubai per capita is today among the world leaders in external trade—$28,000 of trade per man, woman, and child a year.

Rashid's day begins at 6:30 at the palace, where he issues instructions, confers with favored businessmen, and receives unannounced callers, like a young man who arrived carrying a suitcase on his shoulder. Opening it, he pulled out a new edition of the Koran, just printed in Bombay. Would not Rashid buy the lot and give them to mosques?

Inheriting the windfall, a Bedouin family of Abu Dhabi pitches a goat-hair tent while awaiting the completion of their government-built home next door. Designed with tradition in mind, a separate front room will accommodate a husband's male guests while women remain in the family quarters.

Seeming infinity of houses stretches across Kuwait's new town of Rikkah (**following pages**). Most Gulf states provide free schooling, medical care, and low-income housing for their own people.



New big spenders, Arab financiers cautiously invest billions against the day their grandchildren may see oil reserves run dry. Sheikh Hisham Nazer (**above**), President of Saudi Arabia's Central Planning Organization, drafts a five-year plan for spending a staggering 142 billion dollars to modernize the desert kingdom.

Abdlatif Y. Al-Hamad (**left**), Director General of the Kuwait Fund for Arab Economic Development, plans to parcel out 3.5 billion dollars in foreign aid next year.

One of the world's wealthiest men, Mahdi Al-Tajir (**below**) answers queries about his worth: "If I knew how much money I had, I wouldn't be rich, would I?" U.A.E.'s Ambassador to Great Britain and France, he recently purchased this British estate.

After a drive around the city "to see things with his own eyes," Rashid settles down in his office by the Customs House. It is a sunlit room lined with settees.

The coffee bearer comes and goes, clicking the small cups stacked in his right hand; the telephone rings, Rashid answers; old Bedouin who once hunted with him arrive, camel sticks in hand, to sit and tell stories; the bodyguards sit impassively, sandals kicked off, Czech rifles cradled between their legs; petitioners rise, touch noses with Rashid in Bedouin greeting, then whisper their requests; Rashid scans the newspaper, puffs on a small, brass-lined pipe; the phone rings and he answers, while outside in the bright sunlight dhows and oil-rig workboats slip up and down the Creek.

One day I talked with him about his projects: a second bridge over the Creek, just opened; a four-lane tunnel under the Creek, rushing toward completion; a dry dock, the Gulf's largest, under construction; a 33-story international trade center (to be paid for in cash); a corniche like Abu Dhabi's; tourist and recreation villages.

"So many projects under way!" he mused. "All the new things you see now were accomplished in just five years—so fast many people cannot believe it. But the next ten years will be the same. Wherever there is a need, it will be met. And if we do it all at one go—if we do it now—we'll save money. In the future everything will cost more."

Dubai's oil revenues last year were a modest 750 million dollars, according to one government official. Import duties and other income added 25 million. After government expenditures a capital surplus of 505 million remained.

Some observers have questioned whether Dubai really needs an elegant seaside highway, or a 33-story world trade center with an ice-skating rink. The official concluded, "Why worry about it? The important things are being done."

Throne Relinquished—Under Fire

When I arrived in Muscat, capital of Oman, there were published reports that young Sultan Qabus had been spending so fast and looking at the books so infrequently that he had run out of money and was having trouble finding lenders. Qabus, like Zayid of Abu Dhabi, had come to the throne when a predecessor, his father, Sultan Said bin Taimur, was unable to handle the problems of increased wealth and demands for change. One of Said's advisers recalls:

"He bought himself a schoolboy's exercise book—his little 'night book'—and kept it beside his bed. In it he would jot down ideas, so that when the oil money came he would have developed plans. But when the money came, he didn't move. He didn't trust anyone. He even had his son under house arrest."

And so one day some of Qabus's friends burst into the old sultan's waterfront palace at Salalah and demanded that he step down. Said resisted, there was a struggle, and he was wounded. Said then flew off to England, and Qabus set about coming to terms with the 20th century.

173 More Schools in 5 Years

The gains are easy to measure. In 1970 the country had only three schools, all male; today there are 176, including 47 for girls and 31 coeducational. In 1970 there were three hospitals, today 15; in 1970, six miles of asphalt-surfaced road, today 335.

There is a new port, a Television City, housing developments such as Madinat Qabus, large police and military complexes, two international hotels a-building, and, rising in the heart of Muscat, an elaborate palace reflecting Oman's long ties with India.

Qabus has also had to fight a guerrilla war in the mountainous southern province of Dhofar. The military receives some 40 to 50 percent of Oman's income; oil revenues last year were 900 million dollars.

In Muscat I called on Qais Zawawi, 40, Bombay-educated, a former businessman, now Minister of State for Foreign Affairs and Deputy Director of the Development and Financial Councils.

"Two months ago no one wanted to talk with us about loans; now we have offers. It was a liquidity problem—a question of cash flow. We have reached a formula. In some cases we've slowed down development plans; in others we were able to extend the period of repayment."

Mr. Zawawi expressed more concern over the social stresses that afflict every developing nation. "People adjust to things quickly. We have had an airport for only two years, a modern seaport for only a year and a half, television for even less time. Yet people want more and more—they forget that three years ago we had nothing."

Mr. Zawawi discerns the challenges ahead; so did other young Omanis I talked with. Some had been imprisoned by the old sultan or lived in self-imposed exile during his reign. Now they wanted to build a nation. The question was time—is there enough?

The guerrilla war in Dhofar seems to have turned at last in Qabus's favor. His army, including Baluchi mercenaries led by British officers, and aided by Iranian and Jordanian troops, has gone on the offensive. A 30-mile barbed-wire barrier, rigged with mines and electronic sensors, supported by outposts and patrols, has cut the flow of arms that used to reach the rebels by camel from the People's Democratic Republic of Yemen next door.

Oman Fears Urban Terrorism

The concern now is that the young Arab nationalists and Marxist ideologues who compose the guerrilla force—called Popular Front for the Liberation of Oman—will go underground only to emerge as urban terrorists. In the past they have not lacked foreign support; they have drawn for weapons and training on Iraq, China, U.S.S.R., East Germany, and Palestinian guerrillas.

I would remember many things about Oman: the sere mountains, so lovely after weeks in the desert; Matrah children gathering on the sidewalk at dusk while a man unlocks the wooden box holding a public TV set. I would recall the helicopter in which Qabus was receiving flying instructions circling above Salalah—and the murmurs that he had begun to spend too much time at the palace where his father had secluded himself.

But most of all I would remember, in a dugout along the barbed-wire barrier, among a soldier's scant possessions, a small green-and-red bird. It hopped about, one leg attached by a cord to a stone. Its owner, a young Baluchi mercenary, was also tied to that mountainside. His string was money, his share of Arabia's oil wealth.

If the smaller states of the Arabian Peninsula proclaim their new wealth with glittering new buildings and the dust of construction, they remain—in the words of one oilman—"small potatoes" when compared with Saudi Arabia. Last year that kingdom received 23 billion dollars in oil revenues.

The bonanza seems unlikely to end soon. The country has proven reserves of 173 billion barrels, and possible reserves of 250 billion—enough oil to last for 40, perhaps as many as

Marked for tragedy, Saudi Arabia's late King Faisal holds a weekly *majlis*, an open-to-all audience in the manner of a desert sheikh. A petitioner bows before the king, passing him a wrinkled note

and whispering a request. Accessibility proved the monarch's undoing. During an audience on March 25, 1975, a nephew bent to kiss the king, drew out a gun, and killed him. A council of the ruling family quickly selected a successor, his brother Khalid. In June the assassin prince was beheaded with a gold-handled sword as thousands watched in Saudi Arabia's capital, Riyadh.

Wealth brings health to desert realms where only a few years ago folk medicine and faith fought the scourges of malaria and TB. A baby (**left**) is treated for jaundice in a fluorescent-lighted crib at the Rashid Hospital (**right**) in Dubai.

In 1977 the University of Riyadh in Saudi Arabia will graduate its first class of doctors, half of them women, who will minister to women and children alone. The late King Faisal endorsed only those measures he felt would benefit his people while preserving their strict moral values—one of them, the seclusion of women for modesty.

90, years. And the oil that Saudi Arabia sold for $10.40 a barrel came out of the pipe for about 17 cents in production costs.

Riyadh, the capital, boasts a new hotel complex and the 200-million-dollar King Faisal Hospital (234 single, TV-equipped rooms, banks of computers, and villas and squash courts for its foreign staff). The Queen's Building, owned by Faisal's widow, towers over Jidda, and tall construction cranes herald a huge twin airport, one side for regular travelers, the other for pilgrims to nearby Mecca. In the east the ultramodern University of Petroleum and Minerals marks the skyscape of Dhahran. Still, in Saudi Arabia, the glamour buildings are relatively scarce; the signs of wealth are mute.

Saudi Arabian money has gone into roads, power lines, education, social services, the strengthening of the defense and internal security forces. As Faisal himself lived modestly and quietly, he shaped his country that way. Custodian of Islam's holy shrine, Mecca, he declared that the first premise of any development plan must be "to maintain religious and moral values."

What then did Saudi Arabia do with last year's 23 billion? Some six billion was spent internally and for imports. About three billion went out to Arab or developing nations. This left a surplus of 14 billion, much of which went into official reserves. These reserves, 3.9 billion at the start of last year, rose to 14.2 billion—surpassed only by those of West Germany and the United States.

The agency handling this surplus is the Saudi Arabian Monetary Agency, housed in an old two-story building near the Jidda airport. SAMA's small staff keeps busy on the phone searching out the best rates on their favorite instruments: bank notes and U. S. and British treasury bills.

Radical Plan for Saudi Arabia

To the world financial community, this treasure is a worrisome thing—both threat and opportunity. The sudden shifting of those funds could injure a bank or a nation. Both businesses and governments around the world look at that 14.2 billion as a possible source of capital, investment, and purchasing. It could build plants, create jobs, shore up flagging economies.

Yet the money sits there, manipulated by a handful of Arabs and a battery of high-powered foreign advisers.

But, I learned in Riyadh, Saudi Arabia was ready to move. A second five-year plan would change the face of the country, provide vast opportunities for foreign companies, and

diminish those short-term deposits and reserves that bothered so many people.

I called on Hisham Nazer, 42, President of the Central Planning Organization, to ask about the 70-billion-dollar plan. "Seventy billion? That was last week. Now it's 142 billion. That too may become outdated."

The plan had been shaped under Faisal. "He never rejected a plan; he asked only that we achieve more."

The plan, said Mr. Nazer, reflects two basic premises: "Oil supplies 70 percent of our gross domestic product, 99 percent of our exports, 95 percent of government revenues. One day it will be gone; we must prepare an economic base for that day. Secondly, we aim to provide every Saudi citizen with a minimum standard of living; the good life above that is 'a prize to be striven for.'"

To meet the long-term manpower problem, the ambitious five-year plan calls for increasing the number of students in elementary and secondary schools from 943,000 to 1,400,000; vocational students from 4,000 to 31,000; university students from 14,500 to 49,000. Other increases include: hospital beds from 7,600 to 19,100; doctors from 1,900 to 4,200; first-class roads from 2,560 miles to 8,100; port berths from 26 to 72. Even fun is carefully drawn into the plan, which projects a tourist city in the south, zoos, Disneyland-like parks.

A whopping 17 billion will go to develop industry. ("The private sector has proven too slow," said Mr. Nazer.) Some three billion of that will go to oil-related industries, such as a vast system to collect the four billion cubic feet of natural gas flared off daily in the kingdom. ("The oil companies thought it was not economic to harness that resource; we do.")

U. S. Firms Vie for Contracts

Last year Saudi Arabia acquired 60 percent control of the production facilities of the Arabian American Oil Company, which developed and operates most of its oil fields. The government aims at eventual 100 percent ownership. Aramco's American participants —Exxon, Mobil, Texaco, and Standard Oil of California—now seek new roles in partnership with the Saudi Arabians to build and operate new petrochemical industries.

The scent of profits has encouraged literally hundreds of other U. S. companies to bid for supply contracts, construction jobs, or joint ventures: Marcona to build a steel plant; Bechtel Inc. to design Riyadh's new airport; Gulf, Dow Chemical, and Shell to put up new petrochemical complexes.

Americans should be well positioned. The U. S. Army Corps of Engineers administers

Luxuries unknown a decade ago have become necessities as Gulf Arabs find their pockets jingling. An Egyptian worker (**left**) puts a last coat of paint on a TV antenna in Kuwait's mammoth low-cost housing project. Television has spread throughout the peninsula. Now rulers use the medium as skillfully as vote-seeking politicians in the West to publicize their programs, from hospital openings to ground-breaking ceremonies. Readings from the Koran also fill the airwaves.

Rococo-style furniture draws customers to a Kuwait store (**right**). The style matches the richness of Oriental rugs, long a favorite form of investment for Gulf Arabs.

Saleh Shehab (**below**) of Kuwait's office of tourism keeps "connected" by car phone to his fast-moving world while checking hotels, resorts, and amusement parks aimed at attracting European visitors. On the opposite side of this open-door policy, Saudi Arabia and Oman at present do not encourage tourism.

contracts for nearly eight billion dollars' worth of military construction, while U. S. Government teams work on a joint economic commission with the Saudi Arabians to provide technical assistance.

But other nationals jam Riyadh's hotels—Germans, French, Japanese, British. One American grumbled: "The Japanese send 40-man delegations; they stay awhile, then leave. You wonder what they do—are they just fishing?" So countless feasibility studies are commissioned, countless letters of intent initialed; but many fewer contracts are signed.

Ambitious Plans Loom Like a Mirage

On one of my last journeys in Saudi Arabia, I visited the fishing village of Jubail, the planned hub of the nation's biggest industrial complex. It seemed a near-ghost town. The streets were empty, many houses deserted; the dhows lay like tilted sea gulls on the mud flats of low tide. For some years Jubail's inhabitants have drifted off for jobs in the refineries and larger surrounding towns.

There were a few signs of change—construction machines rumbling in the distance, wooden stakes marking off sites in the desert. But it was difficult to envision the quarter of a million housing units planned for workers, the dozens of plants.

Can the Saudis do it? Will they do it? "Historically," one banker said, "they have been better at talking than at performance." So the world waits as businessmen come and go, their briefcases crammed with intent.

For precedent in the handling of vast surpluses, Saudi Arabia and its neighbors look to Kuwait. That state has been grappling with the problem for 25 years.

Kuwait may be described as 6,000 square miles of desert, under which lies a natural oil tank, and on top of which sits a large modern city, its growth marked by a succession of six ring roads. Oil-development work is essentially complete—the exploration finished, machinery and pipe in place, even the lifting pressure provided generously by nature. This year the Kuwaitis took over 100-percent control of the Kuwait Oil Company from Gulf and British Petroleum. All they have to do to reap the profits from 2.3 million barrels of oil a day is to turn the valves, filling three or four tankers each 24 hours. Last year that gush of oil provided Kuwait with eight billion dollars in revenue.

From the beginning, Kuwait's rulers have poured money into social services: free telephones, free houses, food subsidies, bonuses to parents who send their children to school, free medical care, including—for those who are not satisfied with local facilities—accompanied travel to England for treatment.

As the revenues continue to grow, benefits expand. The government has budgeted 750 million over the next five years for middle-income housing—including three-room high-rise flats for young marrieds who want to escape the traditional pattern of several generations living together.

Real sand, fake sky form a simulated setting for Bedouin brought in from the desert to perform traditional dances for a local color telecast in Abu Dhabi.

The largess extends to other lands. The Kuwait Fund for Arab Economic Development, which administers the state's aid programs, at first assisted only Arab states. As revenues grew, it moved to African and Asian countries. Its capital leaped this year from 1.3 billion dollars to 3.5 billion.

Kuwait Takes a Practical Approach

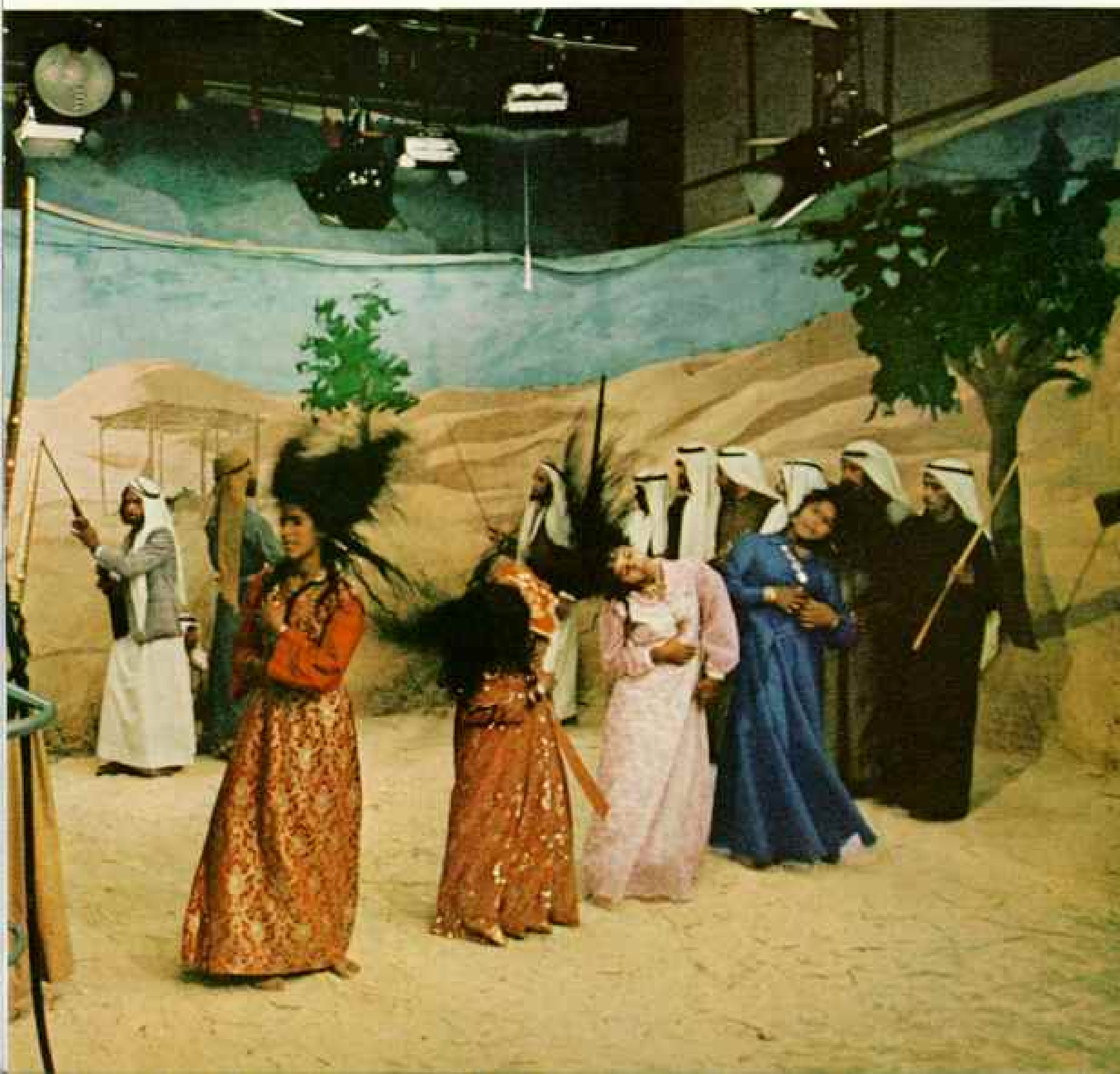
The fund's director general, Abdlatif Al-Hamad, 39, explained the philosophy behind such generosity: "We are a small country and rely on our neighbors for almost everything—food, teachers, labor. In turn we share with them what we have, money. There's also a protective reason. We cannot close our door and say to hell with everyone else. Nothing is clearer than the danger of having an island of prosperity in a sea of poverty."

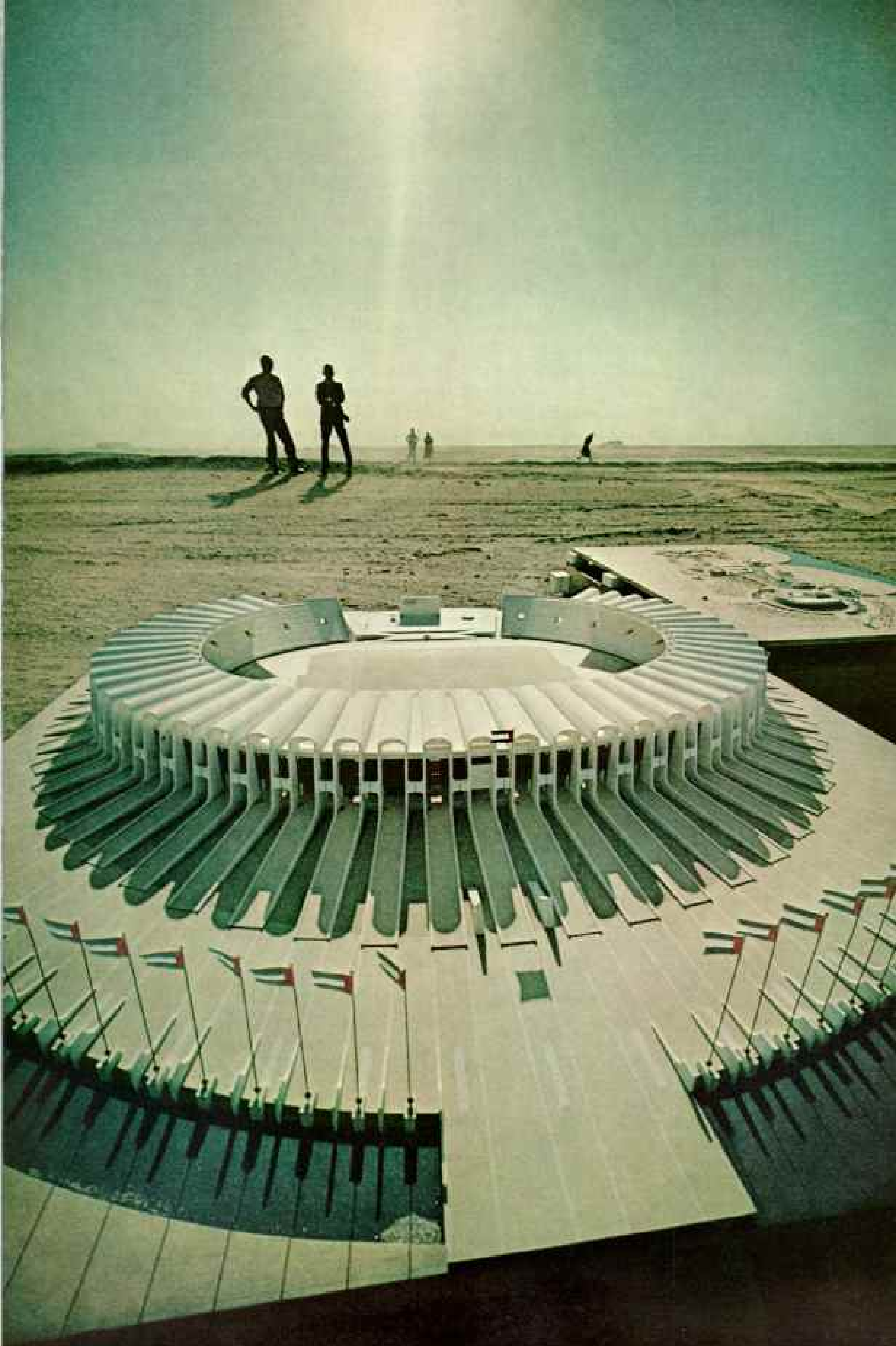
Last year, following Kuwait's lead, OPEC nations pledged 16 billion to developing countries. Still, surpluses keep piling up. One banker estimated Kuwait's holdings increase by "$150 a second, day and night."

What to do with it?

Kuwait has begun a modest industrialization program, but more plants mean more foreign workers—and the Kuwaitis know they are already outnumbered. It is in shipping, which keeps the labor offshore, that Kuwait has moved most boldly. Four companies now float an armada, including 350,000-ton tankers, liquified-petroleum-gas carriers, and freighters, while other vessels are on order from Scotland to South Korea.

But to many it has always seemed that Kuwait's only hedge against the day the oil runs out is to invest wisely and be ready to clip





From a sea of sand, surrealistic structures rise along the once-barren Gulf coast. A full-size version of this model of Abu Dhabi's 60,000-seat stadium (**left**) will crown a "Sports City" shown in the smaller model beyond. The complex, to open in 1978, will offer swimming pools, volleyball, tennis and basketball courts, cricket fields, and hostels for visiting athletes. French architect Henri Calloc, winner of an international competition, views his creation with the state's Director of Town Planning, Dr. Abderrahman H. Makhlouf.

Water towers pierce the Kuwait skyline like minarets. They will brim with hundreds of thousands of gallons of desalinized drinking water from the Gulf—and carry a bonus for visitors. From the top platform of the tower at right, patrons of a revolving coffee shop will enjoy a 360-degree panorama of sea and sand, while a stationary restaurant will ring the lower sphere.

coupons. Its American stock portfolio includes such items as Associated Dry Goods, General Motors, Southern Pacific, Comsat, Eastman Kodak, IBM. There is a real-estate portfolio with hundreds of millions of dollars of holdings in the U. S. and Europe.

Kuwaitis have established their own investment houses, some jointly owned by the government. Such houses, I was told, "are now major actors in the world bond market, and among the top ten in the Euro-market."

But in 1974 an adverse world reaction developed over foreign investments by the oil-producing countries. A flurry of purchases triggered the furor: Iran bought 25 percent of Germany's Krupp Steelworks and expressed interest in Pan American World Airways. Saudi entrepreneurs reached for control of some small U. S. banks. Kuwaitis acquired 14 percent of the German auto maker Daimler-Benz, purchased Kiawah Island off South Carolina, and joined in building a 100-million-dollar Hilton Hotel complex in Atlanta, Georgia.

The reaction was swift. Politicians in the United States, Germany, and Great Britain called for tough new restrictions on future foreign investments.

Chickens Spur a Sizzling Business

One of the Kuwaitis who voted for both the Kiawah and Atlanta deals is Nasser Al-Kharafi, 38, a member of the board of the Kuwait Investment Company, and the man who brought Kentucky Fried Chicken to the Gulf. That business, he said, was doing fine—eight outlets, a million dollars in sales last year, and plans that would take Kentucky's Colonel Sanders from Cairo to Muscat.

The Kiawah deal looked good, too, he told me in his quiet air-conditioned office in Kuwait's commercial suburb. "By going in with good partners, we could develop the island and then sell it fast for a reasonable profit.

Greening of a desert: A grounds keeper (**below**) waters a verdant park in downtown Abu Dhabi. Planners envision truck gardens in the surrounding desert, irrigated by desalinized Gulf water. Air-inflated plastic greenhouses at Abu Dhabi's Arid Lands Research Center (**right**) provide a man-made climate for vegetables worthy of a sheikh's banquet board.

The local community would benefit too." The adverse reaction has not soured him on U.S. investments. "It all depends on the future relationship. If it is good, our investments should grow. Our best outlets for capital remain the U.S. and Europe."

Another Kuwaiti was more bitter: "Your businessmen are eager for our investments. Your politicians don't want our 'dirty' money. May we ask you to make up your mind?"

Meanwhile Kuwaitis have begun to look to fresh fields. They mention Egypt and the Sudan: "Vast pools of labor, a need for development." And they have agreed to help finance a pipeline in Yugoslavia, with a view to developing oil markets in Eastern Europe.

So what happened to Kuwait's eight billion in revenue last year? One banker said: "Fifty-eight percent ended up in foreign bank deposits, 16 percent went for imports of goods and services, 14 percent for direct investments abroad and political aid, 7 percent for aid to developing nations, and 5 percent was retained in the local economy."

As for the oil-price rise itself, the Kuwaitis —like other producers—make no apologies. I talked with Mr. Al-Hamad of the Kuwait Fund, who wears a score of hats in the mixture of government and private financial institutions that shape Kuwait's future.

"You must remember the old price was set basically 24 years ago; you can't expect a commodity price to stand still forever. Perhaps the rapidity of the increase was a shock, but frankly I was glad to see it.

"The world was spinning along, the money gap growing between the rich and the poor. Everybody enjoyed spending petrol to have a hamburger, not at the closest stand but at the one beyond it. Sooner or later the oil would end, but no one paid any attention.

"Oil's future role is as a source of food and shelter—protein concentrates and plastic housing materials. I'm happy the price rise brought this to everyone's attention. The decline in oil use shows how much was wasted."

Director of the center Mohammed Mijrin Saif and Dr. Merle Jensen of the University of Arizona inspect tomatoes that help fill the demand for local produce.

Money Travels Only as Numbers

Those money surpluses: Not long ago Western bankers were saying they threatened the very stability of the world financial system. To find out what happened, I decided to follow the surpluses to London, where most have found their way.

Of course the money really doesn't travel. When Gulf or Exxon pays an oil bill, their New York banks subtract the sum from their accounts and credit the Arab accounts, often held in the same bank. When the money moves around—to London or Tokyo—it moves as digits on computer readouts.

According to the International Monetary Fund, the OPEC countries' 1974 surpluses of 54 billion dollars went this way:

- About 11 billion in the United States, primarily in U.S. Government securities and bank deposits.
- 7 billion in sterling deposits and government securities in London—a major element in financing the deficit in the U.K. balance of payments.
- 21 billion into the Euro-currency money market, mainly in Euro-dollars, and mainly through deposits in London banks and in U.S. bank branches in that city.
- 15 billion into loans to other governments, foreign aid, and other transactions.

One London banker told me: "At first the


AIRLINE
PASSENGER
TARIFF
62

Women without veils, still the exception in much of the Arabian Peninsula, find opportunities expanding—sometimes at a snail's pace, sometimes in quantum leaps. In Kuwait and Bahrain the veil has been cast aside by many women, among them Bahrain travel agent Wahida Bashmi (**left**). The state's new women's police corps (**right**), here studying English, handle juvenile and women's cases only.

At a private school in Jidda in rigidly traditionalist Saudi Arabia (**above**), a Jordanian woman teaches girls who, by present law, will remain segregated until graduate school. In 1960 public education was approved for females, yet they continue to don veils in public after they reach womanhood. Since most Saudi women, especially in the upper classes, remain in the home, the nation must still bring teachers from other countries, generally from Egypt and Jordan.

money was put into a limited number of banks. It embarrassed them, the sheer weight of it. The problem was that it was short term —some overnight—while the banks had to lend at long term. There was a danger for banks that took too much. But now the Arabs are spreading it out more, and they're making direct loans. Last year, for instance, OPEC nations committed 3½ billion dollars to an International Monetary Fund facility that loans money to countries hard pressed to pay their oil bills. Still, there's a lot of money sloshing around; it remains a strain.

"But there's an even greater danger," the banker went on. "The massive increase in oil prices coincides with the Western World's problems of inflation and recession. The increased cost of oil aggravates inflation and stymies recovery. Secondly it comes at a time when so many people have begun to think that their standard of living must improve every year. The oil price rise will not permit it. The West must tighten its belt. But if we all get through the next few years, I think it will become a diminishing problem."

What *do* the Arabs want? Ian Seymour, a

respected editor of the *Middle East Economic Survey*, had told me in his Beirut office that he thought it was "simply a seat higher up the table. The next ten years will be their period of maximum bargaining. If they don't use that time well, they won't get anywhere."

As for the transfer of wealth, "It's really all that hardware arriving every day at every Gulf port—the steel rods, the air conditioners, the cars. One can trace the roots of Western resentment to this: We have to produce more and more to buy the same amount of oil."

And what about the price of oil? Whether

In tune with tradition, the Bank of Oman in Abu Dhabi attracts women customers by offering a separate facility to assure their privacy. Under Moslem law, wives and daughters receive an inheritance from husbands and fathers; they sometimes accumulate sizable reserves. So potentially valuable is their business that a few banks now operate ladies' sections full time.

today's price is fair and reasonable depends on whether you're buying or selling. And if you are buying, what are your alternatives to the higher price?

With the first shock, some talked of war. U. S. Ambassador to Saudi Arabia James E. Akins told me: "Invading for oil? Morally, it would be repugnant. Politically and militarily, it would be criminally naive. The facilities would be destroyed, no one in OPEC would cooperate with us, and the Russians—self-sufficient in oil—would be the gainers."

Some spoke of alternate energy sources—nuclear fuel, the conversion of coal and oil shale. But on a large scale these are years away. Investors have held back from the massive sums required, fearing that a break in crude-oil prices would wipe them out.

Others cited new oil fields coming on line in Alaska, the North Sea, and around the world. But if and when the industrial nations climb out of their slumps, demand for oil will probably resume its strong climb—absorbing those capacities too.

Some expressed the hope that OPEC would split: It is, after all, a cartel—and history tells us cartels tend to fall apart.

Ian Seymour replies: "I don't think OPEC will split. They're aware of their own interests, and their oil ministers have a great continuity; they know each other well."

There was finally this optimistic scenario, offered by one London banker: "The oil price stays as is, other goods go up. In 1980-82, in real terms, oil will not be wildly different from 1972. Inflation and currency devaluation will erode part of the present Arab advantage."

But OPEC has stated its intention to raise oil prices to catch up with inflation and to set those prices not in dollars but in the more stable "paper gold" of the International Monetary Fund, the Special Drawing Rights (SDR's) currently worth about $1.20 each.

A Bahraini Invests in the World

On one of my last days in London I called on Mohammed Mahdi Al-Tajir, who is not only Sheikh Rashid's principal adviser but also the U.A.E.'s Ambassador to Great Britain and France (page 514). A Bahraini, he had begun his public career helping reorganize the Dubai customs office. He also went into private business—beginning in the gold trade. Today, according to London newspapers, he is one of the world's wealthiest men.

His holdings included farms in France ("I love land"), London's Park Tower Hotel, real estate in Paris, shares in African mines, an oil well in Texas ("400 barrels a day"), Wall Street stocks ("you should move things every day, buy and sell even if the profit is low, it's the turnover that counts"), a new bank in the Cayman Islands, collections of pearls and Persian carpets ("I could stare at one for hours, they are so beautiful"). Of his six children, two sons attend Harrow; his daughter is at school in Surrey.

What Does It All Add Up To?

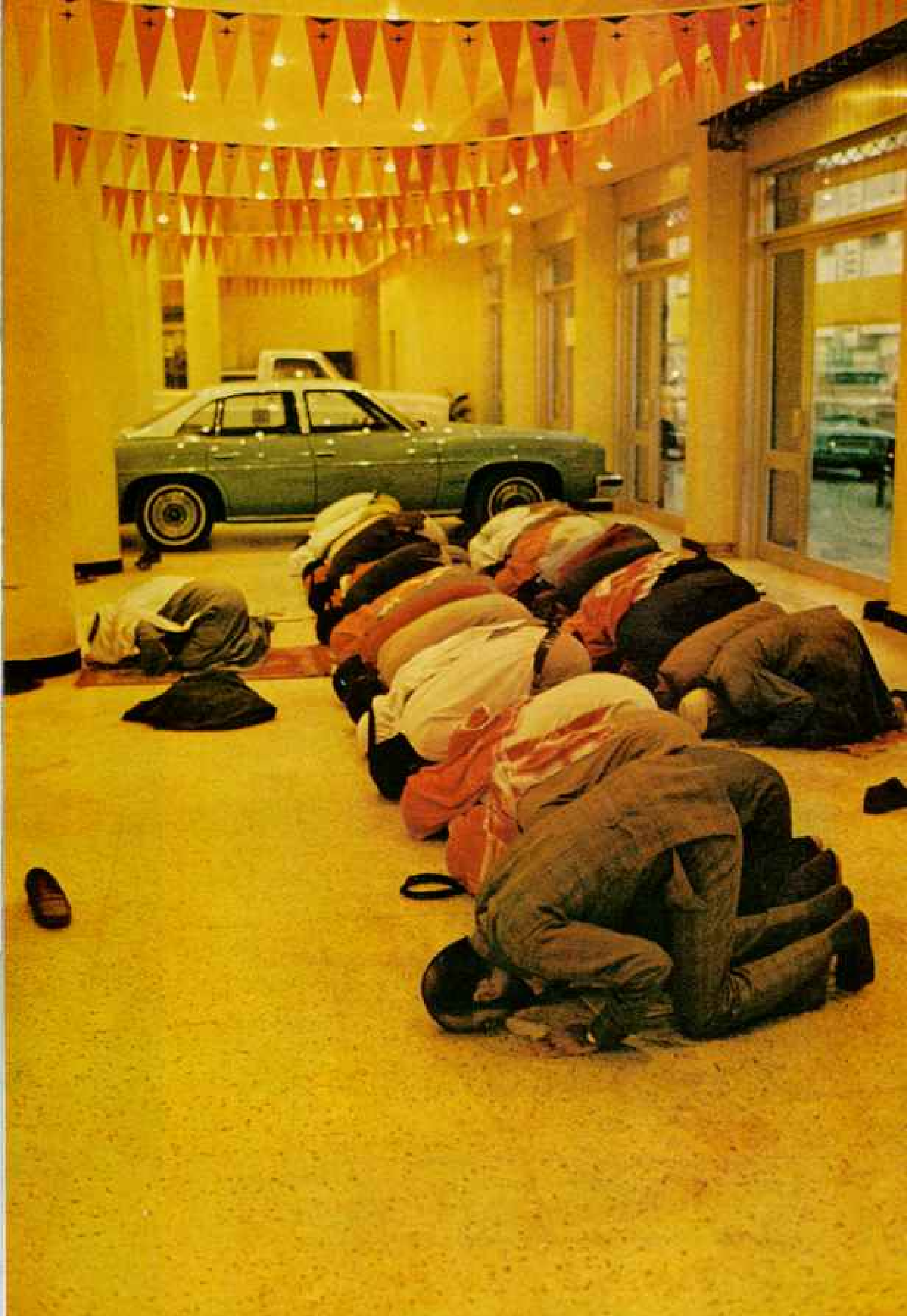
We strolled together over Dropmore, a 300-year-old estate he had just added to his collection of English country houses. There were great trees, a blue sky; far off, a jet climbed from Heathrow. For a time we walked in silence, the only sound the crunch of the gravel paths beneath our feet.

It had been 24 years since the Ambassador first came to London as a young student. Coal still heated most houses, and he remembered how when he came back to his lodgings "my shirt would always be sooty." He came to love the city: its handsome buildings, its institutions, its public services, above all, the character of its people. It is, he said, the "capital of the world." Now a part of it is his.

Mr. Al-Tajir's career reminded me that in personal affairs, as in history, change is a constant. The ignorant sometimes learn; the poor become rich; the powerless, influential. It is a test of life, as old Shakhbut's fate indicates, to come to terms with change; neither to hide from it, nor to waste too much time in protest.

As for the future, few undertake to make predictions when they concern the Arabian Peninsula or the international oil business. But the motives of the Arabs are easy to discern. As one Arab minister said: "Nobody cared about us before the oil came, nobody will care about us when it is gone." □

The call of Allah turns an automobile showroom into a place of prayer in Riyadh, Saudi Arabia. Even in the midst of a commerce that looms ever larger in their lives, these Moslem faithful take off their shoes, unroll their prayer rugs, and kneel toward Mecca in answer to the muezzin's sundown summons.



King Cotton and the Crimson Tide,
Jefferson Davis and George Wallace,
steel mills and green piney woods,
shrimp boats chuffing out of Mobile Bay . . .
But behind the poster pictures lies a
different "'Bama" with extraordinary
character and its own view of life . . .

Alabama, Dixie to a Different Tune

By HOWARD LA FAY
Photographs by DICK DURRANCE II
BOTH NATIONAL GEOGRAPHIC STAFF

BENEATH A BLACK AND STARLESS SKY, Don McAfee's pickup truck jounced down the dirt roads of Alabama's Chilton County. The five of us inside—Don, Jake Jones, Basil Clark, his son Tom, and I—were engaged in a traditional and noble Southern pursuit, the possum hunt. Behind us in a small trailer rode two hounds—Red, barely more than a puppy, and International Champion Possum Dog Jefferson Davis III.

Jake, who trained the dogs, told me: "Now you gotta understand that a possum dog follows that scent because he *hates* possums. So once he trees a possum, you gotta control him if you want that possum alive."

We were abroad that blustery night to replenish the stock of Basil's Big C Possum Ranch, first in the nation to breed possums on a commercial basis. At likely places along the road we stopped and followed the dogs into the forest. Then the dense woods would come alive with movement

King Cotton is dead! Long live King Possum! Others may scoff, but Alabama breeder Basil Clark insists that the lowly marsupial could provide protein for millions. Shifting patterns of agriculture, population, and industry—both major and minor—prompt a fresh look at a paradoxical state where shoeless poverty and newly tailored prosperity march in the same parade.

and our bobbing lights and the voice of Jake encouraging the hounds.

At first our luck was bad. Between forays, we warded off the chill with conversation and a comforting bottle. "When I was a kid in Hanging Dog, North Carolina," Basil observed, "we used to hunt possum and sell the hides for 20 cents each. A lot of mountain folks never would have survived without the possum. It gave you meat and the hides brought cash."

"Yeah," added Don, "you knew the Depression was ending when you were chasing a possum and there weren't six or seven other people after him too."

"In Alabama, we've always been poor," said Jake. "When I was a boy, the only sheets we had my mama made from fertilizer sacks. They were like sandpaper. I guarantee you never slid outta bed in those days."

Don said, "We made all kinds of clothes out of those sacks. When my Daddy got enough money to buy a shirt, the salesman asked him what size. 'I don't rightly know,' Daddy told him, 'but my last one was 20-10-10.'"

Finally the baying of the hounds announced that they had located a possum. We crashed through the woods, aromatic with the scent of wet pine needles. The dogs' baying rose in pitch. "They treed 'im," said Basil.

Jake's voice trumpeted jubilantly in the distance: "Talk to 'im, Jeff! Talk to 'im!"

We found Jeff and Red in full cry at the base of a slender tree. High in the branches a big possum glared down at us. A brisk shake of the tree brought him crashing down and soon he was in a sack, destined for the corral of the Big C Ranch.

Possum breeding has become a growth industry in Chilton County, and Basil Clark is its prophet and promoter. "It started in 1968," he told me. "I just looked around at the population explosion and the way we're polluting the entire planet and I realized that something had to be done.

"You know, at the rate we're going, if your grandchildren want to see a cow, they're gonna have to go to a zoo; and if they eat protein it's gonna be possum. Because the possum thrives in a man-filled environment. You know—and I'm dead serious—the possum is gonna save some underdeveloped countries from starvation."

Basil journeys throughout the South preaching the virtues of possums, sometimes accompanied by the great sires of his breeding stock, Beauregard IV and Stonewall II. When I left Chilton County, he enrolled me in his Possum Growers & Breeders Association of America. "Remember one thing," Basil told me. "The nation that controls the possum controls the world."

He gave me a bumper sticker reading *Eat More Possum*. "Now," he said, "you get you a pickup truck with a gun rack, put this on the front, and you can go anywhere in Alabama."

FOR THE NEXT SEVERAL WEEKS, I did go "anywhere in Alabama." I found a state with misty mountains, graceful cities steeped in history, white beaches, and lonely bayous. I drove through towns with wondrous names like Opp and Arab (pronounced A-rab), Scratch Ankle and Cat Mash, Corduroy and Lower Peach Tree, Burnt Corn and Toadvine (map, page 550; see also **"Close-Up: U.S.A." — The Southeast,** a supplement to this issue).

I found a state in transition from an agricultural past to an industrialized present. Alabama now produces more pulpwood and paper than any other state but Georgia. Textile mills dot the landscape. Agribusiness has consolidated small farms into vast cattle ranches; the Alabama Cattlemen's Association is the largest in the nation.

"Until a few years ago," a good old boy told me, "anybody who wanted to amount to anything went north to get a job in a factory. You'll find Alabamians by the thousands in Akron and Detroit.

"Over in Greene County, Alabama, there's an undertaker who makes a good living just bringing bodies back from Cleveland so they can be buried at home. Now, though, you have a chance of getting a job right here. That's a big change."

Above all, every experience I had in Alabama vindicated the judgment of the great British scholar of the United States, Professor D. W. Brogan of Cambridge University, that, alone in America, *(Continued on page 542)*

Daydream break finds Kay Hampton at rest from weaving baskets for the produce trade. This small family business near Nectar supplies truck farmers throughout the Southeast and prospers even as Alabama industrializes on the corporate level.

JILL DURRANCE

Tattered gray legions of mist fall out as the sun trumpets reveille across Alabama's "black belt" near Demopolis. The broad band of dusky, fertile soil once supported a plantation society based on cotton and slavery. Now, cotton has been largely displaced by beef cattle and soybeans, and its farm laborers by machines. These and other changes in Alabama find expression in a local saying: "Cotton going west; cattle coming east; blacks going north; and Yankees coming south."

Casting for largemouth bass, Elwood Overstreet, Jr., and Eugene Widder (**left**) work one of the lakes of the Choctaw Bluff Club, where 16 members and their guests enjoy 20,000 game-rich acres. This sportsman's paradise also proves a good laboratory for wildlife research by a unit from Alabama's Auburn University.

The wells of discontent have nourished the political career of Governor George C. Wallace, talking with a deputation in his office (**left**) and politicking by phone from his exercise room (**above**). Wallace supporters see him as a populist in tune with the common man and are gearing up for a presidential run in 1976. Opponents regard him as a onetime segregationist become all-purpose demagogue. But all agree on one point: the high personal courage he has shown since the 1972 attempt on his life condemned him to a wheelchair.

the South possesses a "genuine tradition of civility" as well as "skepticism of the... prophets of a technological paradise" and a "feeling for the tragic side of history which the North has not experienced..."

Wind in the south puts the bait in his mouth,
Wind in the west, fish bite the best.

—SOUTHERN PROVERB

TO A VISITOR, the most exotic region of Alabama is the vast delta bordering Mobile Bay. Here is a half-lost world of marsh and water, of ducks on the wing and the lonely cries of gulls and terns. From ports like Bayou La Batre great fleets of trawlers sail into the Gulf of Mexico, ranging as far as the Yucatán Peninsula to catch tons of succulent shrimp. But it is a risky livelihood, for hurricanes often rake the gulf and shore.

"I call this coast 'God's blackboard,'" said Mr. Crum Schambeau of Bayou La Batre, "because every 14 or 15 years He erases it."

People here live close to the land. Men hunt and fish for the table; women tend kitchen gardens. Many draw their living from the sea. Although bacteria-bearing silt flowing down the Mobile and Tombigbee Rivers from the farms of central Alabama sometimes closes the gulf's famous oyster reefs, catches of oysters and shrimp have actually increased in the past ten years.

Near the town of Coden Mr. Llewellyn Rabby—a retired carpenter with thick white hair—has 500 acres on the coast, marshland latticed by bayous, and a comfortable house

Tree-chomping harvester of the MacMillan Bloedel company shears southern pines like so much celery (**below**). The Canadian-based firm has made a multimillion-dollar investment at Pine Hill, helping to make the forest-products industry Alabama's biggest in revenue produced.

on pilings. "Last hurricane," he said, "the water was four feet deep around the house. That piling has paid for itself."

We clambered into a weathered skiff with a kind of broad shelf abaft the middle. Using a small version of oyster tongs called "nippers" to pole the boat, Mr. Llewellyn stood at the bow. Periodically he clicked the nippers and drew up a cluster of blackened oysters that he cast on the shelf for sorting. He clenched a cigar in his teeth. "Two years ago," he said, "there wasn't an oyster in this bayou. But I seeded it with old shells and beer cans and worn-out tires. All an oyster needs is something to cling to and it'll grow just fine."

"Is it a particular species?" I asked.

"Well, we call them mud oysters."

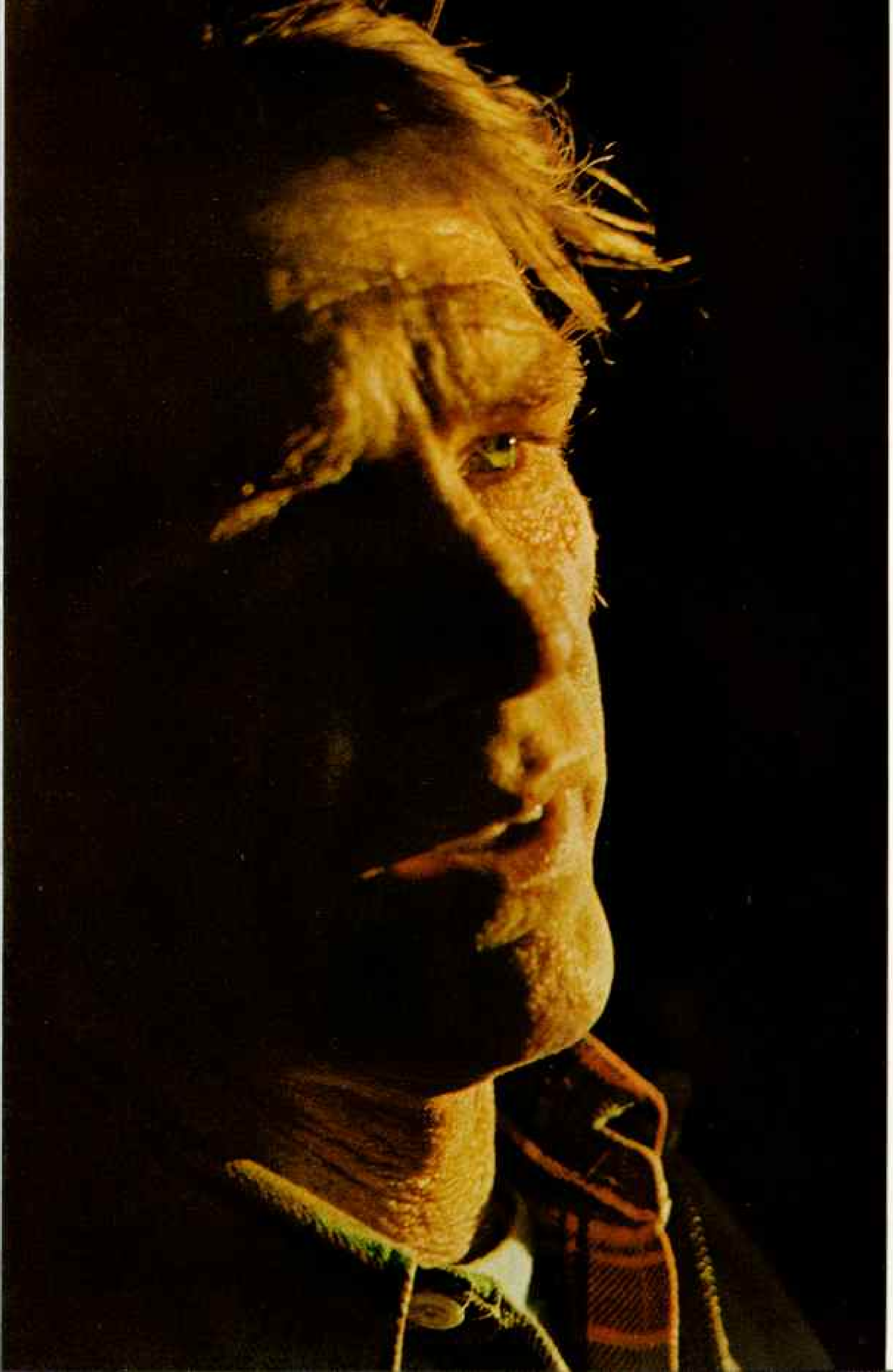
Silence.

"I know," he sighed. "It's not a very elegant name."

As we drifted through the meandering waterway bracketed by harsh, high grass, Mr. Llewellyn kept swinging up clumps of oysters. One huge oyster broke open and I sampled it. Plump but bland. "That size," he said, "they're only fit for frying. Besides, all the rain has probably taken away the salty taste. They're delicate, you know. The salinity of the water, the temperature, even the tides affect the way they look and taste."

Later, in Mr. Llewellyn's dining room, we wolfed down fresh oysters with a fantasy of sauces, followed by fried oysters, grits, and coffee. "I lived away from here for 14 years," Mr. Llewellyn said, "and the thing I missed most was the taste of those mud oysters."

Up the down shaft goes debris being cleared near Tuscaloosa from one of U. S. Pipe and Foundry Company's deep coal-mining operations (**below**), where the seam runs 2,000 feet deep. Both underground and strip mining make coal the state's biggest mineral industry.



The next day with my friend Eddie Hicks of Irvington, I visited the lonely tip of Point aux Pins, Point of Pines. Gallberry and sassafras bushes lined the dirt road. "The gallberries come out in winter," Eddie said. "As they ferment, the robins eat them and get dead drunk. You can almost pick them off the branches. Well, you take those robins and fry the breasts in grease and mix them with rice and bake it all into a robin jambalaya, and you got the best eatin' you'll ever know."

At Point aux Pins the water was the hue of clouded gunmetal, and a wind with the faint scent of iodine whipped through the coarse grass.

"My granddaddy used to come down here most every day and shoot himself a couple of ducks and catch a sack of oysters," Eddie said. "Those waters out there used to be black with ducks. The limit on redheads was ten a day. Now the state'll put you in jail if you shoot more than one. But I didn't see a single redhead last season."

We turned away from the marshy shore. To the west, on the horizon, loomed a vast refinery. Not far from it a paper mill spewed roiling smoke into the lowering sky.

And once at dusk, on the eastern shore of Mobile Bay, I was walking along the white sands at Point Clear. Overhead, swallows darted; small waves lapped nervously on the beach. Suddenly, I saw him—a blue heron sprawled on the sand like a flawed and dirty sapphire. His graceful body still supple, no wound visible. Dead of what? Dead of filth.

Yes, industry is bringing jobs to Alabama. But the machines sing a threnody for a way of life that, just maybe, was idyllic.

While the moon is bright,
Watch them jugs a-fillin'
In the pale moonlight.

—FOLK SONG

THE TIRES OF THE SEDAN whispered soothingly against the blacktop as Eddie Hicks and I sped down Route 90 south of Mobile; on the radio Conway Twitty was singing "Honky-Tonk Angel." Eddie exclaimed, "You mean you never drank any? Never even tasted it?"

I shook my head.

"Then just turn left here on 188. There's a place where I used to buy it."

A few minutes later we lurched to a halt on a red-clay road and Eddie knocked on the back door of a clapboard house. An elderly lady, eyes blinking nervously, appeared at the screen door. She did not unlock it.

"Lord, no," she responded to Eddie's question. "We stopped sellin' it a year ago. The money wasn't worth the fuss and worry."

"Well, ma'am, do you know where we can get some?"

(Continued on page 550)

Weather eye on his course, Charles McClantoc (**left**) puts out from Bayou La Batre for shrimping grounds in Mississippi Sound on his 60-foot boat, *Five Girls*. His family and a schoolboy on vacation serve as crew.

Nets hauled, McClantoc and his wife, Grace (**right**), sort the day's catch. So far, the pollution of Mobile Bay has not seriously affected inshore shrimping, but it sometimes forces the temporary closing of the oyster beds.

Different signs for different times: The door of Chester Williams's truck (**right**) says bluntly that black people in Alabama have moved a world away from the back of the bus.

In 1955 Mrs. Rosa Parks refused to give up her seat to a white man on a Montgomery bus. Her arrest provoked a bus boycott led by young Martin Luther King, Jr., in the first mass defiance of segregation. The 1960's saw "freedom riders"; clubs, dogs, firehoses turned on peaceful demonstrators in Birmingham; the long, wet march from Selma to Montgomery.

The results are written small and large. The old bench outside Wilcox County's Courthouse was once reserved for whites. The new seat (**left**) accommodates all. Black officials like Mayor A. J. Cooper (**below**), shaking hands at Mardi Gras in half-black, half-white, blue-collar Prichard, are being elected to office.

The "Bear" growls, the crowd yowls, and 'Bama's Crimson Tide, under coach Paul (Bear) Bryant, rolls on to yet another season as one of the nation's top college football teams. Cheerleaders Brenda McCampbell and Chip Cornelius (**left**) wring mounting decibels out of a frenzied crowd (**above**) as the battle rages into the evening.

His two protective state troopers as much a trademark as his hat, the coach (**right**) leaves the scene of another "Coup de Tide." The master recruiter and motivator expects, and gets, hard work, dedication, and loyalty from his players. A successful businessman as well as a coach, Bear Bryant may be only the *second* best-known man in Alabama. It's debatable.

Alabama, first explored by the Spanish in the 1500's, first settled by the French in 1702, stayed disputed territory until the last major Creek Indian lands were ceded in 1814. After secession from the Union in 1861, the state was briefly "independent." A declining one-crop economy and the long epilogue to Reconstruction left Alabama poor, segregated, and bitter. With new industry, different crops, and civil rights, the state rides to a future unhitched from the baggage wagon of her past.

AREA: 51,609 square miles, ranks 29th. **POPULATION:** 3,577,000, ranks 21st, growing at about the national average. **ECONOMY:** Iron and steel production, chemicals and fertilizers, textiles, timber and paper pulp, poultry, cattle, cotton, soybeans, peanuts, fisheries, new oil discoveries. **MAJOR CITIES:** Birmingham, 295,700; Mobile, 188,500; Montgomery, capital, 146,700; Huntsville, 137,750. **TRENDS:** Increasingly urban and nonfarm rural; agricultural diversification; new industries attracted by plentiful water, space, transportation, and large labor pool. **CHALLENGES:** Compared to other states, ranks low in per capita wealth, spending for education, physicians per 100,000.

550

Her voice dropped to a whisper as she gave him several addresses. "I'll tell you one thing," she added in her normal tone, "when we sold it there was none better. People used to come all the way from Chattanooga and New Orleans to buy it."

Eddie pointed toward me. "He came all the way from Washington."

The woman's hand flew to her mouth. "Washington! You mean, son, that you wheedled those names from me and this man is some kinda government investigator?"

"No, ma'am. He just wants to buy a jug."

"I hope you're not lyin'. That's all I hope." She slammed the door.

After following several secondary roads, we turned onto a dirt track and stopped in a barnyard. Half a dozen other automobiles, some with drivers at the ready, clustered around the barn. Inside we found a queue of people—both men and women—waiting for gallon jugs to be filled. When our turn came, we made the illicit purchase and hurried out.

In the car I raised the jug and let the cold, creamy, delicious liquid course down my throat. It was the first natural, unpasteurized milk I had ever tasted.

Tho' millions have come,
There's still room for one,
Yes, there's room at the cross for you.

—HYMN

THE SCENE had the haunted poignance of a landscape in a Fellini film. There, in a broad empty field at Driskell's Store Corner in Mobile County, stood a battered green van with a loudspeaker on top. Beside it a neatly dressed man shouted into a microphone, his left hand cleaving the air for emphasis. He denounced the iniquities of the world in vivid metaphors, calling sinners to the sweet rest of Jesus. But in all the Sunday landscape, the only congregation was his wife and three young children inside the van. From the gasoline station across the road I heard his amplified voice and I entered the meadow. That's how I met evangelist Arthur Rose.

Barefoot fun skips in with the daughters of Aubrey and Martha Morgan at their grandmother's home, Youpon, a 1,800-acre antebellum plantation near Camden. The family hopes to keep the plantation intact despite the pressure of taxes.

A black-haired man in his 40's, Mr. Rose radiates serenity. "I came to Jesus when I was 13," he told me. "When I threw myself on God's altar, I made all my good-byes. I said, 'God, here's my life. Take it and use it.'

"In 1964 He called me to preach. But I have no education and I thought, Lord, You got the wrong man. I struggled against it. Then, in 1968, I surrendered to God's call and He put peace in my heart. I know I ain't much, but I preach as well as I can. In the words of the Apostle Paul, 'I am what I am by the grace of God.'"

IN THE DEEP SOUTH religion is external and ardent. Forty percent of Alabama's population belongs to the Baptist Church; Pentecostals abound. Faith centers upon the Bible and evangelism is endemic. Indeed, evangelists like Billy Graham and Oral Roberts rank as superstars, and beam at you from endless billboards.

But the face of Arthur Rose peers from no billboard. For most of his life, he was a welder in Mobile. "I left my best years at Alabama Drydock," he told me ruefully. "But now I've stopped working to preach the Gospel. I rely on God to meet every need 'according to His riches in glory by Christ Jesus.'"

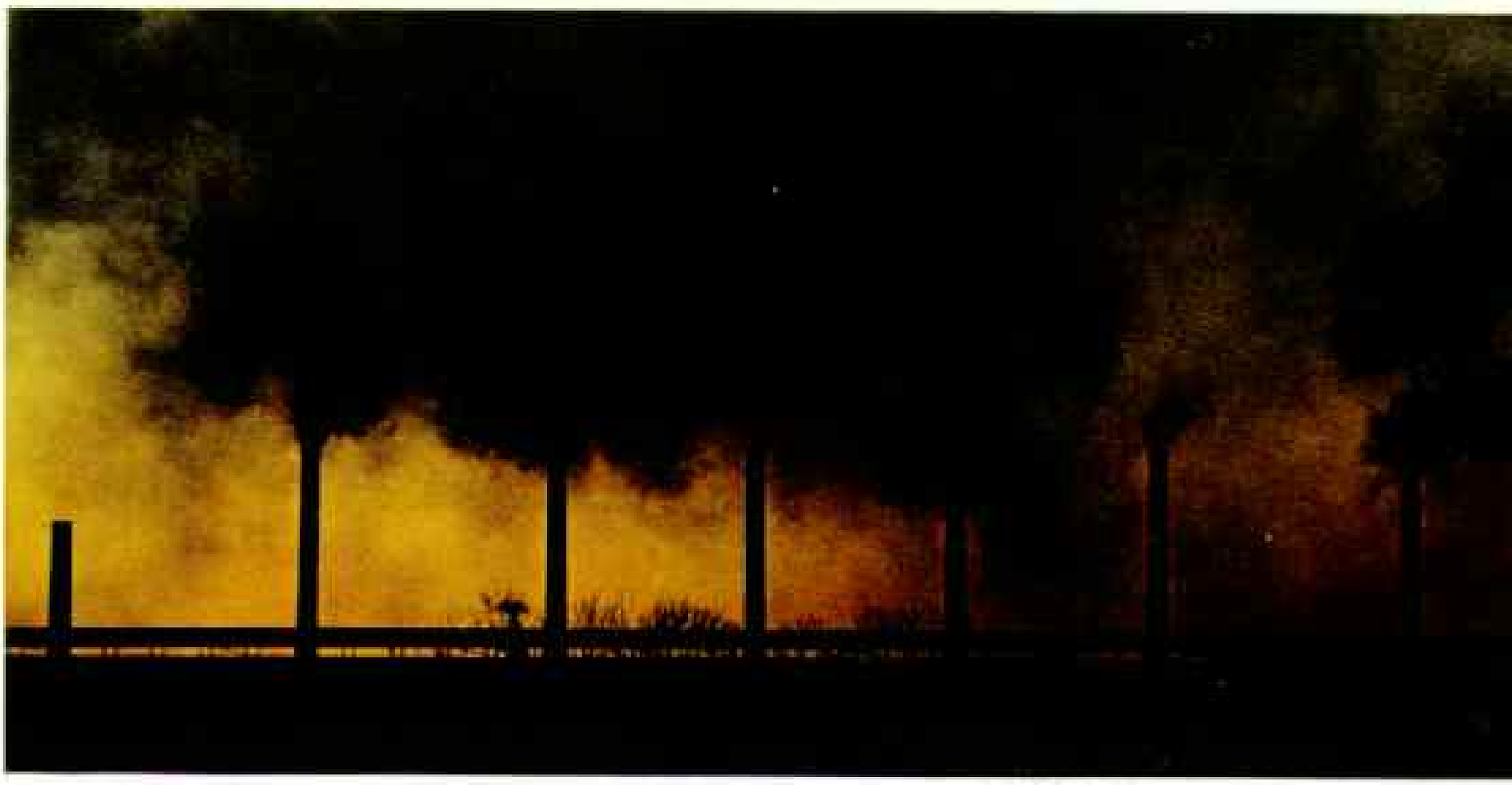
Over a period of several days I followed the evangelist from dusty field to dusty field. Rarely did he attract an audience, but never did the intensity of his preaching flag—not even when passing motorists jeered, shouted, or drowned him out with their horns.

"In a street ministry," he told me, "you can't count converts. You can't even count listeners. Sometimes I get down in my spirits. And someone I don't even know will say, 'I heard you preach once and it helped bring me to the Lord.' Then my joy just wells up.

"Bad experiences?" he echoed my question. "Sure. Lots of them. Once I was preaching at Tillmans Corner, and a man drove up and

Black Fire, one of Birmingham's best dance companies, burns bright. Founder and choreographer, 25-year-old Vera Marcus (**above,** center) rehearses her troupe for the opening of the concert hall and theater in the city's new civic center (**right**). Black Fire's travels, as far away as Brazil, have brought pleasure to thousands. Sponsored by the Jefferson County Committee for Economic Opportunity, the company has opened new vistas for many impoverished youths.

Coming clean, the night skies of Birmingham (**above**) cast into darkness the dead stacks of a steelworks closed as too expensive to depollute. The strangling fumes of five years past (**below**) are abating under tough antipollution codes and their equally tough enforcement by health department director Dr. George Hardy. Hard times and lack of equipment have slowed the pace of cleanup. Yet many recognize that it may be better to be out of work for a time than to be out of breath and life forever.



JAMES P. BLAIR, NATIONAL GEOGRAPHIC PHOTOGRAPHER

stopped not six feet from me. He leaned out his window and just looked at me with contempt. And he said, 'You know, you're a fool.' That same day a drunk came by and threatened me and I put down the microphone and said, 'Because I live in fear of the Lord, I have no fear of you.' He went away."

Invariably, evangelist Rose begins his service with a hymn. As his wife strums the guitar, he sings in a twangy baritone. Early in his sermon will come a humble disclaimer like: "You didn't call a college graduate, Lord. You didn't call a theologian. You just called me, a country hick."

The sermon always unfolds with graphic descriptions of the wages of sin and the joys of rebirth in the Lord. "If there's one thing poor, lost, benighted sinners are lookin' for today, it's the glory of God on our countenances. . . ."

I left evangelist Rose in an empty field, shouting salvation into the unheeding air. His arms waved, he hopped from foot to foot for emphasis. With nobody watching, with nobody listening. A fool? Perhaps. Or perhaps a man made of the stuff of saints . . . a man who unswervingly does God's will as he sees it.

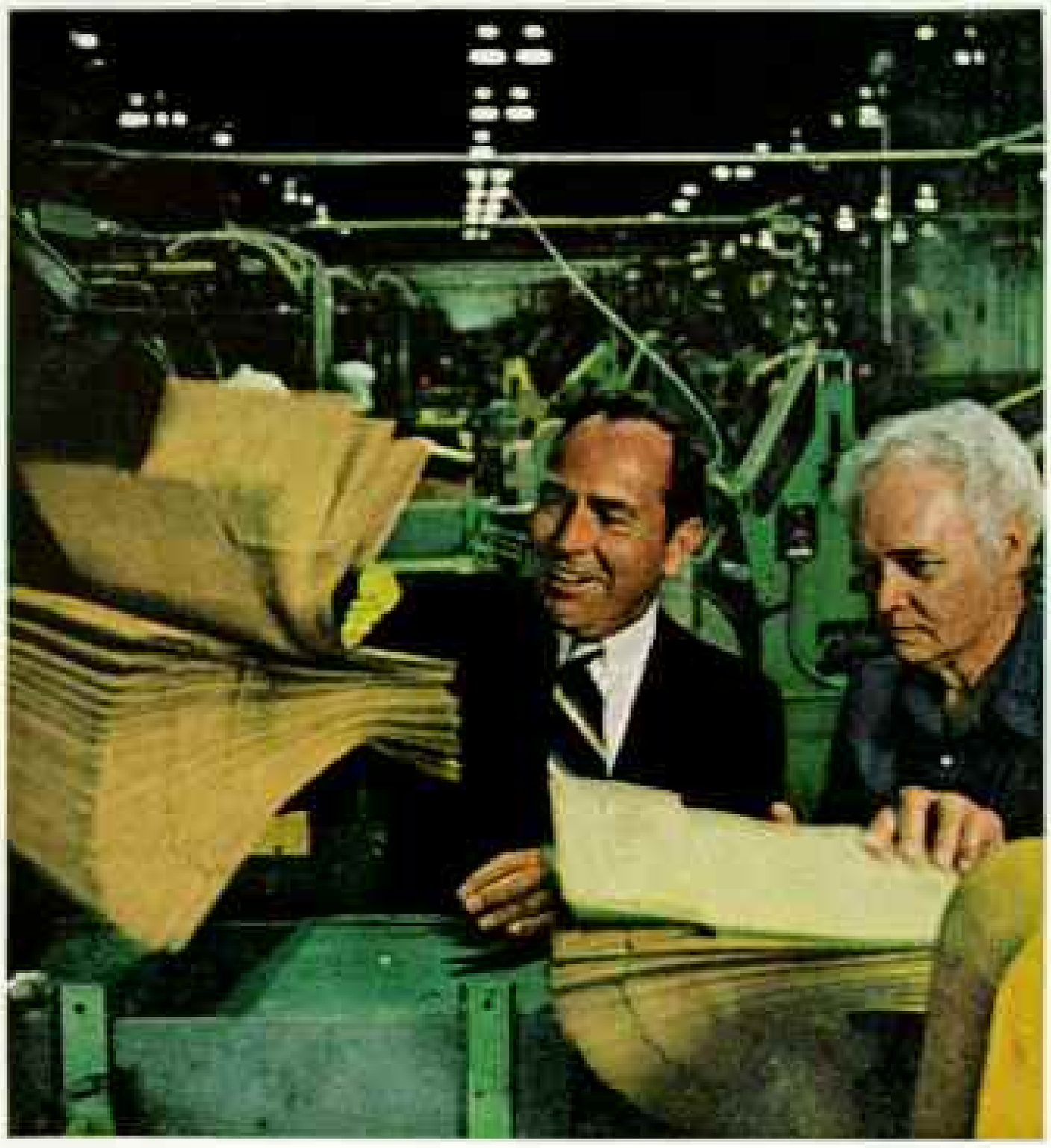
In the South, God's will is often hard.

When you wake, you shall have
All the pretty little horses.

—SLAVE LULLABY

THE PROBLEMS of pollution particularly perturb Alabamians, perhaps because so many depend upon the bounty of the land. In recent years they have enacted stringent laws to combat it. For example, the steel mills of Birmingham have poisoned the air of that city and surrounding Jefferson County for nearly a century. Until recently, particles of solid waste spewed into the atmosphere at a rate of more than 450,000,000 pounds a year. During past pollution alerts in Birmingham, as in most larger American cities, doctors have advised those suffering from respiratory diseases to stay indoors.

But no more. "In 1971," Dr. George Hardy, the young and dynamic director of the Jefferson County Department of Health, told me,



In the bag industry, Gulf States Paper stacks up near the top. President Jack Warner (**left**) riffles the product that helped build the $3,500,000 corporate headquarters and museum (**right**). It could grace Kyoto as easily as Tuscaloosa, avoiding what Warner calls the "standing-on-end-boxcar-type-structure."

In another assault on corporate visual pollution, Gulf States has devised a system that not only treats waste water to make it cleaner, but also to make it *look* cleaner.

"Alabama passed an air pollution control act that has become a model for the nation. Here in Birmingham we've already cut particulate emission in half. Some of the companies—the big ones run from outside Alabama—fight us every inch of the way. But we have the legal tools to give Birmingham clean air by the end of 1976."

On another front, 18 paper mills hulk beside Alabama's once-clean waterways. All but one pump dark-colored wastes into the rivers. The exception is a Gulf States Paper Corporation installation in Tuscaloosa.

President Jack W. Warner received me in the company's new headquarters, just downriver from the mill. "Because I've always believed that an industrial building could also be beautiful," Mr. Warner ordained a striking Oriental structure set amid ponds and Japanese gardens—an Alabama Shangri-La beside the Black Warrior River (facing page).

"Every company has a responsibility to the environment," Mr. Warner told me. "We know it. Tuscaloosa is a university town, and a few years ago the students started raising hell about pollution. Well, the company public-relations people had a fit, but I went on local television to answer questions.

"I told them I hated the smell of the mills as much as they did, and that we were working on it. Well, we still haven't overcome the smell, but now our people have developed an oxygen-cleaning system that reduces water pollution to almost zero. Zero! And we intend to make it available to the entire industry."

Later, in the golden light of late afternoon, Jack Warner and I went out to the North River Hunt Club where a Gulf States Paper employee, Dennis Murphy, was exercising one of Jack's strong, rangy Thoroughbreds. An unabashed country boy from Blount County, Dennis became the sensation of the Toronto International Horse Show last winter. Attired in aristocratic scarlet, riding Jack's horse Do Right as a member of the U. S. Equestrian Team, he scored the highest point total in the international jumping class—a feat never before attained by a rookie rider.

After his workout, Dennis—thin and supple as a whip—talked to me in a stable. "My daddy was a sharecropper," he said, "and I can remember hanging onto the collar of his old plow horse. That's how I learned to ride. I bought my own first horse at a dog-food factory for six cents a pound."

"Crowbait," Jack said. "That's all he used to ride. But with me on my good horse and him on his sorry one, he still won."

Dennis was suffering from a leg infection brought on by saddle chafe. "When the vet came in this morning," he told Jack, "I had him give me a shot."

"The vet!" I exclaimed.

"See," Jack said admiringly, "that's why Dennis is so good. He even thinks like a horse."

In Dixieland I'll take my stand,
To live and die in Dixie,
Away, away, away down South in Dixie.

—CONFEDERATE ANTHEM

FROM ATOP A GENTLE HILL the domed capitol dominates the city of Montgomery. Chaste and white, it lies like a dream of the antebellum South among scattered pines and oaks. Completed in 1851, it exceeds in sheer grace the Nation's Capitol, which is built in the same style.

Destiny brushed Montgomery ten years later, and this lovely building became the cradle of the Confederacy; a brass star in the front portico marks where Jefferson Davis stood when inaugurated as the first and only President of the Confederate States of America on February 18, 1861.

Not far away, dwarfed by the mighty buildings of the present-day state government, stands the modest wooden house that served for a few months as the Confederate President's official residence. Before it, fittingly enough, rises a huge magnolia tree.

Inside I strolled past rooms whose furnishings bore mute witness to mighty events, rooms where the year is always 1861 and the Southern future always bright. Upstairs, though, I found the detritus of defeat—a crumbling Confederate flag, a lock of Mr. Davis's hair, a fragment of the uniform worn by "Stonewall" Jackson when he was fatally shot at Chancellorsville, Virginia (his last, wistful words, uttered in the delirium of death: "Let us cross over the river and rest under the shade of the trees").

A long, hard way for that consummate tactician from the victory of First Manassas, where he won his name. With the issue yet in doubt and the gray line buckling before a Federal assault, a general of South Carolina infantry—doomed to die from the battle's wounds—cried: "Look, there stands Jackson like a stone wall! Rally behind the Virginians!"

Leaving the first Confederate White House, I felt a profound melancholy—the kind that afflicts so many Americans when they confront that epic national tragedy, the War

"**Mobilize,** *verb:* to turn a gracious Southern city, once capital of French Louisiana, into an industrial center, shipbuilding giant, and international port." So a dictionary might define the growth of Mobile (**right**), as seen from the vantage point of two gulls flying as one (**below**). Newly discovered oil fields near Mobile may make it the number-one boomtown of the South.

Between the States. I remembered something once told me by a Spaniard who had suffered much from the internecine conflict that wracked his own nation from 1936 to 1939; "Civil wars are the cruelest and the saddest, because each side fights not for territory or power, but for an ideal."

I know moon-rise, I know star-rise;
Lay dis body down.

—SPIRITUAL

WILCOX COUNTY lies near the heart of Alabama's "black belt"—so named for the rich, dark soil that created fortunes for antebellum planters. Gracious, spacious houses line the streets of the county seat, Camden, but there are subtle signs of decay. And on the courthouse bench it's an old joke that only one family has moved into the county in the past ten years.

In fact, Wilcox County, like much of the South, has been overtaken by a sociological revolution: The small family farm—backbone of rural economy—no longer works. Federal subsidies for cotton were withdrawn after 1973, and the price tumbled to a disastrous 32 cents a pound by the end of 1974. In Wilcox County big farmers have turned to mechanization and alternative crops, but many small farmers, mostly black, have been forced to seek permanent off-the-farm employment. Others, defeated in the only livelihood they have ever known, swell the welfare rolls.

No highway sign directs you to Gees Bend. An isolated tract of 13,000 acres, it juts like a lonely peninsula into a


LYKES LINES

huge curve of the Alabama River. Almost all of Gees Bend's 700 residents are black, are descended from the slaves who labored on the sprawling Pettway Plantation that occupied the site before the Civil War, and are sunk in poverty. At Gees Bend I learned a little bit of what it is like to be black and poor.

Above all, you find resignation. I visited the unpainted clapboard house—three rooms and a porch—of the Square family. Too proud for welfare, husband Herbert cuts wood and takes what odd jobs he can find to support his wife and seven children, but his take-home pay adds up to pitifully little.

I remember a melancholy afternoon in the cluttered living room with Mrs. Square, who is 30 but looks older. "No, we don't eat much meat," she said. "Greens and rice is all we can afford. At the end of the month there's just no money left. I can't pay for the lights. The company's fixin' to come out tomorrow an' cut them off.

"What do I worry about? The kids. They're smart, you know. They get A's and B's on their report cards. I just hope I can get them through high school."

POVERTY IN GEES BEND runs a broad spectrum, however, as I learned when I called upon Miss China Grove Miles. Slightly bent with her 84 years, Miss China Grove made me comfortable in her small, neat cottage.

Like many of the ladies of Gees Bend, she spends much of her free time stitching quilts. The patterns are traditional, and bear resplendent names like "Coat of Many Colors," "Grandma's Dream," "Bear's Paw." In all of Gees Bend, only Miss China Grove can still sew the intricate "Pineburr" pattern, in which each patch—like a chrysanthemum—blossoms in three-dimensional splendor.

Did Miss China Grove remember her distant childhood? "Oh, Lord, yes," she responded with her shy, twisting smile. "I come up hard. My mama had to go to peoples' houses to get enough for her children to eat. But religion was so important to us. I joined the Baptist Church in 1904 and they've never turned me out, never had no trouble with me."

All her life she worked hard. "I done hoed, I done plowed, I done cut wood. Until 1955, I farmed cotton on ten or fifteen acres that I rented, workin' a mule or sometimes a horse. In that year—it was a fine crop year—I made 11 bales o' cotton. You ask down to the gin

With tractors at $3,000 and up, mules can still find work. Chapman and LeRoy Mosely set one to dusting cotton (**above**) in Gees Bend, a former plantation whose land, under a Great Depression program, was deeded to descendants of former slaves. Sharing a dream of better things, Mrs. Lu Square and her daughter scan a home-improvement magazine (**right**).

People in Gees Bend are kin to poverty. Many must go elsewhere for jobs during their productive years. Still, strong feelings for family, community, and the land persist, and the stirrings of change begin. People are trickling back from the cities; cooperative efforts revive. A rural renaissance has not arrived, but that possibility now floats lightly on the humid air.

Hail to the weevil—and farewell! In 1919 the town of Enterprise raised a statue to the insect for destroying the cotton crop. That fortunate disaster forced farmers to plant other crops. Enter the peanut, given new status by George Washington Carver of Tuskegee Institute. Result: Enterprise calls itself "Peanut Capital of the World."

and you'll find out how good that is." I did; it is phenomenal.

Now she lives alone in her tidy cottage on a tiny income. How does she manage? "Well, I eat mostly vegetables, and the greens and turnips I grow myself. Sometimes I take a little piece of chicken. But no snuff or tobacco or strong drink. Food stamps? I can't afford them. I got to live cheaper than that."

When I left this strong, dignified woman, I asked, "Miss China Grove, how are you really doing?"

She chuckled softly. "I'm doin' fine. I just stay here in my house quiltin'. And I still don't need no eyeglasses to thread that little bitty needle, so you know I'm doin' fine."

WILCOX COUNTY long suffered from racial stress—the superintendent of schools was hailed before federal courts no less than 17 times for defying court-ordered integration. Although Wilcox County is not yet the prototype of black-white harmony, progress has been made.

In Alabama, as in much of the South, a county's chief executive is the probate judge. One clear, hot morning I entered the red-brick courthouse in Camden (page 546) and called upon Judge Roland Cooper. Husky and tanned, Judge Cooper said: "Yes, we've had very bad times in the past. And we still have people of both races who won't cooperate in anything. But remember that blacks and whites have lived together in the South for a long time. We know each other; at least we don't seem to suffer from the indifference and brutality of the cities. This courthouse is operated for all the people, and it will continue to be as long as I'm here."

That afternoon I visited the county's leading black civil-rights activist. Tall, gentle Reverend Thomas Threadgill told me: "Everything isn't rosy here, but now at last black citizens are treated civilly by the county government. As to Judge Cooper, sure we have differences, but I can't get mad at a man who, even if he disagrees, will keep on listening.

"Look, I'm optimistic. Nothing's going to happen tomorrow, but it's going to happen. We'll never go the way of the subtle segregation you have in the North. Here it's all honest, even the bigotry; it's all out front. In a couple of years blacks in the South will have something genuine. And I can tell you this"—he held his fingers barely apart—"if we gain only that much, it will be real and it will last."

Birmingham, Birmingham,
The greatest city in Alabam'.

—SONG BY RANDY NEWMAN

WITH 300,000 inhabitants and thriving industries founded on iron and steel production, Birmingham ranks as Alabama's largest, most prosperous metropolis. Seven universities and colleges cluster around the city; its museum and botanical garden have won wide renown. To my mind, though, the brightest star in Birmingham's firmament is the University Hospital, an adjunct of the University of Alabama School of Medicine.

Every Alabamian I met expressed pride in that hospital. In the bayous of distant Mobile County a man told me, "If you can afford real good medical care, you go to Germany or Switzerland. But if you want the best in the world, you go to Birmingham."

In fact, patients do flock from every part of the world to Birmingham, many of them to undergo open-heart surgery at the hands of a superlative staff headed by Dr. John W. Kirklin. In 1966 Dr. Kirklin came from the Mayo Clinic in Rochester, Minnesota, to become chairman of the Department of Surgery.

What had attracted him, I asked? "Well, Alabama is a state anxious to look ahead. It is, of course, a beautiful place to live. But here in Birmingham I saw a young institution with tremendous potential, an institution eager to excel. I had some new ideas about cardiac surgery, and here I could work toward developing them."

Among Dr. Kirklin's innovations is a postoperative system that literally plugs the patient into a computer, simultaneously monitoring 15 vital bodily functions, and administering blood and assorted fluids automatically when required.

At six o'clock one morning, with Birmingham's sky ablaze with a fiery dawn, I enter the University Hospital to witness Dr. Kirklin operate. By 6:30 the tiled operating theater is alight and active. Nurses arrange instruments and sterile cloths, the anesthesiologist makes his preparations. At 7:30 the patient is wheeled in. He is a 6-year-old Italian boy named Denis, from the town of Contarina. From birth he has suffered from a cardiac defect called the tetralogy of fallot. In effect, his heart pumps insufficient oxygen-rich blood to sustain his body; the sinister blue hue of cyanosis suffuses his skin.

He was too weak to walk, had never played, and had ceased growing more than a year before. Local newspapers in Italy had raised money to send the boy to Birmingham for the operation that could save his life.

The surgical procedure proves a marvel of technique and technology. With scalpel and saw, the surgeon opens the boy's chest to reveal the throbbing heart. Then, for four tense hours, Dr. Kirklin and his team work in the chest cavity. "This operation," he had told me, "is almost like piloting an airplane. The trickiest moments are takeoff and landing—in our case when we connect the patient to the heart-lung machine, and when we disconnect. In between, we live on the engines; any failure in the machine and the patient dies."

With all tubes in place, the boy's life passes to the great, gleaming machine. It is a terrifying moment when the heart stops beating and becomes an inert muscle. But the machine has already taken over smoothly. Dr. Kirklin mends the faulty heart carefully, swiftly.

Disconnect. Every eye on the still heart. It begins to pulsate, to throb, to pump. On the electronic monitor a ball of light bounces strongly and rhythmically. Everyone visibly relaxes. Doctors and nurses reflect a quiet exultation.

Almost miraculously, the boy's tiny body assumes a healthy, pinkish hue. For the first time in his life, his heart pumps rich and plentiful blood to his body.

WHAT, I ASKED LATER, did Dr. Kirklin regard as the ultimate cardiac operation?

"When you can repair a child's heart, as in this case, and give him perhaps 70 years of life, that's pretty ultimate."

Denis's parents—neither of whom spoke much English—visited him afterward in the intensive-care unit where he lay tiny and unconscious beneath the bank of computers registering their tireless readout.

His mother, a woman with the almond-shaped face of a Byzantine Madonna, touched her son's hand and wept quietly. The Italian couple kept a quiet vigil in the corridor later. The mother sat, bewildered in the strange country and the strange hospital, with tears overflowing.

A tall raw-boned woman with bleached hair—the kind of Alabama wife you can see riding in a pickup truck any Saturday night heading toward a honky-tonk or a church social—strode purposefully across the hall. She knelt beside the small Italian woman and put her arm around her.

"I know how you feel, honey," she said. "They operated on my baby yesterday and I like to cried my eyes out when I saw that poor little-bitty thing with the bandages and the tubes. But today she's so much better. She smiles, and for the first time in her life she got a heart that works. Now just don't you worry, sweetie. Your baby is gonna be all right. I promise you!"

Sometimes language barriers fall. The Italian woman rested her head on the big blonde's shoulder. And she stopped crying. Two weeks later Denis—cured—returned to Italy with his parents. None of them will ever forget "the greatest city in Alabam'."

Rally 'round the flag, boys,
We'll rally once again,
Shouting the Battle Cry of Freedom.

—CIVIL WAR SONG

NORTHWEST OF BIRMINGHAM I traveled through the green, hilly forests of Winston County. When Alabama seceded from the Union, the tough mountaineers of Winston County, in effect, seceded from Alabama. On July 4, 1861, they declared: "We are not going to shoot at the flag of our fathers, 'Old Glory,' the Flag of Washington, Jefferson, and Jackson." Thus was born an Alabama legend—the Free State of Winston.

On the heels of the Conscription Act of April 1862, Confederate recruiters combed the county; houses were burned; resisters were shot or jailed. The carnage was finally too much for the mountaineers. More than 2,000 men of Winston and surrounding areas volunteered for the First Alabama Cavalry Regiment, which fought for three years in Alabama, Georgia, Mississippi, and the Carolinas. From the Confederate standpoint, there was only one thing amiss: This First Alabama Cavalry served in the Union Army.

Come all you ramblin', gamblin' boys,
Wherever you may be.
Listen to my story,
And shun bad company.

—MOUNTAIN FOLK SONG

BEFORE DAWN on every Saturday of the year, rain or shine, pickup trucks rattle down from northern Alabama's hill country to gather in the field beside Harris Grocery in the town of Collinsville. The drivers park their vehicles in lines, lower the tailgates, and place their wares on display for the weekly Trade Day. I joined the throng one frosty December morning.

Good old boys in thick jackets stamped beside oil drums stuffed with burning kindling; many sipped discreetly from small jugs. I watched a man in overalls unloading an array of old farm implements. "Where did you get them?" I asked.

"Cleaned out the barn. When I get rid of this lot, I'm fixin' to clean out the attic."

As the sun climbed higher in the sky, the crowd increased and commerce became brisk. Although most of the part-time merchants preferred to swap articles, none shrank from a cash offer. Bargaining was intense, and almost always underscored by the terse wit of the mountain people.

One man had opened a huge suitcase filled with hundreds of jackknives—old, new, large, small—in a great jumble. A client strolled over and stared into the suitcase for several minutes. Finally he asked casually, "Got any jackknives to sell?"

After a suitable pause, the vendor said, "Just about to run out of them."

Collinsville struck me as America's ultimate supermarket. There you can buy Shetland ponies and antique furniture, fighting cocks and Indian arrowheads, coon dogs and calves and hogs. In the food stands you will find treats like crowder peas, sorghum syrup, and turnip greens.

Eventually I joined an old man with shrewd blue eyes and a day's growth of gray stubble. Beside his truck lay a huge assortment of disparate objects, ranging from old photographs and coins to banjos and violins. "Been comin' here for 20 years," he told me. "Tradin' is just pure fun."

A lean farmer paused to finger a violin. "Fiddles don't pleasure me none," he said. "You got any git-tars?"

"Not this week," said the old man. As he watched the farmer stride away, he shook his head: "It never fails. When I bring the banjo, they allus ax for a git-tar; when I bring the git-tar, they want a banjo."

After a moment, he nudged me. "You see that boy over there?" He nodded toward a young man in a denim jacket who was sauntering past. "That boy has seen somethin' here that he wants. He keeps circlin' by. That poor, foolish boy thinks he's gonna outshrewd me."

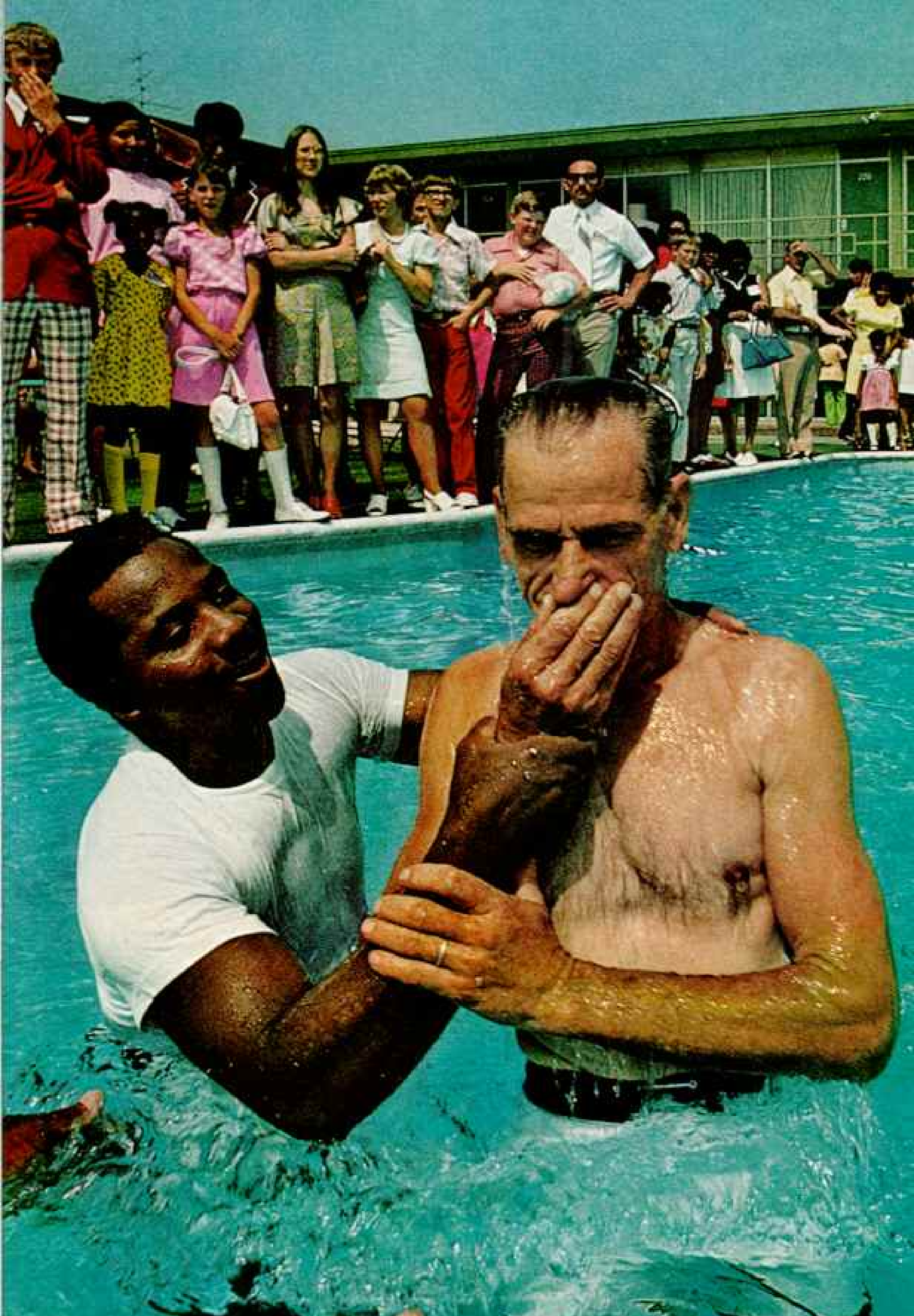
A citified woman darted toward the old

In pursuit of the uneatable, dogs and riders of the Midland Fox Hounds—with Ernest Carlisle III in the van—set off over grasslands and forests near Montgomery. At Dollarhide Camp hunting club, members (**below**) hunker down to a perennial poker game. On the serious side, the club near Eutaw was responsible for sponsoring the first game laws in the state. From the ultra-exclusive to the good old boys, hunting clubs with their sport and camaraderie of escape persist as an Alabama way of life.

Taut as a tuned string, a boy twangs his mandolin during a festival at Horse Pens 40, a cluster of natural stone corrals atop Chandler Mountain that have become a center for the folkways of country life.

After-supper talk engages Eligha Simmons and his family (**above, right**) at their home up in Paint Rock Valley near the Tennessee border. The Simmonses, like many mountain people, have an independent nature. They hunt, tend a vegetable garden, and work odd jobs that "are slowed down right now." As to the future, daughter Wanda wants to be a teacher, while Edith hopes to be a nurse.

The Appalachians tail off in northern Alabama where Cheaha Mountain (**right**), at 2,407 feet, casts the state's longest shadow.



man's display and placed her hand upon a rotating piano stool. "What's this worth?" she demanded.

"I don't know what it's worth, ma'am, but it'll cost you $12."

She turned huffily away. After a while, the youth with the denim jacket casually approached. I saw his eye dart briefly to a siren tossed with studied carelessness on the ground by the old man. At great length the boy examined a banjo. Abruptly he asked, "How much you askin' for that?"

"Thirty-five dollars," the old man responded warily.

"It's got a busted string."

"Snapped it myself this mornin'. Buy that banjo an' I'll give you $1.25 for a whole new set o' strings."

"Too high."

"Can you go to $30?"

A pause. Then the boy said, "Can't go to that." He started to walk away. Suddenly his eye seemed to fall accidentally on the siren. "That there a si-reen?" he inquired innocently.

"Yep, that's a si-reen."

"What you askin'?"

"That's a police si-reen. Costs $42 new."

"It ain't new no more."

"But nobody gotta break it in. It's been broke in by experts."

The boy picked up the siren and cradled it in his hands. "How much you askin'?"

The old man said softly, "You can hear that si-reen for a mile and a half away."

"How much you askin'?" the boy demanded tensely.

"When you speedin' down 411 and you lean on that si-reen, evvabody'll know it's you out on the road. They'll hear it clear across the Georgia line."

Crazed beyond endurance by the old man, the youth clawed at his wristwatch. "Here!" he exclaimed. "I know I ain't got enough money. But give me the si-reen and I'll swap you this watch that my daddy gave me!"

His face ashine with triumph, the old man nodded agreement.

Not long thereafter, I shared the boy's fate. After extensive haggling, I purchased a board with a display of Indian arrowheads for $15. As I walked toward my car with the prize, a man snatched at my sleeve. "How much you askin' for that?" he demanded.

"Maybe $20," I responded craftily.

"You kiddin'!" he exclaimed incredulously. "I can buy four o' them for $20!" He stomped resentfully away.

I felt a sinking certainty that he was right.

A brand new breeze is blowing
'cross the Southland,
And I see a brand new kind
of brotherhood.

—COUNTRY SONG

THE NUMBER of black officeholders in Alabama has jumped from 24 to 167 in the past seven years. I called upon one of them, 32-year-old Mayor Johnny L. Ford of Tuskegee. In the chronicle of America, Tuskegee holds an honored place; here, in 1881, Booker T. Washington founded one of the first colleges for blacks in the U. S.—Tuskegee Institute, now 3,500 students strong.

Mayor Ford's father was a nurse's aide in the Tuskegee Veteran's Hospital, his mother a domestic servant. They saved enough to educate him, and after college, he followed the example of countless other Alabamians—he migrated to the North. After living in New York City for several years, he returned to his hometown in 1969. "Sure," he told me, "up there black and white work side by side. But at night the black goes home to his ghetto and the white to his suburb. Here in the South we've been living together for 250 years, talking to each other every day. That gives you something solid to build on."

Even as I left Alabama, I felt the first pangs of nostalgia for such lost delights as fried crab claws, streak o' lean, and pit barbecue . . . the twang of country music on WBAM . . . the springtime glories of Mobile and the autumn thunder of the Crimson Tide.

For better or for worse, I had become addicted to Alabama. And to her people. When I took leave of my old possum-hunting friend, Jake Jones, he said: "Come back soon, hear. We'll treat you so many ways that one o' them's bound to be right." □

An event once impossible—public interracial baptism in a Tuscaloosa motel pool—goes unnoticed except by the Jehovah's Witnesses in attendance. While hardly a commonplace scene, it conveys a message: What the law guarantees, people learn to accept in a spirit of mutual tolerance and civility. Alabama is getting on and going on.

Miracle of the Potholes

Text by ROWE FINDLEY

Photographs by ROBERT F. SISSON

BOTH NATIONAL GEOGRAPHIC STAFF

IT CARRIES THE WONDER of a miracle, and some of its mystery, the little pool cupped in the rock of a Utah desert. Mere inches deep and a few feet across, the water that rain has brought will evaporate in a few days or weeks. Yet while it lasts, fairy shrimp (**below**) and a host of other aquatic creatures thrive in it.

But how did such life come to occupy this precarious niche, and how can it hope to survive the desiccation ahead?

"Maybe the colonies are remnants of a wetter age," says Dr. Lewis T. Nielsen of the University of Utah. "Maybe they began with eggs borne by the wind or birds. No one can say for sure."

Adds Steven V. Romney, "They survive through amazing versatility in adapting to change."

I met the two biologists on a Utah field trip while Steve was working on his doctoral dissertation; Lew was his

faculty adviser. Steve's subject area: desert potholes. And any conversation with him is a revelation.

For example, "There is a pothole gnat in West Africa," he says, "whose larva, and sometimes its pupa, can survive for unknown lengths of time after losing most of its body moisture—as much as 92 percent. Immersion brings full recovery, sometimes in a few minutes. We have a similar form here."

I was entranced by visions of "instant life" through the miracle of water and shared my enthusiasm with the Geographic's natural science photographer, Robert F. Sisson.

Soon Bob was photographing these fairy shrimp, here enlarged 15 times, and we were compiling their biographies. The two at top are males; they bear antennae that have become modified for clasping females. The three below are females; they bear egg sacs to help assure the next generation. The female turned on her side at left reveals a food groove on her belly that collects plankton as she swims. The others swim upside down to our eye but normally for them.

Gill-like plates on eleven pairs of legs capture life-sustaining oxygen from water or from the air above it and give the shrimp another name: branchiopods—"foot-breathers."

Fairy shrimp hedge their survival bets by laying two types of eggs. So-called summer eggs will hatch the first time the pothole refills. But winter eggs may lie in the pothole's sandy substrate through repeated fillings, over one season or many, hatching at different times.

Seeking more facts on desert potholes, I found that literature on the subject is virtually nonexistent. In this little water world of wonders, we probe at the edges of man's knowledge.

THE PROMISE OF LIFE exists anywhere water collects, but that promise in a desert pothole is doubtful at best. Even when the hole contains water, the amount, temperature, and chemistry may change radically in a matter of minutes.

"The stresses on life posed by the pothole are among the most extreme in the world," comments Lew Nielsen, here dipping specimens with Bob Sisson's son, Robert (**below**). They investigate a pothole in Canyonlands National Park, Utah.

In shallow pools, Lew explains, the turn from day to night can bring a 30° drop in temperatures, a variation virtually unheard of in larger bodies of water.

Sudden downpours can lower temperatures a degree a minute, at the same time radically altering the alkalinity and oxygen content.

Where natural drainage lines feed a pothole such as this one, torrential runoff can refill a basin in seconds, or scour through it with such force that its small residents—such as the 1 ¼-inch-long tadpole shrimp (**right**)—are flushed away to certain death.

Ultimately the pothole goes dry (**facing page**). Using a ladder to lug cameras, lights, and dissecting kit to the shelf-like pothole, Bob Sisson combs dry sands where Lew, just days before, had dipped up wriggling life.

Later Bob laid a thermometer on the sand, and the mercury rose off its scale at 124° F. Estimates of pothole surface readings range to 150°. In winter, temperatures in this mile-high plateau country plunge to below zero.

"You've just got to have respect for eggs that can survive all that," Bob concludes.

FROM EGG TO ADULT and back to egg, the life cycle of the pothole mosquito may take as little as six days. In a realm where the water may vanish at any time, such speed is a decided asset and one that most life forms share. But unlike other residents of the pool, which can occupy a variety of habitats, the pothole mosquito lives only in potholes—an all-or-nothing gamble on little pockets of water.

"The eggs hatch early in the pothole's life cycle, well ahead of other mosquito species," explains Steve Romney, whose research focused on the pothole mosquito. "Mating and feeding occur in the cooler, moister air of night or dawn, and the egg-laying female seeks out sheltered cracks or niches at the waterline, where the eggs escape the worst of the heat and cold and wind."

Here two larvae try their new world after popping the caps off eggs to emerge (**upper left**). Among their hazards: a parasitic fungus that is usually fatal. Discovered by Steve during his study, the parasite may prove to be a control agent harmless to other life.

In as little as four days the larvae become pupae, with long bowed tails and huge dark eyes topped by little breathing horns (**upper right**).

In as little as 36 hours, the pupa turns dark brown, the long tail straightens just under the surface of the pool, and the adult begins to escape from a split along the top of the pupal case.

For a vulnerable two or three minutes, the adult labors to extract its long wings and legs, still soft and easily mangled. Now it has no defense against hungry toads, spiders, or dragonflies.

Finally free, a female stands briefly on the surface tension of the pool (**right**). Soon she will hasten the hardening of her wings by gliding about the pool like an ice skater. Then she will fly away to fulfill her mission: Find a male with which to mate and a warm-blooded creature to bite, essentials for the fertilization and nourishment of her eggs.

ABOUT THREE LIFE-SIZE

6 TIMES LIFE-SIZE

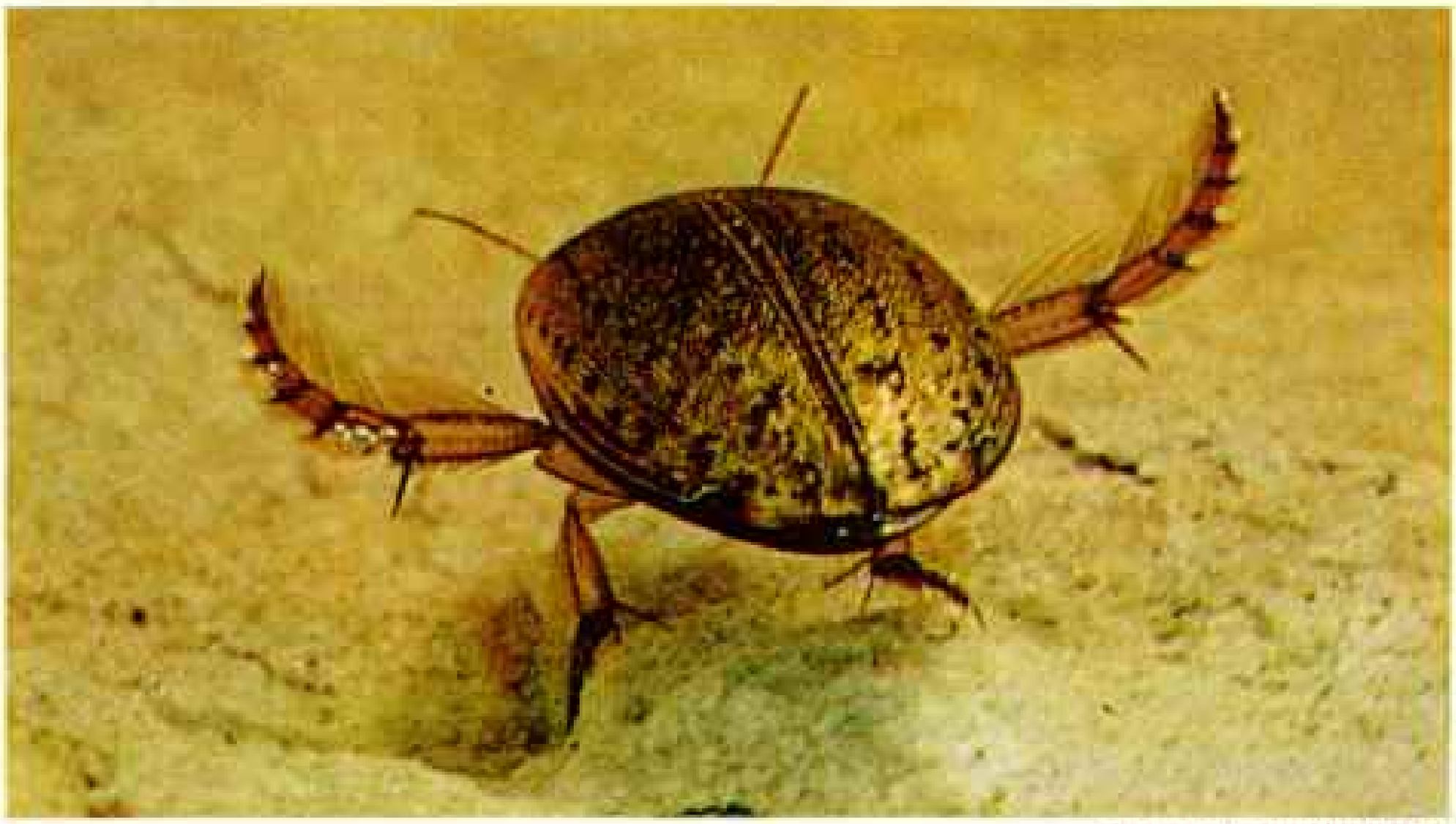
11 TIMES LIFE-SIZE

"WATER TIGER!" The larval form of a pothole beetle earns its name. Multiple eyes, swift legs, and a rapacious appetite make it one of the fiercest predators in a pool (**right**). Its mouth parts include hypodermic-like jabbers for injecting substances that turn the insides of victims into suckable juices.

Cunning hunter, the adult beetle first bites off the tail of a hapless tadpole, which otherwise might have a chance of escape. Then, in a leisurely ten minutes (**below left**), the diner reduces its dinner to a sleeve of sagging skin.

An air breather, the adult beetle totes a bubble under its wing case, now and then taking in new air and jettisoning the old (**below right**). It also has wings for flying, permitting escape from a dying pothole, and specially adapted rear legs for swimming (**opposite**).

41 TIMES LIFE HERE



3 LOWER PICTURES A TIMES LIFE SCENE

THE MATING of the clam shrimp is a joyous ballet to our eyes, yet it is actually a dance of death.

Their little rock-pool home has shrunk steadily during days of unrelenting sunshine. Since early this September morning, Bob Sisson, Lew Nielsen, and I have kept watch beside the diminishing water. Before the sun sets, we calculate, the last of it will evaporate. For the little pool's thousands, this is doomsday.

By 10:30 a.m., as the heat mounts, the pothole's populace shows agitation. Snails burrow into sand, where they have hope of surviving while the dampness lasts. Tadpole shrimp wallow downward into the bottom mud, as if in retreat from the pool's lowering surface. In the shallow fringes fairy shrimp by the hundreds flail and writhe, their wet bodies reflecting dancing bits of sunlight. Marooned by retreating water, they can only die, together with myriads of speck-size seed shrimp, copepods, and other tiny crustaceans.

In the narrowing, warming pool the clam shrimp—up to now given to only occasional mating—become possessed by the drive to reproduce. A score or so of pairs, most of the clam shrimp populace, swim locked in a T embrace, the male grasping the belly of the female, whose translucent form bares orange masses of eggs (**right**).

They weave a giddy course of dives and soaring climbs, turns and glides, impeded now and then by lone males trying to cut in. At last they part, the male to burrow into the sand, the female following after a moment's rest.

Next day we return to find only damp sand in the pothole. So fragile are all its tiny dead creatures that we are hard put to discover a carcass intact. Sun and wind have already dried and crumbled the tiny victims.

But in the sand the snails still live, and in thousands of eggs and in the gnats' pupae and larvae, the seeds of a new generation await only the coming of rain. Then the hole will fill once more, the water will warm, and the sparkling pool will teem again with the vigor of the life force as on the first day of the world. □

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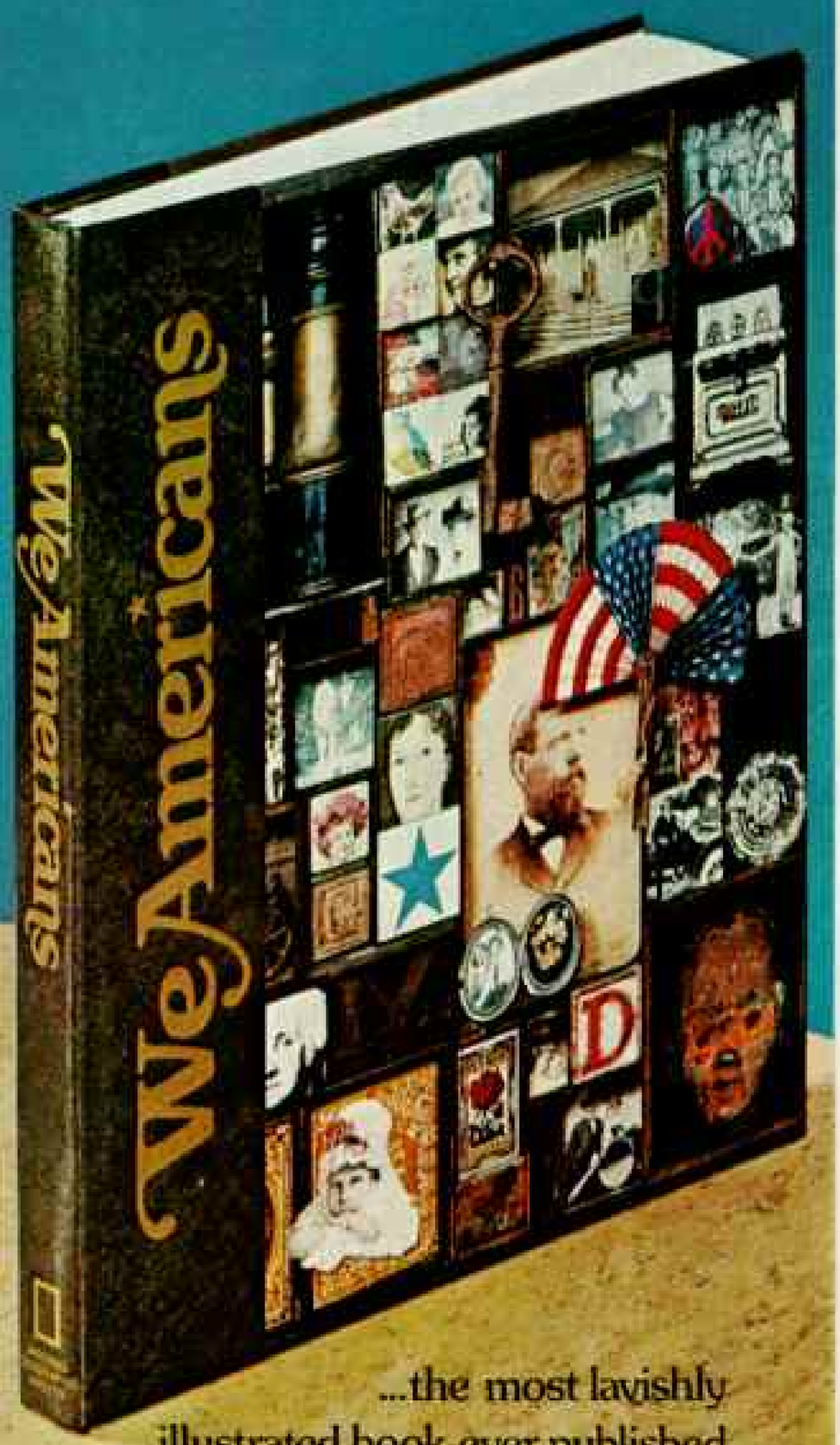

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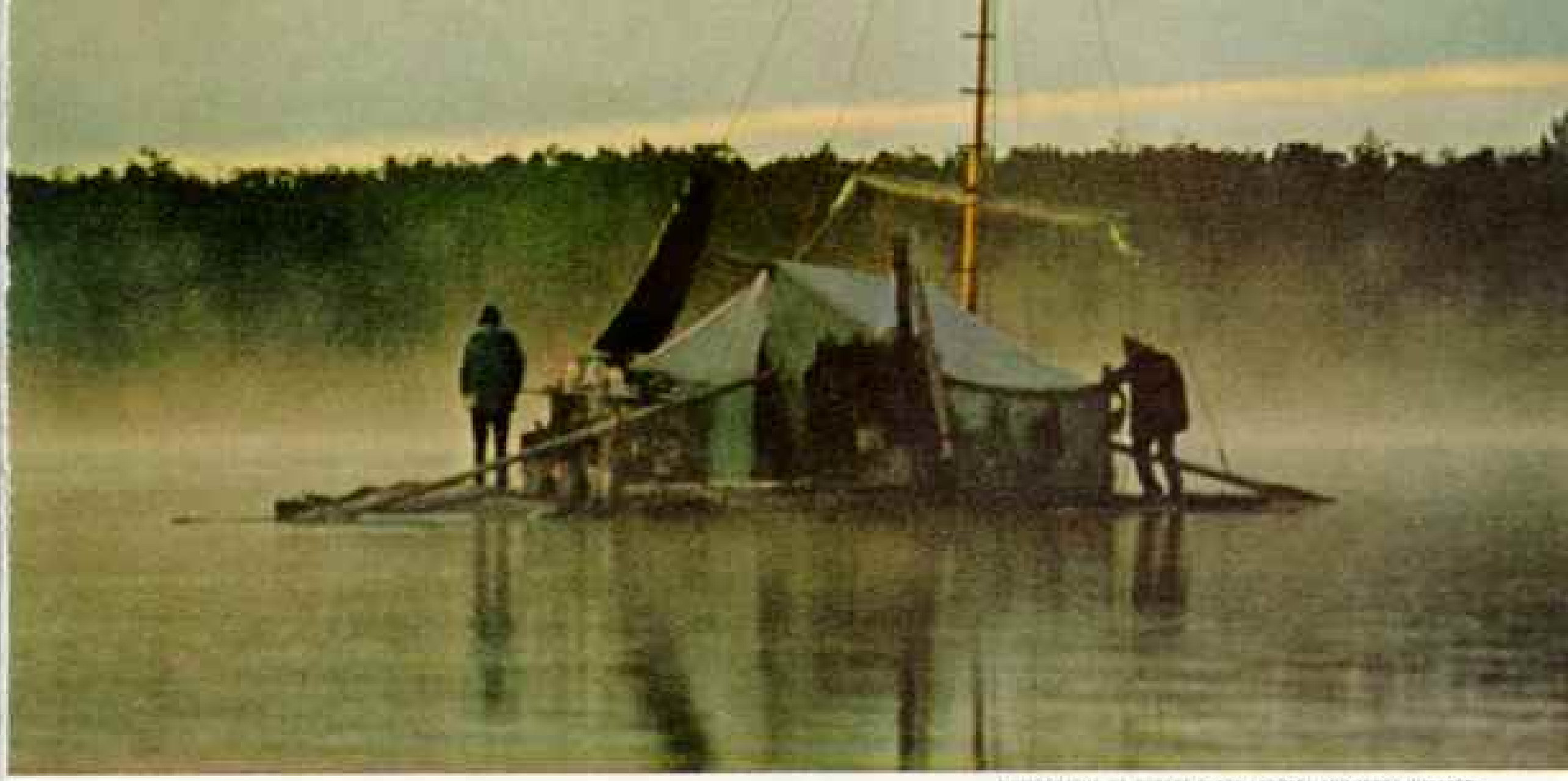

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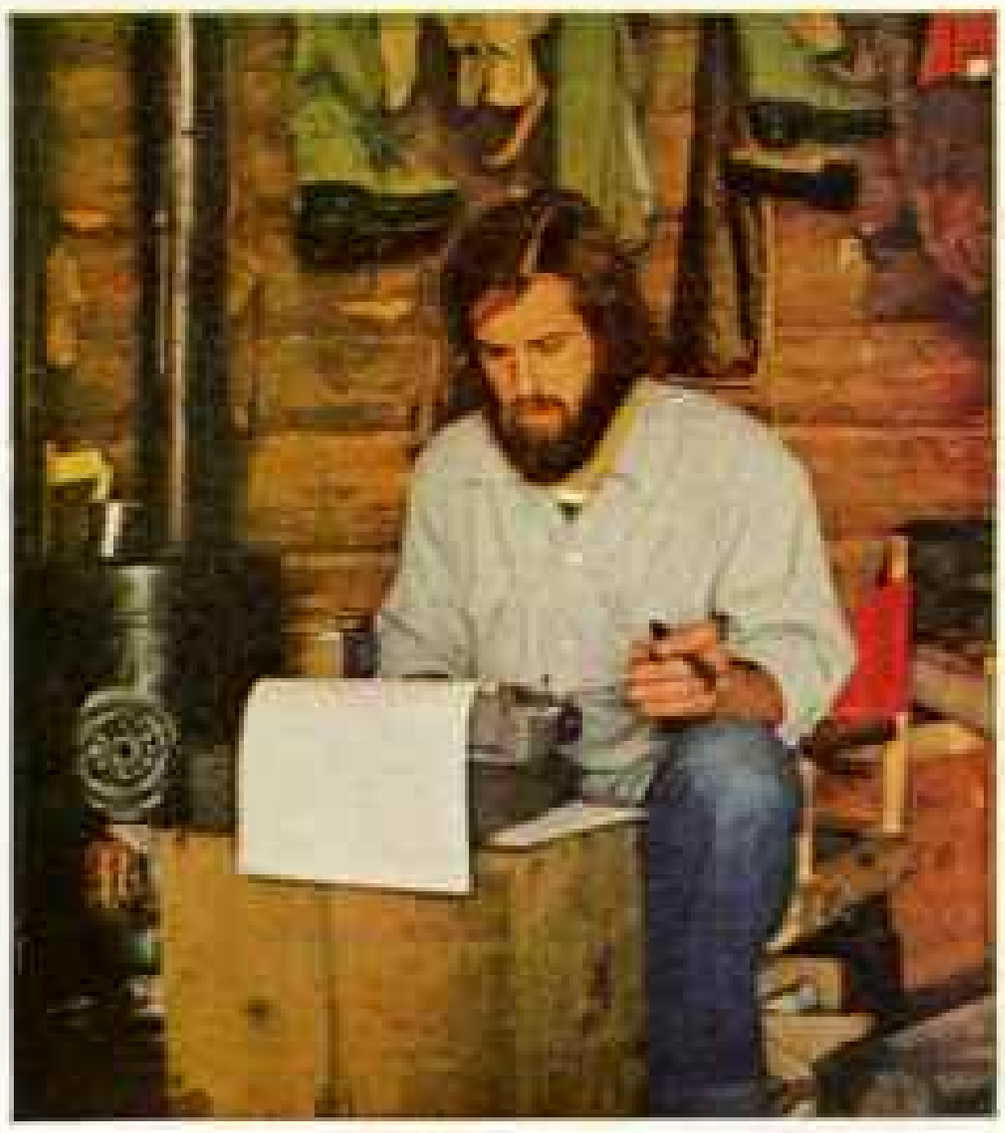

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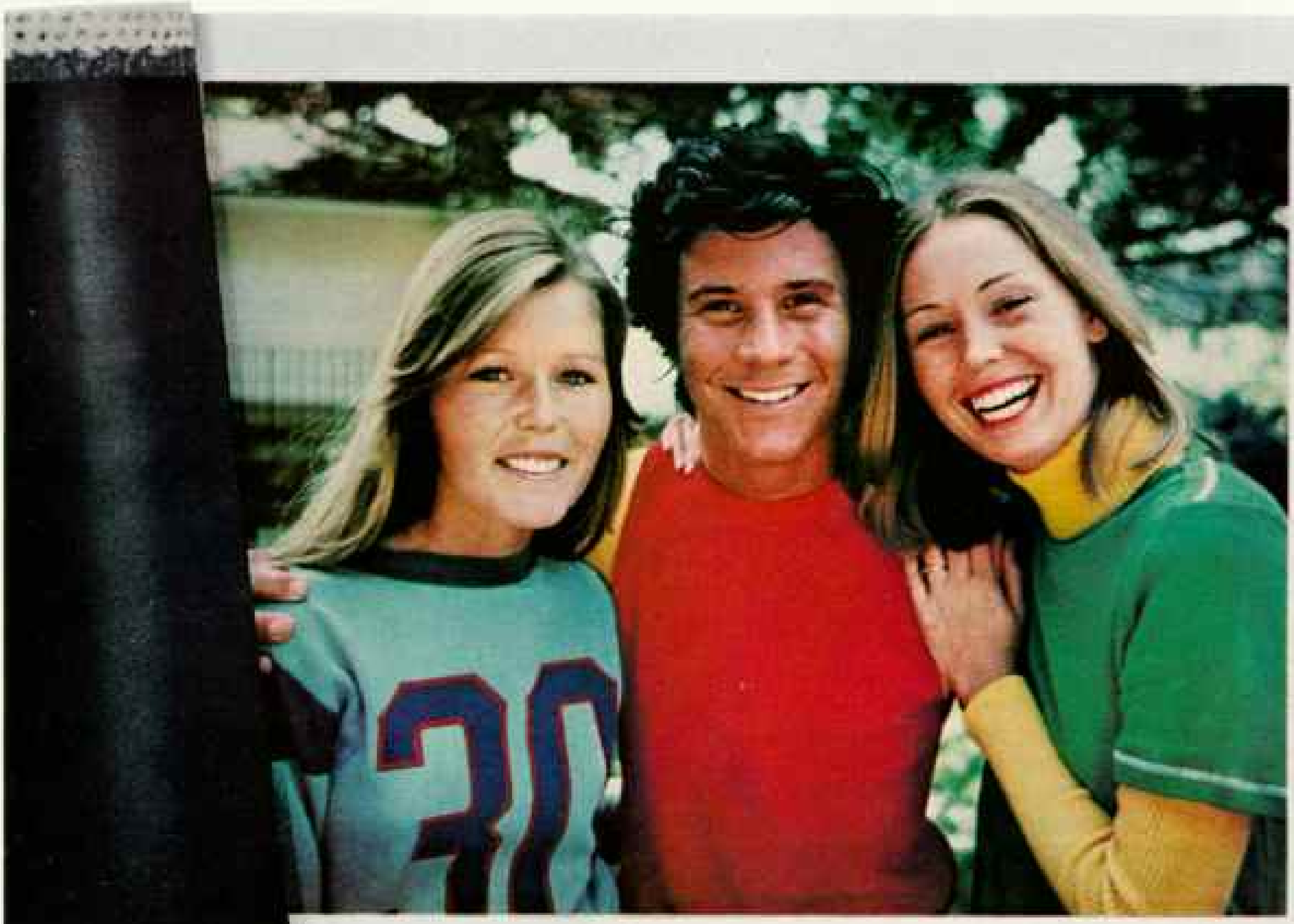
(PLEASE PRINT: MR., MRS., MISS)

STREET

CITY, STATE, ZIP CODE

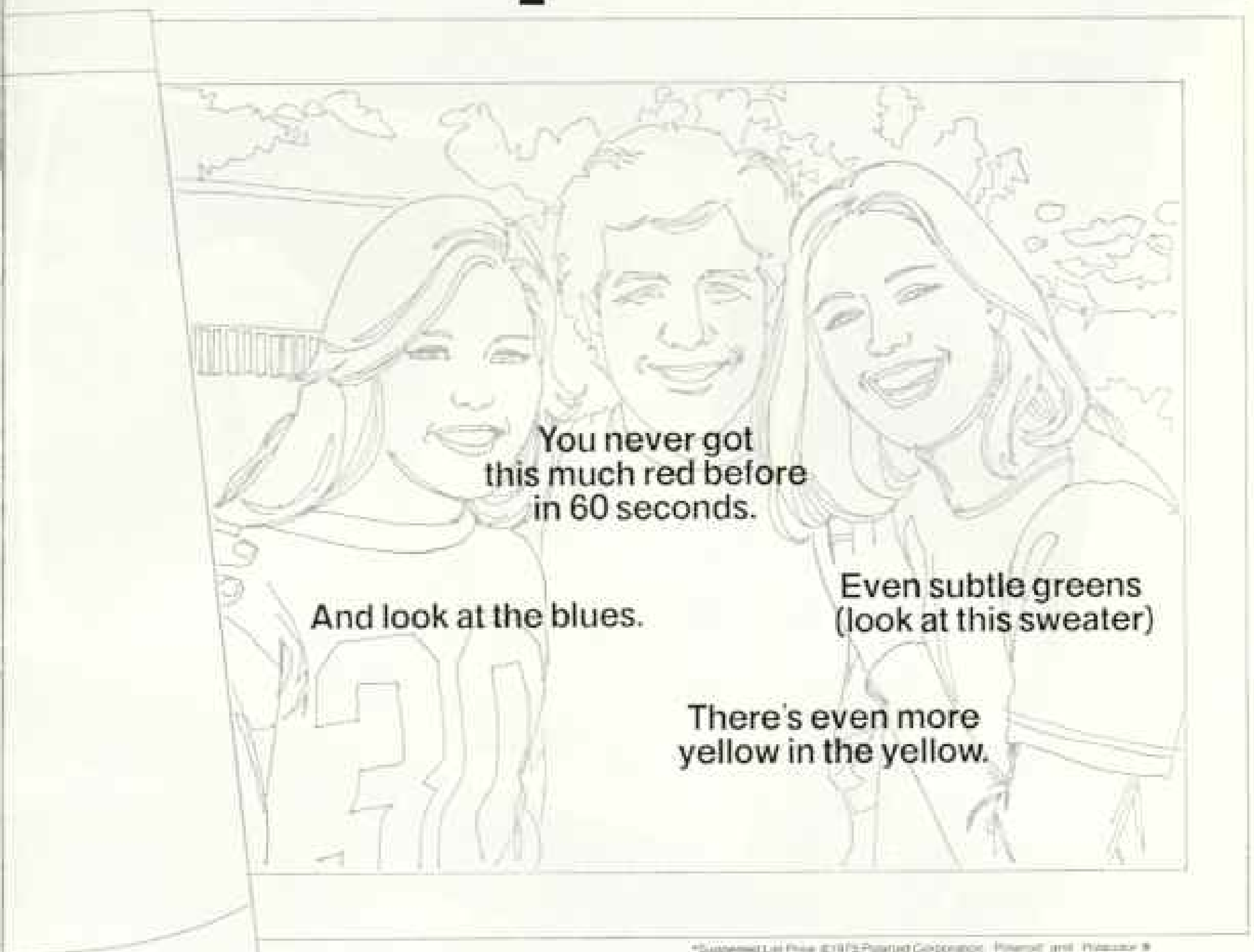
61075

Our 60-second



Polaroid's $25* Super Shooter for the new Super Colors.

masterpiece.



*Suggested List Price ©1975 Polaroid Corporation. Polaroid and Polacolor ®

Our remarkable Super Shooter Land camera uses 6 different kinds of instant picture film—and the most dramatic is our new Type 108 Polacolor 2.

Special metallized dyes (the same dyes we developed for the SX-70) now give your 60-second pictures amazing new brilliance. You get more red, more blue, more yellow and more green than ever before.

And the Super Shooter comes with an electric eye and electronic shutter for automatic exposures, sharp 3-element focusing lens and a built-in flashcube attachment.

And $25 gets it all.

OUR FUN

From sight to sound

Our fun side is television and stereo. At GTE Sylvania, we take fun very seriously.

We produce nearly 3 million color and black-and-white picture tubes a year. We've been making them since television was a pup.

We pioneered the first bright phosphors for the face of the tube. Our reds, greens and blues brought color TV out of the Dark Ages.

We make parts that go with picture tubes: deflection yokes, guns, aperture masks. Masks have as many as half-a-million tiny holes to guide the electrons that fire up the phosphors. (What precision!)

Sylvania engineers developed integrated circuits that help keep the picture looking good automatically without any help from you.

With this kind of design thinking and control over components, it's no surprise that the first true self-adjusting color set ever is the Sylvania GT-MATIC.™

Our designers have been busy in audio, too. (One of our stereo sets recently got rave reviews.) Sylvania high fidelity equipment ranges from stereo consoles to component systems.

Watch us. Listen to us.

Just for fun.

SYLVANIA COLOR TV & AUDIO

SIDE GTE

The Bicentennial Council of the Thirteen Original States
presents its official tribute to

The Fighting Men of the American Revolution

Available by advance subscription only.
Limit: One set per subscriber.
Subscription rolls close: October 31, 1975.

THE PATRIOTS who won America's freedom were ordinary people—citizens of our thirteen original states—united by their belief in the cause of liberty, justice and American independence. They were not professional soldiers. Yet side-by-side they marched to victory over a British army that was considered the finest of its day.

Now, as we begin the celebration of our nation's Bicentennial, it is fitting for us to remember—and honor—those men who made our country free.

To do so, in a lasting and significant fashion, The Bicentennial Council of the Thirteen Original States—representing the official Bicentennial Commissions of all thirteen of our original states and dedicated to making the nation's forthcoming Bicentennial a time for revitalizing the spirit of the American Revolution—will issue a collection of thirteen finely sculptured figures honoring *The Fighting Men of the American Revolution*.

SCULPTURES SHOWN ACTUAL SIZE.

Works of art in fine pewter

Each of these figures will be a work of art that is historically accurate down to the smallest detail. The patriots' uniforms, and their equipment, will be exactly as they were in Revolutionary days—sculptured with precision and authenticity by the distinguished American artists William Imrie and Clyde Risley.

Each sculpture will be produced in fine pewter—the traditional metal of Revolutionary America. This high-quality pewter, prized since Revolutionary times for its softly gleaming luster and rich tone, enhances every detail of the sculptor's art.

Authentic in every detail

As recognized authorities on the uniforms of the American Revolution, and as Fellows of the Company of Military Historians, the sculptors have received the full cooperation of curators and scholars from museums and historical societies throughout the thirteen original states. As a result, every detail is accurately portrayed, and the entire collection is authentic in every respect.

. . . A Massachusetts militiaman, from Captain Minot's Alarm Company of Concord, is depicted after the battle at Concord Bridge. His empty cartridge box is homemade. His weapon is an old fowling piece. And his coat is in the style of the French-and-Indian War . . .

. . . A frontiersman of Thompson's Pennsylvania Rifle Battalion—a deadly marksman—is shown sprinting to a new vantage point. His rifle is on the half-cock, and one ball in his shot board has already been fired . . .

. . . An officer from the 3rd New York Regiment pauses to light his pipe during a lull in the action. His hat bears a military cockade. And the fringed epaulet on his left shoulder identifies him as a First Lieutenant . . .

. . . A private of the 1st New Jersey Regiment, battered by the icy blasts of a winter storm, attempts to warm his hands over a small fire. His legs are wrapped in a torn blanket. And the lapels of his coat have been buttoned across his chest for protection . . .

Each is unique—in action as well as in uniform—just as the citizen-soldiers of our thirteen original states were unique. Yet the complete collection has an artistic unity that is symbolic of the shared ideals that brought these men together in the fight for liberty.

A strictly limited edition

The Fighting Men of the American Revolution will be issued in a single, strictly limited edition with an absolute limit of one set per subscriber. Each figure will stand on its own sculptured pewter base, and each base will carry the title of the work, the sculptors' signatures and the distinctive hallmark of The Franklin Mint, which has been appointed by the Bicentennial Council to produce the complete collection.

But the collection is available *only* by advance subscription. The total number of sets produced will be exactly equal to the number of valid subscriptions postmarked by the closing date of October 31, 1975.

No advance payment is required

The sculptures will be issued at the rate of one every other month, beginning in December 1975. The original issue price is $60 per sculpture. *No advance payment is required.* Subscribers will be billed for each sculpture, after shipment, in two equal monthly installments of $30 each. Thus, each subscriber will be able to acquire this extraordinary collection on a convenient monthly basis.

But please remember that this is the only time *The Fighting Men of the American Revolution* will ever be offered. To acquire this important collection, be sure that the Subscription Application below is mailed by October 31, 1975. Applications postmarked after that date will, regretfully, be declined and returned.

ADVANCE SUBSCRIPTION APPLICATION

The Fighting Men of the American Revolution

Must be postmarked by October 31, 1975.
Limit: One set per subscriber.

The Franklin Mint
Franklin Center, Pennsylvania 19091

☐ Please accept my subscription for the Bicentennial Council's official tribute to *The Fighting Men of the American Revolution*. The collection will consist of 13 finely sculptured pewter figures to be sent to me at the rate of one every other month, beginning in December 1975, at $60 each. I need send no money now. I will be billed for each sculpture after shipment in two monthly installments of $30 each, plus my state sales tax.

Price for Canadian residents $65. per sculpture plus provincial sales tax.

Mr.
Mrs.
Miss _____
PLEASE PRINT CLEARLY

Address _____

City, State, Zip _____

Signature _____

All orders are subject to acceptance by The Franklin Mint.

A Bicentennial collection of thirteen finely detailed pewter sculptures honoring the citizen-soldiers of our thirteen original states.

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The American Quarter Horse, a friend of mankind for decades. Irreplacable on ranches and roundups, the fastest in a quarter mile, and the one those "horse crazy" kids yearn to own and ride. Write for FREE, fascinating details on the American Quarter Horse . . . the choice of thousands.

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THE NATIONAL GEOGRAPHIC SOCIETY'S

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Visit your Society's museum of science and exploration in the Nation's Capital. Remarkable exhibits talk, move, glow—and take you on adventures into the past, to the ends of the earth, and to the edge of space. You'll enjoy the visit, and so will we. Open seven days a week.

Remember when you were in such a hurry to grow older?

At the time, thirteen seemed like a silly age. It was so. . .*young*.

And since growing up was taking so long, you decided to hurry nature along, and become Very Mature instantly.

As it turned out, the years didn't need any hurrying at all. The girl above trying to look like a Woman is *now* a Woman—and probably wondering, like yourself, how she got there so fast.

You can't postpone the future.

If all that time can fly by so fast, imagine how quickly the *next* several years will pass.

That's why we'd like to urge you to get ready for them.

And that's where Metropolitan Life can help.

We don't just insure your life. We help insure your future.

Let's say you're planning to send your children to college someday. If you take out your own Metropolitan policy, that can help pay for it.

Or maybe you've chosen a career instead, and you have an eye on a business of your own someday. Your Metropolitan insurance can help make that possible, too.

And, of course, men aren't the only people who retire. Women do, too. Your Metropolitan insurance can help make a secure retirement possible, too.

In fact, two out of every three dollars we pay out in benefits go to *living* policyholders to help pay for their future.

She who hesitates pays higher premiums.

At Metropolitan Life, we insure over forty million people. We've been helping people prepare for the future for 107 years. But while much has changed over that time, one fact about personal life insurance is always the same:

The sooner you begin, the less it costs every year.

See your Metropolitan representative. Soon. Because the future gets closer every minute.

Metropolitan

Where the future is now

WE GIVE YOU HALF

NORTHWEST'S ORIENT EXPRESS

Northwest gives you the Orient as no other airline can.

You deserve the very most in comfort, convenience and service when you fly half way around the world to the Orient. And that's what you get on Northwest's Orient Express — in ways unequalled by any other airline.

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Elegant Regal Imperial Service. Our very best service. With superb entrees, hors d'oeuvres and desserts. Hot Oshibori towels. Wide-screen movies and stereo.*

So come to the Orient on Northwest's Orient Express: The premier network connecting the U.S. with Tokyo, Osaka, Seoul, Okinawa, Taipei, Manila and Hong Kong.

For reservations, see a travel agent or call Northwest.

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Los Angeles	7:40 am 1:30 pm	4:10 pm 7:50 pm	First flight out Offers Honolulu Stopover
San Francisco	10:00 am	4:10 pm	Offers Honolulu Stopover
Seattle/Tacoma	1:40 pm	3:35 pm	Exclusive Nonstop Service
Anchorage	3:10 pm	4:30 pm	Only Direct Service
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*$2.50 charge on international flights. Schedule subject to change.

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THE WORLD

NORTHWEST TOURS TO THE ORIENT.

Discover the colorful Orient on a Northwest tour — at money-saving group air fares! We've listed a sampling of tours below — priced from $28 per day land cost, including deluxe hotels, all breakfasts, dinners, sightseeing and more. For brochures containing details, see your travel agent or check and send us the coupon.

Northwest Orient Airlines
Tour Information Center
P.O. Box 1082
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Please send me brochures on the tours I have checked.

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19 days Japan, Taipei, Bangkok, Singapore, Hong Kong, $1,676.

☐ **Orient Highlights**
21 days Japan, Taiwan, Hong Kong, Singapore, Malaysia, Philippines, $2,156.

☐ **Classic Orient**
26 days Japan, Taiwan, Philippines, Bali, Singapore, Thailand, Hong Kong, $2,580.

☐ **Orient Escapade**
21 days Japan, Hong Kong, Taiwan, Thailand, Singapore, $1,429.

☐ **Air-Sea Wanderer**
22 days Japan, Hong Kong, Singapore with 9 night Indonesian Cruise, including Bali, $2,006.25.

☐ **Circle Pacific Venture**
24 days Japan, Hong Kong, Thailand, Singapore, Australia, New Zealand, Tahiti, $2,141.75.

☐ **Orient Deluxe**
16, 22, and 24-day tours from $1,115 (meals as defined in brochure) plus 35-day World Deluxe Land only, $1,023.

☐ **Around the World**
38, 40, 42, 62, 80 and 86 days. Land only, from $2,198.

All tour prices per person based on double occupancy. West Coast Off-peak Group Inclusive Tour air fares effective November 1, 1975. Prices are subject to change.

Name_____

Address_____

City_____ State_____ Zip_____

My travel agent is_____

NO-OT-1075

IF YOU THINK ONE IMAGINE THE SYSTEM

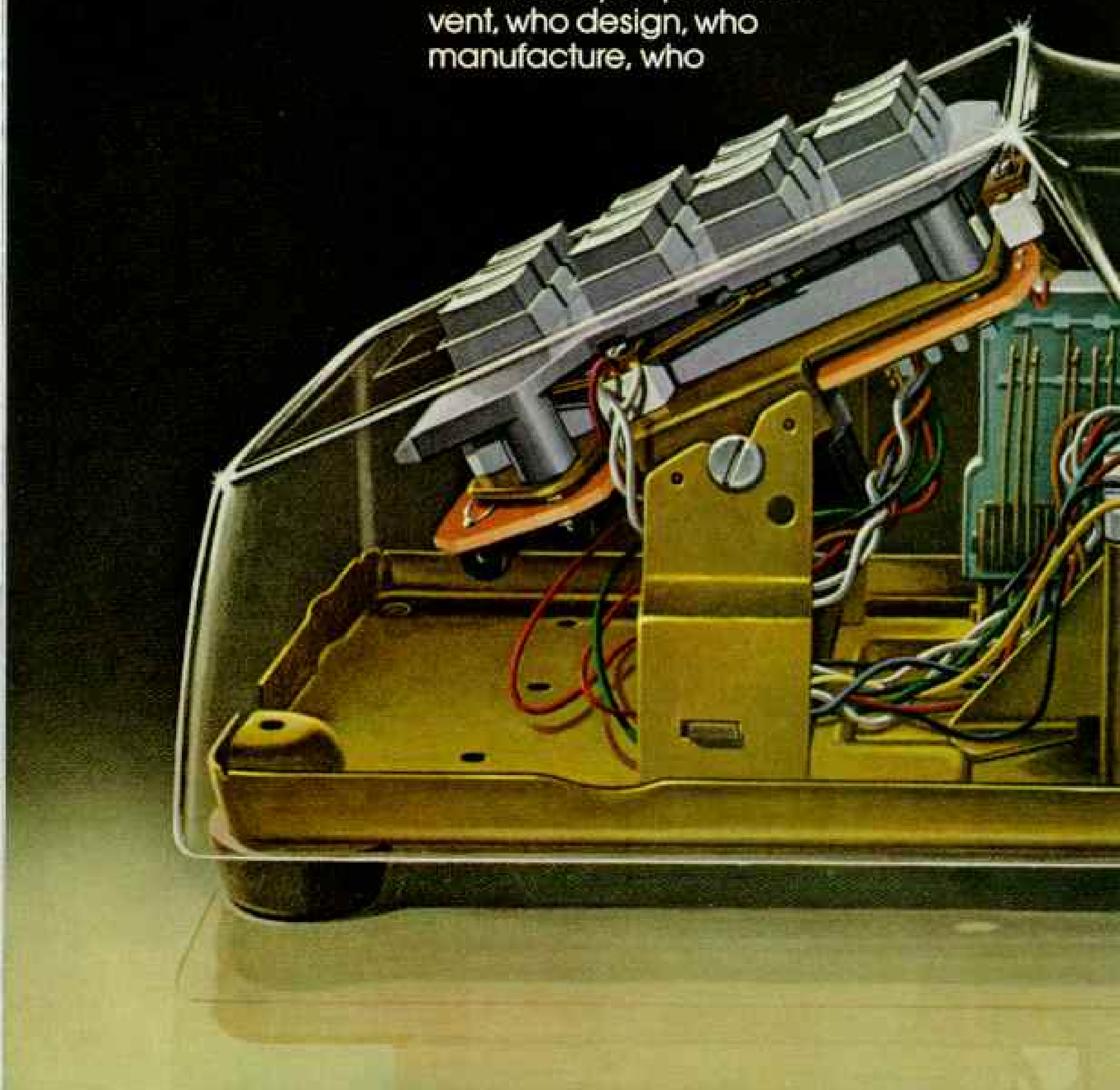
The Bell System. It's an incredible operation.

It takes a mind-bending multitude of cables and switches and gear to make 114 million telephones talk to each other.

It takes a master plan to keep this system running 24 hours a day.

It takes a totally unified system to make it all work together.

It takes people who invent, who design, who manufacture, who



PHONE IS COMPLICATED, THAT LINKS 114 MILLION.

put it together and keep it together–so all the parts fit, all the pieces connect.

The result of all this planning is, quite simply, the best phone system in the world.

One Bell System.
It works.

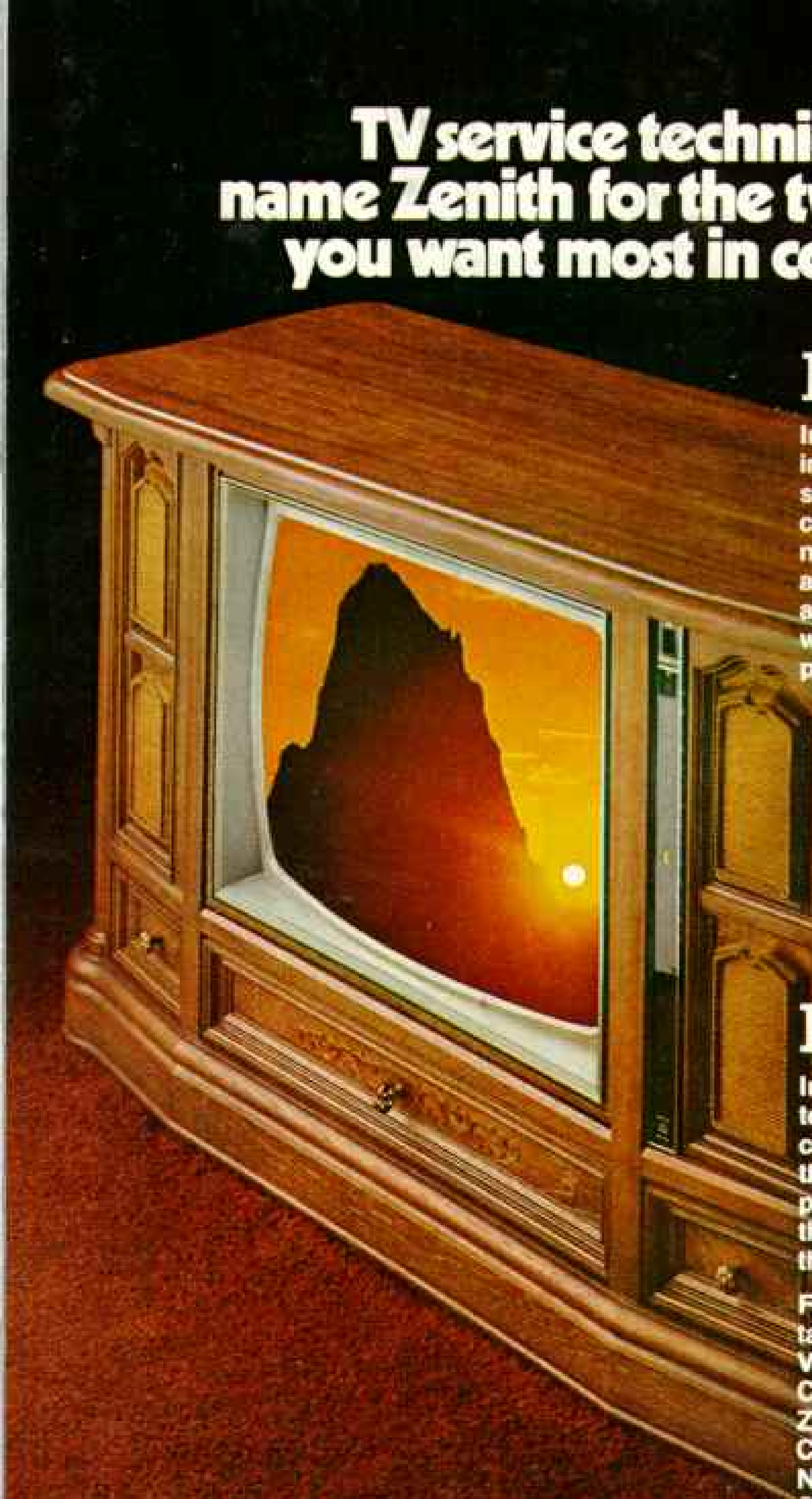
Bell System

The woman I love doesn't wish
she was twenty or pretend she is thirty because
whatever she does, she does better at forty.

A diamond is forever.

A gift of diamonds need not be expensive. Your jeweler can show you many exciting pieces starting as low as $200. De Beers Consolidated Mines, Ltd.

TV service technicians name Zenith for the two things you want most in color TV.



I. Best Picture.

In a recent nationwide survey of independent TV service technicians, Zenith was named, more than any other brand, as the color TV with the best picture.

Question: In general, of the color TV brands you are familiar with, which one would you say has the best overall picture?

Answers:

Zenith	36%
Brand A	20%
Brand B	10%
Brand C	7%
Brand D	6%
Brand E	3%
Brand F	2%
Brand G	2%
Brand H	2%
Brand I	1%
Other Brands	3%
About Equal	11%
Don't Know	4%

Note: Answers total over 100% due to multiple responses.

II. Fewest Repairs.

In the same survey, the service technicians named Zenith as the color TV needing the fewest repairs. By more than 2-to-1 over the next brand.

Question: In general, of the color TV brands you are familiar with, which one would you say requires the fewest repairs?

Answers:

Zenith	38%
Brand A	15%
Brand C	8%
Brand D	4%
Brand B	3%
Brand I	2%
Brand F	2%
Brand E	2%
Brand G	1%
Brand H	1%
Other Brands	4%
About Equal	14%
Don't Know	9%

For survey details, write to the Vice President, Consumer Affairs, Zenith Radio Corporation, 1900 N. Austin Avenue, Chicago, IL60639

The Bordeaux, Country French style, with beautiful simulated wood finish and genuine wood veneer top. Model SG2569P. Simulated TV picture.

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The quality goes in before the name goes on.

IF THE PICTURE'S WORTH THE TAKING,

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Taking a good picture doesn't just depend on who takes it— and with what. Processing can make a world of difference. And that's why it's so important to choose a quality processing service. Someone who can make the picture worth the taking. So, when you leave your Kodak color film for developing, ask your dealer for quality service by Kodak or one of the many other quality photofinishers.

A message from Eastman Kodak Company on behalf of photo dealers and finishers.

"I believe everybody has an obligation to serve their country in some way. If they choose the Army, it's guys like me who help them fulfill that obligation."

1st. Sgt. Ronald Raymond, 2d Armored Division, Fort Hood, Texas.

"No matter where you go, you've got to work. If you're on a farm, and you don't milk the cows or cut the hay, you don't get paid. Well, in the Army they pay you to grow up."

Sergeant Raymond has trained a lot of soldiers. He knows how they get to be good ones.

"A guy comes into the Army, he's got to mature or be matured. Most people eighteen or nineteen are still searching. They're not sure what they want to do with their lives–except be on their own.

The Army's where you cut yourself off from a lot of the things you were before. You get responsibilities. You get an education. And the chance to put it all on the line. That chance is important."

If you enlist in the Army, you'll be getting a good job for good pay, the opportunity to travel and to further your education. You'll work for people who want you to do something meaningful for your country–and yourself.

"The things you get here, they just don't leave you when you leave the Army."

Join the people who've joined the Army.

For more information about educational opportunities in today's Army, write to Army Opportunities, P.O. Box 5510, Dept. 6AR, Philadelphia, PA 19143. Or call 800-523-5000 toll free. In Pa., call 800-362-5696.

SAUDI ARABIA

Yesterday

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A NABATEAN TOMB

ZAHRAN

TAIF

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DHAHRAN
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AIRPORT

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GYMNASTICS IN
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A 150 BILLION DOLLAR FIVE YEAR PLAN

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INDUSTRY	$ 12, 364, 637, 680
DESALINATION	$ 9, 873, 910, 144
HEALTH	$ 5, 212, 463, 768
SOCIAL SECURITY	$ 4, 126, 086, 951
REMAINING SECTORS	$ 97, 137, 104, 356

The 1975 Danbury Mint Christmas Bell

Actual height — 3½"

- Limited edition available at original issue prices only until December 25, 1975.
- Based on a beautiful angel by the genius Michelangelo.
- Each fine silver covered bell is hallmarked and registered.
- Guaranteed Christmas delivery for all orders mailed by November 25, 1975. Attractive gift package.
- A prized limited edition and a uniquely beautiful Christmas gift. Not available in stores.
- Priced at only $29.50

The 1975 Danbury Mint Christmas Bell is based on an enduring work of art. The angel that sits majestically atop the bell was inspired by Michelangelo's famous angel sculpture at the Shrine of St. Dominic in Bologna, Italy. It is a fitting tribute to the world's greatest sculptor in the 500th Anniversary year of his birth.

This beautiful bell will be issued in strictly limited edition and is available at original issue prices only for orders postmarked before December 25, 1975.

As a gift, for yourself or someone else who is special, it is a unique collectible that could well be the beginning of a most interesting and rewarding tradition.

The Danbury Mint
10 Glendinning Place
Westport, Conn. 06880

the Danbury Mint

Must be postmarked before December 25, 1975

Please enter my order for the 1975 Danbury Mint Christmas Bell. I understand that this is a strictly limited edition available at original issue prices only for orders postmarked by December 25, 1975. I have enclosed my remittance as follows:

_____ Bell(s) @ $29.50 each $_____

Shipping and handling @ $1.25 per bell $_____

Total amount enclosed $_____

If any bell is to be shipped to a different address, please provide instructions on a separate sheet of paper (including message for a gift card which we will provide if requested).

Name _____

Address _____

City _____ State _____ Zip _____

Make check or money order payable to the Danbury Mint.
Connecticut residents please add $2.15 per bell for sales tax.

D

The 1975 Christmas Bell will be produced for the Danbury Mint by Reed and Barton Silversmiths, of Taunton, Massachusetts. The Danbury Mint, a division of MBI, Inc., is not affiliated with the U.S. Mint or any other U.S. Government Agency.

Take away the fancy Le Sueur label and what do you have?

Fancy Le Sueur Peas.

These are small, tender peas with a rare, delicate flavor that rivals the French petits pois. The silver foil label shows they are special. But there is more to Le Sueur peas than meets the eye.

Le Sueur Vegetables. Every bit as special as they look.

You don't have to live near the water to live near the water.

Flickering reflections sprinkle ever-changing patterns on the surface. Underwater formations paint areas of contrasting colors and hues, creating wonders never seen from any other vantage point.

Looking down from your Beechcraft Baron gives you an entirely new perspective on the world you saw only at ground level before. Or from an airliner six miles high.

Whatever adventure beckons: sailing, snorkling, speedboat racing or big game fishing, your own Beechcraft Baron can be the difference between daydreaming and doing. And it makes getting there at least half the fun.

A weekend becomes a mini-vacation when an hour of leisurely flight can replace a long half-day on the road. (And thousands of people, just like you, learn to fly each year, in a lot less time than they had imagined.) Here's something else they may not have imagined. Time isn't the only saving when you travel in a Beechcraft Baron. On many trips it will actually use less fuel than a standard-size automobile.

The Beechcraft Baron is a limited-production aircraft, a careful blend of hand-craftsmanship and the most advanced manufacturing processes. The cabin can be styled to reflect your individual taste, surrounding you with elegance and comfort.

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Understanding your bent for the unusual, the out-of-the ordinary, we put together a guide to unusual, out-of-the ordinary places and events in the U.S.A. It's one of a kind, available only from Beech Aircraft. We call it the Beechcraft Adventure Kit, and we would like to send you one free of charge.

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Please include name, address, occupation and title. Also, please let us know if you're already a pilot.

The Beechcraft Baron 58