"CLOSE-UP: U.S.A." — FLORIDA, PUERTO RICO, AND THE U.S. VIRGIN ISLANDS

VOL. 144, NO. 5 NOVEMBER 1973

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

NATIONAL GEOGRAPHIC

November 1973

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Florida's Booming–and Beleaguered–Heartland

By JOSEPH JUDGE

ASSISTANT EDITOR

Photographs by JONATHAN BLAIR

IT WAS SNOWING. I could hardly believe it, but there it was—first, the excited voice of the woman calling in to the Gainesville radio station ("I used to work in Ohio, and I know a snowflake when I see one!"), and then the thing itself, a dazzling spark of cold adrift against the dark pines.

I was driving a back road in the Florida countryside, past moss-shaded hamlets of weathered houses with tin roofs sloping against the chill rain. Fort McCoy, Citra, Island Grove, Evinston....

Evinston? The highway marker had clearly designated the place as Evanston, yet before me stood an ancient post office and general store, its pinewood aged the color of mahogany, its sign proclaiming "Evinston P.O."

In the pleasant-smelling gloom inside, Mr. Fred Wood was standing by an iron stove, warming his hands. He tilted back the visor of his leather cap and addressed himself carefully to the question.

"There were two brothers," he said, "who came out from England. My forebears. Their name was Evans, with an 'a.' During the war they took opposite sides."

"The Civil War?" I assumed out loud.

"Lord, no, man, the Revolution. The colonist got so mad at the loyalist that he changed his name to Evins, with an 'i.' No highway department knows much about history, or cares."

A heavy rain began pounding on the roof as a young woman with a small girl came in.

"Isn't this awful, Mr. Fred? Did you hear about the snowflakes?"

"I believe I saw it sleet once," said Mr. Fred. He examined three red sumac leaves lying on the counter: "Our autumn," he said.

"You draw a line across the center of this state, from New Smyrna to Homosassa, and everything north of it is southern, and everything south of it is northern. The last of what's

(Continued on page 592)

GAUZE OF FOG, *gilded by early sun, swathes lakes and orange groves between downtown Orlando and Kissimmee. Such pastoral settings fast disappear as a relentless tide of men and money surges through central Florida.*

Mouse that launched a million smiles, Mickey snares an admiring look from a youngster at Walt Disney World. Cinderella Castle (**right**) towers over a jam of visitors on Main Street, U.S.A. After a day of dancing bears, talking Presidents, scowling ghouls, and pistol-packing frontiersmen, strollers often whistle while they walk, for pavements of resilient asphalt restore bounce to tired legs.

In 1964 Disney Productions bought a chunk of central Florida woodland about the size of San Francisco and began transforming it into one of the world's most magnetic tourist attractions. Opened in October 1971, Disney World drew some 12,000,000 visitors in 1972, more people than live in the State of Florida and twice as many as the number of foreigners who toured the United States that year.

Blurred as a bullet, silent as an arrow, the rubber-tired Disney World monorail train comes to a halt inside the 100-foot-high concourse of the Contemporary Resort hotel (**left**). The train runs straight through the A-shaped hostelry (**below**) on a 2½-mile circuit that links it with the Magic Kingdom, the Polynesian Village hotel, and the park's entrance.

In Utilidor, an eight-acre service and supply vault beneath the Magic Kingdom, Snow White and the Wicked Witch are accompanied by Br'er Bear and two of the Three Little Pigs (**right**). Overhead pipes funnel utilities, including a waste-removal system that vacuums trash with a 60-mile-an-hour whoosh.

Utilidor houses a huge wardrobe center, where seamstresses maintain more than 100,000 costumes. A computer keeps the bears dancing in time, coordinates the scowls of the ghouls, and even sniffs the air in the Hall of Presidents to warn against fire.

really Florida is right here in the middle, and we lose a little bit more of it every day. You go down to Orlando and look around, and see if you don't come running back here."

In Search of the Real Florida

I did go down to Orlando's spreading neon-and-plastic landscape, and over to "the Cape," and into the embattled Big Scrub, and up the primeval St. Johns, and down into the St. Cloud cowboy country. Mr. Fred was proved a prophet. My search skirted but avoided the two urban colossuses of the coasts, Tampa and Daytona Beach, that hold central Florida like huge parentheses. Between them I found both "what's really Florida" and the most explosive growth in the United States, a tide of development that is (choose a verb: improving, despoiling) central Florida.*

A planner in Orlando told me: "We are much better off than we were a year ago. We are getting a handle on this—the traffic, the refuse, and the rest of it."

The next day an ecologist said: "The population pressures are so great, and the Florida environment is so fragile, there is not one of us familiar with the facts who is confident that it can be saved."

At the eye of the hurricane stands the least probable of all symbols, the serene Cinderella Castle that towers over 43-square-mile Walt Disney World (pages 588-91). Last year it beckoned more than 12 million people to a real Somewhere Else, far from the hassle of modern life, at an average daily cost of $85 for a family of four.

I stayed with my own family at the lovely Polynesian Village hotel, on a man-made lagoon circled by the zooming monorail and crossed by steamboats ferrying the crowds to the Magic Kingdom. Inside the gates of that kingdom, wonders rewarded those with the patience to wait under a hot sun.

We descended in a submarine to a world of shimmering mermaids and drowned civilizations; rode with Peter Pan high over London's twinkling lights; cruised a jungle river past frowning natives and bathing elephants. We hummed along with the Mickey Mouse Revue, laughed at the soulful bears having a jamboree, and listened to the nation's Presidents as they gestured and chatted.

Did my children know how little was real? That the ocean was inside a building, and that the bears and Presidents were computer-controlled robots? Alyson gave the answer

*See **"Close-up: U.S.A." – Florida, Puerto Rico, and the U. S. Virgin Islands**, distributed as a supplement with this issue.

Rush hour over, traffic ebbs on the twin ribbons of Interstate 4 as twilight dusts Orlando. Once a sleepy crossroads, the city boomed during the space activity of the 1960's, centered at nearby Cape Canaveral. Now it braves the construction whirlwind spun by Disney World. To buy the land to build the motels, restaurants, and service facilities for the Magic Kingdom's employees and guests, companies pay up to 500 times the real-estate prices of a decade ago.

one warm evening as we watched the *Admiral Joe Fowler*, a stern-wheeler, coming in to dock. Alyson gazed into the Florida sky and said, "I didn't know they had a moon here."

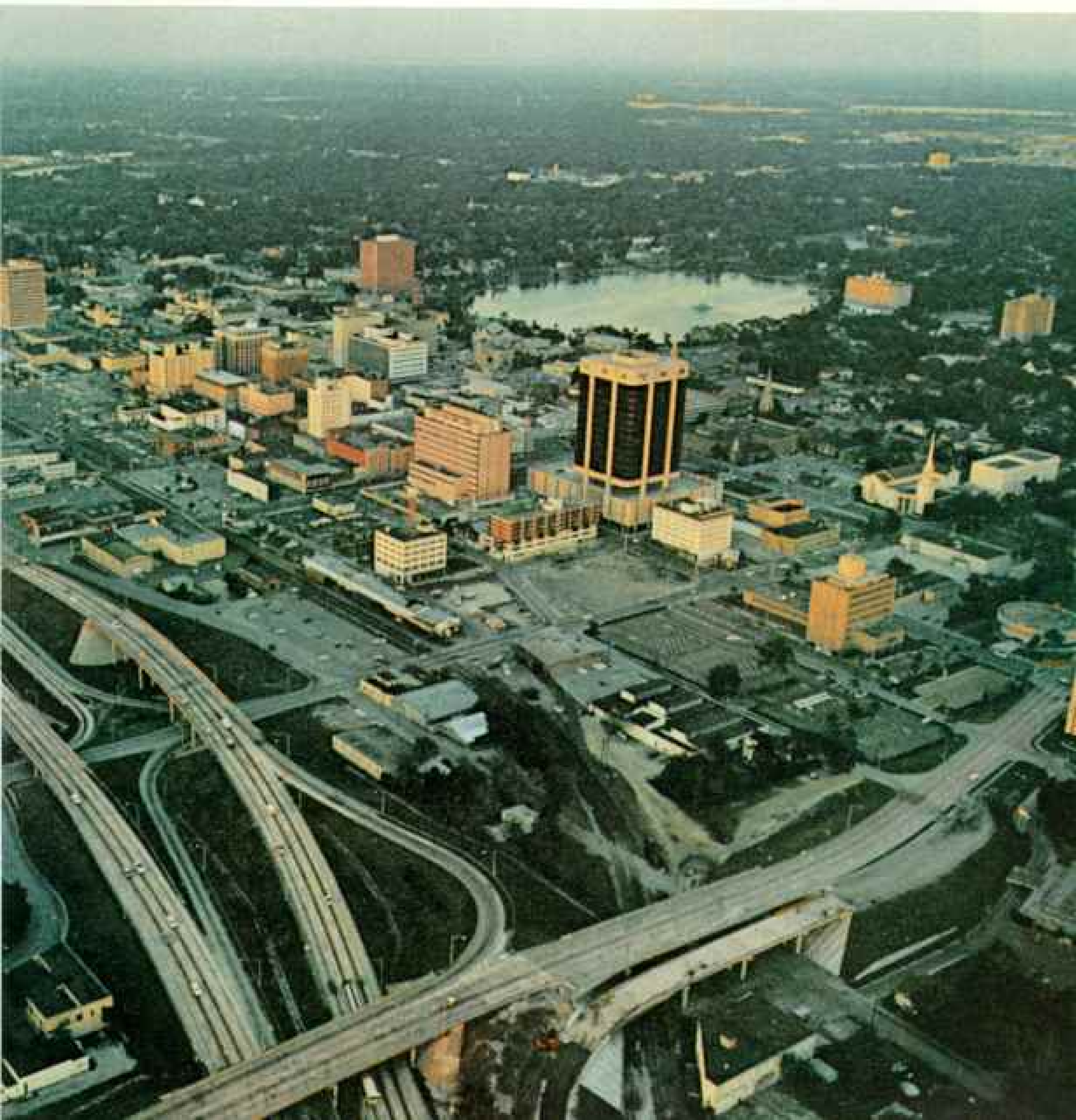
Later that same pale moon was easing through a pearl sky, with the proper streak of romantic mist drawn across its face. With special permission, I climbed alone into that huge steel-and-fiberglass tree the Swiss Family Robinson once inhabited in somebody else's dream.

I explored my domain in the sky by candlelight along wooden paths that led to rooms set square and secure in the huge arms of the tree. My bedroom had a thatched roof. Beyond Victorian porcelain that had survived the wreck, two volumes of Thackeray shared a shelf with a sewing box. Far below, torches flared along the jungled banks of a stream, and huge black shadows leaped toward the dome of a distant temple.

In the small hours of the morning, the tree came rhythmically alive with the wind and waving moss, and I felt as remote as the castaways in Shakespeare's *Tempest*. And what was it Prospero says in that play?

> *We are such stuff*
> *As dreams are made on....*

Dreams. The Florida muck was made for



Wild West in the East. Spurred by cowpokes' whistles, cattle surge through a marsh on their way to pasture at the Deseret Ranch (**above**). Owned by the Mormon Church, the ranch sprawls east of St. Cloud across some 300,000 acres, one of the largest spreads in Florida.

Cattlemen crossbreed disease- and heat-resistant Brahmans with meaty black Angus, Hereford, and Charolais to produce strains called Brangus, Braford, and Charbray. Actually a nursery, Deseret ships calves to midwest feedlots where they fatten for market.

Down but far from out, a horse kicks up the dust (**left**) after losing its footing and its rider at the Silver Spurs Rodeo in Kissimmee. Having jumped clear, the black-hatted contestant now holds the bucking rein as others race in to help. The action amuses a cowboy bystander (**right**).

them. But never, in Florida's long history of boom and bust, had dreams of profit been more aroused than when Mr. Disney's certifiably magic mouse appeared with a . . .

Boom! It was 110 acres a few miles from Orlando, for sale at $4,500 an acre. A buyer put down a $25,000 deposit and tried to enlist others in the venture. They laughed. The discouraged speculator forfeited the deposit. Three years later the owner sold 54 acres at $10,000 an acre. Boom! Then five acres for $400,000. Boom! Another four for $400,000. Boom! Now he had $1,365,000 in the bank, with 47 acres to go!

The Mouse Gets the Blame

In October 1971 the Orlando area had 5,854 hotel and motel rooms. Less than a year later it had added 6,000 rooms. Today it has 25,000, with 7,000 more under construction. Real-estate transactions doubled—boom!—as Disney World opened its gates.

Orlando's Sun First National Bank handles the two and a half tons (boom!) of money trucked in each day from Disney World.

That vast, ingenious amusement park has elicited widespread praise. "How," one reporter wrote, "can cynicism and despair continue to clutch the minds of men and women who have experienced for even a few days the freedom of spirit that reigns here?"

Well, one man more or less clutched is Mr. Paul Pickett, chairman of the Board of Commissioners of surrounding Orange County.

"Unless he is a land speculator, owns a bank, or sells insurance," he told me, "the average taxpayer around here has not only had zero profit from this tremendous growth —he is paying for it. And I don't mean in our new bumper-to-bumper style of driving, increase in crime, and all that. I mean in cash, for new roads; additional law enforcement, welfare, and the rest. No hard feelings, but I wish the mouse had stayed in California."

All roads in central Florida lead to Orlando, and the older roadsides, bearing the burns of the boom, can only be described as end-to-end junk heaps, with sprawling shopping centers and blinding blizzards of ugly signs.

I asked conservationist David Anthony what the consequences of all of this might be, and he startled me with his reply: "The probable death, by thirst, of southern Florida. Do you know what a polishing pond is?"

I admitted I did not.

"It is a pond connected to a sewage plant by a pipe. It is a hideous green, choked with algae. The bottom is organic mud because the algae grow, die, and settle, carrying nutrients from the sewage flow. The pond is a nutrient trap." He drew a circle and tapped it with the pencil: "Lake Okeechobee, upon which southeast Florida ultimately depends for its drinking water."

He drew parallel lines into the top of the circle. "What used to be the Kissimmee River, now Canal 38. It used to meander through a wild marshland that soaked up and took out dangerous nutrients. Unfortunately, the area was subject to heavy flooding, so the engineers made a pipe out of the river, reducing the marshland from 45,000 acres to 8,000.

"At present 53 sewage plants around Orlando discharge 27 million gallons a day into the system. The engineers have built a shortcut from the bathrooms and streets of central Florida to the major drinking-water reservoir of south Florida. Lake Okeechobee is becoming the polishing pond for central Florida."

The U. S. Army Corps of Engineers reacts sharply to such charges, calling them "unduly alarming, pessimistic, and distorted." A spokesman for the corps pointed out that south Florida relies directly upon Okeechobee water only in periods of prolonged drought. While conceding that the water quality of the Kissimmee has suffered a decline, the corps believes it is due to an increase in cattle in the lower basin more than an increase in people near Orlando. Like others in this controversy, the point is disputed.* Both the corps and its opponents are assembling more data.

Tornado Strikes Like a Cobra

The corps also insists that a flood loss of many millions of dollars has been prevented by the channelization of the Kissimmee, which used to run wild, causing destruction. Not only has no one yet proved that channelization has caused a loss in water quality, it concludes, but "such views are subject to considerable doubt by experts in the field."

"We are between a rock and a hard place in Florida," conservationist Anthony insists. "Mother nature is demanding payments of past dues, and payment in advance for future growth."

I was there when mother nature showed some of her stuff. I was driving in a heavy rain near a small place on the road known as

*Fred Ward reported on south Florida's ecological crisis in the January 1972 GEOGRAPHIC.

Intercession City, when a dark cloud mass, twisted into a funnel shape, whirled into view directly before me. Its movement reminded me of a huge cobra, snaky, easy, and powerful. The sky turned a brilliant white through sheets of rain.

In a few moments I came upon the tracks of the tornado—power lines down, a huge live oak cracked in half and thrown across the road, a gas station with the roof exploded off and three men struggling to get free of the debris and welling gasoline.

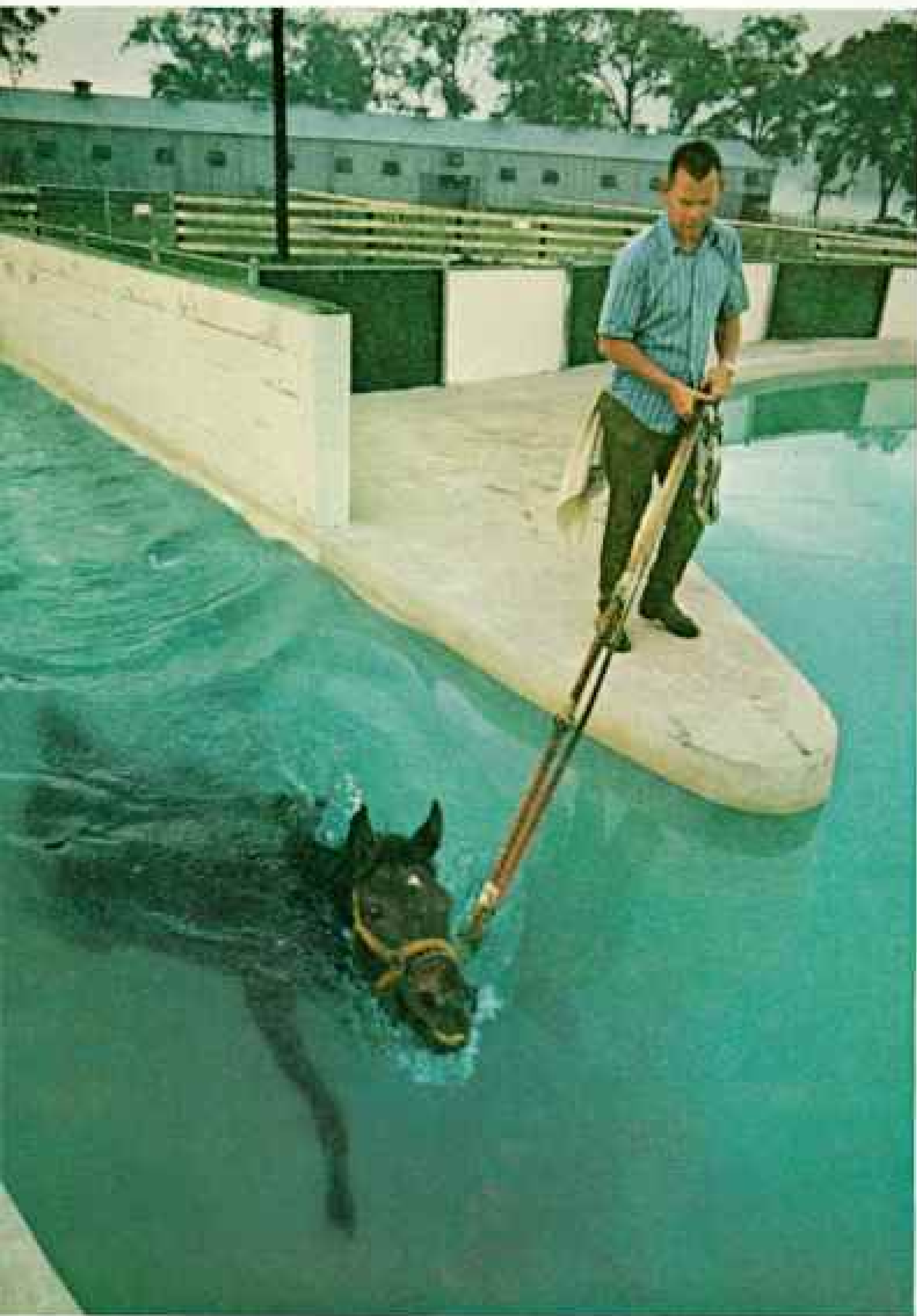
Isaac Chapman and Theodore Cooper had been sitting in a car waiting for gas.

"It come up from behin' the buildin'," Isaac said. "I heard this cracklin' and skreekin'. I said, 'What's that skreekin'?' And 'bout the time I asked that, it hit the station."

John Lockwood, an angular and elderly man, had been inside, and he kept talking about it.

"I was scared to death," he said. "I was so danged nervous, boy, I'll tell you, shoot, I didn't know which way to go. I tried to close the front door and the dang front door met me. If I had got out, I'd a been kilt."

I followed the track of destruction to Orlando, where the twister had touched down at the Washington Shores housing project, turning a block of apartments into instant



To heal an aching ankle or a wrenched knee, Thoroughbreds at the Ocala Stud Farm get into the swim. Reined by a handler, a racer eases down a chute for a couple of laps around the farm's 188-foot circular pool.

Swimming mimics the motion of running without the risk of injury. Horses work up to ten laps at a time before running on the turf again.

Turretlike roots, or knees, of bald cypress trees stand high and dry in swampland flooded by the Oklawaha River (**following pages**). Riding the northwest fringe of the Ocala National Forest, the Oklawaha brings nutrients during seasonal overflows to nourish a lush habitat for otters, bears, ospreys, and the now rare Florida panther and southern bald eagle.

Smiling, serving, caring. Dr. George Zeagler attended the people of Palatka for 45 years. Never willing to turn away a patient, he often worked a 13-hour day. Photographer Jonathan Blair saw in him the figure of a way of life he had known as a child growing up in Florida.

"A station wagon had replaced the horse he used to ride, and the old dirt roads had been paved, and two generations of patients had grown up. But change didn't bother him or slow him down. With more enthusiasm than men half his age, he hurried from one room of his office to another, from rich man to poor.

"Often he would introduce me. 'Bessie, this is Mr. Blair,' he would call out. 'He's our photographer today, and he's going to take your picture. Now let's listen to your ticker.'

"Once he took my own blood pressure. 'It's all right, young man,' he said. 'I just want to see how you feel when you take all those pictures.' "

Last January, at 73, Dr. Zeagler died. He had just returned from visiting a patient in the middle of the night. A spray on the door of the hospital managed by him and a colleague spoke the community's grief.

rubble—with, miraculously, no fatalities.

As I watched linemen carefully removing tangled wires from broken poles, a group of young black men standing nearby took the disaster lightly.

"If somebody's gettin' picked out to get hit, man, who you think it's gonna be?" one said to me. "*Us*, that's who."

They spoke out of a tradition of the politics that long governed the Old South, and out of parental memories that still recall a prison farm where 22 black convicts were jammed in a 7-by-7-foot box for ten hours—one died—and the notorious Jacksonville Blue Jay, another prison farm, where Negro women were once harnessed to plows. The forlorn chants of the chain gangs of the 1930's still linger in the piney woods:

Great big bars,
Cast iron locks;
If I tries to leave,
I'll get the box.

The central Florida explosion has brought with it for the first time in history the election of a black man to the council that governs Orlando: Arthur (Pappy) Kennedy.

I was discussing central Florida politics with a friend during lunch at the Beef & Bottle, a steak house in Winter Park, Orlando's small, cushy, college-town neighbor.

"You should talk to Pappy Kennedy," he said. "As a matter of fact, he should be in here before too long."

"Is he a regular customer?"

"No, he's worked here for twenty years."

Voting Machines Let Pappy Down

Later I did talk to Pappy, assistant manager of the restaurant. He was gray-haired, soft-spoken, and politically ring wise.

"Yes," he said in response to my question. "I would say that the day of the old courthouse gang in central Florida is about over. I've enjoyed a great deal of white support. Our problem, as I see it, is an economic one. The boom seems to be for white people. But we've got to keep after the economic opportunity that's available here. When you get in behind a rabbit, you'd better stay on it or you've lost yourself a rabbit."

Mr. Kennedy had run before, in 1967. At first it seemed that he had won by 3,000 votes, but a later call came with apologies—there had been a malfunction of voting machines.

"My wife had started to dress to go down to the victory party," explained Pappy Kennedy. "So I told her, 'Honey, take your hat off.'"

In 1972 the machines were all in working order, attended by poll-watchers.

Do the younger, activist blacks think of him as an Uncle Tom?

He laughed at the question.

"I tell them all the same thing. I ask them: Do you have a job? Do you want to work? If you do, I'll find you a job, but you better have the skill and talent and education to take it. That's the only way you're going to make it in this world."

It was time for me to go. A number of Winter Parkers were coming in for lunch.

Like a Big Touch of Texas

I always felt a certain sense of relief leaving Orlando, but I never got used to finding myself suddenly in Utah, or Wyoming, or Texas. For that wide-open space to the south called the Kissimmee Prairie (sorry, it is pronounced Ka-SIM-ee) is old-time, sure-enough cowboy country. There the land spreads to the horizon, as flat as an immense lagoon, upon which thousands of cattle float along, tended by ranch hands who can throw a lariat or wrestle a dogie with the best of the West.

I was more than surprised to find on Orlando's doorstep a cattle spread as big and beautiful as almost anything in Texas. It is known locally as the "Mormon ranch," since it belongs to the Church of Jesus Christ of Latter-day Saints (pages 594-5). When I asked for directions, a fellow said, "Well, you start pickin' it up anywhere along here now, and then you keep on pickin' it up."

I did, indeed. I drove for more than two hours along its property lines. When I finally arrived at the office, ranch manager Harvey Dahl pushed back his broadbrimmed hat and said, "Well, the ranch is roughly 40 miles deep and covers about 300,000 acres."

"How many cattle are on it?" I asked.

"You can't hardly get a cattleman to tell you how many cows he's got. That's the same as askin' how much money he has in the bank. Just say we started countin' 'em last November, and we hope to get finished."

We went out to watch a crew cutting out cows with calves. The pastures looked rich.

"It took 14 years to get them that way," Mr. Dahl said. "The ranch brought in 42 tractors, with big forks to lift out the palmetto. Then the land was fertilized and put to good grass. Before, it took 30 acres

The ditch to nowhere: Sunset etches the Cross-Florida Barge Canal west of the St. Johns River. For nearly 40 years the on-again, off-again project poked through central Florida until it collided with conservationists determined to save a 45-mile stretch of Oklawaha River floodplain from inundation. They went to court, and a Presidential order stopped canal construction in 1971.

Hale but hungry, three southern bald eaglets (**right**) await mother's return to a slash pine in the Ocala National Forest. Several years will pass before the fledglings acquire the white heads and tails of adult plumage.

to support one cow. Now three acres'll do it."

Among the men of that country, Henry Partin is admired for being one of the first to introduce the Brahman from India—a strain far more heat- and drought-resistant than the cracker stock descended from Ponce de León's six cows and a bull. There is now a bit of Brahman in most Florida cattle, and the state is our eleventh largest beef producer.

And old Lawrence Silas is admired for his crisp memory of the lawless days of long ago. A leather-tough, husky-voiced old cowhand, Silas is the son of a slave who came down to Florida from Georgia after the Civil War.

We met in his comfortable home in Kissimmee; I asked him how he liked town life.

"I been out there," he said, "and I want to see what it's like in town 'fore I go, you know. When I was young, there was no town. The country was wide open and grass growed everywhere, and cattle was thrown from here right back on to Okeechobee. Everywhere you looked, you saw a cow, yes sir.

"We had some tough, hard cowboys in those days. Tough men, like Carl Barber. We was out one evening and my son said to me, 'How come I don't hear no birds singin' and no dogs barkin'?' I said to him, 'Son, Carl Barber lives around here, and they just wouldn't dare do it.' "

The low-lying prairie land, thick with palmetto and interlaced with marsh and cypress trees, spreads away eastward until it reaches the Atlantic surf of the "missile coast." I arrived at the John F. Kennedy Space Center in time to witness the last Apollo blast-off to the moon.*

I could not escape the impression of a faded glory along Cocoa Beach—the kind of empty atmosphere that lingers over a stadium after a big game. The draw-down in the moon program launched a shower of pink slips at the cape. Employment dropped from 26,500 to 14,000, leaving behind a number of stunned communities—Cocoa, Cocoa Beach, Merritt Island. Houses were going for the balance of the FHA loan.

Moon Men Make Way for Skylab

The cape was strangely quiet during the long, hot day preceding the Apollo 17 launch. The scientists worked in isolation inside the buildings of the Kennedy Space Center; pelicans paraded across the afternoon sky, as they have almost forever.

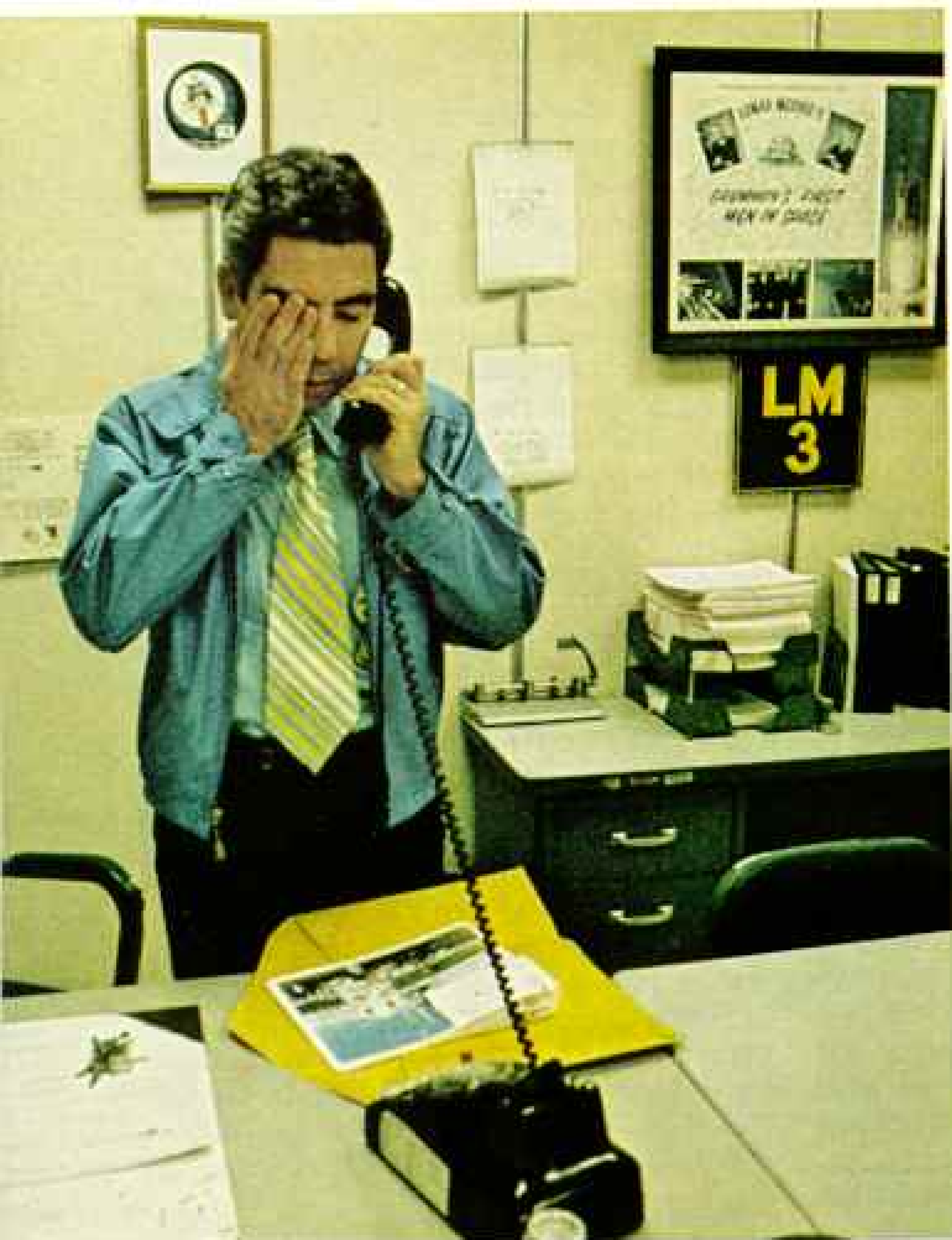
Some of the people of the cape would continue on the Skylab program. But for many, Apollo 17 was the end.

"What use can they make of us? Our specialty in life is building machines to land men on the moon," said Charles Bartola. We settled down in the control room as LM-12 was being readied for Apollo 17. Charlie, a small,

*For a comprehensive survey of the accomplishments of the Apollo program, see the September 1973 NATIONAL GEOGRAPHIC.

His moon days over with the launch of Apollo 17, Grumman Aerospace Corporation's Charles Bartola (**below**) says good-bye to a colleague. Since 1966 he has shepherded five lunar modules through their six-month series of prelaunch tests. Now he works at Grumman's Peconic Facility on Long Island, New York.

During the heyday of the Apollo program Grumman had 1,400 employees at the cape. But the space effort wound down until only one company representative remains, helping families tie up loose ends before they rejoin men who have moved away to other jobs. Signs at Cocoa Beach (**right**) recall the days when the town was overrun by space personnel. Now it caters largely to tourists and retired people.



STEVEN L. RAYMER

KENNEDY SPACE CENTER
NASA TOURS
NASA TOURS
TELEPHONE
e Shores
AN ADULT
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amiable man, is one of hundreds of Grumman Aerospace Corporation specialists who built the lunar module, known to millions now as the LM—a little bug of a thing, with gangly legs and a fragile body that looked as though it would blow away in a high earth wind. Little wonder the first of the manned LM's was called *Spider*.

"I suppose we remember the 'Lifeboat' the best," Charlie said. "That was on Apollo 13. You remember an oxygen tank blew out in the service module, the moon landing was aborted, and those three guys were hung out there. They all crawled into the LM for the return voyage and made it home safely. We're proud of that."

There was a special note on the Apollo 17 schedule: "No matter where you go or what you do in your later life, you can be proud of having been a part of man's greatest adventure. GOOD LUCK AND GOD BLESS."

About twenty technicians tended three curving rows of consoles; nine television monitors showed men working high atop the Apollo 17 gantry.

"Grumman Aerospace Corporation," remarked a tall man who came into the room, reading the back of a technician's jacket. "G.A.C.—Gone After Christmas."

"Christmas," another rejoined. "Don't look for me Thursday."

Charlie would be moving to New York. A cryogenics engineer was staying in Cocoa to open a gun shop. The greatest adventure was almost over.

In the afternoon, on schedule to the second, Charlie remarked: "Get that platform in, and I'll be moseying on."

"You feel like you've kicked your last baby out of the cradle?" an engineer asked.

"Well, as a matter of fact, yes," Charlie Bartola said.

All evening an envious mother nature had been trying to compete with man, parking a huge thunderstorm just off the cape, giving us pyrotechnics for three hours; she even

Incoming waves play tag with motorists cruising the water's edge at Daytona Beach. Florida designates the 23-mile hard-sand stretch from Ormond Beach to Ponce de Leon Inlet as a state highway but limits traffic to a 10-mile-an-hour crawl.

Vanguard of an Eastertide invasion of some 200,000 sun-seeking students, a threesome lazes atop a car (**above**).

dropped in a falling star or two to show what she could do. But when man's turn came, he clearly outshone the competition: an artificial sunrise, a man-made dawn spreading its orange glow over the cape. A giant ball of fire rose over the flat Florida night, the air ripping and popping in its wake. Charlie Bartola's LM, like the rest of them, flew true the whole way.

I walked back along the beach, the waves slanting in silver, and met a hiker coming the other way, a tanned young man from Virginia.

"I suppose you came for the shot," I said.

"What shot?"

"Apollo 17. It went to the moon tonight."

"No," he said. "I just happened by here. I forgot it was going."

Tannin Stains a Noble River

A generation inured to the masterwork of modern man still finds something to admire in the masterworks of nature—like the St. Johns River and all its contributing nobility of stream, lake, spring, and rain.

The river begins a virtuoso performance by easing its way northward from a headwater only 20 feet above sea level. Its waters flow darkly, stained by tannin from cypress and pine forests. Its wilderness tributaries rise from huge springs that have gushed clear, pure water at the rate of several million gallons each day far beyond man's memory.

Alternating its image between narrow jungle stream and blue lake, the St. Johns waits for two hundred miles before it begins to stretch to three miles across and flow on to its finale.

Bravo, St. Johns!

I encountered the beauty and joys of the St. Johns—as well as its bane, the water hyacinth—aboard the *Admiral T.*, a houseboat my landlubber family managed to get up the river from Lake Monroe to Lake George.

At Blue Springs a stream of purest water issues from a cavern some forty feet deep; Mark, Alyson, and I drifted out over it in a canoe and looked down into its blue, impossible depths. There is a wonderful thing about this spring: It is a winter home of the manatee, the fascinating sea cow that probably originated the mermaid legends.*

We tied up that night at Astor. In the darkness before dawn, the voices of fishermen croaked like wise old frogs, discussing the

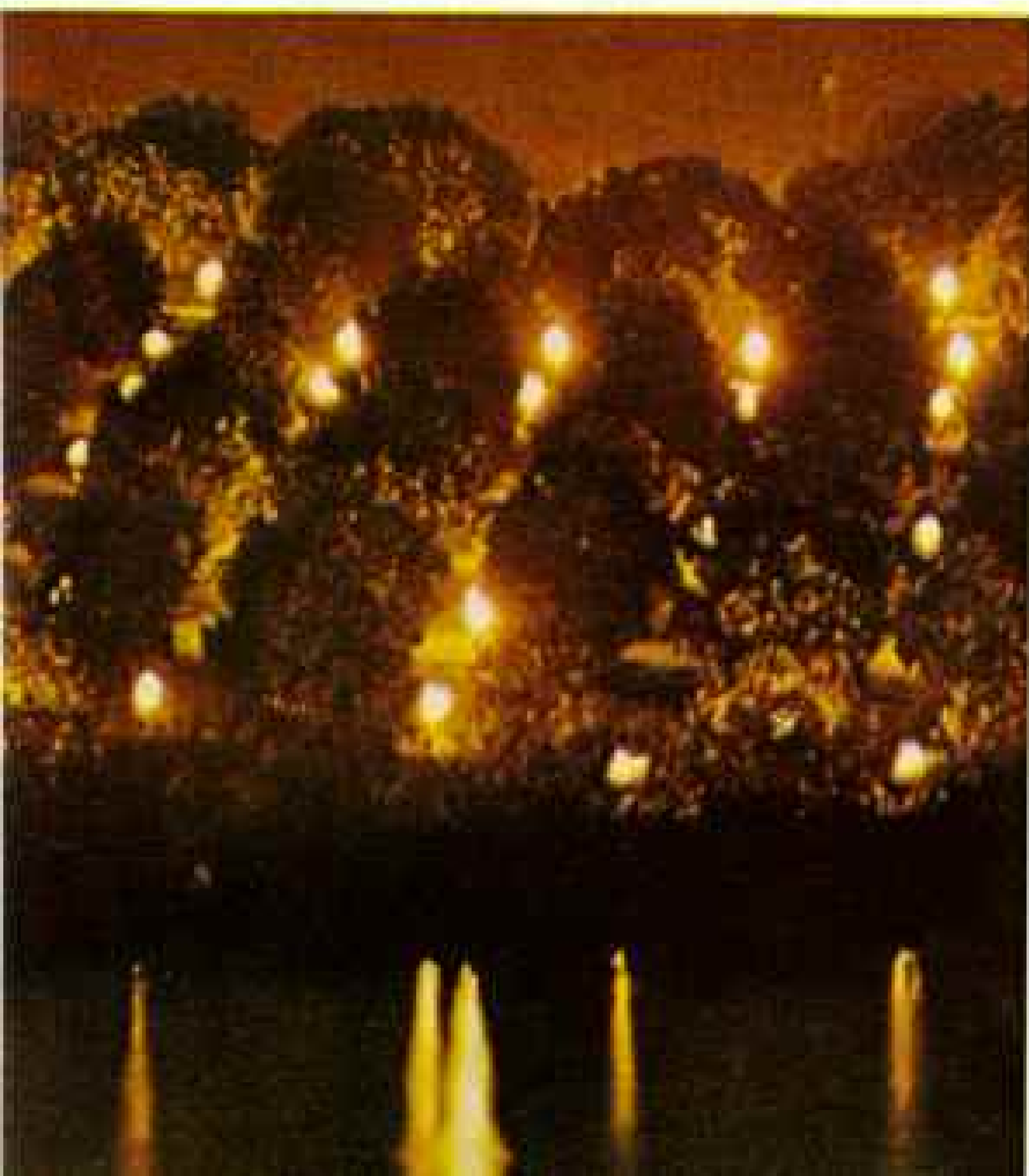
*See "Florida's Manatees, Mermaids in Peril," by Daniel S. Hartman, GEOGRAPHIC, September 1969.

Too slow on the draw, a car teeters at the edge of catastrophe on St. Petersburg's Treasure Island Causeway. Fire-truck equipment hoisted occupants to safety.

Roiling waters soothe the spirits of St. Petersburg matrons simmering in the European Health Spa's 109° F. whirlpool (**opposite**). The ladies may later take an invigorating dip in a 50° "polar ice plunge."

To scorch the fingers of frost, production men (**above**) at the Golden Gem orange groves near Umatilla hold a midnight meeting with cold-fighters—teams of students from nearby high schools. As a chilling temperature inversion threatens the oranges, the youths fire the groves' kerosene burners with torches. Wind machines try to whip away the cold air and stir in warmer air

from above. Fans and fires struggle through the night (**below**). The temperature falls to a killing 22° F., but only a fraction of the groves' 540 million oranges are damaged.



relevant things of life—slapping bass, the damp smell of the wind. How rich and sweet life seemed at that hour, on a clear river running out of a wilderness.

The scene brought vividly alive the works of author Marjorie Kinnan Rawlings, who lived at Cross Creek in a comfortable old Florida home now maintained as a state museum. She will long be remembered for books like *The Yearling*, the tender story of 12-year-old Jody Baxter and his pet deer, Flag.

The Grahamsville Road down which Jody walked and the huge Big Scrub where Flag was born are still there, in much the same condition as Mrs. Rawlings described them in the 1930's, in the Ocala National Forest.

Slim Pickings for the Dirt Farmer

Big Scrub country. Sand hills roll out of sight like a swelling brown ocean, covered with turkey oak and pine, with here and there an occasional hardwood hammock. A deep, fearsome place, where man might get lost turning around. A poem tells of the people who first lived in and around the scrub:

Good God, with a bounty
Look down on Marion County,
For the soil is so pore, and so
awful rooty, too,
I don't know what to God the
pore folks gonna do.

The dirt farmer scratched away at the sand. The hunter stalked game. Timber companies in those years cut pretty much what they wanted on private holdings scattered through the national forest. Few people saw beauty, privacy, and wilderness as premium values, and the forest suffered.

I went into the Ocala with Rangers Ben Sanders and Walt Guerrero and found a strange, forlorn, stark beauty as we drove mile after mile down dirt paths arrow straight between the pines.

Huge swaths—some as large as 640 acres —were visible where clear-cutting of federal scrub had gone on. Under a new plan, the U. S. Forest Service now limits cuts to 100-acre contoured stands.

I asked about Jody's deer—the famous Ocala herd, once one of the largest in the South.

"There was a strong decline after 1967," Ben said. "Until recently, we had 20,000 hunters here in deer season. But with new game restrictions, we have reversed the trend."

About 64,000 acres within the national

forest are privately owned, and much of the area is shoddily developed. At Hunter's Haven a rural slum of shacks stands amid roadside heaps of trash.

"We get blamed for all of this," Ben said, "but we don't own the property."

Bombs and Oil Rigs Menace the Wild

Whatever private developers have done to the forest seems trivial compared to the pounding given it by the U. S. Government.

Since 1943 large tracts in the southern forest have been used for practice bombing and gunnery. Today, thirty years later, 4,600 acres are still closed off because of the danger of unexploded bombs.

And practice bombs continue to rain upon the Navy's nine-square-mile Pinecastle bombing range in the heart of the forest, seven days a week. Five planes have crashed and exploded in the area since 1951.

What more could happen to a forest? In a word—oil. In 1971 conservationists discovered that almost the whole forest had been leased for oil and gas exploration. One company was preparing to sink a bit into the

ground on one of the 162 leases without benefit of either the public hearing or environmental-impact statement required by law. The Secretary of the Interior promptly ordered a moratorium on oil drilling in the forest, but many fear that someday steel rigs will sprout amid the pines.

Yet, for all the pounding, pummeling, misuse, overuse, and hacking down, the Ocala forest has managed to preserve places of rare isolation and beauty, such as Hopkins Prairie. A wash of water only three miles long and half a mile wide, this low, wet space in the piney woods is a haven for many kinds of wildlife, including the stately and endangered southern bald eagle.

A pair of these birds was nesting in a tall tree when the rangers and I visited there. We watched the female swoop out over the prairie, more beautiful than any bomber.

At the northern edge of the forest, I stood on a small dam and looked out across a blackened lake studded with tree stumps. There once flowed the virgin Oklawaha River, a stream that made a solemn and beautiful passage through a forest inhabited by

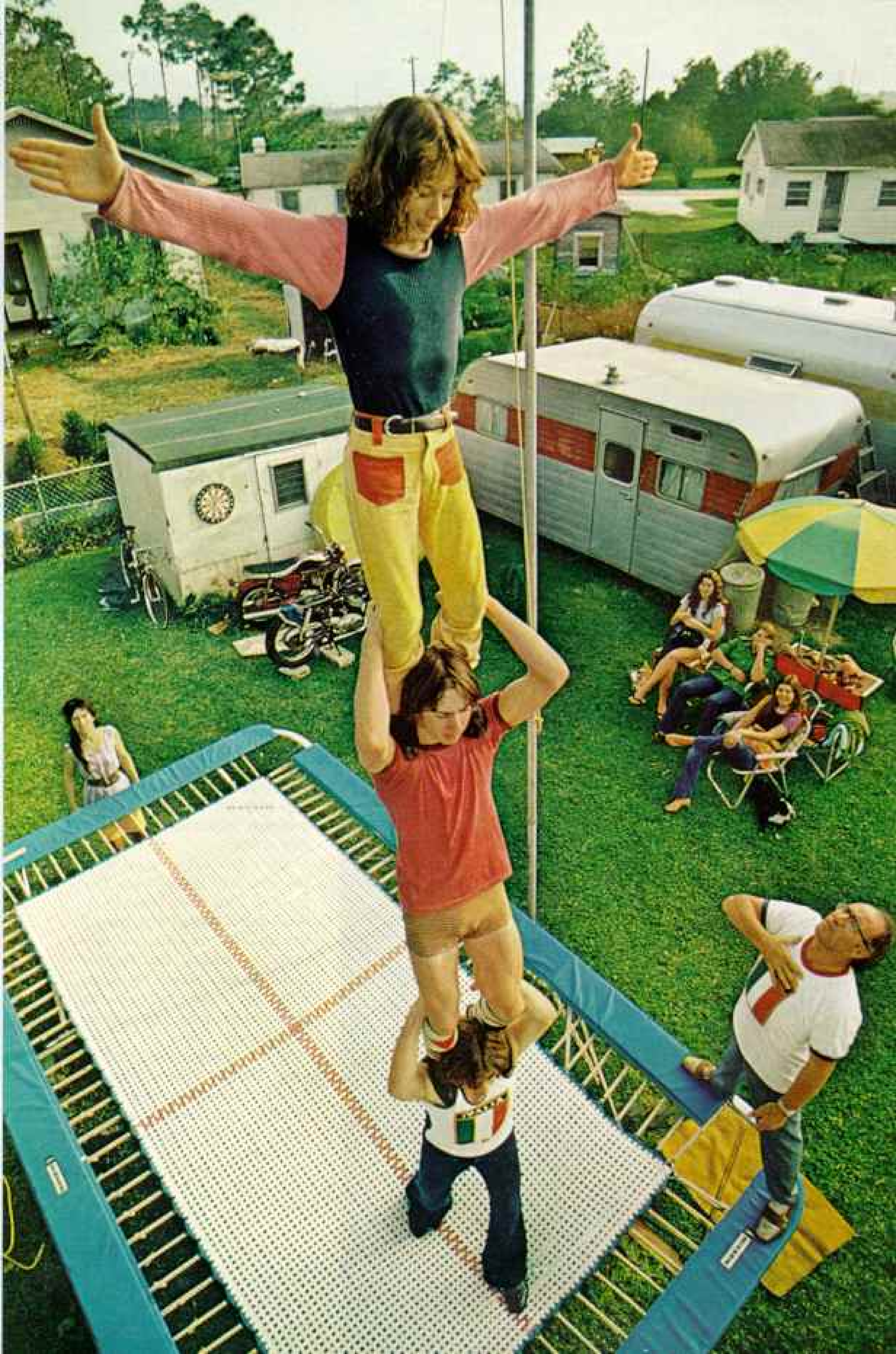
Stalled by rain, laborers while away the afternoon in their camp near Davenport. During good weather a migrant family can make up to $50 a day picking oranges.

Then they move north with the seasons: peaches in Georgia, yams in the Carolinas, tomatoes in Virginia, apples in New York.

There is little hurrahing in the harvest. Unscrupulous crew operators keep their workers in debt by overcharging them for provisions. Even where schools are available, a father may keep his children in the fields to help him pick the crop. Housing is generally minimal, medical facilities rare.

Yet a few bright spots light the migrants' lonely trek. The State of New York offers summer schools staffed with special teachers. Where children can't come to school, the Federal Government plans to bring schooling to the children with Head Start programs set up near harvest towns.

Some communities lend a hand. Retired nurses living in a posh development near Tampa offer their skills at a clinic built by the development's president.



an abundance of wildlife. The woodland was home to at least thirty species of amphibians, fifty-nine different reptiles, forty-one kinds of mammals, including the black bear and the endangered Florida panther, and a dazzling array of birds.

What better place to put a huge canal?

Controversial Canal Dies Hard

An epic conservation struggle was waged over the Cross-Florida Barge Canal (page 602). In the Great Depression of the 1930's, work started—but soon stopped—on a sea-level canal. The intended route included this stretch of the Oklawaha River.

With the advent of World War II, the project was resurrected on the basis of national defense. The money, however, was not appropriated until twenty years later. On February 24, 1964, President Lyndon B. Johnson pressed a button that exploded three charges of dynamite—colored red, white, and blue—and the canal was on again.

"At that point," conservationist Marjorie Carr told me, "we weren't trying to stop the canal. We wanted to save the Oklawaha. It was after they refused to change the route that we took a hard look at the canal itself and found that it was not only an environmental catastrophe, it was certain to be an economic disaster as well."

The canal, for example, is too small for modern oceangoing barges.

The U. S. Army Corps of Engineers built a dam on the Oklawaha, creating an immense reservoir. Using a tree crusher—a huge 300-ton device—they literally smashed 2,200 acres of hardwood forest into the mud behind the dam, salvaging less than 15 percent of the timber. The reservoir filled with 14 feet of water, drowning countless tree trunks, branches, and snags.

In 1971 environmentalists at last obtained an injunction against the corps. Then President Nixon ordered a halt to construction of the barge canal—and a river was saved.

For 58 million dollars and seven years' work, the public got six picnic tables and a barbecue pit.

South of that almost canal one January afternoon I stopped by the offices of Golden Gem Growers, Inc., in the town of Umatilla, about as far north as most orange growers venture these days. Inside, serious-looking men gathered around a Teletype machine, awaiting the 4 p.m. weather advisory.

"It's a big dice table," one remarked. "Growing oranges is a win or lose business. It's pathetic. Eighty thousand bucks one year, and the next year completely broke."

The keys suddenly began to hit the paper —*whap-whap-whap*.

"Well, if that's right, we surely fire," said Dixie Royal. "Yes sir, at 24 degrees, we will surely fire."

"Well," said another. "I don't think it'll frost, but I don't think I'll sleep either."

None of us did. The temperature plunged straight down with sunset. The firing crews came in at 10, high-school boys, laughing and roistering. Before midnight Jack Nelson took the first truckload out. Big fans were already turning in the groves, trying to put a dent in the temperature inversion that settled like a lid over central Florida.

Nelson's voice blared over the radio:

"We've got 22 degrees over here and frost."

Invisible Enemy Defeated at Dawn

Thus the cold came, insidious, mysterious; it actually lay in puddles, settling like an ooze in a dead calm. The lowest points in the groves were in danger of being frozen while trees a few yards away would survive.

Toward three o'clock several crews fired the heaters around a small mirror lake north of Umatilla. From across the water the scene resembled an army encampment with fires spread in orderly ranks. Young men ran the rows, igniting kerosene chimneys; every touch of the torch left a bloom of fire.

The invisible enemy faltered just before daybreak, before serious damage was done. The fires burned on into the sunrise. The smoke, white by night, turned dark at dawn.

Despite efforts by growers such as Golden Gem, central Florida—for all its recent zippity-do-dah—is still the home of an often

Topping a three-man-high, Doady Fornasari spreads his arms in triumph after a perfect somersault to the shoulders of brothers Henry and Benny. Their gymnast father, Italo, instructs from the corner of the trampoline. Fifth generation of an Italian circus family, the Fornasari brothers polish the routine daily at their Lakeland home, winter quarters for many circus troupers.

shameful but recalcitrant institution, the migrant farm-labor system, with its crew bosses and shacks and run-down buses. In Orlando I stopped in to see Sister Joseph Beatrice Eyl, a Roman Catholic nurse who provides health services to migrant workers as they trek up the Eastern Seaboard.

"You can't imagine the brutality I've seen," she told me. "I saw a man whose leg had been broken to prevent him from leaving camp. You'll find the crew leader who keeps his workers broke and in his debt. There are, of course, many good crew leaders among the hundreds who take the stream of migrant families north. But the abuses continue."

The sister put me on the track to Haines City, central Florida's migrant-labor capital and headquarters of "bird-dog" companies that seek out the workers and contract to pick the oranges. I had planned to visit one of 33 migrant crews that were out working in the groves on a cold Saturday morning. But tragedy intervened: A 2-year-old child in a family I wanted to call on had come down with pneumonia and died.

So I looked up Genna Suffredin in the local health clinic, and we toured the migrant neighborhoods—some of them solid and well kept, some simply squalid. We stopped to chat with Mrs. Geraldine Jenkins, a thin, worn woman who was made thinner by winter sunlight limning her cheeks, igniting a wisp of brown hair.

"That's a pretty purse," Genna said.

"My daughter give it to me for Mother's Day," said Mrs. Jenkins with a shy smile. "With a five-dollar bill in it."

Her husband was in the groves, picking oranges at 40 cents a box. He would rather be on grapefruit at 25 cents a box, filling twice as many boxes a day.

Mrs. Jenkins said simply, "We've had nothing but trouble all up and down."

Students Press for Publishing Rights

The sons and daughters of Floridians have for years and years attended "their" university, the University of Florida at Gainesville.

When I arrived, a collision between the establishment and the counter-culture was in full swing. A faction of the student body was protesting President Stephen O'Connell's chasing the university newspaper, *Florida Alligator*, off the campus. The issue was freedom of the press. Mr. O'Connell and the editors had had a violent disagreement over the publishing of a certain item.

"What was it?" I asked a student.

"Just a list of doctors who will perform abortions," she replied.

Like other universities, UF seemed to have passed a watershed since the violent confrontations across the country during the late 1960's. I dropped into a local beer parlor and asked some students about it.

"People are not as radical, that's true," a young man said. "We don't want to be heard. The world's too awful, man. We are serious and private people. We like to study, play it cool, smoke a little grass."

Elbowing into the salt marsh, a retirement community rises near West Pasco (**left**). Such developments virtually carpet the shore for 50 miles north of St. Petersburg. The Gulf Coast's Pinellas County counts 42 percent of its residents above the age of 60.

Fire hydrants sprawl at the site of a proposed shopping center in Altamonte Springs, an Orlando suburb. "I drove by one day and saw a field with trees," says photographer Blair. "The next day fireplugs were sprouting from blowing sand."

A big football weekend was coming up, so I went, and found that while tradition may be faltering, it is far from deceased. Several hundred alumni had their station wagons and campers arranged in long rows, tailgates down, tablecloths spread, ham and salad and iced drinks laid out for a picnic beside the stadium.

"I'm a Gator," said an elderly man, who proved to be a bank president and rancher. "So's all my family. Get yourself a plate and a drink. You're a writer? Comin' down here to tell some more lies about us, I suppose."

He laughed heartily. "Well, things have surely changed, haven't they? Now you got the problem, if you know what I mean."

"You mean racial trouble in the North?"

"You catch on quick, boy. Have some of that potato salad, it's delicious, I mean it. Yes sir, you've got a taste of it now, and you're welcome to it."

Later in the day I saw him cheering wildly for some of the black players now representing his alma mater.

The Gators lost, but that did not diminish the *joie de vivre* along Fraternity Row that night. In houses reverberating with rock music, attractive groups of young people postured to the incessant rhythm. They did not seem too far away from the Big Apple and zoot suits and goldfish swallowing. One long-haired young man was rather disappointed with the return to normalcy, not to mention "squaridity," in university life.

Frenetic Present to Peaceful Past

He offered, but I declined with thanks, an invitation to spend an evening with an enlightened guru from India, passing through on his way to Nirvana, as well as an opportunity to listen to a gay panel discussion, and a chance to see *Straw Dogs*, a film that the exiled *Florida Alligator* said "strips away any pretense of moral order in the universe."

From Gainesville a road runs straight and quiet, southwest toward the Gulf of Mexico. At the end, it opens upon a wide, shining marsh and mud flats. Beyond four bridges the tin roofs of the hamlet of Cedar Key gleam in the sun. Cedar Key has the look of having endured, at peace with the waves and sky; a place that doesn't mind a little sand in its shoes, or the paint flecking off, because that means one more season survived.

Some of its weathered buildings are boarded up, but the 135-year-old Island Hotel still offers the shade of its balcony and its unique hospitality to the passing stranger.

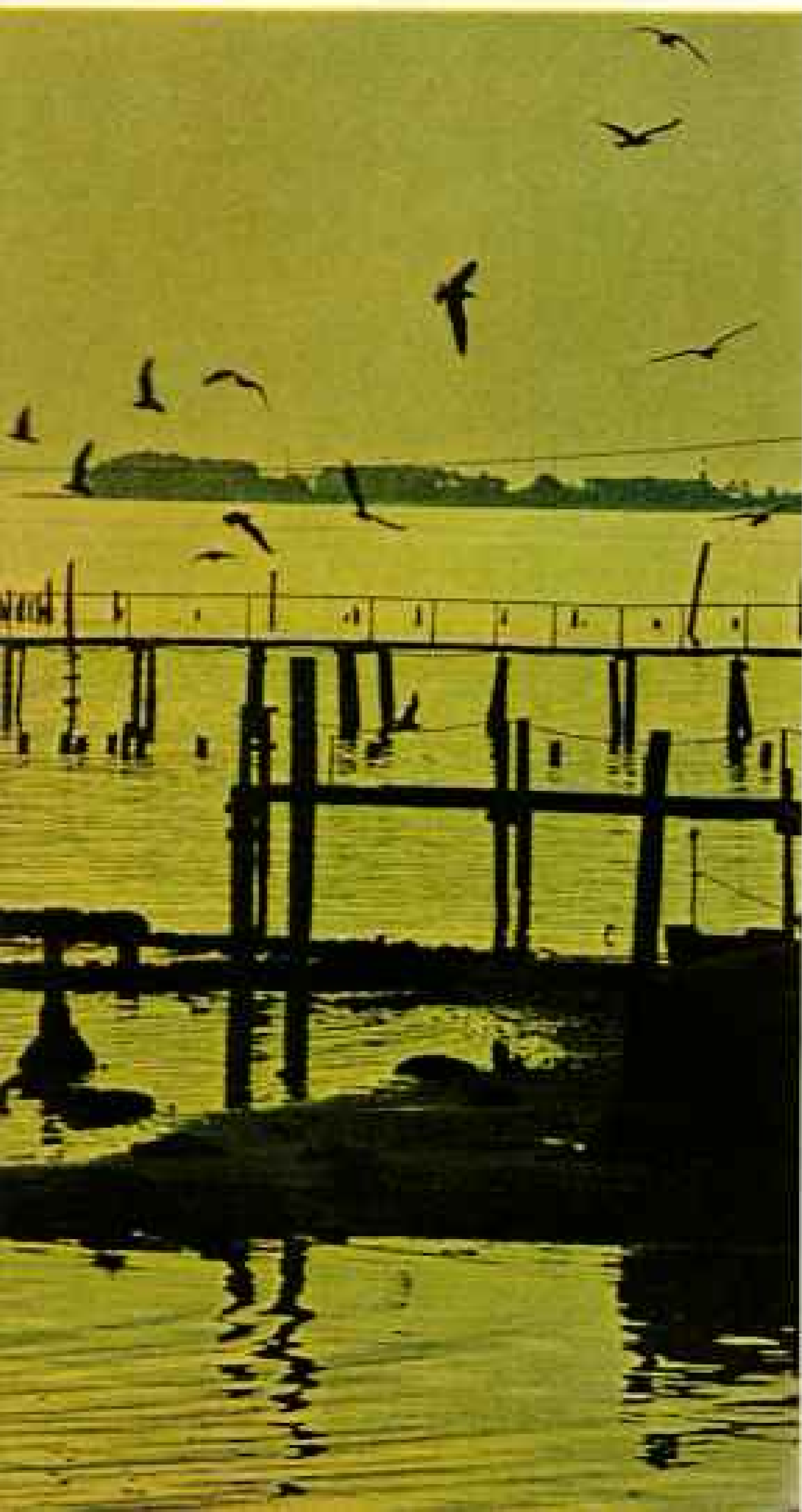
When I entered, a woman named Maggie was curled up on a sofa in the lobby. When I told her that I was a wandering journalist, she said, "Please go away. Do not write about Cedar Key."

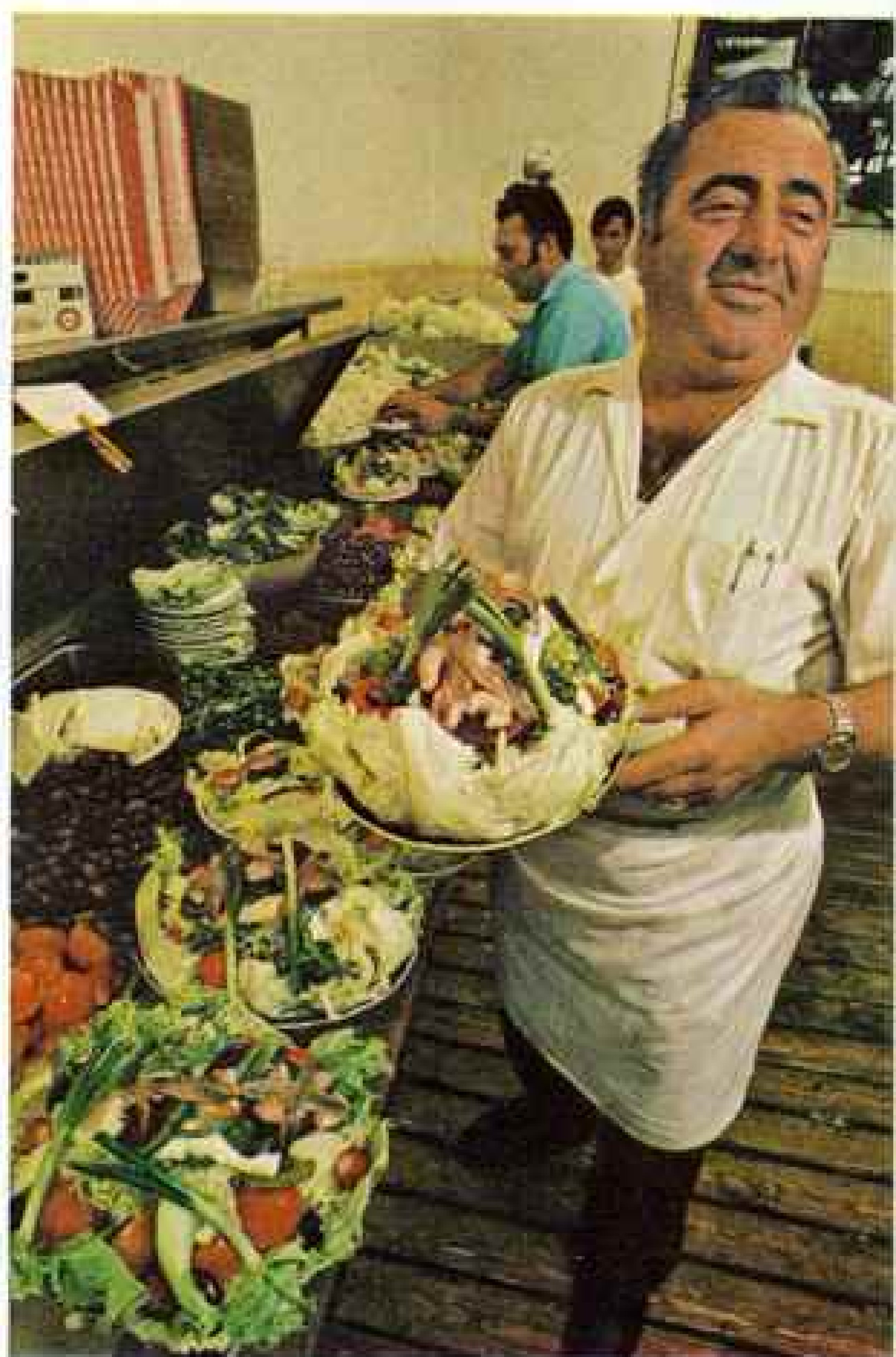
I'm sorry, Maggie, but here goes.

The hotel is owned and operated by the singular Bessie Gibbs, whose body has been

Whispering wings and a sinking sun signal another drowsy evening at Cedar Key (**left**). The Gulf Coast town once hummed as a shipping point for Florida cedar destined to become pencils. Now it idles into relaxed and unpainted old age, a haven for visitors seeking respite from the bustle and boom inland.

Greek salad supreme weighs seven pounds and will serve six patrons at the Louis Pappas restaurant (**below**) in Tarpon Springs. Using a potato-salad base ringed by lettuce, pantrymen build tiers of ingredients including feta cheese, avocados, watercress, black olives, Salonica peppers, scallions, shrimp, and anchovies.





confined to a wheelchair in recent years but whose spirit goes forth unto the land. She wheeled into the lobby and was greeted with a squawk from the parrot, Pancho.

"That bird is like me," said Bessie. "He hates cute little children and deliverymen with bills. You want a bed, you've got it. No television. One phone, right there on the desk. Bathroom's down the hall. I'm not running any Holiday Inn."

I sat down to lunch with a young Virginia artist, Dan Moncure, and a bearded veteran author, George Walton. "I came here for a weekend three years ago," George said, "and I haven't found the time to leave." Dan came down for the arts festival that Bessie organized, then decided to come back.

What magic does this old shell heap of a town have?

"I fell in love with this crazy place when I saw the chain and padlock they use to lock up the front door of the bank," Bessie said.

"Last weekend," George said, "there were eight Ph.D.'s in this hotel, escaping. Eight. People from the top drawer."

"Some with no drawers at all," said Bessie.

Last Resting-place Costs Nothing

There is a place nearby called Hodgson Hill, a rise of land where huge grandfather oaks carry silky clouds of Spanish moss. A meadow spills down to the clear waters of a small bay, where I wandered a beach unmarked except for the tracks of seabirds.

On the way back I stopped at the old cemetery—"Wife of Capt. N. Hayden, who was lost at sea, with his son Edward, March 28, 1853." Later I discovered that there is no charge for plots.

"You just go out there and stake a piece of ground, and it's yours," Bessie told me.

At the end of my travels I found another vestige of the old Florida—the genuine article, lost in a remote corner. It turned out to be a person, a wonderful woman known as "Granny" Odlund. She lives on a small island in the mouth of the Suwannee River; it has been her island, and her home, for 63 years. Her husband is buried there, near the comfortable old house, by the small garden plot, in the shade of lovely old trees.

"You don't see many of 'em left like that," she told me when I commented on the house. "When Alec and me first come out here, we built a palmetto camp out of palm fronds. I had an air-conditioned house in the summer, and in the winter I'd go out and cut my walls and hang 'em up."

They made it somehow, salting fish and cutting out cabbage buds from the palms, and managed to raise a family.

The Suwannee swamp has receded since those times, and the stark loneliness of pioneer life has been moderated by radio and television. And most of the early settlers have passed on. "They done gone on the happy huntin' ground," Granny said.

Granny Deplores Man's Destruction

One of her girls, Margaret, had brought a daughter, Melanie, to the island. They fixed the finest meal I had in Florida, or expect to have—wild pig, shot by Margaret a few days before in the swamp, freshly shucked oysters fried a golden brown, stone-crab claws, a hearts-of-palm salad. We ate in the warm, dappled shade. Afterward we walked out to Alec Odlund's grave. The carved legend on the stone reads, "King of the Suwannee River." It was a gift from some Georgia friends whom Alec had long served as a fishing guide.

"I've got no regrets," Granny told me. "I've been faithful to him, and I been with him always, all my life, from my youth." She paused and looked around her small domain —white birds banking on a small wind, marsh grasses bending ever so gently back, the tide easing ever so slowly over the flats, familiar, fragile, of surpassing beauty.

"Alec told me that modern men were the ruination to the country," Granny said. "Destruction, nothing in the world but destruction. Man has destroyed everything in the world that God give him. They don't realize that when they get the last bit of it, then what are they going to do?" □

"I like my old-timey ways," says "Granny" Odlund, mistress of Odlunds Island at the mouth of the Suwannee River. With her husband, Alec, she settled on the tiny, marsh-flecked islet in 1910, carved out a living, and raised a family. Now a widow, Granny gardens a little and cooks for the itinerant fishermen who come her way. Facing her future with uncommon sense and plain-spoken pride, she says, "I'm nothin' but a backwoods cracker. I may got patched clothes on, but I own 'em."

Friendless Squatters of the Sea

By ETHEL A. STARBIRD

Photographs by
ROBERT F. SISSON

BOTH NATIONAL GEOGRAPHIC STAFF

Feathery feet seine plankton from surrounding waters, then retract and carry food into the conical shell of an acorn barnacle. Plague to mariners, barnacles use an amazingly strong glue to secure themselves to the hulls of ships and almost any other submerged surface. In laboratory experiments the natural adhesive has held through wide ranges of temperature and acidity. Researchers hope to synthesize the crustaceans' sticky secret for industrial and medical uses.

"LOOKING AT BARNACLES from my point of view," Bobby Wayne Pruitt, Jr., said, "you can't see much to recommend them."

I had to agree. Twice a year, Bobby—a commercial crab fisherman of Tangier Island, Virginia—crouches for a week beneath his beached boat, chipping at its barnacle-encrusted hull. He can ill afford to spend this time ashore.

Bane of saltwater sailors, the pesky barnacle may eventually make up for some of the trouble it has caused. And all because of its annoying habit of producing a glue that adheres to almost any hard surface, congeals rapidly in a wet environment, and holds fast under extreme pressures and temperatures.

If the glue is successfully analyzed and a similar material synthesized, the adhesive may mend broken bones, serve as both the cement and the filling agent in dentistry, and meet scores of industrial needs.

Supported by the National Institute of Dental Research, Dr. H. J. Bowen of Philadelphia's Franklin Institute Research Laboratories heads a team trying to determine the complicated chemistry of barnacle glue.

"The glue isn't very cooperative," Dr. Bowen told me. "Once cured, it can't be dissolved with strong acids, alkalis, or protein solvents. Also, it is impervious to bacteria and resists temperatures as high as 440° F."

So far, the barnacle has found few friends except those within the scientific fraternity trying to solve its secrets.

"For shipowners, they're a multimillion-dollar headache," Michael Pursley said, as we toured waterfront facilities of the Maryland Shipbuilding and Drydock Company in Baltimore.

We paused to watch workmen sandblast the heavily fouled hull of a dry-docked tanker. "We'll probably remove about fifteen tons of marine growth—mostly barnacles—from that one ship," he said. "And it's been less than two years since her last scrub-down. The drag caused by only a six-month accumulation can force a vessel to burn 40 percent more fuel just to maintain normal cruising speed."

From Rear Adm. James B. Hildreth, a 32-year veteran with 13 campaign ribbons, I learned that a barnacle buildup can mean trouble for the United States Navy.

"We can't afford to carry much extra fuel on combat missions," he said. "And any loss of speed makes us more vulnerable to attack.

Also, if we release a ship from a battle zone for cleaning, we reduce our firepower.

"Then, too, friction from hitchhiking barnacles can make an otherwise quiet ship into a noisy one, more easily detected by listening devices. Even one specimen, clinging to a sonar dome," Admiral Hildreth added, "can seriously distort echo-location."

For idle hours in port plus clean-up charges, the cost to U. S. shipping interests—military and civilian—comes to several hundred million dollars a year.

Principal pests in this never-ending war are the numerous species of acorn barnacle (Balanomorpha) that armor rocks and pilings in most temperate and tropical salt waters of the world and sail all but the iciest seas as stowaways on ships. Long exposure to air, frigid temperatures, or fresh water will kill these hardy animals, but their conical shells continue to cling until they are pried loose or finally wear away.

Tenacity has been a barnacle trait at least since Jurassic times. Fossils from that period show barnacles still attached to surfaces they settled on some 150 million years ago. However, these tiny troublemakers have been around far longer than that. Paleontologists trace their history back 400 million years.

Darwin Intrigued by the Crustaceans

World travelers though they are, barnacles cannot settle readily on fast-moving objects. But they congregate quickly on stationary ones like rocks, piers, and ships in port. Almost any submerged surface will do—wood, metal, glass, plastic. They are even found on the skin of whales, the toes of penguins, and on shellfish, living or dead.

Although these lowly crustaceans irritate bathers and frustrate boatmen, they have fascinated—and baffled—scientists for centuries. Charles Darwin filled his house with 10,000 specimens, many of them collected on his *Beagle* voyage*, and spent eight years studying, classifying, and describing them in two detailed monographs that still serve scholars as reliable works of reference.

Another Englishman, Dr. Hilary B. Moore of the University of Miami's Rosenstiel School of Marine and Atmospheric Science at Virginia Key, Florida, has specialized in barnacles for thirty years—and considers them more friend than foe. "Certainly they're a nuisance," he conceded. "But the fisherman forgets, as he scrapes his boat, that barnacle larvae are part of the plankton, first link in the food chain that eventually fattens his catch—and his pocketbook."

Barnacles are, indeed, prolific. From earlier investigations on the Isle of Man, off the northwest coast of England, Dr. Moore estimates that adults clustered along half a mile of shoreline release nearly a thousand billion young a year. A tropical barnacle may breed when it is only three weeks old, producing some 10,000 offspring three or more times a year for the three to five years of its life. Quite a feat for a creature that, after settling, remains forever attached to one spot.

Part of the explanation is that the majority

*Alan Villiers chronicled this nearly five-year-long voyage in the October 1969 NATIONAL GEOGRAPHIC.

FLIP SCHULKE, BLACK STAR

Nose full of barnacles, a gray whale stands on its tail. Scientists believe that the mammals scrape themselves against the sea bottom to get rid of the tenacious pests.

of barnacles are hermaphrodites—male and female within a single body. But to propagate, most of the more common species must be fertilized by a neighbor—a service performed through a retractable tube and facilitated by the congestion of barnacle communities.

The newborn emerge from their parent's shell as a cloud of microscopic free-swimming larvae called nauplii. At this stage they faintly resemble water mites; it is then that many fall prey to plankton eaters.

Those that survive evolve, within a few weeks and after six molts, into cyprides—still fair game for filter feeders. They soon cease to swim, creeping instead on two front antennae as they search for a permanent home; a substance released by settled barnacles may draw the young to a likely place. Within hours a brownish liquid oozing from their antennae anchors the cyprides, and they begin final development into adults (pages 630-31).

Across the court from Dr. Moore's office, Dr. Charles E. Lane, a noted authority on barnacle behavior, outlined the last act in this amazing biological drama.

"Soon after settling," he explained to me, "the cypris turns over on its back and becomes forever fixed in that position. Carapace and other juvenile features disappear. Then, flattening out into something of a blob, the newly structured animal starts building a permanent home."

Within a few days, the young barnacle has totally encased itself in a cone of overlapping calcareous plates, usually six in number. It now resembles a miniature volcano, with four small horizontal plates covering the crater. Sliding these apart, the animal feeds by extending plumelike feet, or cirri, to sweep plankton out of the sea and into its mouth. Seemingly safe within its fortress, the adult may still fall prey to snails (page 629), fish, and certain shorebirds.

Dr. Lane spent many years trying to find a formula to discourage barnacle attachment. "The Phoenicians tried pitches; the Greeks,

Unwanted skirt clings to a Nicaraguan shrimp boat. Workers must periodically clean and repaint such badly fouled steel hulls to end fuel-wasting drag.

Blizzard of brine shrimp means a feast for goose barnacles (**following pages**). Food-snaring feet extend and retract as the creatures gently sway on their long stalks.

Savory giant of Puget Sound, this three-pound barnacle fills human hands—and stomachs. Steamed, its flesh tastes much like a blend of lobster and crab.

BALANUS NUBILUS, 5 INCHES AT BASE

CONCHODERMA VIRGATUM, 2/3 INCH HIGH

POECILASMA, 1/4 INCH HIGH

Colorful tagalongs hitch permanent rides with varied ocean traffic. A nearly shell-less soft barnacle (**left**) was found on the cap of a floating bottle.

Attaching themselves by their fleshy necklike stalks, goose barnacles settle and grow on a crab of similar hue (**right**).

tar and wax," he said, "but nothing worked very well until mariners began sheathing wooden hulls with copper.

"Copper over steel produces rapid corrosion by electrolysis and is too expensive for today's big ships. So we now rely mainly on bottom paints containing copper oxide."

As this chemical leaches out of the paint, it forms a toxic film that keeps home-hunting cyprides at bay. But effective leaching lasts, at best, three years, and paints that produce maximum results may retail for as much as $55 a gallon.

I found, in the pages of the *Miami Herald*, a far less costly suggestion. Boating editor Jim Martenhoff reported that a friend ended his barnacle woes by lacing ordinary bottom paint with ground red pepper.

Helen D. Albertson, Dr. Moore's research assistant, offered to test this home remedy. Adding 1½ ounces of red pepper to a quart of paint—as prescribed—she coated half a wooden panel with the concoction and set it out in barnacle-rich Biscayne Bay.

Some weeks later the treated part of the panel showed a larger barnacle population than the unpainted area. Helen and I could only conclude that some of the freeloaders had drifted over from Mexico with a built-in taste for red pepper.

Jim's is not the only weird formula tried—and found wanting. Among antibarnacle brews submitted in years past to the United States Patent Office is one that calls for a mixture of "clay, fat, sawdust, hair, glue, oil, logwood, soot, etc."

"If it worked," said William J. Francis, chief chemist at the Navy's Portsmouth, Virginia, facility, "it had to be the 'etc.' that did it."

Giant Species Delights Gourmets

Fortunately for the mariner, a brute of a barnacle found on the West Coast settles on submerged rocks, not ships. Similar in all biological ways to its smaller relatives, *Balanus nubilus* grows to five inches in height and weighs three pounds or more at maturity (left, above). Steamed in the shell and served with seafood sauce, it carries the flavors of both lobster and crab.

A chance encounter with one of these giants at a Seattle party provided proof for an important scientific premise.

Impressed by the size of the meaty fibers in his unusual hors d'oeuvre, Dr. Graham Hoyle of the University of Oregon began to

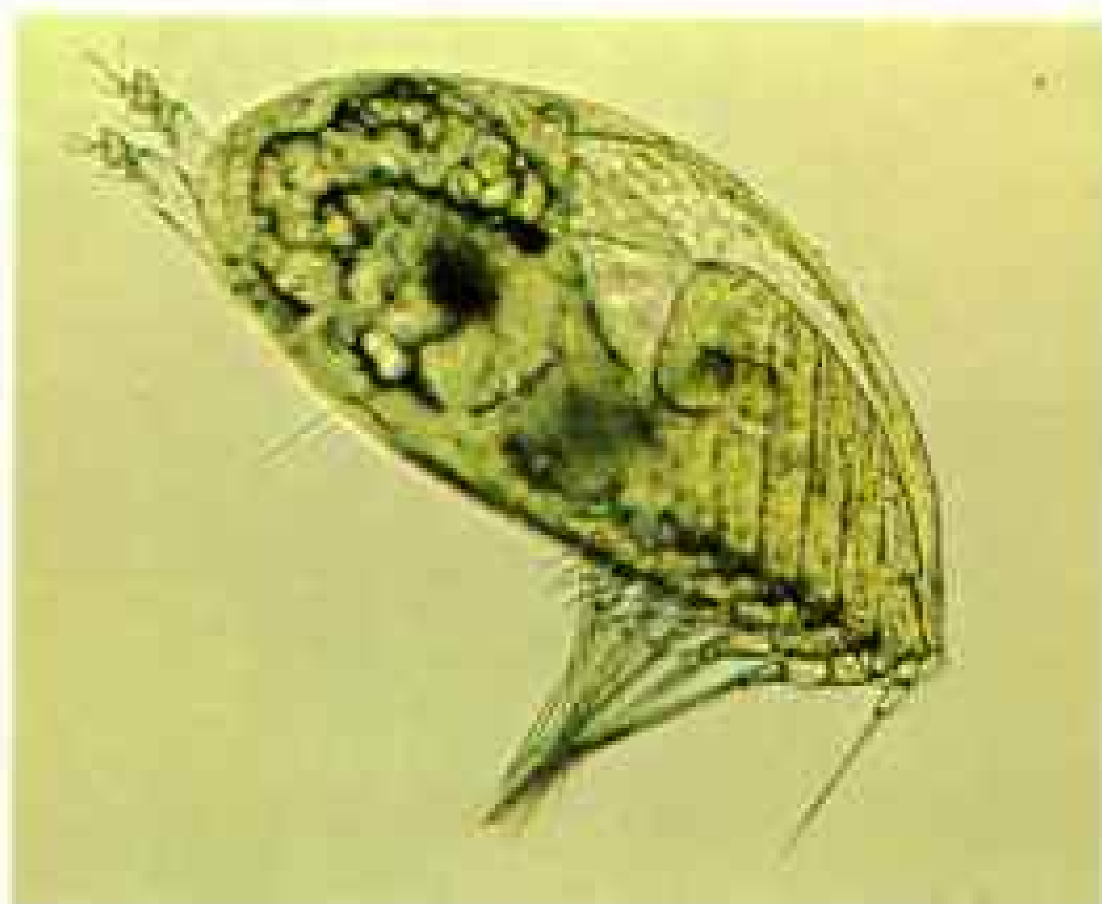
BARNACLE, BALANUS AMPHITRITE, 1/2 INCH AT BASE; SNAIL, OPEATOSTOMA PSEUDODON

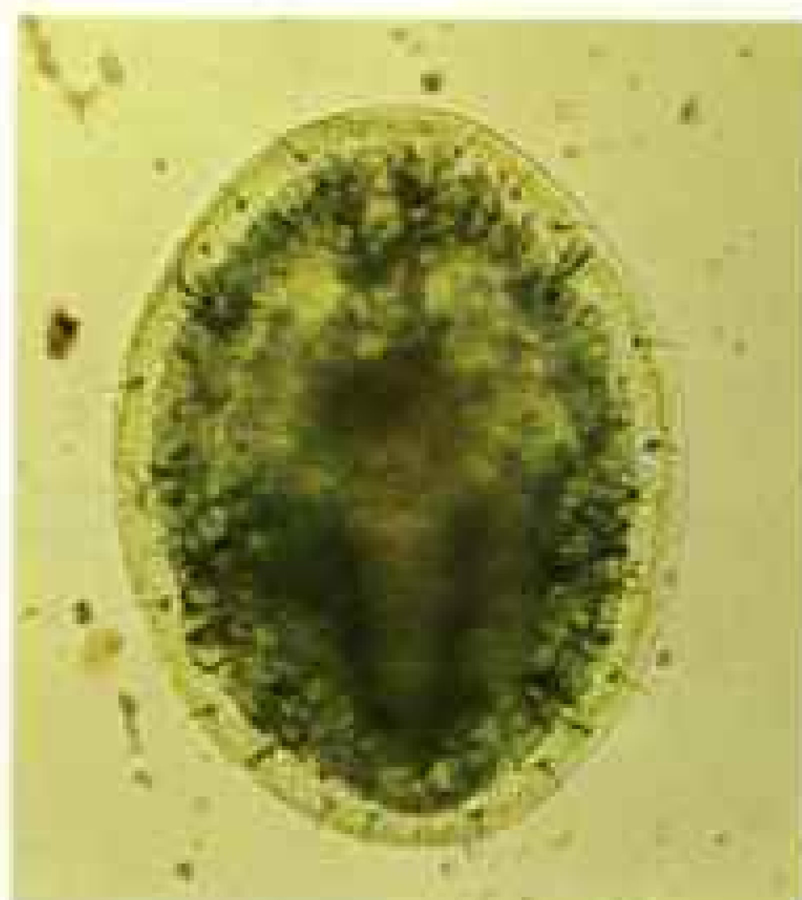
Daggerlike prong enables a marine snail from Panama to penetrate the barnacle's usually impregnable limestone fortress (**above**). Manipulating the weapon like a can opener, the snail deftly pries apart its victim's shell (**below, left**), blankets the hapless crustacean with its red foot (**below, right**), inserts its proboscis, and literally eats the barnacle out of house and home.

Problem: How to find a mate when you're glued to one spot. Most barnacles possess both male and female organs but do not impregnate themselves. Here two barnacles bridge the distance to a neighbor with long tubes (**above**). Eggs incubate and hatch within the parent, each becoming a larva called a nauplius. Soon the barnacle releases several hundred nauplii in a planktonic cloud (**upper right**). Like any crustacean, the larva (**near right**) wears an encasing cuticle, which it must shed and regenerate as it grows larger.

After several molts, the nauplius elongates into a cypris (**middle**), which swims and walks on leglike antennae in search of a permanent homesite. When it finds one, the young barnacle almost immediately starts to secrete the glue that will lock it in place for life. At the same time, the animal begins to take adult shape (**far right**).

PHITRITE (ABOVE, LEFT AND RIGHT), 1/5 INCH AT BASE; LARVAE (BELOW), 200 TIMES LIFE-SIZE





examine live specimens. In them he found some of the largest animal-muscle fibers in the world: They ranged from 14 to 20 times thicker than human ones.

"By first injecting highly sensitive chemical agents into the live fibers, followed by electrodes to stimulate them," Dr. Hoyle explained to me, "we were able directly to confirm the sequence of events—lasting only a small fraction of a second—that cause muscles to contract."

Balanus nubilus is not the only edible barnacle in the world. Coast dwellers in Greece, Spain, and Italy harvest goose barnacles (Lepadomorpha), which, to a New Englander like me, look more appetizing. With their long stalks (pages 626-8) they resemble the succulent long-neck steamer clams found in tidal flats along our shores.

Some people eat these barnacles raw, either plain or with a vinaigrette sauce. Or they may be steamed or grilled with butter. Unlike the steamer clam, it is the stalk, not the body, that is eaten.

Less of a pest than the cone-shaped variety, goose barnacles appear most frequently on floating objects like buoys and bits of rotting wood. Specimens fringe the edges of every continent, including Antarctica, but also venture far out to sea. During his reed-boat crossing of the Atlantic in 1970, Thor Heyerdahl found some in mid-ocean—firmly glued to globs of solidified oil.*

Through nauplius and cypris stages, goose and acorn barnacles lead parallel lives. But when settling time comes, the goose barnacle builds an almond-shaped wigwam and attaches itself by a single elongated fleshy stalk.

*The anthropologist recounted "The Voyage of *Ra II*" in the January 1971 NATIONAL GEOGRAPHIC.

Swaying on this stalk, the goose barnacle enjoys a little more freedom in feeding and breeding than its limpetlike cousin, but it, too, is stuck in place forever.

Mighty Myth Born of a Tiny Creature

In most parts of the world goose barnacles seldom grow to a size worth serving; those I've seen along the East Coast measure little more than an inch in overall length. But, small as they may be, they spawned a mighty legend that lasted more than five hundred years.

The myth, circulating in the British Isles before 1100, contended that the goose now known as *Branta leucopsis* hatched, not from an egg in normal bird fashion, but from creatures attached to floating timbers. The theory makes a certain amount of sense. Stalk, shell, and feathery cirri of goose barnacles could, with imagination, be seen as the neck, body, and plumage of embryonic birds. And no one had then found the Arctic breeding ground of the brant, or barnacle goose.

The strength of the bird-from-barnacle belief, especially in medieval Ireland, led certain Roman Catholic clerics to regard the goose as fish, not fowl, and allow it to be eaten on fast days.

In the 16th century the mystery of this goose was given a new twist in Du Bartas' *La Semaine*, which English poet Joshua Sylvester translated as "first a green Tree, then a gallant Hull, Lately a Mushroom, now a flying Gull." To both poets, stalked barnacles, appearing to sprout from water-soaked wood, could only be mushrooms.

It has taken several hundred years and ever closer observation for us to realize that the facts about barnacles are far more incredible than such fiction. □

PANULIRUS GUTTATUS; BARNACLE, BALANUS TRIGONUS, 1/2 INCH AT BASE

BARNACLE, LEPAS, 1 INCH LONG; SNAIL, JANTHINA JANTHINA

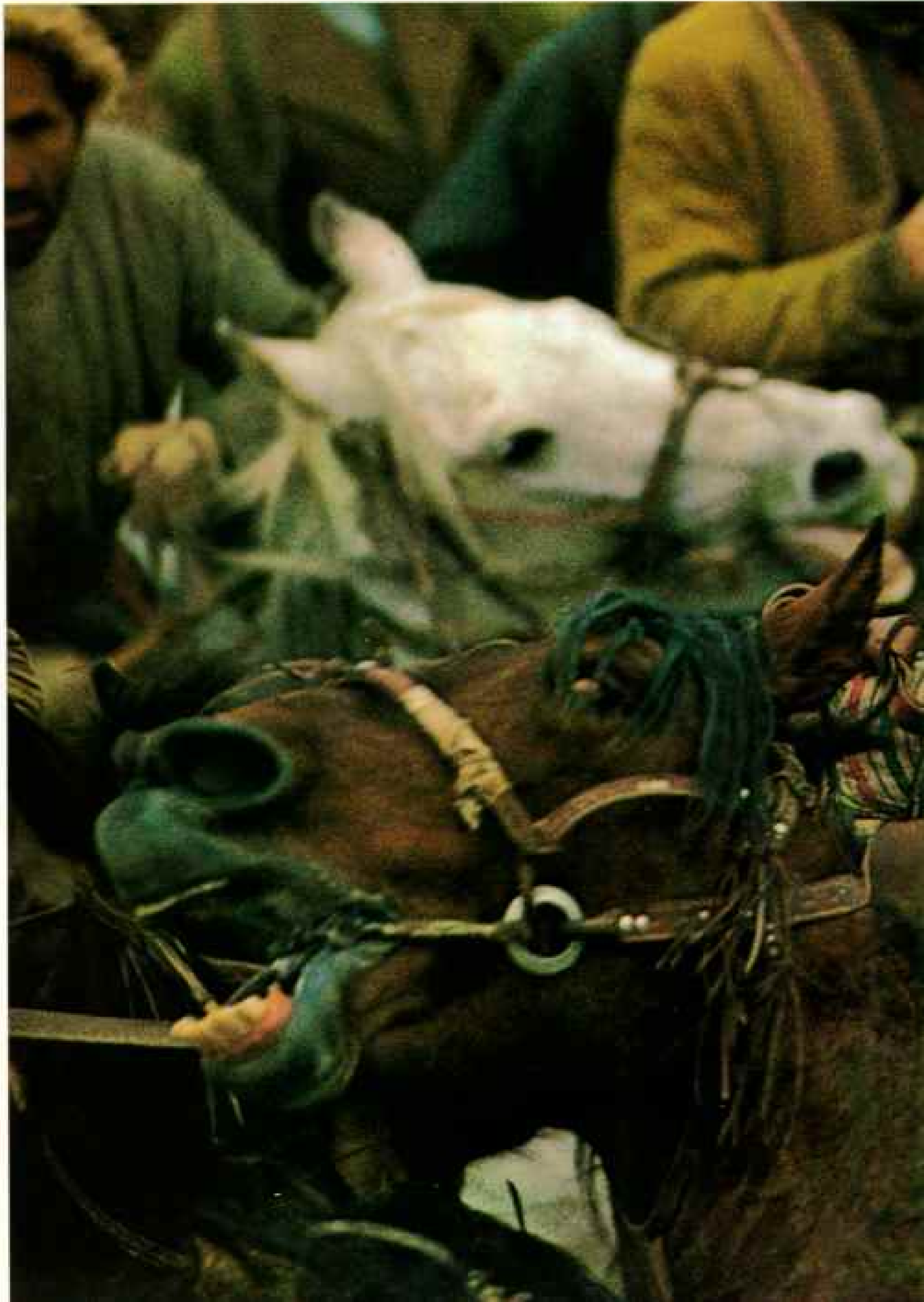
Burdened with a hitchhiking barnacle, a snail hovers near the surface, held there by its mass of flotation bubbles. In the background hangs a Portuguese man-of-war, upon which the snail feeds.

As if suited in rusty armor, a spotted lobster suffers from dozens of joint-jamming, encrusting barnacles (**left**). Fortunately, the unwanted growths rarely cause permanent harm and will be shed with the shell when the lobster molts.

Bold Horsemen of the

ARTICLE AND PHOTOGRAPHS BY SABRINA AND ROLAND MICHAUD

Fingers bound against injury, whip clenched in his teeth,



Steppes

Afghanistan's Turkomans hold fast to traditions of their nomadic forefathers, who once terrorized Central Asia

champion rider Hakim fiercely plays the violent game of buz kashi.

Horsemen of the Steppes

THE PILE OF THORNY BRANCHES on which I perch shakes dangerously. Turning to see what is causing this, I find myself suddenly nose-to-nose with a camel, which shows me its teeth.

I know, of course, that the ungainly beast is only trying to pull its dinner from the heap beneath me, which has been cut and stacked for its benefit. Nevertheless I am frightened by this unexpected confrontation with an open slobbery mouth and long yellow teeth that can bite so efficiently.

The camel wrinkles its enormous lips into a hideous grin and blows bubbles at me. It is too much! I recoil as if propelled by springs. Children who have been watching me, a foreign woman, shout with laughter.

I am angry with myself. For ten years I have traveled the remote areas of Central Asia and encountered thousands of camels, yet today I allow myself to be startled by one. I shout at the beast and threaten to bang it on its rubbery nose. It goes away. I return to my work.

That work, just now, consists of studying and photographing the Turkoman people of Afghanistan. I am not alone. With me are my husband and collaborator, Roland,* and our 4-year-old son, Romain.

Roland and I have lived among the Turkomans before, but this is Romain's first journey away from Paris. For the past several weeks we have been visiting villages and camps both along the Amu Darya, the Oxus River of the ancients, which for some 800 miles forms Afghanistan's border with the U.S.S.R., and in the countryside to the south, from Kholm—old Tashkurghan—to Andkhvoy.

The Turkomans are one of Central Asia's many Turko-Mongol peoples. These tribesmen, traditional nomads and superb horsemen, are the aristocrats of the steppes. They are descendants of Attila's Huns; their forebears rode with Genghis Khan and Tamerlane.

Until a century ago the Turkomans were brigands, the scourges of Asian caravans. They raided as far as Persia, and there took prisoners for the slave markets of Bukhara and Khiva. But they were also good herdsmen, ranging widely with the seasons in search of pasturage.

Being mobile, they evaded the controls of the governments through whose territories they wandered. They paid no taxes; rather, they extorted "protection" money from isolated villages, in return for freedom from their own depredations.

Though conquered by the Russians in the 1880's, the Turkomans remained fiercely nationalistic. Joseph Stalin's ruthless purges in the 1930's forced many to flee to Afghanistan. There they joined other Turkoman tribes already living sedentary lives south of the Amu Darya. The dashing bandits and heroes of song became peaceful agriculturists.

They remain, however, a closed and secretive people. As Moslems, they guard their women from the gaze of strange men. They dislike cameras, a serious handicap for us; worse, they are wary of outsiders.

One day a train of events was set in motion that was to lead finally to my perching upon a pile of fodder in order to photograph a Turkoman wedding procession near Shur Tappeh. It happened in this fashion.

One-upmanship Wins the Day

It is winter. The water pipes in the little provincial hotel are frozen. We must rely on the *hammam*, or public bath, of which, happily, there are many in this Islamic land where ritual ablutions must precede prayer.

Roland goes to a hammam and returns with an enchanting story he heard about Nassreddin, a mullah, or Moslem religious leader, who is supposed to have lived in Turkey in the 13th century. Stories are told about him all the way from the Balkans to Turkistan.

The village boys of the day admired Nassreddin greatly and loved to play practical jokes on him because he took them in such good grace. Thus one day, when they accompanied him to a hammam, each boy brought an egg hidden in his clothes.

When everyone was comfortably settled, one youth said:

"Let us play at laying eggs. He who cannot lay an egg must pay the bath bill for all."

So every boy cackled and put an egg on the floor. Nassreddin scarcely hesitated. He crowed and flapped his arms like wings.

"For all these hens there must be a rooster," he said. "As the rooster, of course, I need not pay the bill."

Tuesday arrives, the day set aside at the baths for women and children.

"Come, Romain," I say to my son, "put

*The authors, among the few Westerners to visit this area, described the Wakhan corridor of Afghanistan in the April 1972 NATIONAL GEOGRAPHIC.

away your toys, we are going to the bath."

We enter a dressing room, where we leave our clothes on earthen benches. We put on wooden sandals, for the floor, also of earth, is wet and sticky.

In the steam room, which has a raised section in the center, the bathers rub themselves with rough gloves of horsehair and scratch the soles of their feet with pumice, everyone perspiring and panting with the heat.

Romain finds it too hot. We go into the next room, where there are basins of hot and cold water. Happy as a fish in a stream, Romain splashes himself. Soon he finds a friend, a small boy named Kalim. The two children laugh and play.

I assume the young woman with Kalim is his mother, but she tells me the child is her sister's son.

"I'm not married, and I never want to be," she says with a frown. "Here a girl cannot choose her husband and may not refuse the one her father picks for her."

Suddenly she asks me: "Have you ever been to a Turkoman wedding?"

"No. Do you suppose I could?"

"You'll come with me. I have a girl cousin who is to be married in a few days. I will arrange for you to see everything of the wedding except the ceremony, which is carried out privately before a mullah and two witnesses."

I could not have hoped for more! For weeks I had been trying to get into the women's quarters of a Turkoman household. On a few occasions village chiefs had ordered that I be admitted into someone's home, but these visits had proved unsatisfactory. The people had felt themselves imposed upon.

Now, in the unlikely milieu of a bath, I have been invited to a Turkoman wedding!

Mock Abduction Gets a Bride

On the appointed day we set out for the village where the cousin of my new friend Zulfiya lives. An icy wind sweeps the *chul*, the steppe. Guided by plumes of smoke, we pass a camp of yurts, the felt tents of those Turkomans who remain nomads.

The tribesmen who still wander with their livestock carry their yurts with them. Though many have settled in towns or villages, outside their houses of mud brick they still keep yurts, memorials to nomad days.

Their cheeks red with cold, little boys surround our four-wheel-drive vehicle. An old man tells us we are welcome. The sky weeps great snowflakes; they settle on every blade of grass, turning them into dream flowers.

We arrive just in time. The men of the village, led by the groom's father, are making up a caravan to bear the bride-to-be to her new husband.

They have ordered the camels to their knees and are harnessing them. The harness of one is especially rich and bedecked with beaded pompons and silver bells.

On each side of the animal they attach wooden platforms on which the bride and her attendants will ride. So that she remains hidden from public gaze, there is atop all a

Free rovers for centuries, Turkoman tribes crisscrossed Central Asia with their herds, raiding villages and caravans for slaves and booty. Then, in the 1880's, Czarist soldiers subdued them, and closed the slave markets of Bukhara and Khiva. Now most of the 1,500,000 Turkomans live peacefully in the border regions of the Turkmen and Uzbek S.S.R.'s, Iran, and Afghanistan. The authors, French writer-photographers, spent six months among some 400,000 settled in northern Afghanistan's Amu Darya river plain.

framework covered with fine carpets and decorated with bright scarves and talismans.

Some of the men drag a large carpet to the door of a yurt. They fight a mock skirmish with those inside: They are ceremonially abducting the bride from the home of her father, who has kept her as long as he can in order not to lose the income from the sale of the rugs she weaves.

The intruders place the veiled girl on the rug and carry her to the richly bedecked camel. With slow and measured gestures women in long robes and lofty coiffures wish her prosperity and happiness. Opening their hands to the sky, men pray.

The bride's camel quits the compound. The others, bearing women and young girls, follow in a caravan (pages 644-5). Thus does the Turkoman girl leave her family. Seated on a rug she has woven with her own hands, she is borne away to her destiny. Perhaps in similar fashion the magic carpets of Oriental tales carried princesses into new lives.

Bride Receives New White Yurt

The caravan moves along. The silver bells the young girls wear on their festive attire tinkle joyously. The tambourines in their hands beat a lively rhythm. The girls sing, "*Kilin aljak, kilin aljak!* We are taking the bride away!"

And what of the girl hidden upon the swaying camel? What is she thinking? She is probably wondering what her new husband, a man she does not even know, is like!

The last camel moves by. We follow. The procession goes to the bridegroom's village. It halts before the yurt—so new it is white as snow—that he has erected for his bride. (It will blacken with smoke, to become the *kara uy*, the "black chamber," that the Turkomans call their tents.) Still on her rug, she is carried inside and stays there until evening, surrounded by her female friends.

After dinner the friends leave. The bridegroom comes with two witnesses and the mullah who will perform the ceremony. We were not allowed to witness the brief wedding, but my friend Zulfiya told me how the ritual is performed.

"Have you chosen this young woman for your wife?" the mullah asks the groom.

"I have."

"You have heard?" the mullah asks the witnesses.

"We have heard."

Galloping off to do battle, but only as rivals in the marketplace, men of Zadian leave families behind in mud-walled seclusion. Only the dark circular yurt, set up behind trees at right, recalls nomadic days. Otherwise, this Turkoman village

follows the model of long-settled Uzbek and Pashtun neighbors. Using only mud, men construct ingenious domed dwellings. Each compound shelters a man's wife or wives, his sons with their families, and unmarried children. A separate building houses guests. In courtyard gardens irrigated by canals that burrow under the outer walls in the foreground, succulent melons and apricot and almond trees flourish. In the fields beyond, men raise one crop of wheat a year.

Now he puts the same question to the bride, but when he asks the witnesses if they will vouch for her reply, it is customary for them to say they have not heard her.

The girl must then repeat "yes" very loudly. The mullah blesses the couple and congratulates them. For the first time they find themselves alone.

The next morning two old women who have been given the duty of ascertaining whether the marriage has been consummated must answer the question, "Has the boy become king?"

When the groom's father asked for the young girl's hand, he offered his son as her "slave," but now, if the old women answer "yes," the son is no longer a slave but an absolute monarch, even gathering the proceeds from the sale of the carpets his wife will make.

Extra Wives Reduce the Work Load

As for the girl, she becomes a part of a new household in which she will never cease working, weaving, and having children. Sometimes her husband takes a second wife, perhaps a third, and even a fourth, which makes the work a littler easier for each.

But for all, the life is the same. Smiles are small, laughter rare, yet the magic fingers of these women of queenly bearing produce true works of art, the glorious Turkoman carpets (pages 656-7). On the great looms unfold silent gardens of deepest red, through which flow brooks alternately bathed in light and shadow—scenes of paradise as described in the Koran.

The weavers work with every ounce of their energy, burying their joys and sorrows alike in their carpets, forgetting even the baby in its hammock hung above the loom. Sometimes, as I watch them wield the great scissors with which they even the strands of wool, I sense a symbolism: They cut themselves off from the world; they accept their lot with calmness and serenity.

In their finished work as well there is symbolism. The rhythm of the patterns, differing from tribe to tribe, is that of the changing seasons, perhaps also that of the footfalls of marching camels—the rhythms that are so basic in nomadic life.

Seeking better understanding of the weaving women, I crouch often beside their looms and with my clumsy fingers try to tie some of the thousands of tiny knots that go into every carpet. The women smile and patiently guide my hands. They answer all my questions, even asking their mothers or an old neighbor the names of ancient patterns in which I express an interest.

I can give so little in return! I hand out a few aspirin tablets and doctor small cuts or sore eyes. But Romain's presence proves to be my best gift to them. At his slightest display of strange foreign ways they chuckle gleefully. His spontaneous friendship delights them, and when he joins naturally in the games of their own children, he wins their hearts completely.

Unhappily, some of the women are abandoning the traditional carpet designs in favor of those of foreign lands. This is to satisfy the demands of the international market, which are so great that workshops have recently been opened for men, whereas only women wove rugs before—and they weave only at home.

Chemical dyes are replacing the old vegetable colors. However, I have seen women using madder, *Rubia tinctorum*, an herb that produces extraordinary reds. But to dye the wool for even a small carpet, a good deal of madder root is required, and this costs twice as much as chemical dye.

Birthday Cake Perplexes Hosts

Today is Romain's birthday. We are dinner guests of the governor at Kaldar, a big Turkoman village on the bank of the Amu Darya. A *bukhari*, a primitive wood stove, heats the room. For light there is a kerosene lamp, and for comfort, rugs spread on the floor.

A number of village personalities, all of them men, are with us. Wrapped in silks as beautiful as the robes of kings, heads swathed in turbans as majestic as crowns, they might have stepped out of centuries-old Oriental

(Continued on page 650)

Serene in seclusion, 22-year-old Bibi, or Lady, Aqbika drops her veil for Sabrina Michaud. The authors' 4-year-old son won the hearts of secretive womenfolk, paving the way for his mother's entry into their innermost circles. The Turkomans converted to Islam in the 11th century but did not veil women before strangers until the tribes settled to till the land; now they follow the strict customs of their neighbors.

Simple safeguard for precious treasures, a wooden-rail gate marks the normal outer limits of a woman's world. At night an iron padlock (**opposite**) seals the entry, and fierce dogs stand guard duty. Despite such precautions men from other villages sometimes sneak in to steal, since the family may hoard a fortune in silver jewelry (**below**).

Rugmaking earns the money for the gifts of silver, which under Moslem law become a woman's property. She wears the bracelets constantly, but the cumbersome

interlinked rings—ajangle with bells—appear only at feasts. The red carnelians, Turkomans believe, ward off eye disease.

To win a Turkoman bride in this land of arranged marriages, a lad must depend on his father as matchmaker. The older man offers the bride's family a pledge of good faith, usually $1,000 to $1,500 in livestock, grain, and cash, paid in installments—a small fortune to a Turkoman. In return, the girl's father spends at least half this bride-price on his daughter's dowry.

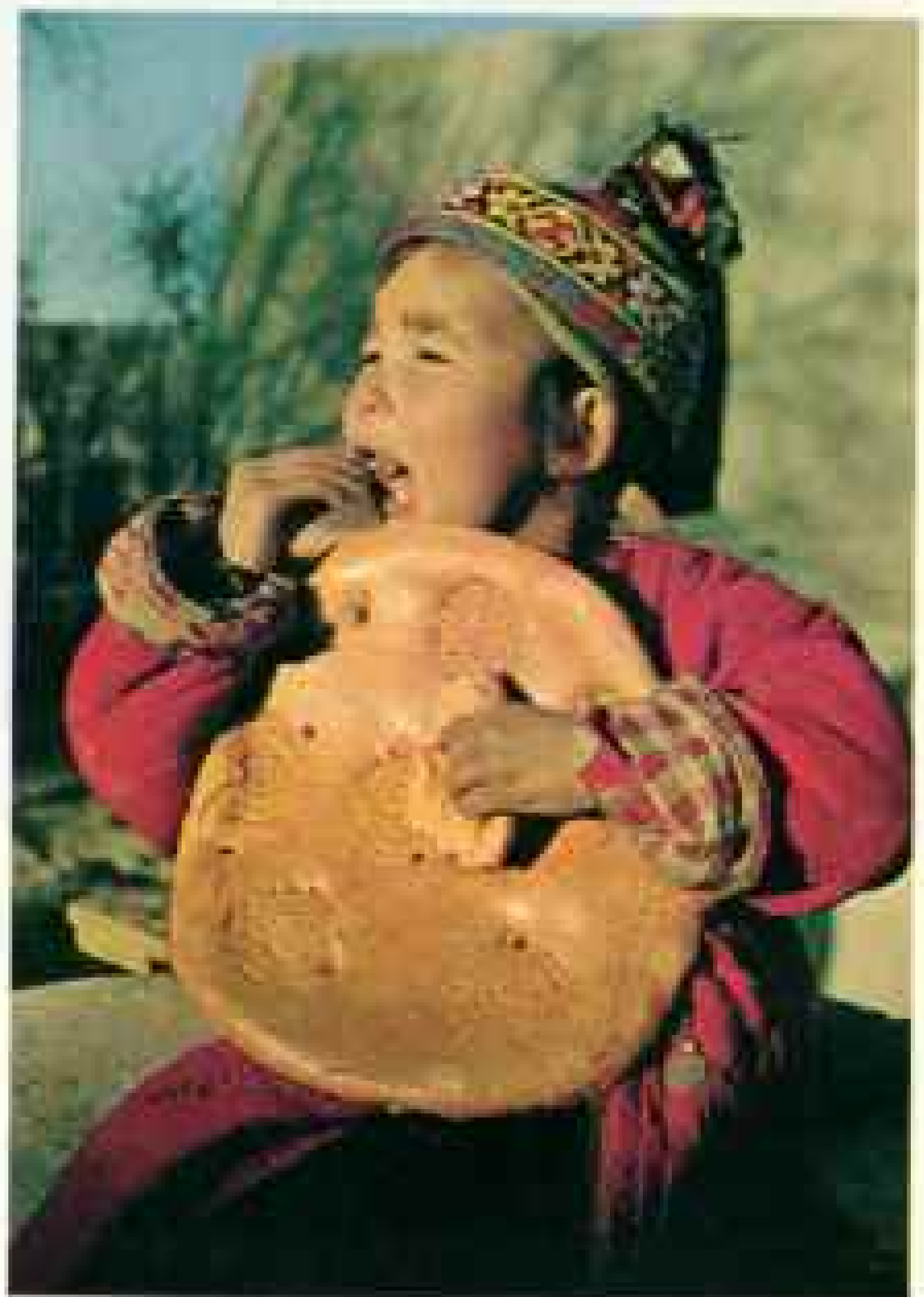
"We are taking the bride away!" The joyous refrain rises from a wedding caravan, a river of color in the sere winter landscape. Earlier the groom's father paid the last of the bride-price,

and now in a mock abduction he takes the girl—concealed under the red-and-indigo cloth on the lead camel—to his waiting son. Many women guests ride on platforms slung on either side of the camels. Gauze draped over a frame shields the family at far right. A young couple may know each other, having played together as children, but more often they are strangers.

Happiness hidden, Bibi Gulchera peeks from the veiled high-crowned hat that proclaims her new status as a matron. The day after the Moslem ceremony, surrounded by her dowry of carved chest, quilts, and linens, she greets friends. She married her first cousin, a relationship considered most desirable for couples. The son of a *bey*, as a large landowner is called, he will continue medical studies at Kabul University, while she remains in his father's compound.

Waiting to call on the bride, friends (**above**) listen to the music of a tambourine (**right**). Single girls, who wear belled caps, may wait years to wed because of the high bride-price set by their fathers.

Lunch is a two-fisted affair for 5-year-old Aghabil. Every day her mother bakes great disks of the whole-wheat bread that is the staple of Afghan villagers.



Signaling a special occasion, carefully watched pots of mutton boil atop mud-walled stoves, a welcome change from the usual fare of pilaf or bread and vegetables. Preparing a wedding feast, the senior daughter-in-law in a bey's household, at right, directs helpers in her yurt kitchen. In nomadic times, women could fold the felt covering and lattice walls and load them on camels in less than an hour.

A bey's daily life differs little from that of a small farmer or tenant. The wealthy sometimes buy Russian tractors, Swiss watches, and Japanese radios, but they rarely veer from the traditional clothing, goods, and status symbols of their own society—silver jewelry and fine horses.

Glimpsing another world, boys of Zadian gaze in wonder at the authors drinking tea in a farmer's guest room. Such rooms have the best of furnishings and often the only windowpanes in a compound.

Bazaar day brings a Turkoman to an Uzbek barber in the market town of Andkhvoy. Many men agree on the healthful benefits of a shaved skull. Afghan villagers cover their pates with deftly wound turbans. Colors of the striped robe, or *chapan,* identify the town where it was woven.

(Continued from page 640)

paintings. Some have handsome ivory countenances, some are old and wrinkled, others display the waxy faces of opium smokers. One puts us in mind of a wicked sultan.

We have a small cake and on it put four candles we have brought from France. We sing "Happy Birthday to You." Making a great effort, Romain blows out all the candles. Our Turkoman friends are mystified by all this. Yet everyone smiles and applauds and gracefully accepts a slice of cake proffered by Romain. The winter wind howls outside, but we are warm and among friends.

Special Streets for Special Trades

The next day is a market day. I will buy sugar at the bazaar for Romain's tea; he does not like it unsweetened, as the Turkomans drink it. The bazaar is a place of animation. On donkeys, camels, and horses, people have come from the four points of the compass to buy and sell.

The tradesmen are organized into guilds, as in medieval Europe. Each guild has its street: The weavers weave here, the carders of wool card wool there; an alley is lined with glowing braziers of the blacksmiths. Behind scales, merchants smile enigmatically. They finger their account books, bound like copies of the Koran. Abacuses rattle.

I spend hours watching the coppersmiths at work, heating, molding, hammering with precise and beautiful movements as old as all Central Asian mankind. I like, too, the jewelers who, aided by their young apprentices, melt silver coins from which they fashion pendants, bracelets, necklaces, and brooches. The latter are set with carnelian, a stone believed to guard eyes from disease.

But where is Romain going? Jewelry interests him less than it does me, so he goes to watch the *patragar,* or mender of china. The craftsman sits on the ground, bracing the broken vessel between his feet, and works with a bow drill, with wire, and with glue made of lime and egg white (page 658). In this poor land even the cheapest teacup goes to the patragar for repair.

Now I lead Romain into the street of the cobblers, for he needs new shoes. Turkoman shoes are ideal for a small boy: The right and left ones are the same, so he cannot make a mistake. Such variety! Low shoes with turned-up toes and camel-leather soles. Heelless indoor boots in softest goatskin. Small yellow boots, women's shoes of green pebbled donkey leather and horsehide, horsemen's high-heeled boots.

I see wooden chests decorated with bright patterns cut from ordinary sheets of oilcloth, nailed to the wood with big-headed nails. I inspect wicker birdcages, strange musical instruments, herbs and condiments, enormous blocks of rock salt brought by caravan from the Andkhvoy region, and piles of oranges

from Jalalabad, some sweet, some bitter.

Romain is intrigued by an old man who mumbles a monotonous chant while whirling a smoking censer above the little boy's head. The man is a dervish. In the censer is burning charcoal, over which the dervish scatters seeds of *isfand,* or wild rue, the smoke of which is supposed to repel evil influences.

For keeping Romain free of evil influences, I give the dervish two oranges. He then goes from shop to shop, swinging his censer in each and collecting coins or bits of merchandise.

The voice of the muezzin sounds from the minaret balcony. The call to prayer is not a recording, as is so common today in the Islamic world; the muezzin appears in person. For us it is time to lunch with Roland, whom we see just coming from the barber.

Creaking mill of ancient design crushes cottonseed, the first step in the production of cooking oil. Power comes from a blindfolded cow, prodded by a stick in its master's hand. The Afghanistan Government encourages farmers to grow more cotton to fill orders from other countries for the raw fiber. Russians in the 1880's introduced long-staple American cotton to Central Asia.

"Oh *maman,* papa has a pointed beard," shouts Romain.

Too true: The barber has shaped Roland's beard so that he looks like an Afghan *bey* returning from a pilgrimage to Mecca.

In a small restaurant run by a fat man we eat liver with onions *en brochette* and a hot bread pancake. And we share one plate of *palao,* or pilaf, for it is very greasy.

"I eat two plates of palao," boasts the fat man. Then, staring at me, "Is this tiny woman your only wife? I have two big fat ones."

"Now I know why you eat two palaos," says Roland. "Two wives, two palaos. One wife, one palao."

We go next to a teahouse. We take off our shoes and sit on the floor of packed earth covered with fine carpets. No local woman ever comes to a teahouse, but it is all right for me, a foreigner, to do so. We are always given the best places, next to the stove.

The walls are painted with simple pictures of pomegranate flowers, birds, and melons, and decorated with framed pictures.

Trained Bird Speaks in Persian

Sunlight filters through screens of branches and rushes. It falls on golden and silver ewers and on gleaming copper samovars. It lights like a butterfly upon the silk turbans and striped *chapans*—caftans—of the guests. The delicate colors of their clothing tell where each man comes from: green and violet for Mazar-e Sharif, mostly beige for Sar-e Pol, wine for Aqcheh.

In a cage hanging from a ceiling beam a myna chatters in Persian, the lingua franca of Afghanistan, a language we are beginning to speak. Another wicker cage holds a chukar, a belligerent little partridge used in fights on which bets are made.

We slowly sip our tea—Roland a black one from India, which is said to warm, and I a green Chinese one, which refreshes. A water pipe circulates among the other guests. We hear them exchanging greetings and news.

"Is your bazaar hot?" asks one, a question that means "Is your business good?"

There is much talk about the price of wheat and of the current market for Turkoman silks and Astrakhan fur, other elements of the Turkistan economy.

A man asks us where we are from. He offers Romain sugared almonds. Our son thanks

Colossal spring cleaning: Men of Dowlatabad clear an irrigation channel to carry snowmelt

him in Persian. The man is delighted, and so are all the other teahouse guests. They ask him to count in Persian, and Romain does so, to ten. This is nothing new for the boy. Everywhere he goes in Turkistan someone undertakes to teach him how to count.

The teahouse we have chosen is part of a caravansary, which is a stopping place for caravans. Here the caravaneer can find a room for himself, fodder and a resting-place for his beasts, and warehouses in which to store his goods. In the old days he found refuge from brigands as well.

The caravansary is a square of buildings and walls surrounding an open courtyard; the latter is a parking lot for animals and also for the trucks that are slowly replacing them.

When we step out of our teahouse, we find ourselves in the courtyard.

"*Khabardar!*" shouts a horseman who is entering. "Watch out!" We step aside, he comes in and stakes his horse to a wooden peg in the ground.

He pays the keeper of the caravansary the equivalent of a cent and a half for a day's stop. Fodder is extra. Rates vary according to the kind of animal.

The caravansary keeper augments his income by gathering and selling manure. The price of this bonanza varies according to the kind of manure and how much straw and grass are mixed in it. Sheep manure is held

from a nearby river. Each farmer contributes labor based on the amount of water he uses.

to be excellent for cooking fires. That of cows and donkeys, when molded into pats, produces excellent heat and is believed to keep mosquitoes away.

We note that the caravansary keeper is now gathering manure. Romain would very much like to aid him in this interesting task, but we manage to dissuade him.

Little Flame Gives Big Assurance

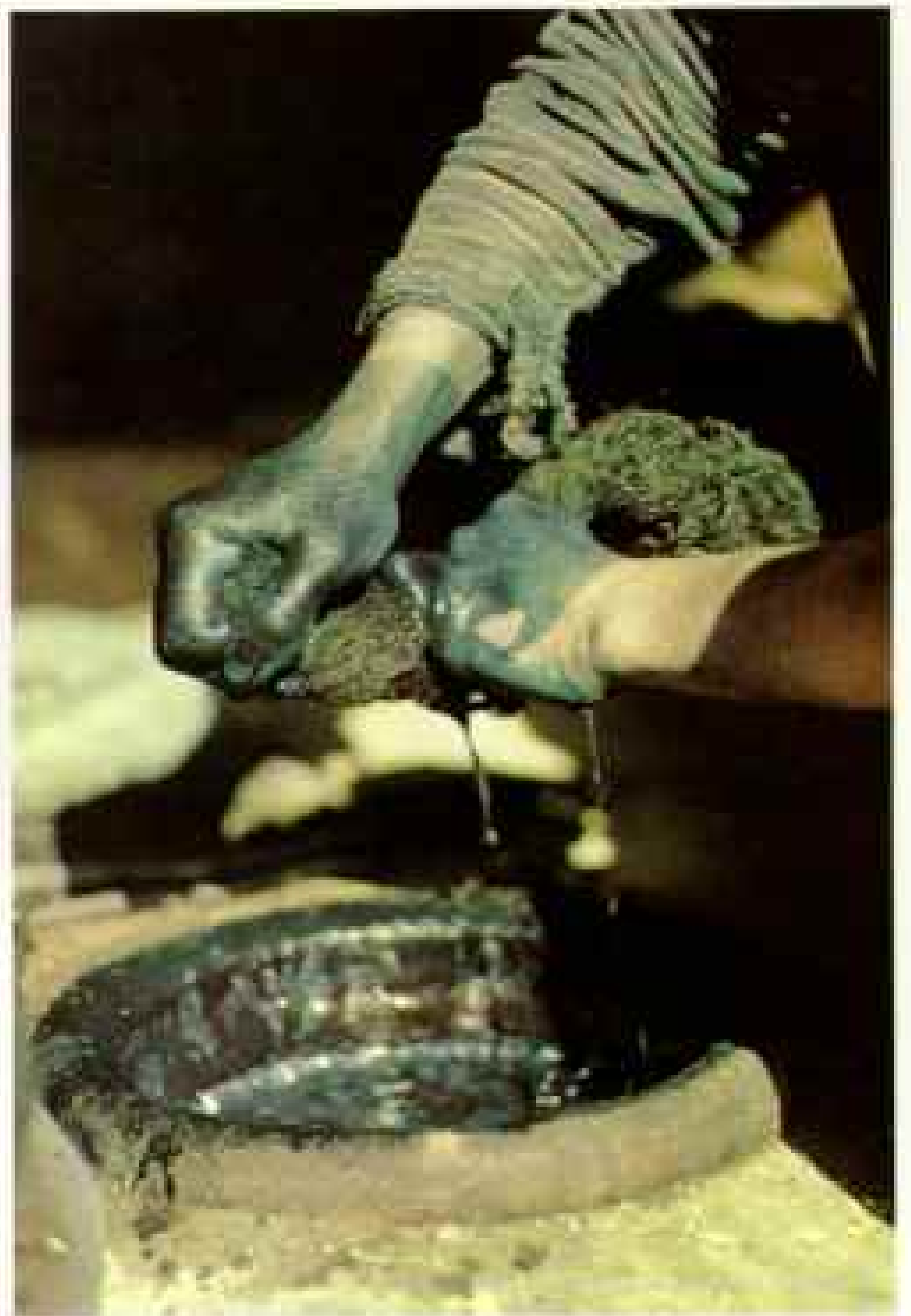
Toward evening new guests arrive. These are the big caravans that pass the winter days traveling across the steppes. Loaded upon the camels we see flour, forage, cotton, salt blocks, and charcoal.

Night falls. The marketplace is closed. Watchmen patrol the deserted streets, calling out to each other in the darkness.

Before the locked shutters of every third or fourth shop they hang a little kerosene lantern. These do not give a great deal of light, but when, in the middle of the night, I am awakened by a howling dog and glance out my window, I find reassurance in the sight of the small wavering flames.

In the morning we set off by car for Sheberghan, following a line of telephone poles standing at drunken angles across the infinitude of the steppe. It is winter and there is snow on the ground, but this sometimes melts under the sun and the ground softens.

(Continued on page 660)



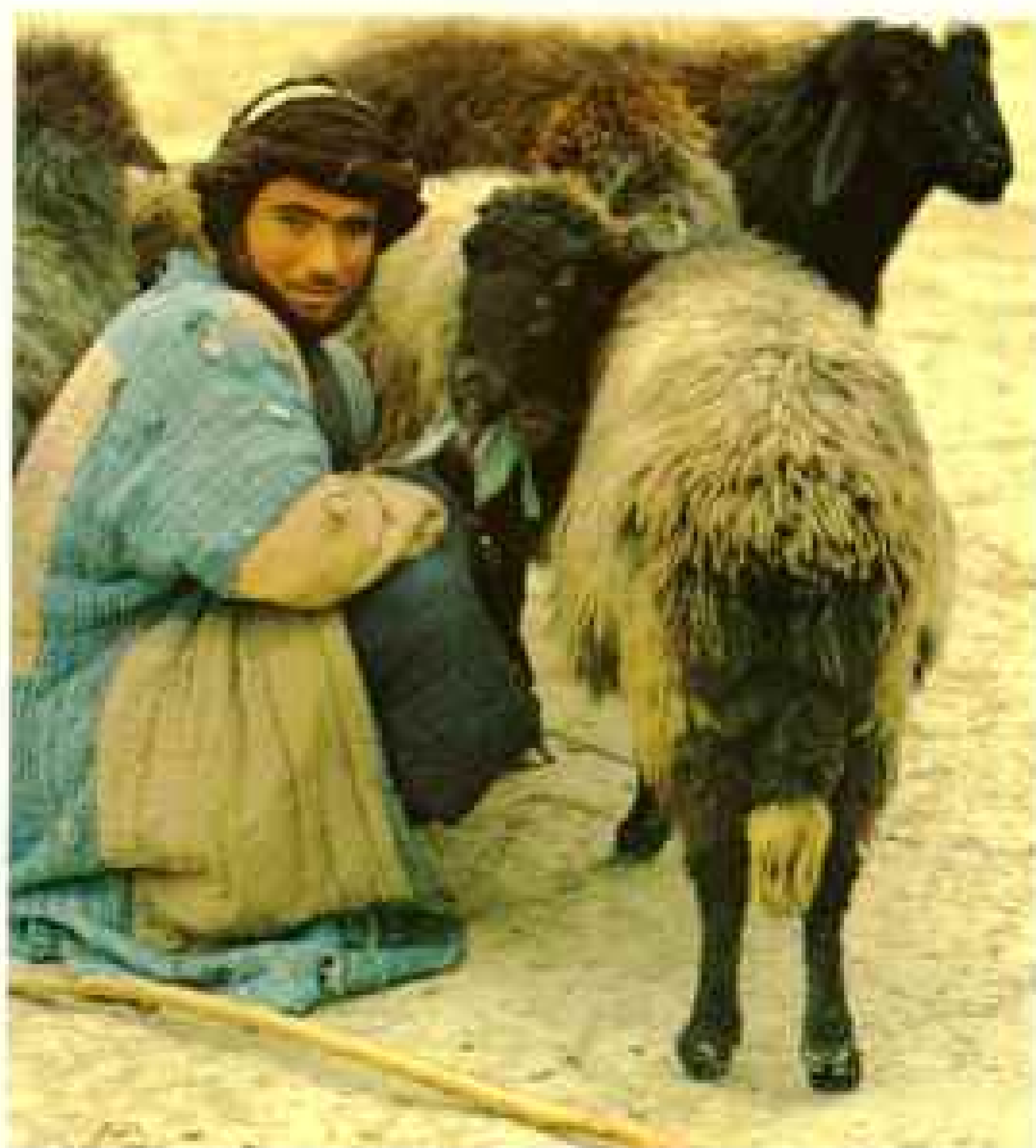
Conjuring a paradise underfoot, the Turkoman women create rugs with the help of every member of the family. Men buy the finest wool they can afford for their women to card and spin. Then they carry it to a bazaar, where dyers specialize in the favorite Turkoman colors: red and indigo (**right**).

In a barren room (**below**) two women labor over a horizontal loom, while a child attends a baby.

A weaver needs only three tools (**opposite**) and the memory of the design her mother taught her. She knots a strand of wool around a thread of warp, cutting the ends with the sickle-shaped knife. After each row she tamps the line with the heavy comb. Finally, using shears, she clips several inches of shaggy tuft to an even height. This six-by-nine-foot carpet—representing two months' work—earned Altibulaq weavers about $250.

With a jeweler's finesse, a china mender carries out his delicate task amid the bustle of Dowlatabad's bazaar. Feet for a clamp, he uses a bow drill to make tiny holes in a broken bowl. He will glue the pieces and wire them together to assure a permanent mend. The craft flourishes in a land where every coin counts; even the cheapest replacement may cost ten times as much as repair.

Comparing quality, Turkomans bring homecrafted rugs to the Andkhvoy bazaar (**right**). A village's reputation and the quality of wool, dyes, and workmanship determine a dealer's offer. With much of the money, a man buys jewelry for his wife and daughters—their savings account.



Woolly assets go to market guarded by the shepherd hired to tend them all year. Each brings about $5. The fat tails that help sustain the animals through summer droughts are rendered into oil for cooking pilaf. From Turkoman herds of Karakul sheep come the coveted skins of the newborn, known as Persian lamb, or Astrakhan, an important Afghanistan export.

Curtained by camel meat, a butcher awaits customers at the Shur Tappeh bazaar. He charges only by weight, regardless of the cut.

Then trucks sink into the ground and leave deep furrows.

The extreme variations in Turkistan temperatures have given rise to a nickname for the land, "Country of the fan and of the fur." During the blazing summers, not a drop of rain will fall.

We keep the line of poles in sight at all times, for the truck tracks are legion, and confusing to follow; they lead off in all directions.

"Tong! Tong!" chants Romain. His sharp young eyes have spotted a caravan ahead, and he alerts us with the onomatopoetic Turkoman word for camel bell.

The caravaneer ties the bell to the neck of the last camel in his caravan, a string of from five to a dozen beasts roped together. Should he be riding in the lead and doze off, the sudden silence of the bell would awaken him if a thief tried to steal the tailender.

We watch the caravan pass. It cuts directly across the line of poles and seemingly follows no landmarks, but we know the caravaneer will not lose his way. Like a sailor at sea, he navigates by the sun and the stars, as his forefathers did before him.

We see flocks of sheep and goats on the steppe, although the area has been drought stricken for three years, and the livestock of this part of the country has been reduced by 80 percent. Romain would like to run after the flocks, but we do not let him go until we see that the shepherds have restrained the great mastiffs that guard the animals. They are very dangerous.

Often a shepherd picks up a curly lamb for the little boy to pet. This is the celebrated Karakul of the Turkomans, which produces the fur called Astrakhan, for the Volga port from which it was exported in large quantities.

The manner in which the pelt is obtained is cruel. For one grade of fur the lamb is slaughtered a few days after birth. For a still better quality pelt, the ewe is killed and the unborn lamb skinned.

The one that Romain is petting has been saved for breeding stock. Grown, it will be an extremely rugged animal, well suited to the rigorous climate in which it lives. It carries a reserve of fat in its tail (preceding page). During the summer when the baked ground produces no nourishing grass, the sheep can live on the stored fat.

Arid Land Yields Fruitful Harvest

We drive on. Flocks of crows blacken the sky. The villages we pass are drear. We stick first in mud, then in sand, then in mud again; the steppe can be anything from black soil to sand dunes. The people of the countryside come to our aid and help us pull the vehicle to solid ground.

For all its aridity in summer and muddiness in winter, the plain to the south of the Amu Darya, called Bactria in olden times, has always been famed for its fertility.

The secret is irrigation: With water the land produces cotton, a number of grains, vegetables, and fruit in abundance. Some of the ditches crossing the landscape are centuries old.

If the Turkistan mulberries, almonds, apricots, and pomegranates are good, then the grapes and melons are little short of magnificent. The grape is said here to be the

king of the fruits. But the melon is the sultan. It is told of certain thin-skinned Turkoman melons that when they are about to come to full ripeness, they will burst at the sound of a passing horse's hoofbeats.

Perhaps 400,000 Turkomans live in Afghan Turkistan, but this is only approximate, for they have never been counted. They are not alone in their region. The Uzbeks are more numerous, and everywhere one meets Pashtuns, the last conquerors. Then there are Tajiks, undoubtedly the oldest people of the area, and some small Arab colonies.

The Turkomans, however, give Turkistan its unique character. Sometimes they call themselves the "people of the black"—*kara halka*—because the color black, kara, touches so much in their lives.

Their black sheep, the Karakul, sometimes graze on the Kara Kum, that black desert which lies mainly in the Soviet Union. Their yurts become blackened by the smoke of their cooking fires. And some are fond of opium, the *kara khan,* or black king.

In a small village we halt to drink a cup of tea. We ask many questions, seeking to learn what sort of events will be taking place. This time we are richly rewarded.

At Kavochenaq, not far from where we are, the rich landlord Khan Bey announces that in three days he will sponsor a *buz kashi* to celebrate the circumcision of his two sons. Although the sky outside is leaden and the wind glacial, the news brings joy to our hearts.

Buz kashi is the game which, for us, stands out above all others. In fact, buz kashi is why we are traveling in Turkistan during the winter. The game is so strenuous that it is rarely played in the Afghan summers.

It is a game for horsemen, containing elements of polo and cavalry warfare (pages 662-5). It is fast, rough, and even brutal. In the past it was literally murderous.

Almost any number from ten upward may play. In the more or less formal buz kashis of the Afghan cities such as Kabul, the players are divided into teams. In the country, as at Kavochenaq, it is every man for himself.

Heavy "Ball" Makes a Rugged Game

The "ball" is the headless carcass of a goat or a calf. On the eve of the game the animal is slaughtered, gutted, filled with sand, then sewed up and soaked in water during the night to increase its weight. It ends up at somewhere between 60 and 80 pounds.

The game opens with the carcass in the center of a circle, drawn in lime, which is called the *hallal,* or circle of justice. The chief of the buz kashi signals. The horsemen, ranged about the circle, plunge for the prey.

Leaning far out of his saddle, each player tries to pick it up, tuck it beneath one leg, and gallop for a distant pole. Every other player tries to snatch it away from him as he careers across the open steppe; there are few boundaries to the buz kashi field. If no one seizes the carcass, the man who has it circles the pole, gallops back to the circle of justice, and there drops the calf for a score.

The prize? A small bill, a gold coin, rarely a valuable camel or horse. Glory is the real reward. Rich men like Khan Bey keep stables of the strong, carefully bred buz kashi horses, along with their trainers and riders.

(Continued on page 667)

Strong men wrestle until one pins the other's shoulders firmly to the ground. Beys sponsor wrestlers, musicians, comics, and animal acts for celebrations such as weddings, circumcisions, and holy days. Everyone is welcome, giving a sense of belonging and a good meal to the most impoverished villagers.

Cantankerous camels tug on the last morsel of their meal. Fueled by brambles and grasses, they still serve as the trucks of the steppes.

Unleashing a whirlwind, buz kashi players hurtle madly across the steppe, scattering spectators like chaff, in a game said to date from the days of Genghis Khan. Rider on the leading white horse grips the

"ball," the tattered carcass of a calf, under his leg. He attempts to carry it around a post—sometimes as far as a mile away—and back to a winner's circle, while keeping it out of reach of competitors.

Fierce centaurs, horses and men move as one in buz kashi. Anyone can play, though only professionals bear the proud title *chopendoz* and the right to wear a gray fleece cap trimmed with wolf or fox fur. Each draws a salary from a bey who breeds and trains the mounts and sponsors the weekly wintertime games.

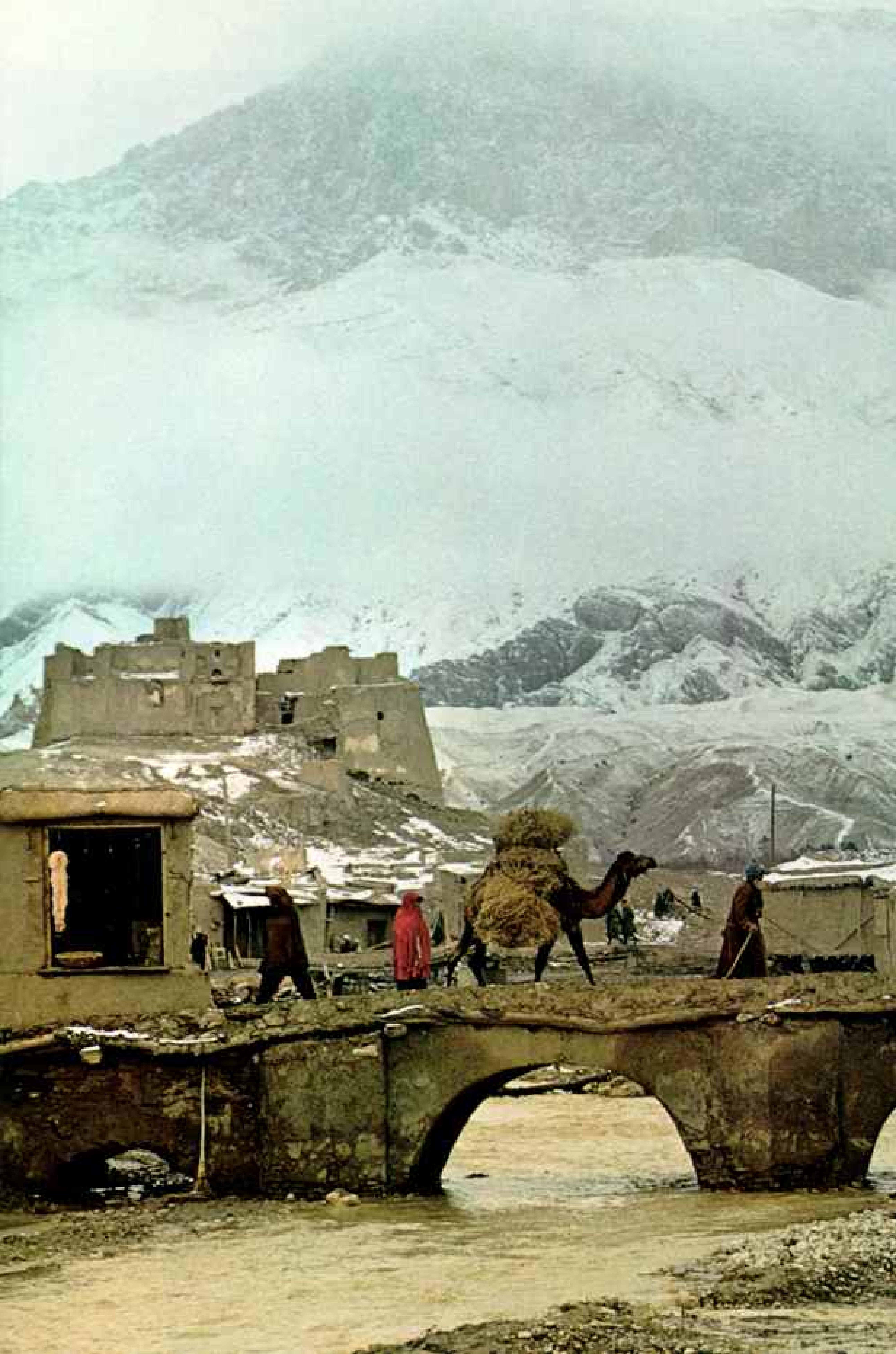
A chopendoz (**left**) jerks the headless 80-pound carcass filled with wet sand into the most protected position, under his thigh. His horse will ram, rear, and feint to help him keep it.

In a classic maneuver a challenger balances on one stirrup and swings across his saddle to snatch the prize with two hands (**lower left**).

A ferocious tug-of-war at full gallop determines the winner of a skin so tattered it drags on the ground (**upper right**). Soon a fresh carcass replaces it, and then another, in the punishing four-hour joust.

Horses jam together as one rider swings down to claim a fallen trophy (**right**). Steeds are trained to step on the calf until their masters can reach it.

At game's end a camel, a coat, or perhaps a gold coin, like this 68-year-old *tilla* (**above**) from Bukhara, goes to the best player. But a winning chopendoz finds his real reward in the respect of his countrymen.



The training of a buz kashi horse is rigid. It begins, in fact, before he is born: His mother gets ten or more eggs a day, to ensure that her foal will be strong.

Upon the day of his birth the colt is prevented from falling to the ground, for that would "destroy his wings." Until he is three years old, he is left to run free.

Then, if he is judged still a fit candidate for the buz kashi, he is saddled, he is taught the discipline of the bit, he learns to tolerate the rider. He is never shod.

Two years pass. When the horse is five, he is allotted rations of salt, to aid his digestion, and corn or melon to give him the weight necessary to withstand the battering he will receive in the game.

With the coming of blazing summer, he gets the cruelest test of all, the *kantar*. Staked out upon the steppe, bridled and saddled, he is made to become accustomed to heat, dust, and wind, and learns to endure suffering.

Summer ends. Buz kashi begins, on Fridays and holidays and special occasions such as a wedding or circumcision.

The horse is ready. He is pampered, loved, and valued, and given a rich blanket to cover his kidneys against the cold.

Buz kashi May Symbolize "Bridenapping"

We ask our Uzbek friend Mardan Qul how the game originated.

"You are aware," he replies, "that the Turkoman father keeps his daughters in his home as long as he can.

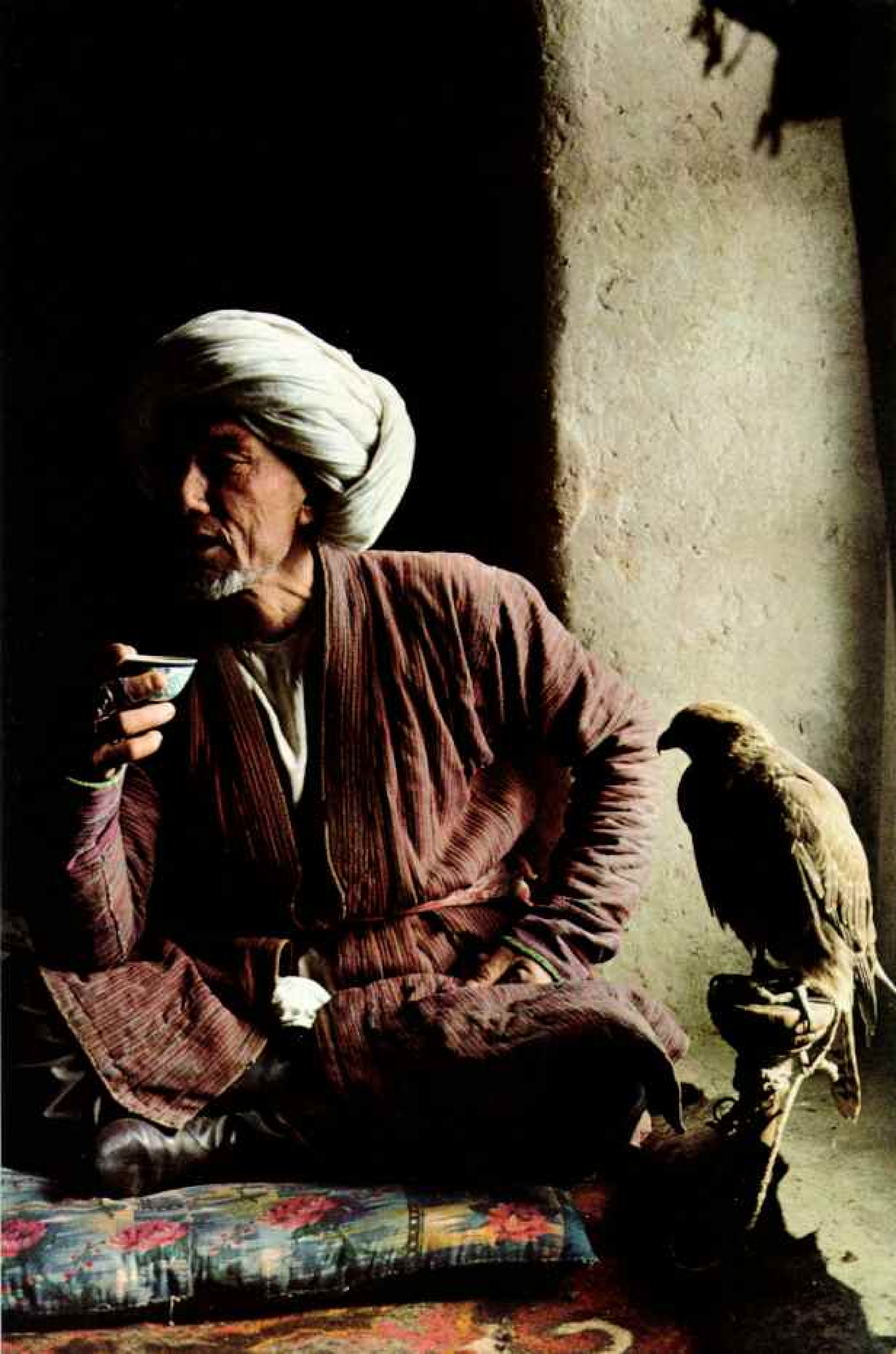
"In the old days, therefore, if a young man wished a young wife, he was forced to kidnap one. Buz kashi may represent such a kidnapping, with the calf symbolizing the woman."

He chuckled.

"Once my father helped a friend kidnap a bride. Although he had, of course, never seen her, this friend knew that a young woman lived in a certain yurt. He asked his friends to help him take her.

"The band of youths burst into the yurt and

Crossroads of yesteryear, Kholm, on the threshold of the Hindu Kush, once provisioned caravans bound for Russia, India, Persia, and Tibet. Its hilltop fort offered shelter from invading armies. Now a highway bypasses the town, but its bazaar still draws farmers, such as this man leading his fodder-laden camel.



seized a woman who was veiled. They boosted her up behind the bridegroom's saddle, and he galloped away.

"After a while he turned and said, 'By the way, sweetheart, how old are you?'

"'Two times thirty and ten,' she replied."

Players Charge Through Spectators

We are at Kavochenaq. The buz kashi is starting. We have parked our car midway between the circle and the turning pole, a good place from which to see the action, we hope.

We hear shouts. A score of furiously charging horsemen explode from a faraway golden cloud of swirling dust. They lash about with their whips. The tawny steppe shakes beneath pounding hooves.

Suddenly they are so near that we see the dilated nostrils and wild eyes of the glorious horses. The foaming beasts appear enormous.

The tightly packed horde parts around us. Something jostles the car, shattering a rear light. Spectators, some afoot, some mounted, scatter like chickens.

A *chopendoz*—a player—falls. He rolls like a cat in the dust to avoid being trampled. His horse stops. He leaps back into the saddle.

His face is a mask of dust and blood, but his bearing is proud, haughty, fearless. He charges into the melee of riders now circling the man with the calf, clearing a way for himself with his whip. He is magnificent!

"Who is he?" I ask Mardan Qul.

"That is Hakim of Aqcheh, one of the best of all chopendoz [pages 634-5]."

Hakim *must* win. I will him to win!

Out of the circle a horseman flees with the prize. Hakim is after him like a fury. In a moment he is galloping alongside his rival. Then he leans from the saddle until he is holding onto his mount with only a boot heel. He seizes the calf from his astonished opponent and is off for the turning pole.

While the game is at a distance, a mounted jester named Pishaq—the Cat—clowns into the limed circle. He whips off his huge headdress, throws it to the ground.

"I am the winner, I am the winner!" he screams, and the spectators roar approval.

The sellers of biscuits and candy move about. They do a brisk business. Everyone munches, talks, laughs.

I am the only woman here. High above the crowd, operating my cameras from the vehicle's top, I feel hundreds of eyes watching my every movement. I am happy when the players return, for then all those men watch them instead of me.

For four hours the game comes and goes. The calf has been torn to pieces and replaced several times. Not only do the horsemen rip it, but the horses have been trained to stand upon it when it is on the ground, and release it only to their riders.

Hakim Will Not Be Stopped

Horses stagger with fatigue. Riders change to fresh ones. A giant chopendoz with a broken nose has the calf. He is surrounded by rearing, plunging horses and almost goes down, but he holds grimly to his prey.

Like a bolt of lightning, a lead-tipped whip cracks and splits the giant's cheek. Blinded with pain, he drops the calf.

Hakim has it before it even touches the ground. He finds no way out of the mass of players except into a crowd of spectators. Not hesitating for a second, he charges directly into the mass. There are screams, but everyone manages to avoid the frantic rider.

This time no one catches Hakim. He rounds the pole and returns to the circle of justice while the field of pursuers strings out in a long line behind him.

He drops the calf and gives the great cry of victory as he raises his hands to the sky.

"Hallal! Hallal!"

He receives his prize, an old gold coin from Bukhara. The chief of the buz kashi announces that the game is over.

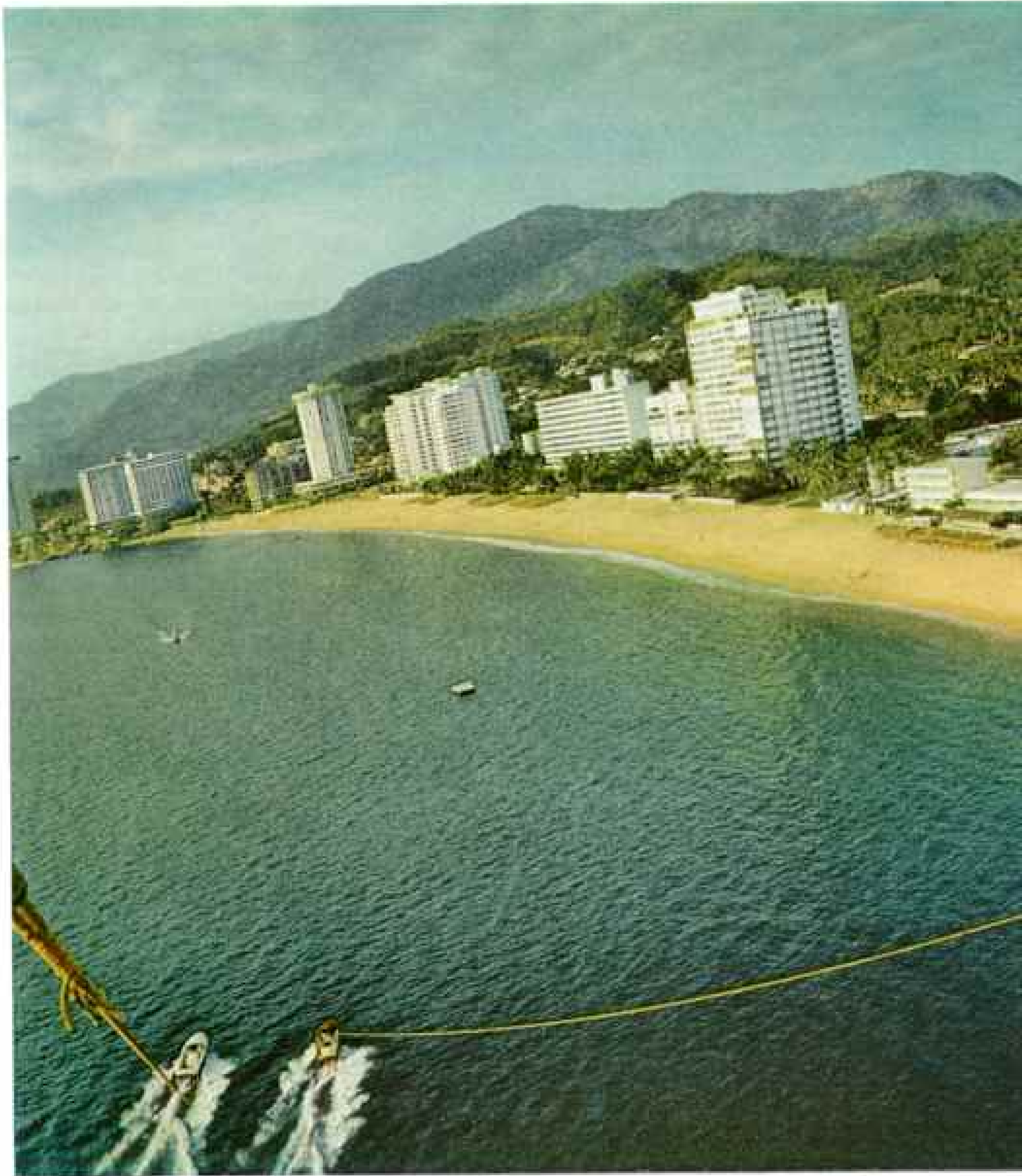
Weary men on weary horses, the chopendoz ride for their quarters. The spectators head for home.

Roland turns to me and quotes from Kipling's "Recessional":

The tumult and the shouting dies;
The captains and the kings depart. . . .

High in the sky a lone hawk circles. We are alone in the immensity of the steppe. □

Savoring repose after hours in the saddle, Jura Eshan accepts a cup of tea in a guesthouse near Towz Bulaq. With his hawk and his hounds, the hunter seeks quail, rabbit, fox, and wolf to barter with neighbors for his own food and clothing. Proud and independent, he and the chopendoz count themselves among the last of the Turkomans to make a living on horseback.



A New Riviera: Mexico's West Coast

By NATHANIEL T. KENNEY

SENIOR EDITORIAL STAFF

Photographs by CHARLES O'REAR

Monuments to pleasure, high-rise hotels line the strand at Acapulco. A daredevil visitor and the photographer, strapped beneath parasails and towed by speedboats, enjoy a bird's-eye view of the panorama. Here on Mexico's western shore, a booming resort trade gilds once-quiet towns with a color and luxury rivaling the seaside spas of Europe.

FROM ACROSS THE BAY I saw a gleaming white city nestling, like so many of the world's most beautiful cities, in the crescent embrace of a curving hillside above blue water. Algiers? Rio de Janeiro? Monaco?

It wasn't a city at all, but Las Hadas, a resort on Mexico's west coast, reflected in the still water of Manzanillo Bay until it seemed as big as New York. Planned by the Bolivian mining tycoon Antenor Patiño as a private club for wealthy guests, Las Hadas is certain to be one of the half-dozen most luxurious holiday spots anywhere (pages 692-3).

The illusory white city symbolizes dramatic change along this sun-drenched, 2,000-mile, once-drowsing coast. The transformation (whether for better or worse, I leave for others to

Fun-and-sun Mecca for millions, Acapulco remains Mexico's queen resort despite new rivals to the northwest. Beyond neon glitter, the natural beauty of a butterfly brightens a flower (**clockwise from top**). Deep-sea prizes, two sailfish head for a taxidermist. An average catch in a sailfish rodeo here weighs in at a hundred pounds, twice the size of most hooked off Florida. Fishing for finery, a sunbather shops for baubles offered by one of the many beach vendors. For après-beach amusement, dancers writhe at Boccaccio's, a late-night discotheque.

decide) is not yet complete, for the leisurely traveler can still find both copra and condominiums, dugouts and discotheques. But lavish resort hotels erupting along the west coast, from Guaymas to glittering Acapulco, leave little doubt that here is the world's newest Riviera in the making.

When I arrived at Las Hadas last winter, it was not yet officially open, but General Manager Walter Rupprecht took me in anyway. For at least part of my brief stay I was, I suspect, the only guest. It is a heady experience to have exclusive use of 25 million dollars' worth of marble-floored villas and suites, swimming pools, golf course, and yacht harbor!

But more important was the glimpse that Las Hadas gave me of Mexico's newest dream: to make its west coast one of earth's finest vacationlands. President Luis Echeverria Alvarez's government is committed to the dream. Señor Patiño is only one of the billionaires and millionaires—men not noted for throwing their money away—who are spending fortunes to make it come true.

Who am I, then, to harbor doubts, especially after having heard the guitars sobbing in the moonlit streets of Puerto Vallarta, and eaten of the lotus on the shores of Acapulco Bay?

MY TRAVELS BEGAN at Guaymas, at the northern end of the Mexican Riviera, only 260 miles from the United States border. On the mainland shore of the Gulf of California—Mexicans call it the Sea of Cortés—Guaymas is one of a string of west-coast ports built by the Spanish conquistadors and the compatriots who followed.

There was Mazatlán, and Manzanillo, and the most important of all, Acapulco. Then there was San Blas, now badly silted, and Zihuatanejo, and the old Puerto Navidad, from which the Spaniards launched their conquest of the Philippines. For the missionary padres carrying the Cross northward, these places were staging posts; to them, as well, mule trains came down from the mountains laden with silver.

Acapulco long carried on a thriving trade with the Orient—and still does. Japanese auto parts and electronic equipment are landed here. In Spanish colonial days the annual Manila galleon docked at Acapulco. The port's wealth attracted English corsairs, who raided shipping lying off what today is the popular Los Hornos beach. Some of Mexico's battles for freedom from Spain took place at Acapulco.

But none of the Pacific ports ever grew very large, isolated as they were from the heart of Mexico by the rugged Sierra Madre. Even after Mexican independence from Spain in 1821, a new nation bedeviled by revolution and banditry paid little attention to the west coast.

So the region drowsed, and the ports remained picturesque little havens for fishermen until, in the days after World War II, came the miracle of Acapulco, a dusty village that soon became the "in" place for the jet set.

Naturally, the Smiths and Joneses followed, bringing more money. The other sunny little west-coast ports heard the cash registers jingling in Acapulco and began building hotels and trailer parks. The government built highways, airfields, and utilities. The boom was on.

Formidable guardian of the coast, the Sierra Madre was breached by Spanish conquistadors in the 16th century. They stayed to found a string of ports for exploring lands beyond the horizon. Along the coast sailed privateers in search of booty. Northwestward marched the padres to establish missions in what is now California. Many of today's invaders, in search of relaxation, arrive to the roar of jetliners.

I found Guaymas, however, not exclusively interested in tourism. The port's shrimp-fishing fleets are still more important than tourist gold.

"We look more to industry," a prominent local businessman told me. "We want manufacturers, from no matter what countries, to build assembly plants here. We offer favorable tax situations, labor at reasonable cost, and we do have a good deepwater port."

Rómulo Gonzalez, who heads the local tourist office, also looks to investors to build hotels and other tourist-oriented services. "When our new international airport begins service, we expect an increase in tourism far beyond our present capacity. Tourist facilities are our number-one need. If you want to see what we're doing right now to attract visitors, I suggest you run out to San Carlos Bay."

FIFTEEN MINUTES NORTHWEST of Guaymas by road, the San Carlos resort complex, like Las Hadas, came into being as the result of one man's dream. Its builder is Rafael Caballero, one of a nervous new breed that makes you wonder whatever happened to the stereotype Mexican dozing in the sun beneath his big sombrero.

A dozen years ago Rafael Caballero acquired three ranches on San Carlos Bay. Here the country is desert, but the bay, with its lofty headlands and its secluded coves, matches that of Acapulco for beauty.

"I put up a tent and started selling building lots," Señor Caballero reminisced. "It was lonely there.

"Nothing broke the silence except the thunder of the surf. Nothing moved but the occasional sailfish leaping from the sea and the shorebirds pattering along the sand. Finally I sold a few lots, and with the proceeds I started building."

Today a resort community stands on the shore of San Carlos Bay: four hotels, a yacht club, restaurants, a golf course, tennis courts, trailer parks, and a marina. There are also 190 houses on the hills, another 79 under construction, and more on the drawing board. Emil Malanga, an associate of Señor Caballero, drove me around the complex.

"Almost all the houses belong to people from the United States and Canada," he said. "A lot of them are from the West and Southwest. No jet setters. Many are retired and live here the year around."

Though foreigners are forbidden to buy land within 31 miles of the Mexican coast, a new law permits development through trust arrangements with the National Bank of Mexico or other authorized Mexican banks.

Broad sombrero and smile to match accompany a strolling guitarist in Puerto Vallarta. The filming nearby in 1963 of *The Night of the Iguana* gave the town a reputation as a romantic rendezvous. Movie stars Richard Burton and Elizabeth Taylor established a vacation home here. Despite the ensuing tidal wave of tourists, "P. V." retains its languid ambience. Most shops still close for siesta from 1 to 4 p.m., and in some neighborhoods milk is delivered by burro.

"This started building booms all along the west coast," Mal Malanga told me. Much of the new construction, I was to discover, was in condominiums: You get an apartment or villa, use it for your own holiday, then rent it to others, using the proceeds to help pay for it.

At lunchtime Mal drove into a long driveway lined with oleander, hibiscus, and bougainvillea and parked before an awesome luxury hotel.

"The first hotel here, the Posada de San Carlos," said Mal. "We'll have lunch."

"But I don't have a jacket," I protested. "They won't let me in a place like this."

"More likely they wouldn't let you in *with* a jacket," Mal said, and I was to find the good life was lived thus informally all the length of the Mexican Riviera. You might pay $100 a day for a hotel suite, but you dine in a sport shirt.

Curb service meets a bus bound for Zihuatanejo. Along Mexico's Pacific coast, on roads often little more than country lanes, an endless procession of public buses carries passengers, crates of chickens, squealing pigs, and fresh produce from village to village.

I LINGERED five days in Guaymas, savoring the life of its busy market, learning the limits of my tolerance for hot tamales. It is a peaceful place, little disturbed since 1854, when a French nobleman, Gaston Raousset de Boulbon, attacked the port in an effort to found a Sonoran empire. He was killed in the attempt, and Sonora is still a state in Mexico.

One day I drove into the high mountains northwest of Guaymas. I followed a road built to reach one of the microwave stations, erected in the past decade, that have at last given Mexico adequate telephone communications. Narrow, steep, winding, the way terrified me but gave a magnificent view over the Gulf of California in late afternoon.

As late as the first quarter of this century it might have been dangerous for a stranger to venture into the hills. This was a stronghold of the Yaqui Indians, not well known in the U. S., but just as fierce as their cousins the Apaches. Today the

Homes on wheels roll to holidays south of Mazatlán. Government trucks called "Green Angels" cruise the highways to aid drivers in distress. Each year two million United States citizens, half of them in motor vehicles, visit Mexico—90 percent of its tourist trade.

Yaquis are highly regarded as soldiers by the Mexican Army.

I drove back to Guaymas and Bacochibampo Bay for dinner with Tom and Dinah Jamison, who run a fleet of sport-fishing boats. We watched a procession of outboard-powered fishing "canoes"—actually flat-bottomed fiber-glass boats—coming in from the bay. Every boat was piled high with huge red snappers.

"There are snapper banks out there that must have almost limitless numbers of fish on them," said Tom. "But we're finding the big billfish—sailfish and three species of marlin—scarcer these days. Off the coast, Japanese long-liners are taking thousands every year."

In the morning I set out for Mazatlán. Driving rain, a rarity here in January, added four hours to a normal 10-hour drive. The road was good but crowded with huge trucks and thundering buses, along with hordes of the mobile homes, campers, and trailers in which growing numbers of retired Americans now follow the sun. Highway crews labored in the rain to replace antiquated bridges washed out by floods.

Ahead of me an old pickup truck lurched to the side of the road. Two Mexican nuns climbed out, took one look at the rear wheels, and gave me the universal hitchhiker's signal.

"Two flat tires at the same time," said one of the sisters. "I wonder what sin we committed to deserve this. And on a rainy day, too."

I dropped them at the next Pemex, a service station of the government gasoline monopoly. The sisters sent me on my way with their prayers for a safe journey.

"The prayers are sure to work, señor," said one with a smile. "Your tires are new."

MAZATLÁN, its inhabitants boast, was the first North American city ever bombed from the air. It happened in 1914, during the Mexican Revolution. A homemade bomb fell from the grasp of an airsick bombardier in an open cockpit plane and exploded in a city street. Ever since, it has taken a great deal to shock the people of Mazatlán.

There was, for example, the matter of Coco, Carlos Irvine's seven-foot-long crocodile, a species seriously threatened in the *tierra caliente*, the "hot land."

Crocodiles have a reputation for nastiness, but this one is tame enough to be fed by hand. Carlos operates the Mazatlán Arts and Crafts Center, a sort of thatched village of artisans north of the city beach, where the great new hotels soar into the sky. The animal lives at the center as a visitor attraction.

One day Coco crawled out of his lagoon and ambled down the street to lie in the sun on the pool deck of a nearby motel. The pool's second visitor that morning was an 8-year-old guest. Eyes agog, she ran to tell the desk clerk, who called the police. Coco eluded the posse but was finally recaptured, lured by his favorite food, a piece of pork.

Mazatlán is the west coast's second resort city after Acapulco, and is growing at a fantastic rate (pages 682-3). With every year some of the old charm passes, but local citizens seem willing enough to trade picturesque atmosphere for electricity and better schools and good jobs in the tourist hotels.

Practiced fingers sort shrimp at a government plant in Guaymas. During peak months the plant processes 50 tons daily. Some west-coast shrimp are so large they are dubbed *zapatos*, "shoes."

Catch that can bite back, this shark may yet take off a man's hand as it is hauled aboard near Isabela Island. The predator yields meat for the table, liver oil for vitamin A, and a tough hide for belts and wallets.

GUILLERMO ALDANA E. (ABOVE)

Jeweled sunrise silhouettes brown pelicans near the town of San Blas. Though

on the endangered list, the birds survive in the jungled estuaries of Nayarit.

So the air hammers clatter and the bulldozers rumble ever farther around the city, and the new skyscraper hotels and plush condominium apartments rise beside golden beaches empty since the dawn of history. In the new restaurants you still find frijoles and enchiladas, but you get the hot sauce served separately: Few foreigners can handle Mexican seasoning.

At the bar of one of the larger hotels I ordered pulque, the national drink of rural Mexico. The bartender beamed.

"That makes you an honorary Mexican," he said. "But I don't have pulque. Nobody here ever asks for it."

At such times I drove into the high hinterlands away from the neon signs, searching for the voices of old Mexico—the dawn arias of burro and rooster, the plaints of oxcart wheels, the brass bands playing off-key in a village plaza of a Sunday night. The voices are still there, I found.

One day I drove to Copala in the hills beyond the coastal plain. It is almost, but not quite, a ghost town, with a population of perhaps 250.

Happy "savage" flaunts face paint, wild headdress, and a wooden spear during the Mazatlán *Carnaval*, where merrymakers burn an effigy of bad humor at the stake. A week of pre-Lenten festivities uncorks hours-long parades, masquerade balls, and fireworks in sky-spangling eruptions.

ONCE 5,000 SPANIARDS lived in Copala and took gold and silver from the mountains. Later came American mine owners and revolutionary troops. A *pistolero* among these latter gentry shot the head off a statue on the roof of the lovely old church. Most of the mines are closed now; many of the old houses are only ruins, hidden by undergrowth.

In my able Volkswagen Beetle I climbed the track from the main highway and jounced into the village. To my surprise I found a vast Cadillac with U. S. license plates parked beneath purple bougainvillea on one narrow street.

While I stared at it, a young man approached. "I'm Daniel Garrison," he said. "I'm an American, but I live here with my Mexican mother. If you're wondering about that Caddy, it belongs to a retired businessman. He's bought a house here and is fixing it up."

We repaired to Dan's house on a cleared hilltop, where his delightful mother was trying to launch a small restaurant in her living room. She gave me a cold beer but wouldn't let me

Crown of Mazatlán, Icebox Hill rears above a city where German immigrants settled in the mid-19th century. Traders from the U. S. gave the hill its name when they stored ice in tunnels for sale to the rich. Today tons of cotton, sugar, hardwoods, and shrimp flow from the busy harbor.

Verdant rows near Villa Unión stream behind a farmer cultivating soybeans, interplanted with corn. Waters flowing from the Sierra Madre, channeled into irrigation ditches, have turned once-arid areas of Sinaloa into gardens teeming with tomatoes, melons, beans, peppers, and cucumbers.

pay for it. "One day we will make a good business here," she said. "Every year there are more tourists."

Also possessed of faith in Copala's future was a young man who owned a gigantic red bus, brand new. With it he was providing service between the village and Mazatlán.

All Mexican buses are equipped with deafening air horns, but the new Copala bus had the loudest I ever heard. On the vehicle was lettered *Ya Llegó La Escoba*—"The Broom Has Arrived."

La Escoba overtook me on the way back to Mazatlán. I took no chances on being swept off the narrow road. At the first blast of that fabulous horn I pulled over into the ditch and watched the Broom go triumphantly by.

Green fingers fill a truck near Manzanillo, a lush tropical area where pockets of rich land lie squeezed between mountains and sea. Some acreage along Mexico's west coast, once owned by communal plantations, now sprouts condominiums and resort hotels instead of fruits and vegetables.

COPALA was the touch of old Mexico I needed for contrast with the Costa de Oro, the Gold Coast. So was Carlos Irvine's ranch near the little town of Villa Unión.

A Mexican despite his surname and perfect English, Carlos inherited the Rancho Irvine from his father and ran cattle there for a time. But now he rents it to John Lohr, an American who leads an idyllic life in the sprawling hacienda under huge old trees.

John plays host to hunters seeking the enormous flocks of ducks and geese that winter around the Laguna del Caimanero—the Lagoon of the Crocodile Hunter. We skimmed through the surrounding marshes aboard a noisy airboat pushed by an airplane propeller.

Never have I seen such wildfowl as I saw in this watery country, so very like the Camargue of southern France.* Mixed with the game birds are great flocks of brown and white pelicans, roseate spoonbills, cormorants, and coots. The tall saltwater grass teems with herons, cranes, and shorebirds of every kind.

Sharing the marshy landscape with the birds, the fishermen of two village cooperatives trap and net the delicious *camarones* that thrive on the lagoon's abundant plankton. These fine shrimp command a high price in the market.

The birds. The fishermen casting their nets from log canoes. Mullet leaping from the sparkling water. The occasional surviving crocodile slipping off his sandbar into the lagoon. It was a scene centuries old.

OFF THE MAIN ROAD between Mazatlán and Tepic to the south, you will find other oases of charm—places like Teacapán and San Blas.

You reach Teacapán over a road running through neat fields where corn grows, and millet. Lyre-horned cattle share the long grass on the verges with the ubiquitous burros.

Teacapán is small. Bob Stevens runs a trailer camp there, one of dozens of such enterprises that have sprung up all along Mexico's west coast to cater to retired Americans. For some reason Bob's place is a haven for iguanas—foot-long black ones and spectacular three-foot green ones with spikes on their heads and backs.

It was iguana mating time, and the green monsters were down from the palm trees, prowling about the camp. To attract the females, the males bobbed their heads, making the dewlaps under their chins dance in what must be, to a lady iguana, an entrancing display.

"A game warden came here one day and told me it was against the law to keep iguanas," said Bob. "I told him OK, I never close my gate, they can leave any time they want. Haven't heard from him since."

On the way to San Blas I followed good but twisting roads through jungled mountains that stand very near the Pacific. Where I turned off the main highway leading on south to Tepic and Guadalajara, there is a restaurant. Behind it are cages filled with gorgeous parrots and small animals.

I stopped to chat with the proprietor, professional hunter Heriberto Parra, who in his lifetime has taken at least fifty jaguars from the mountains of Nayarit.

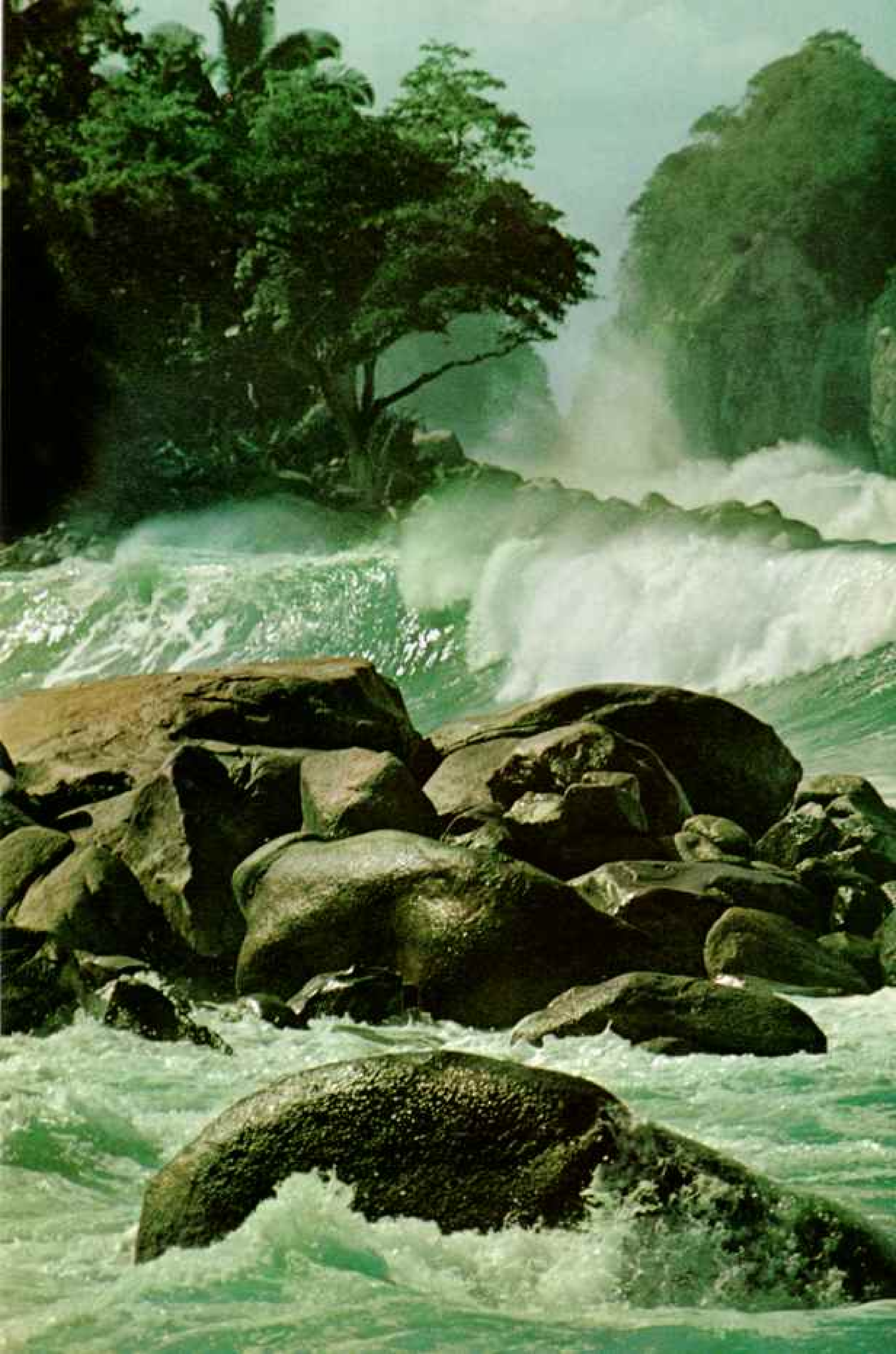
"But I shoot no more *tigres* now," he said, "and I guide only hunters with cameras. The beautiful jaguar has become too scarce for a man of honor to kill."

I listened for an hour to Heriberto's tales of encounters with jaguars, ocelots, and the lovely little margays—slightly larger than house cats—that look like miniature leopards. Then I took my leave and resumed my drive to San Blas.

Two miles away I rounded a sharp curve and ran over a boa constrictor. I stopped, pitying, for the boa, though big, is a harmless and beautiful snake.

*See "France's Wild, Watery South," by William Davenport, NATIONAL GEOGRAPHIC, May 1973.

Ceaseless surf smooths boulders along a rugged stretch of coast near Puerto Vallarta. Isolated beaches blessed with beautiful mountain scenery and superb year-round weather bring planeloads of tourists to a town that was barely accessible only two decades ago.



Two different worlds share a river in Puerto Vallarta, where women wash clothes in the shadow of an opulent villa. One of the lures of a west-coast holiday is that the timeless ways of old Mexico can still be seen. But inevitably money left by visitors will change the region and the life of its people.

"Five machines have so far run over this great *serpiente*," said a small boy sitting by the road. "I think he is now dead enough so that I dare to skin him."

That was my last encounter of the day with Nayarit fauna, although frequently, as night fell, the eyes of fist-size tarantulas crossing the road reflected the glare of my headlights.

IN SAN BLAS, I dined at the Torino restaurant, the only one I know that has four big crocodiles lolling in a pool at one end of the barroom. That night I was lucky. A street carnival was in town, one of those traveling outfits that each year grow rarer in the Mexican countryside.

In the warm evening boys played *futbol* machines, expertly manipulating levers so that little model players under the glass tops kicked tiny soccer balls back and forth. Chickens and dogs wandered under the tables as the boys played. Raspy

amplifiers blared old U. S. dance music. Girls screamed on the Ferris wheel, as girls do everywhere in the world. I bought a taco from a lady who had set up a street stand. It was so fiery I wept for an hour.

San Blas has its share of visitors, but so far its charm survives.

South of San Blas the countryside becomes lusher with every mile. Tall coconut palms and banana plants take the place of the desert cactus to the north.

Copra, the sun-dried meat of coconuts, is still an important crop of southwestern Mexico, but thousands of palm trees are cut each year to make way for resorts.

Many of the larger plantations are on *ejido* lands—communal tracts belonging to entire villages. Lately the government has allowed some ejido land to be leased for development. Title is retained by the community, but in some cases individuals may benefit from the transaction.

Refreshed inside and out, guests at the Camino Real Hotel in Puerto Vallarta quench their thirst at a mid-pool bar. Informality sets the mood at west-coast resorts, with bikinis worn in hotel lobbies and sport shirts replacing coats and ties even in the most expensive restaurants.

When the road meets the river, a father puts his trust in his burro—a time-proven conveyance of the Mexican countryside. At a crossing in Jalisco this traveler cradles his sleeping child (**opposite**) and lets the surefooted beast find the way.

Outside Puerto Vallarta a ragged Mexican riding a burro pointed out a new, expensive villa and told me he once lived on the site.

"Our little wooden house stood there as long as I can remember," he said. "But when they told us we could lease our land and do as we wished with it, I sold my share, naturally. Unfortunately I bought a motorcycle with the money, and now it is wrecked."

I drove on, past a new airport and a ball park filled with travel trailers. Then I bounced into Puerto Vallarta.

Bounced. I use the word advisedly.

"We will never pave our streets, which you can see are composed of equal parts of deep holes and stones," said pert Bertha Polony of the tourist office. "In summer the stones keep the streets cooler than asphalt or concrete.

"Also," she added with a twinkle, "the storekeepers are happy that traffic must move slowly, for then the visitors can see the beautiful things in the show windows."

Puerto Vallarta was founded in 1851, but ten years ago not many people had ever heard of the little village on the shores of beautiful Banderas Bay. There was no paved road to Puerto Vallarta then. You came in by yacht, if you had one, or by air, or by local bus if you were tough enough.

In 1963 Richard Burton and Ava Gardner made the movie *The Night of the Iguana* at nearby Mismaloya. Then, like Acapulco a couple of decades earlier, Puerto Vallarta became an in place for fashionable people.

Now big hotels line the beaches at either end of town, and the bay front at night sparkles with neon light. Villas and condominiums line the hillsides overlooking the sea. Each time a new one goes up, five or six more thatched huts vanish from the slopes, along with their burros and chickens and goats and fat brown children.

Above the town, behind the big gaudy church, is Gringo Gulch, named, of course, because it is a predominantly U.S. quarter. A tourist bus goes there with difficulty, for the streets are narrow and steep.

One reason the bus goes to Gringo Gulch is that the Burtons had a house there, or rather two houses, one on each side of the street, connected by an overhead bridge. The Burtons, I was told, were rarely seen.

In a joyful lather, a youngster bathes in the Petatlán River near Zihuatanejo. Lads his age begin training for 118-foot dives from the cliffs above Acapulco Bay—a world-renowned feat that continues to awe tourists.

PUERTO VALLARTA welcomed me with an earthquake. I happened to be sitting beside a swimming pool at the time. The pool tilted, and a wave sloshed into my lap.

The town sustained little more damage than I did, although the tremor—at its epicenter 200 miles away—registered 7.5 on the Richter scale. I would prefer one of these to an hour in a Puerto Vallarta night spot, where a mariachi with amplified electric guitars nightly disturbs the peace.

One sultry evening I fled such a place and drove north through a tiny village. Quite suddenly I emerged upon a stretch of beach alive, in the silvery moonlight, with hordes of crabs scurrying about in search of dinner.

There were the pale ghost crabs on their long legs, and the fiddlers with one big and one small claw, and the hermits in

shells borrowed from snails and conchs. When I moved, they vanished as if by magic.

I waded out to the breakers. Gray shapes raced in from the sea to inspect me, slender shapes of porpoises exploding from the waves with "whoofs" of expelled breath, falling back into the Pacific with great splashes that showered me with pearly drops of salt water.

Finally I went back to my motel, where the room clerk chided me for wandering alone in the countryside at night. *"Bandidos, señor,"* he said. But I never met one myself.

IN DAYLIGHT (the road from Puerto Vallarta was under construction and too rough for safe passage at night) I drove toward Manzanillo and to the gates of Señor Patiño's lavish resort, Las Hadas, where I luxuriated for several days in lonely splendor.

Like Guaymas, Manzanillo suffers from mild schizophrenia. While expanding its commercial port facilities, it is also opening a new jet airport to funnel vacationists onto its dozen

Master of the bell: For six decades 86-year-old Cristóbal Rodríguez Vásquez has pealed the arrival of ships at Manzanillo. Most have been freighters coming for iron ore and manganese. Increasingly, he rings for yachts and cruise ships from California.

golden beaches. Private yachts cruising the cobalt bay mingle with Japanese fishing boats putting in for supplies.

Between Manzanillo and Acapulco there is still a 120-mile gap in the coast highway, and you must make a long detour inland to Mexico City, where you pick up the very good road between the capital and Acapulco (map, page 673).

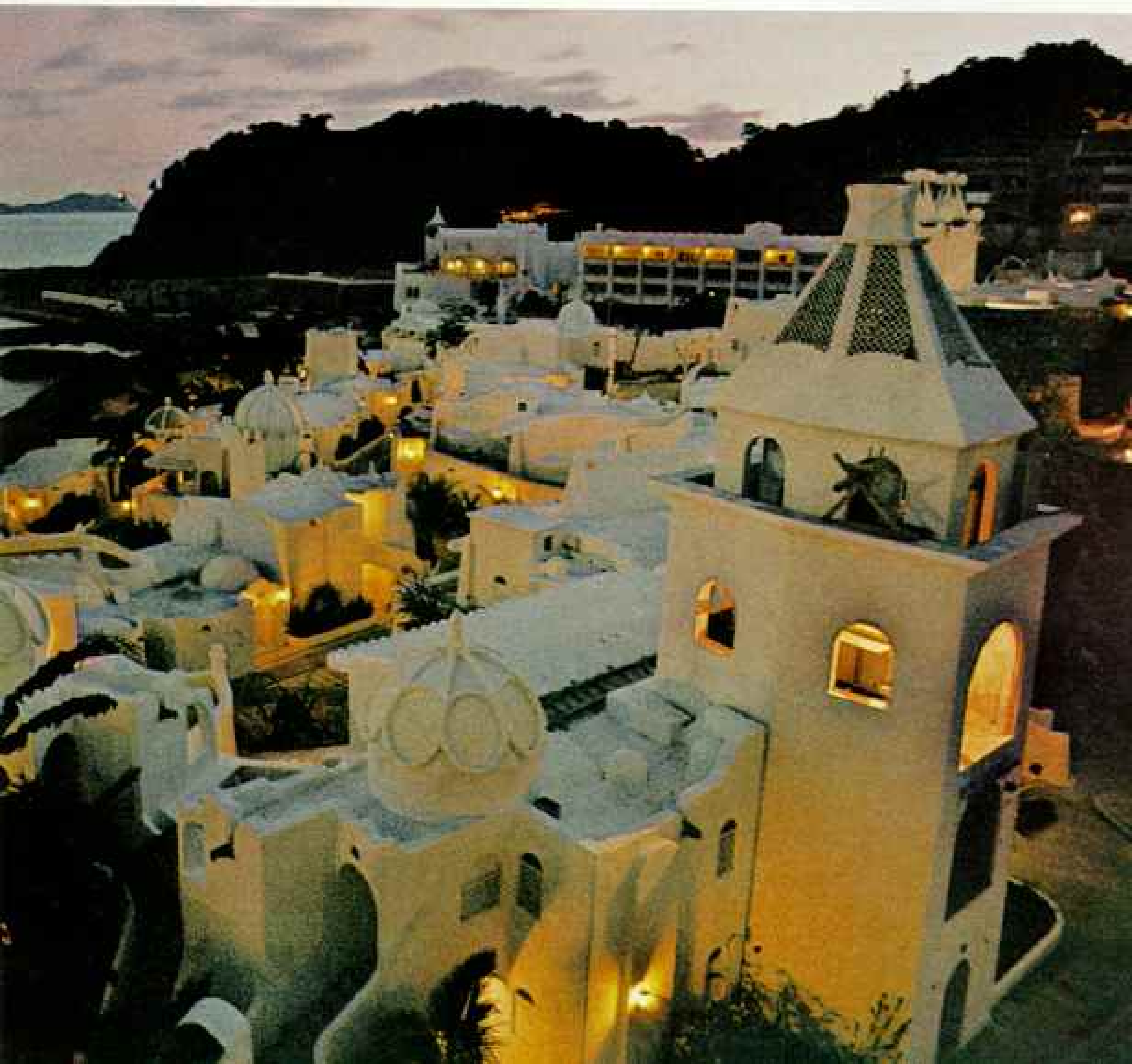
Near the end of this highway you drop steeply out of the Sierra Madre into the streets of what seems to be just another Mexican city of 300,000 people. Suddenly you come to the Costera Miguel Alemán, and you are in a different world.

Named for a former Mexican president and early promoter of Acapulco, the Costera is the bay-front boulevard, lined on both sides with hotels, restaurants, shops, and nightclubs.

Costera traffic is a solid stream of buses, taxis, trucks, cars, and motorcycles. I waited five minutes for a break in the traffic so I could cross the boulevard to the beach. With me was Teddy Stauffer, the city's most tireless press agent, its most devoted rooter, and its severest critic.

A onetime European dance-band leader, Teddy was mainly

Newest Shangri-La—and among the most luxurious—Las Hadas' alabaster villas meet dusk as the lights of Manzanillo wink across the bay. Each unit has a vista over the water. Winter rates begin at $52 a day. Cars are banned within the compound; guests ride electric carts.



responsible for building the lovely hillside hotel called the Villa Vera Racquet Club, another hotel, a restaurant, a nightclub, and a block of shops and apartments.

"Dirt, noise, mobs of people," growled Teddy. "Well, I'll always love Acapulco, but I must say I miss the old elegance."

Acapulco's old elegance may be gone, but more than two million visitors each year seem happy to settle for the expensive glamour that has taken its place. They flock to such palaces as the Acapulco Princess and the Pierre Marqués, built by U. S. multimillionaires Daniel K. Ludwig and J. Paul Getty, respectively. Each hotel has its own golf course, and the Princess, one of whose buildings takes the shape of a stepped Aztec pyramid (pages 696-7), also offers air-conditioned tennis courts.

I took a deep breath and plunged into the glitter of Mexico's premier resort.* In glamorous restaurants overlooking the moonlit bay I feasted on succulent camarones and the delectable red snapper, *huachinango,* Vera Cruz style. I drank *coco loco*—coconut water and tequila served in half a coconut—at

*James Cerruti described this intriguing city in "The Two Acapulcos," NATIONAL GEOGRAPHIC, December 1964.

Work greets the dawn before pleasure has its day. Fishermen at Acapulco Bay haul in their nets on the same beaches that will blossom with sunbathers by the thousands as the sun climbs higher. Mexico's public-beach law bans private ownership of the waterfront. The poorest townspeople lounge alongside the richest vacationists in front of the most luxurious hotels.

a hotel bar one reaches by swimming across the pool and perching on an underwater stool.

As every visitor must, I went to La Quebrada cliffs one night and watched the famed Acapulco divers plunge into the dark sea with flaming torches.

ONE SUNDAY I tried water-skiing with friends on Acapulco Bay but fell off immediately. Prudently I declined an invitation to ride a parasail—a parachute towed 150 feet above the bay by a speedboat.

And, indulging in one of the Acapulco tourist's favorite sports—movie-star hunting—I stopped at Las Brisas, a resort hotel considered by some people to be the world's best. Frank M. Brandstetter, the managing director, welcomed me. He wouldn't tell me whether he had celebrities in residence.

"But if you've got ten minutes, I'll name you all the well-knowns who've been here in the past," he said. "One reason most of them come back is because they know we'll guard their privacy."

Las Brisas looks like anything but a hotel. It has no lobby

Jack in a steel beanstalk, a worker ties reinforcement rods for a new condominium rising next to the balconied 26-story Holiday Inn at Acapulco (**above**).

Seven miles southeast, the 777-room Acapulco Princess, patterned after Aztec temples, looms beyond a horse and rider racing the afternoon surf (**above, right**). U. S. oil-tanker tycoon Daniel K. Ludwig built the luxury hotel after Mexico eased a ban on foreign development of property within 31 miles of the coast.

Sun-shaded though almost submerged, one swimmer (**right**) takes his ease in the pool at Acapulco's Villa Vera Racquet Club, avoiding pollution in Acapulco Bay. Thanks to a $14,000,000 government project, most of Acapulco's sewage will soon be piped to the ocean beyond the bay.

Trophies for tourists: With a stuffed armadillo on her head, beads dangling from her arm, and a raccoon at her waist, a young hawker displays her wares on an Acapulco beach.

and no tall buildings, but is a collection of pink-and-white *casitas*—"little houses"—clinging to a steep hillside on the eastern side of the bay.

There are 250 casitas. There are 200 swimming pools, which means that the people in some of the casitas have to share their pools with neighbors. At many of the casitas I saw Las Brisas' pink-and-white jeeps; the hill is almost too steep for comfortable walking.

In one of those jeeps, a member of the hotel staff, Victor Hugo Jauregui, took me on a tour. We entered a unique casita being readied for its next occupants. Its private swimming pool was built half in and half out of the living room. You could swim under the picture window into a patio ablaze with tropical flowers.

"This was the room both Brigitte Bardot and Raquel Welch used when they were here," Victor said. "It's fun imagining them splashing around in that pool."

We drove to the head of a steep staircase where a sign said "Complaint Department." I looked down. The steps ended at a cage occupied by two full-grown African lions.

"If a dissatisfied guest doesn't laugh, we know he's either got a serious complaint or no sense of humor," said Victor.

Acolyte in folk art paints a pot in the Acapulco market. The vitality of Mexican handicrafts—ceramics, weaving, metalwork, and woodwork—testifies to the artistic drive of the people and to the impetus of tourist demand. That demand reflects, in large part, the fascination of the United States with the culture of its southern neighbor.

FIERCER THAN LIONS, so I was told in Acapulco, are the people who live in the 145 miles of rugged country between Acapulco and Zihuatanejo to the north. These aggressively independent citizens have clashed with authorities in the past, but this is not unusual in the State of Guerrero, a traditional hotbed of political dissidence.

I made the trip without incident and suspect Acapulcan jealousy for the warning given me. Zihuatanejo, now just a small town in a lovely seaside setting, will be developed into a major resort that could well siphon off some of Acapulco's choice business.

The government will put nearly half a million dollars into the project, private investors much more. The plan envisages a permanent population of 60,000 in the Zihuatanejo area, along with hotels and condominiums and all the rest.

Meanwhile, however, the glorious beaches of nearby Point Ixtapa are empty, and in the last days of my Mexican sojourn, I sought surcease there from bright lights and mariachi bands with too many trumpets. Under a hot midday sun I sat on the beach with a friend. We watched rollers that had not tasted sand since they left Hawaii burst into cream at our feet, and pelicans fly in line above the surf, and frigate birds circle in the high sky.

My friend quoted from the Mexican poet Octavio Paz:

En el silencio transparente el dia reposaba. . . .
In this transparent silence the day was resting. . . .

Then suddenly the silence was broken, and the day awoke: Unseen behind the dunes, trucks and bulldozers roared to life and resumed their work on a road that will open yet another paradise to the world.

As on so much of Mexico's west coast, the siesta had ended at Point Ixtapa. □

This Is My

THE DRUMMING of the engine fell to a mutter as the boat entered the narrow channel. Poised delicately on one leg, a white egret feeding on the bar stared at me with a bright yellow eye, as if I were a stranger. From the marsh rushes waving in the breeze a mallard leaped into the sky.

As we neared the landing, a man standing at the door of a fisherman's shanty shouted the traditional greeting:

"Whur you been?"

The wharves were lined with people, calling and waving. Suddenly I found it hard to see, and I could not swallow very well.

This was the moment that had sustained me through three long years, during which I had seen many islands rise from the blue swells of the Pacific: high green ones dense with jungle; low coral atolls feathered with palms. But this small flat island nearly flush with the choppy gray waters of Chesapeake Bay was different. It was home.

Dreams for the Future Come True

It was the first day of June 1945, and I had come home from the wars. Unlike many of my fellow soldiers, however, I intended to stay. While overseas, I had heard of the GI training bill that would enable me to continue my education, and I had dreamed of going home to teach school. I was in love with a girl who was already teaching on the island, and that helped my determination.

Since that June day I have more than fulfilled my wartime dream. I married the schoolteacher, went to the University of Virginia and took two degrees, and today I am principal of the island school.

Many happy years have slipped tranquilly past my island since I returned, but my memories of that day are still green. As I walked down narrow King Street 28 years ago, everything looked the same. The white frame houses stood behind picket fences bright with flowers. Children darted through the throng

Swinging from a spar, an ebullient youth skylarks on the rigging of a decaying trawler beached at Tangier Island—2½ square miles of brine-soaked tradition in Chesapeake Bay. Clapboard homes of bay-faring watermen huddle behind the low-lying shore.

Island, Tangier

By HAROLD G. WHEATLEY　　*Photographs by DAVID ALAN HARVEY*

Fragrant rolls, light as morning mist, come piping hot from the oven of Tangier's "Miz Annie" Parks. Most of Tangier's 850 folk trace their ancestry to a handful of Cornish families who settled here more than 200 years ago. Tightly bound by blood and isolation, their descendants still speak a dialect reminiscent of earlier centuries.

of friends who had come to welcome me. No one has ever been killed on this peaceful street.

On a wharf two weather-beaten watermen were mending their nets. Turning to me, one of them said:

"Been away, ain't you, son? Missed you out on the crabbin' grounds. How were them thar natives in the furrin lands? Their islands prettier than our'n?"

I assured him that our island was by far the prettiest, and I spoke from the heart. Then their talk, in the familiar accents of home, turned to more important matters.

"Whur do you think to go tomorrow, George?" one asked the other.

"Don't rightly know. It speaks of rain and a nor'easter, so I won't cross the sound. I might try the flats, if it's fit."

I felt their concern. Wind and water were the stuff of life for these old-timers. Their forefathers and mine had looked over these same Chesapeake waters and asked the same questions. The weather is not an idle topic to men who wrest their living from the sea.

My Virginia island, Tangier, lies on the broad expanse of Chesapeake Bay, a great arm of the sea that thrusts nearly two hundred miles deep into the fertile lowlands of Maryland and Virginia. Tangier is only 3½ miles long by 1½ wide, and is 12 miles from the nearest mainland port (map, page 706).

That doughty Elizabethan, Capt. John Smith, had first sighted my island in 1608. With 14 companions, Smith left the fledgling Jamestown settlement in an open boat to explore the Chesapeake, "...searching every inlet and bay fit for harbours and habitations...." They soon had a taste of what the deceptively placid Chesapeake can do.

"Seeing many Iles in the midst of the bay, we bore vp for them; but ere wee could attaine them, such an extreame gust of wind, raine, thunder, and lightning happened, that with great daunger, we escaped the vnmercifull raging of that ocean-like water."

The next day, Captain Smith named those "inhabitable Iles" Russels Isles, after the surgeon of the party.

John Smith probably referred to the whole line of islands, beginning with Tangier, that extends up through Smith and Bloodsworth Islands to the mainland of the Eastern Shore. Between Tangier and Smith Islands, divided by shallow water, runs the man-made line separating Virginia and Maryland. The waters of the bay continually erode the land, and within living memory some small islands have disappeared.

Tradition says that John Smith named our island Tangier, but the first-known mention of that name does not occur until 1713.

In Smith's time, the island was a fishing

and hunting ground for Indians from the Eastern Shore, but they had never established villages there.

In 1670 one Ambrose White received a patent to the island, but local legend has it that there was no permanent settlement until John Crockett, a Cornishman, moved there in 1686 with his sons and their families.

Surnames of the early settlers have persisted, and Pruitts, Parkses, Dises, and Dizes make up the bulk of our present-day population of 850 souls. A third of all the families still bear the name Crockett.

Sea's Bounty Ebbs and Flows

An off-islander listening to my old-timers' conversation the day of my homecoming would have been puzzled.

"Last three or four licks, I didn't ketch nary pailer," Captain Tom had said.

The veteran waterman was speaking of crabs, specifically the blue crab, *Callinectes sapidus*. Scientists have well named the blue crab the "savory, beautiful swimmer." He is among the fastest swimming of crabs, and one of the world's most succulent.

What Captain Tom called a "pailer" was a peeler, a crab about to shed its hard exoskeleton to become a soft-shell, among the most delicate of seafood morsels.

Chesapeake Bay crabs, oysters, and fish have for generations been the lifeblood of Tangiermen. In recent years a parasite has severely depleted the oysters in Tangier Sound, although lately they appear to be increasing. But the blue crab continues to swarm and thin out in an irregular cycle.

Tangiermen catch crabs in several ways. A summer method we call scraping. Two scrapes—net bags held open by a frame of steel rods—are dragged over the bottom, plucking crabs from the eelgrass.

In winter Virginia watermen may do something that our bay brethren in Maryland (our people pronounce it Murr'l'nd) are forbidden to do: dredge up dormant crabs buried in the deepwater mud.

It takes a good-size vessel to pull the dredges, similar to crab scrapes but bigger and heavier. Capt. Marshall Pruitt skippers his *Marie*, an open-foredecked vessel 68 feet in length. In March of this year, Captain Marshall and his crew were dredging in 40 feet of water on "Coral Bed," a bottom of soft mud and sea growth to the west of the main ship channel running down Chesapeake Bay.

From the high wheelhouse Captain Marshall eyed the vibrating chains straining to port and starboard as the boat dragged the steel-toothed dredges along the seabed.

He moved a lever, and the winch began to wind in the port dredge. When the frame struck a roller set into the bulwarks, two men seized the bag and spilled a mass of sea growth, mud, and dormant crabs onto the deck.

"We're gittin' half a bushel to a dredge, that's a good lick," a crewman told me, tossing the crabs into a round bushel basket.

There were few "jimmies," or legal-size males, distinguished by their bright-blue claws and larger size. Mature females, called "sooks," outnumbered them eight to one. Most of the females had migrated here from the upper reaches of the bay to spawn in the saltier water.

"Jimmy crabs brings twice as much as sooks [rhymes with looks] because they got bigger lumps of backfin meat near their swimmin' paddles. Folks pay twice as much for backfin meat as for claws.

"Law allows us 75 bushels a day, but we hardly ever makes it this late in the season. Half a bushel a dredge comes to 35, 40 bushels a day. Hardly ever hit that, either, this time of year."

He pointed to the motionless crabs.

"They ain't a-crawlin' yet.

"Run sooks, their biters is bright red; these'll be runnin' soon. When the grass is greenin' up, they starts crawlin', and really starts wanderin' when lilacs and snowballs bloom."

Since crab records were first kept before the turn of the century, the crab crop has fluctuated widely, following no apparent pattern. Over the years the total catch in this region has increased, rising from 3.3 million pounds in 1880 to a high of 97 million in 1966. The estimated 1973 catch is only 50 million pounds. This year's scarcity sent crab prices rocketing at the marketplace, but not enough, Tangiermen agree, to offset the smaller profits produced by a low-yield season.

Crab's Life Fraught With Peril

A female crab carries from one to two million eggs. Of these, only two or three will survive. Watermen are no scientists, but they have sharp eyes and good sense. They say:

"Sooks'll spawn a million little crabs; if they all lived, the world'd be et up by crabs."

Toward sunset *Marie* swung aboard her last dredges, and the crew hosed down the

decks. We had taken 24 bushels of crabs.

Then we headed back to Tangier, lying low on the horizon. My island is so low that from the bay the houses seem to stand on water. Most of us live on the three "ridges," nowhere more than five feet above sea level, on the eastern edge, middle, and western edge of the island, separated by marshland.

Visitors wonder at the raised graves and headstones in our front yards. What the visitors do not know is that sometimes an abnormally high tide sweeps right across Tangier. The houses stand on the highest land on the island; here, too, we bury our dead.

Many tropical storms have wreaked havoc on Tangier, but our standard of comparison is still one we call simply the August Storm. That was back in 1933, and old-timers still talk about it. Breaking seas inundated everything but the upper stories of our houses. Boats were lost, crab shanties destroyed, and our household furnishings ruined. The small fry thought it great fun—they had only to jump out of windows to go swimming—but it was a heavy blow to our little community.

"Sugar Tom," the Tattletale Teacher

I remember the August Storm for another reason. That was the year I enrolled in our new high school; it was then that I determined I would teach there one day.

My dream of becoming a teacher was really the continuation of an island tradition. After the Civil War, when Virginia first began to grant teaching certificates, one of the earliest was issued to a predecessor of mine, one Thomas Crockett, in 1877.

"Sugar Tom," as everyone called him, was self taught. After he retired, he wrote a book about Tangier. Parts of the book titillated and shocked the islanders, because Sugar Tom uncloseted many skeletons and retailed racy gossip sometimes whispered but never before seen in print. In later years his descendants garnered and destroyed every copy of the book they could find.

I wish I had known Sugar Tom, because although it is many years since I read his book, I can still remember some of his vivid turns of phrase. He described himself as "a master of crabology and busterism," the last referring to a crab just about to molt. And speaking of his girl, he said, as I recall:

"When my Liz kisses me, I feel I could let loose two barrels of feathers in a gale of wind and catch every one of them!"

Crabman's castle, a clapboard house sleeps in a summer dawn beneath the sinking moon—blurred in this time exposure. To such shipshape domiciles weary crabmen thankfully return after long days or weeks "following the water." Two indispensable items within: a time-frayed family Bible and a well-thumbed mail-order catalog.

Dinner fights back: A Tangier lad feels a victim's wrath (**opposite**) while out on the shallows progging for crabs. Some of his catch is sold for pocket money; his mother transforms the remainder into spicy crab cakes—the pride of island kitchens.

Shaped like a fishhook—and not much bigger—Tangier sits in mid-bay, 10 miles from the nearest point on Maryland's Eastern Shore, and 14 miles from Virginia's mainland on the west. Though a part of Virginia, Tangier has its closest links with Crisfield, Maryland, whence the daily mailboat comes and where most Tangier crabs are sent.

Since Capt. John Smith discovered the island in 1608, Tangier has lost great chunks of land to wave erosion. Much of the beach from which the British fleet set sail to bombard Baltimore in the War of 1812 has been washed away. On occasion, hurricane-driven waves inundate the entire island, only five feet above sea level at its loftiest point.

Early settlers ran cattle here, but today, with land at a precious premium, not a head of livestock remains.

Over the years I have watched our school develop into a fully accredited institution that offers instruction from kindergarten through high school. Quite a number of our boys and girls have left the island to serve humanity in many fields, but some have returned to their school as teachers. Can there be a greater reward on earth than having a part in shaping people's lives?

Traditionally, a boy on Tangier grows up with the sea; a girl grows up with the home. At 3 or 4 a Tangier boy is already amphibious, swimming from the docks and progging—looking for crabs—in the eelgrass of the muddy shallows. At 16 he has the experience to become a waterman.

Most of our boys "follow the water," like their fathers and grandfathers before them. That is why, although times are changing on Tangier, as everywhere else, high-school graduating classes are still small.

As I write, the graduating class numbers ten. Of these, half will leave the island. On the last day of classes I asked them why they had elected to stay or leave. Said one youth:

"I'm signing up with the Marines two weeks from today. I feel I owe my country a military obligation. My father and others before him served; now it's my time."

On my island, patriotism has not yet become passé.

One girl said she was going to a fashion-design school in New York City. But note:

"I figure that someday I could open me a little shop here on the island."

"I've Been Growed Up With It"

Another boy was staying:

"This is a good place to live, and I like to work on the water. My father's been taking me with him since I was 10. I've been growed up with it. On the land it seems like you're always under somebody, but on the water you do as you please."

The possibilities of life "ashore," when set against the certainties at hand, have little attraction for most Tangier boys. Nothing is more appealing to a man than to be his own

boss, and on our island that is simple. You acquire a boat and search the water for delicacies sought by people ashore. The water is open to all. Sometimes the rewards are great, other times scanty, but always this active life brings excitement, and usually the search brings satisfaction.

Since 90 percent of our men are on the water, our women must live with that fact of Tangier life. Few of them mind it. A waterman's wife will tell you:

"We grow up with the idea that a man has to be on the water. It's something you don't think about—unless, of course, there's a storm, and then you just pray.

"We Tangier women are stay-at-home people, mainly concerned with house, children, and church. But I think we're more neighborly than mainlanders. Why, I've got relatives in Baltimore that don't even know their next-door neighbors! Here we're one big family. If something real joyous happens in your life, everyone's happy for you.

"A Tangier mother has great responsibility

Crabmen come in from the cold to the warmth of the Double Six, a hangout open during the winter dredging season. Here, before and after their dawn-to-dark routine, crabbers swap yarns and joust at dominoes. To chase the numbness from overworked bones, they down hot oyster sandwiches and great gulps of coffee or soda pop—the strongest drinks sold on Tangier.

Pedal power keeps things rolling on Tangier's main street, barely wide enough for the handful of cars and small trucks permitted on the island. The white picket fences of former years are being replaced by chain link—yet another sign, along with TV aerials and an island airstrip, of the inexorably creeping "progress" that slowly transforms the old way of life.

toward her children, because the man's away during most of the waking hours. When our children were small, my husband would cross the bay in September to tong oysters. He'd come home only every other weekend; that was two weeks I was alone with the children.

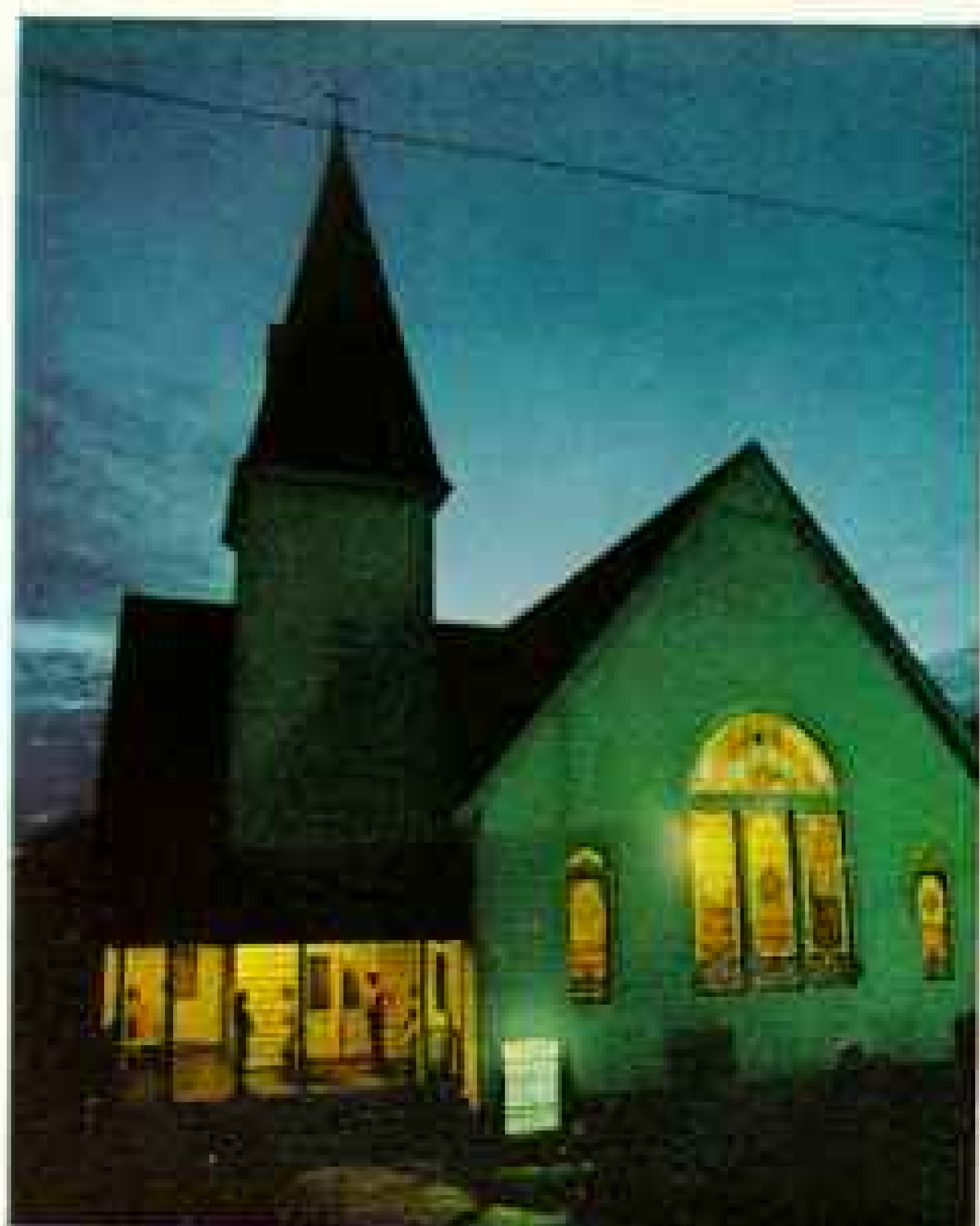
"Now he sheds crabs. He gets up at two in the morning, culls out crabs that's shed, and comes home for breakfast at 7:30. He goes back until three; at five he's back at the crab house until 7:30 that night. When he comes home, he's sleepy, naturally.

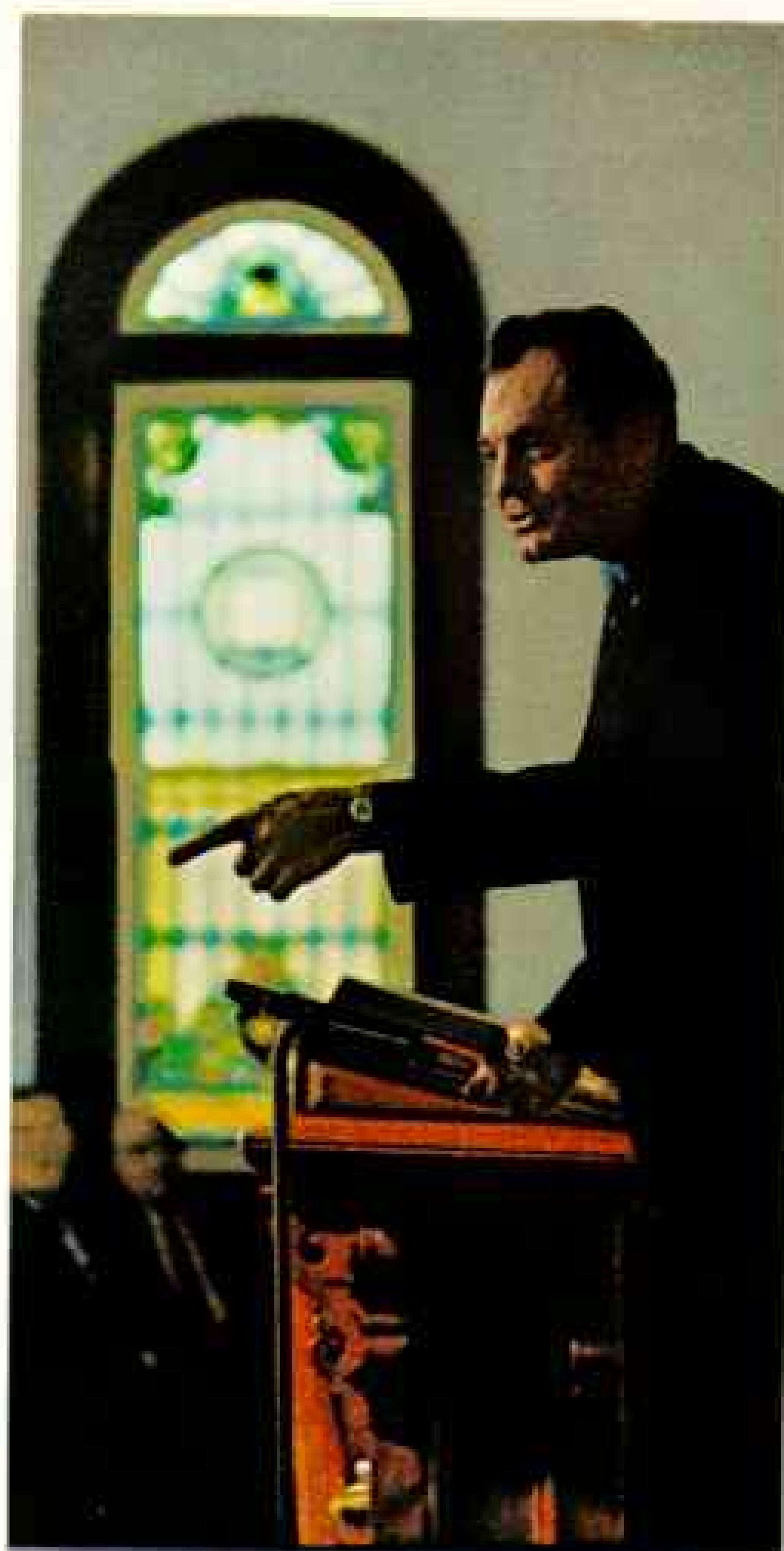
"A man on the water has enough trouble trying to make a living, and when he comes home, the wife doesn't want to burden him with problems involving the children.

"But I'm real thankful for the privilege of knowing everybody, and maybe the quietness. Oh, I'm very contented with my life. I wouldn't trade it; no, I would not!"

The little leisure time given to a waterman he spends mainly at home. But scattered along our main street, we have a grocery store and several snack and soft-drink shops where

Fortress of faith, Tangier's Methodist Church casts a glow of greeting at dusk. Lovingly enlarged and rebuilt many times, the church anchors a people who daily grapple with the sea for survival. During services, youngsters are kept at parents' sides (**left**), though not compelled to pay attention. Through these walls, the spirit moves in many moods—as when W. Ray Crockett looses a fire-and-brimstone sermon, or gentle "Miz Annie" Parks rises to "testifoi over all th' fine blessin's the Lord's given me this past week."





School-bound lasses stroll with books and lunch bag down a narrow lane, one of many paths branching off King Street, the central thoroughfare. Even it was hardly wider than this until enlarged to accommodate motor vehicles in the 1950's.

Clustered on the high ground, most of the island's homes line King Street (**opposite**). A few dozen yards to either side, the land becomes too marshy to support a house. Dig six feet, and you hit salt water; deep wells go down a thousand feet or more to tap fresh water from beneath the floor of Chesapeake Bay.

the men gather. At the Double Six they meet to play dominoes, but during the games everyone concentrates and there is little speech.

One of the best places to hear island talk is at Lawson's Clipshop, a miniature barber shop halfway down King Street toward the southern end of the island. Here, on benches near the oil stove, the old-timers chat.

"How's fishin'?"

"Do you mean fishin' for fun or fishin' for a livin'? It's good one way and hard t'other."

Capt. Willie Crockett has been "on the water" for more than fifty years. He is 68 years old but goes crabbing every day except the Sabbath, wind and water permitting.

"If I was to quit work now," says Captain Willie, "I know I'd doie. When you're past 60; you've got the same moind. It says, 'Go ahead,' but your body tells you you cain't. I intend to keep goin' as long as the powers above will let me.

"Never can tell what you'll bring up in a crab pot; that's part of the fun o' fishin'. I've caught sea horses in my pot, and once I got a real lobster. I carried him to Crisfield and showed him around, then the next day I took him and turned him back in the water right whur I found him. I said: 'I don't know whether you're goin' t' make it, but I'll throw you overboard whur I took y' out.' I figured he was off course."

Treacherous Waters Earn Respect

Capt. John Smith would have sympathized with the misguided lobster, for after receiving a drubbing from "that ocean-like water" of Chesapeake Bay back in 1608, he wrote:

"The wind and waters so much increased with thunder lightning and raine, that our fore-mast blew overbord; and such mightie waues overwrought vs in that smal barge, that with great labour wee kept her from sinking, by freeing out the water."

Like Captain John, Captain Willie knows what it is like to bail for your life.

"I'll tell you somethin'," says Captain Willie, "this water business is sometimes pleasant, sometimes not so pleasant. One toime I was out in an open boat about 20 feet long, and it came on to blow—more than 70 moiles an hour, they told me later. For four solid hours I bailed for dear life, with a lard tin. I tell you I looked death in the face that day. If it had blowed a little *less* hard, I wouldn't be here talkin', but it blowed so hard

(Continued on page 717)

Weathered as the wood it tends, the hand of a waterman (**left**) feels for rough spots on the just-sanded surface of an upturned crab boat. Frequent applications of filler and paint help fight the wear inevitable with fishing craft used daily in the waters surrounding Tangier. For fisherfolk's hands,

alas, no such remedies exist. Men and boats alike take a pounding on the often wild, always capricious waters of Chesapeake Bay. Icy dollops of spume (**above**) splatter a dredging boat in winter, when Tangiermen leave the island for a week at a time to drag the bay bottom for crabs. Workdays during this rigorous if profitable season last 14 hours or more—each minute an agony of numbing wind and blinding spray. Every Tangier crabman has harrowing tales to tell of brushes with disaster on these fitful waters; a few fail to return to Tangier's hearths to recount them.

"Our lives are intertwined like the branches of the grapevine"

THUS COMMENTS THE AUTHOR of the oft-tested, seldom-severed bond of loyalty and devotion among Tangier's tight little community. "If one suffers, all suffer," he notes.

Widower Capt. Johnny Ross Parks (**above**), 89, still tries his hand at crab potting on summer days. In the evenings he comes home to find dinner "a-waitin'" on the table, punctually prepared by his daughter Viola. She daily steals time from her own family's needs to see that Captain Johnny's little house stays trim and his plate well filled with his favorite fare—hot crab cakes and fried chicken.

With changing times, more and more islanders—particularly the young—seek new lives and livelihoods "ashore." Crabman's daughter Annette Pruitt (**right**) went away to college, met mainlander Gary Beatty, and has since left Tangier to live with her husband at Harrisonburg, Virginia. Here islanders gather to send off bride and groom amid a shower of rice and good wishes.

it blowed the tops clean off'n the waves, so they was nothin' but foam.

"I didn't know the Lord in them days, but let me tell you, I made a lot o' promises!

"Blowed me right over a sandbar without touchin', and grounded me on the shore. When I fell out on the sand, I don't moind tellin' you I had a spell o' cryin'."

Religion Sustains the Island's Life

When I came home from three years of war, the first sign of my island to rise from the water was the white steeple of the Methodist Church (page 711). Tangiermen are deeply religious. Their religion is not a casual Sunday cloak but a mantle that sustains them through the trials and toils of life.

Many of the watermen are lay preachers and Sunday-school teachers. Religion to such devout men is a part of everyday life, and they talk of their faith in familiar terms. I well remember hearing one lay preacher tell his listeners with fervor and conviction:

"Chroist was willin' to take all the sins of the world, no matter whose. Now, you cain't ask for a better deal than that!"

Preaching is in the Tangier tradition, for here, early in the last century, that "powerful exhorter," the celebrated Reverend Joshua Thomas, proclaimed the Word to thousands at camp meetings on the beach.

The "Parson of the Islands" was born with the Republic in 1776. He attended the first camp meeting held on Tangier, in 1808, and became a formal preacher about 1814.

One day on a walk to the south end of the island I recalled the parson's most famous sermon. When I turned west at the foot of King Street, I had to cross a creek by way of the "hoistin' " bridge (so called because it

could be raised to allow boats to pass). Some small boys were mudlarking under the bridge. I thought of my own boyhood in this same place, and when I reached the beach, I removed shoes and socks. The sand between my toes lifted forty years from my back.

On the old beach here Joshua Thomas harangued British troops who had occupied the island during the War of 1812.

Toward the end of summer in 1814 Tangier islanders saw much coming and going among the troops and ships of the fleet offshore. It was evident a major action was impending. Later, the Reverend Thomas recalled:

"Before they left Tangier, they sent me word to be ready to hold a public meeting....

"At the hour appointed, the soldiers were all drawn up in solid columns, about twelve thousand men, under the pines of the old camp ground....

"I told them it was given me from the Almighty that they *could not* take Baltimore....

"When the battle was over ... I asked them if they had taken Baltimore? They looked at me and said, 'No, but hundreds of our brave men have been slain.... You seemed to be standing right before us, still warning us against our attempt....' "

The Parson of the Islands was famed for his utter fearlessness in preaching the Word of God. Like other islanders he stood in awe only of the God he worshiped.

In 1831, the Reverend Thomas's biographer reported, islanders influenced by the parson's stirring sermons "began to feel some trouble of mind in relation to the traffic and sale of ardent spirits...." Since that time the sale of alcohol has been prohibited here.

Major crime is almost unknown on Tangier. We do have a jail in the Town Hall, but it is seldom occupied. The town sergeant is mainly concerned with speeding offenders.

Flat and small, the island is ideal for bicycles. It has only three miles of roadway. I can safely say that there is at least one bicycle,

In the blue chill of winter, Tangierman Kenneth Pruitt, Jr., shoulders a Canada goose that made a fatal stopover in the island's inviting salt marshes, a magnet for migrating birds and hunters alike. During the mid-November to mid-January season, some Tangier watermen paint their normally white boats green for camouflage and hire out as guides to hunters arriving at the small but beehive-busy island airstrip.

"Goin' pottin'," watermen empty and reset their crab pots—wire-mesh traps marked by small buoys painted to identify the owner. As they empty the pots, they keep a sharp eye out for the occasional peelers—pronounced "pailers"—that blunder into the traps. Peelers are crabs about to shuck their hard exoskeletons. During the interlude between the casting off of the old shells and the hardening of new ones, the crustaceans briefly become soft-shells, a prized delicacy of Chesapeake-region tables. Crabmen keep the peelers in shedding floats and stand vigil day and night (**left**). When a crab finally sheds, it must be quickly plucked from the salt water; otherwise it would begin to harden again within an hour.

and sometimes more, for every one of the 250 households on Tangier. A common sight is a little tot of five, pushing her big brother's bicycle, asking a passerby, "Hey, mister, gimme a send!"

In the past few years motorcycles have come to Tangier, and some of the young bucks cannot resist the temptation to roar along faster than our 15-mile-an-hour island speed limit. Although our main street is so narrow you can nearly span it with outstretched arms, we now have 30 motorcycles and motor scooters, seven cars, and four trucks. If two cars meet on the main street, one has to give way and back up to the nearest side road.

Offenders are assigned to public work: cleaning the cemeteries, streets, and other public places. Normally the sentence is for one or two weeks. The lawbreaker remains at liberty during the night but reports to the town sergeant every morning.

Boats Remain Central to Island Life

But by far the heaviest traffic of Tangier is on the water. Boats hold the same place in our lives that automobiles do for mainlanders. You've just got to have one: skiffs for the little ones, outboards for the youths, and work craft for the breadwinners.

The waterfront is a natural magnet for a Tangierman. Frequently I find myself looking over the harbor at the scores of boats riding at anchor or tied up side by side at the piers. The wooden workboats are usually between 40 and 65 feet long, powered with diesel engines that can get you out to the fishing grounds in a hurry.

Toward the end of World War II, watermen on the bay began to use traps, or pots, to catch crabs. These are fashioned of poultry wire. Fish bait, usually menhaden, attracts the crabs, which enter through a funnel. A man who fishes hard may set 200 pots; if he has a helper, perhaps as many as 250. Pots are the mainstay of the crab fishery from late March to December, while the crabs are "walking."

When a crab is finally ready to shed its shell—it may do this five or more times during the summer months—and immediately after, it seeks a hiding place. Then it will not come to the fisherman; he must go to it.

A peeler becomes lethargic as molting time approaches, and after it has shed its old armor it remains as limp as an empty glove

CUSHMAN

for at least an hour as the new shell begins to harden. This is a vulnerable time in a crab's life, for only then is the creature incapable of doing battle or scurrying away from predators.

Crabbers look for peelers and soft-shells from a small skiff they pole over the flats, in water two to five feet deep. They shove the boat to windward, then drift downwind, peering over the side into a "ca'm streak" made by pouring fish oil on the water. When they spot the crabs hiding in the eelgrass, they scoop them up with a dip net.

Lightly dusted in flour, or dipped in batter, and fried, the soft-shelled crab is eaten whole. It is the delicacy of the crab world, and fetches the highest prices. Some crabs are picked up soft from the bottom, but most are placed in floating live-boxes as peelers, to await molting (page 720).

Fishermen bring their catch to the crab shanties that line the shores of our entrance channel. Slat-sided boxes float in enclosures as big as an acre. Such a crab city may have a population of ten thousand.

I watched a packer count the crabs from one boat. As he picked up each one, he glanced at the paddlelike backfin.

"Crab that's got a white edge to his paddle, he's got about a week to go. Pink rim, he'll shed in three days. When they gets red in the paddle, they'll shuck their shell in a day or so. See this one?" He held up a crab coming apart at the seams. "That's a buster; he'll come out in about three hours."

Out of the water, the soft-shells do not harden. They are packed alive in sea grass, refrigerated, and sent to the restaurants and markets of the cities.

Visitors ask the crab packers all kinds of questions. A shantyman told a lady visitor:

"We been gittin' lots o' doublers."

"What are doublers?" asked the lady.

"Well, this toime o' year, every jimmy crab, he's got a woife in his arms, and we scoop 'em up together."

Bay crabs mate in late spring or summer after the year-old female has molted for the last time. As shedding time approaches, the females and jimmies seek each other out and swim about, clasped together, until the female sheds and mating occurs. The female spawns the next spring or summer after spending a dormant winter, then usually dies within a year. The male lives as long but continues to mate and molt until his death.

Tangiermen Specialize in Crab Cuisine

Crabs are prized as food throughout the world, but nowhere else, I think, do they taste as good as they do on my island.

Stewed jimmy crabs are a Tangier specialty. You take about 15 hard-shelled crabs (crabmen prefer "big, rusty jimmies"—dark-red ones that have shed some time ago). Peel off the back shell and remove the feathery

Instant fire fighters, volunteers materialize on one of the department's mini-engines at the first sniff of woodsmoke—a fearsome scent to Tangiermen, whose clapboard homes stand eave-to-eave along the island streets.

Uneasy rider, sunbonneted Maggie Pruitt hitches a ride to the island's only grocery store on Terry Parks's motorcycle; this form of transport is looked on askance by some elders but adored by Tangier youths. Violations of the 15-mile-an-hour speed limit may result in an encounter with the town sergeant—and a week or more of penance, cleaning streets or pulling weeds in public cemeteries.

gills, the dead men, we call them. Place the crabs in a pot with 12 ounces of water, season to taste with salt and pepper, and steam for 15 minutes. Fry out half a pound of pork fatback. Drain the crabs and pour the hot grease over them. I promise you a taste treat.

At the Chesapeake House, our island's only boardinghouse, Mrs. Hilda Crockett sets a famous table. Here the guests, not the table, groan as they tuck into crab cakes, clam fritters, ham, chicken, fried oysters, coleslaw, peas, potatoes, corn pudding, apple sauce, home-baked bread, and pound cake.

Ice Can Isolate the Little Island

Although Tangier is less than 15 miles from our nearest supply base on the mainland, in the past there were times when we were as isolated as if we had been in the middle of the Atlantic. I remember vividly the big freeze of 1936. Most of Chesapeake Bay except the lower ship channel was clogged with ice as much as a foot and a half thick. We were cut off from water traffic from late January to the end of February.

The Army Air Corps came to the rescue. I can still see the bombers making target runs over the school playground. We watched in fascination as the bomb-bay doors swung open and sacks of Red Cross food came tumbling down. We had never dreamed we would enjoy being bombarded with beans.

A few light planes landed on the playground then, but today we have a surfaced airstrip that can handle private and small commercial aircraft. On weekends from April to December we may have as many as 75 aircraft fly in on one day. With the scores of people brought in by ferry from Crisfield and Virginia's western shore, Mrs. Crockett serves her classic dinner to several hundred people on the weekend.

For some time Tangier was medically isolated, too. From the 1890's to 1956 we had always had a resident physician. When Dr. Charles Gladstone retired and moved away, our plight drew worldwide attention. From Japan Dr. Mikio Kato came to us, with the understanding that he would remain one year. He stayed 21 months, married his local assistant, and moved to the mainland.

Since 1969 we have had the highly competent services of Miss Helen Jane Landon, RN. Miss Landon, holder of two master's degrees, can do most things our people need, including "borning babies." When she diagnoses something serious, a telephone call can alert an airplane, helicopter, or fast boat, and within the hour the patient is in a mainland hospital.

Yes, what some call progress has come to my island. White picket fences give way to chain link, television antennas poke skyward, and asbestos or aluminum siding has replaced clapboards on some houses.

Progress, however one defines it, cannot be held back. Yet its impact on my island is softened by the strength of the past. We have, I think, the best of both worlds.

People on my island manifest their deep religious conviction by love and concern for one another. Here everything is weighed in the light of eternity. God is not always center stage, but He is always in the wings.

Tranquil Charm Lives On

There is change on Tangier, but one element of our life never changes. The sea is our life, our highway, our farm, our prison. The muskrats still forge intricate runs through the salt marshes. Virginia rails, herons, and white egrets stalk the shallows. And in the autumn the whistle of wings sounds in the yellow morning sky as wild ducks and geese flock down from the north.

When I walk round my island, I feel its peace all around me. At dusk fireflies make patterns of dancing lights against the graying sea. As I near the hoistin' bridge, the island trysting place, I see two figures silhouetted against the sky. In the distance I hear boys and girls hymning "I come to the garden alone. . . ."

Beyond the bridge a group of children walk hand in hand. The little ones are licking lollipops, and their older brothers and sisters have ice-cream cones. They are trading licks. The smallest girl holds out her lollipop.

"Want a lick, Mr. Wheatley?"

How I love this island! □

At one with the sea, a gull, and himself, Tangier waterman "Sonny" Parks pursues a lifestyle that is his by personal choice. "I worked awhile in New York and some other places where people hardly knew one another—and didn't much care. Here on the island, now, we all know each other—and we all care. Guess that's why I decided to stay a Tangierman."

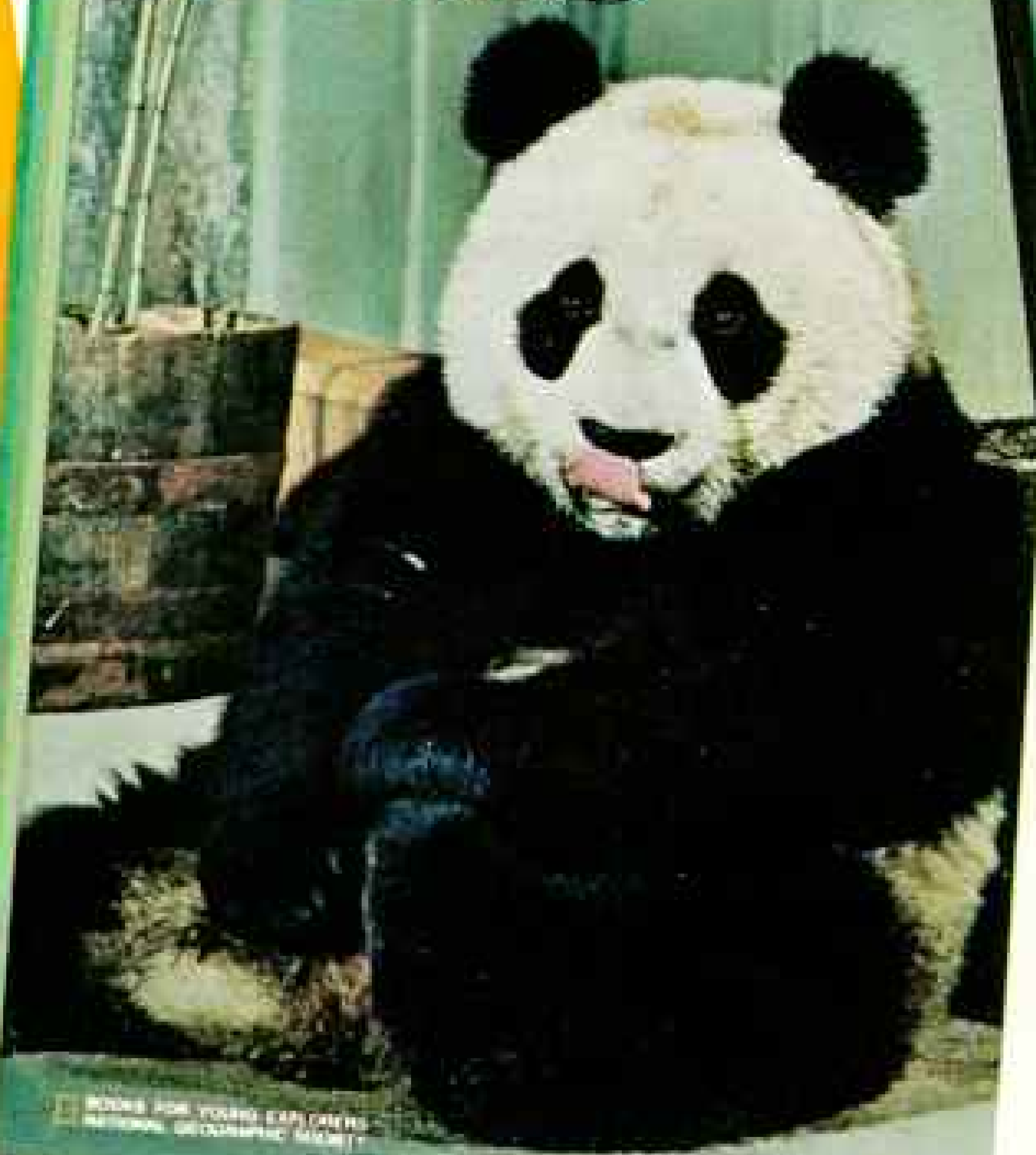
The curiosity crowd selects four great new Books for Young Explorers

ONCE, while teaching the young of Athens, Socrates remarked that "wisdom begins in wonder." In that tradition of wise beginnings, the National Geographic Society announces new titles in its Books for Young Explorers series, brightly illustrated publications designed for preschool children and beginning readers—ages 4 through 8.

Youngsters themselves were carefully polled about topics they would enjoy. They responded by voting for their favorites among a dozen suggestions. Now four handsome hard-cover books answer some of the questions of this curiosity crowd. Simple words encourage the apprentice readers, and color pictures in profusion show the younger children just how much fun books can be.

"Even better," one father wrote, "is your manual *More About*.... It makes me look smarter than I am." The 24-page guide gives parents and teachers supplementary facts, even suggesting reference sources for some informed talk when reading is done.

To examine copies of the books reviewed on the next pages, mail the postage-paid form (opposite). Without obligation, you can see for yourself the wonder these volumes will hold for your own young explorers.



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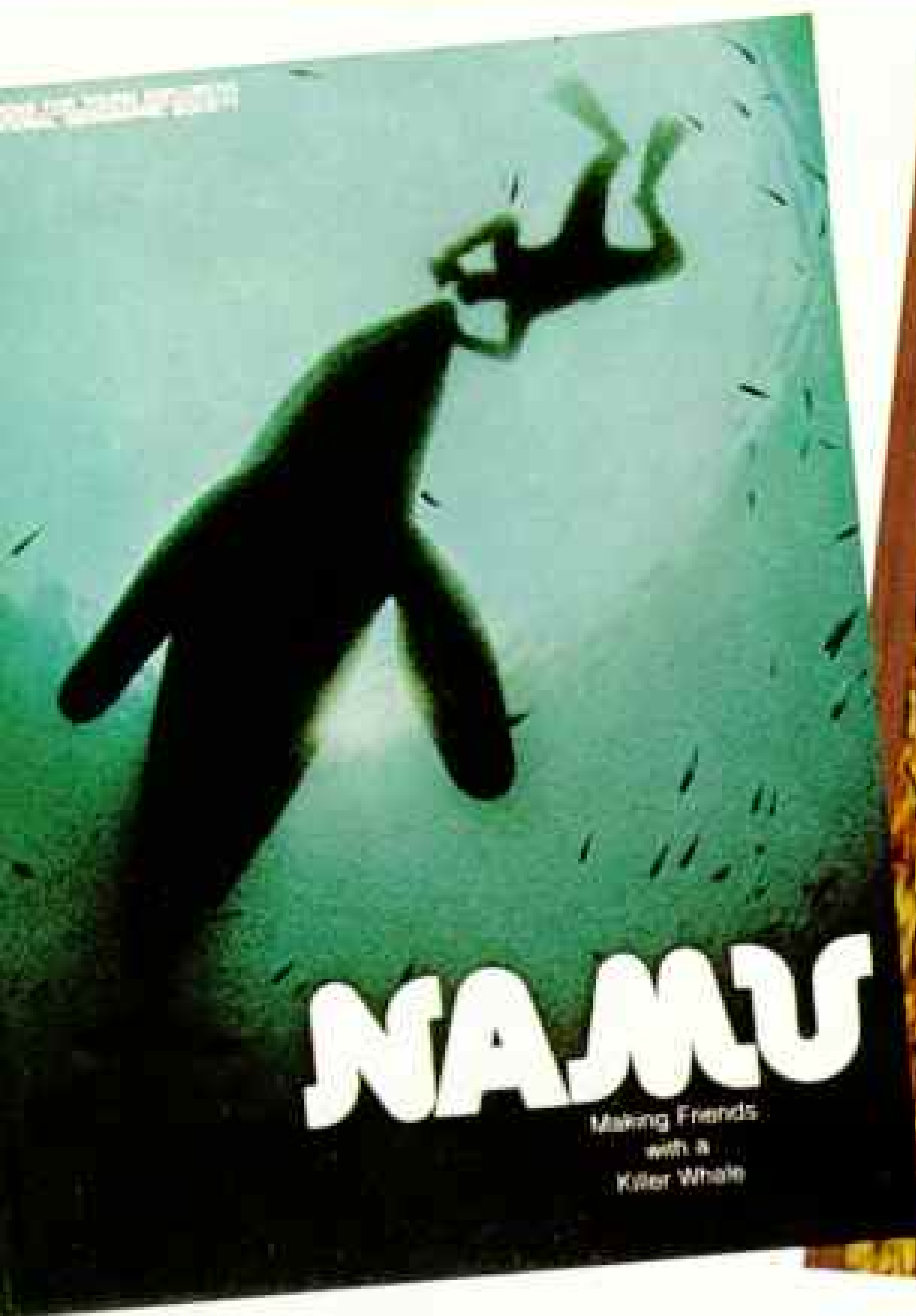

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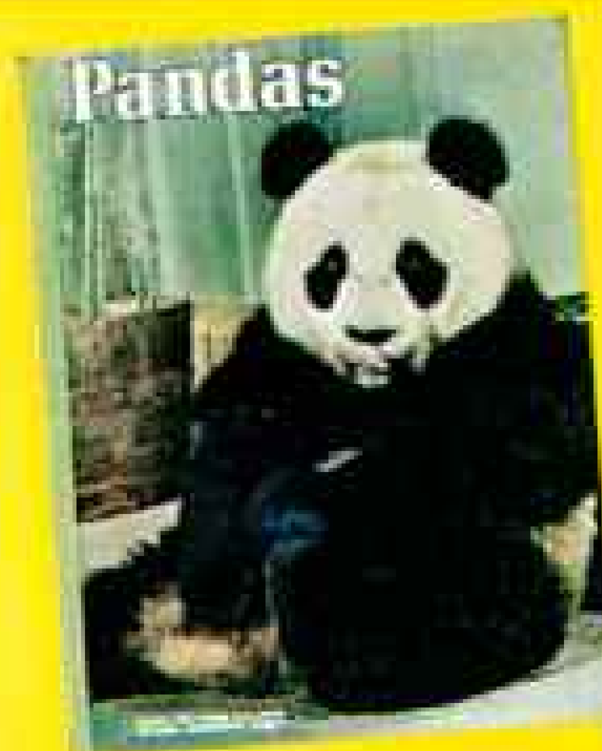

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Subscription Rolls Close: November 30, 1973
Limit: One Proof Set per Subscriber

THE FRANKLIN MINT IS THE WORLD'S LARGEST PRIVATE MINT. IT IS NOT AFFILIATED WITH THE U.S. MINT OR ANY OTHER GOVERNMENT AGENCY.

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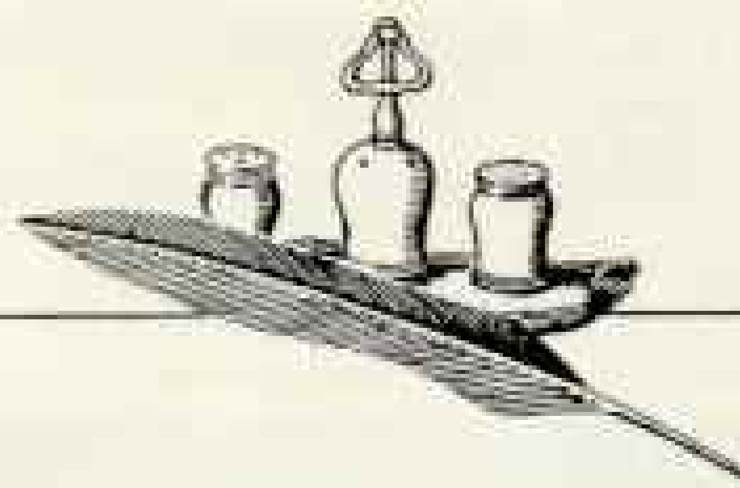
Shown actual size are four of the seventy Official Bicentennial Ingots—The Boston Tea Party (top), the Signing of the Declaration of Independence, the Battle of Saratoga and the British Surrender at Yorktown. Each sterling silver Proof ingot will be issued in a personalized cachet, postmarked on the 200th anniversary of the historic event depicted, at the post office serving the site of the event.



THE BICENTENNIAL COUNCIL OF THE THIRTEEN ORIGINAL STATES, established by the delegates of the Bicentennial Commissions of the thirteen original states, is dedicated to making the nation's forthcoming Bicentennial a time for revitalizing our appreciation of the history of the American Revolution.

The seventy most significant events of the Revolutionary Period—from *The Boston Tea Party* to *The British Surrender at Yorktown*—will be commemorated by The Official Bicentennial Ingots. Specific events will include:

The major battles of the Revolution. Lexington. Concord. Bunker Hill. Princeton. Bennington. Monmouth. Savannah. Charleston. Yorktown.

The great political events. Patrick Henry delivering his "Liberty or Death" speech. The meeting of the First Continental Congress. The signing of the Declaration of Independence. Congress adopting the Articles of Confederation.

Moments of triumph and courage. The midnight ride of Paul Revere. Ethan Allen's "Green Mountain Boys" taking Fort Ticonderoga. Thomas Paine publishing his "Common Sense." The sacrifice of Nathan Hale. The long winter at Valley Forge.

The great events of the Revolution sweep across seven years of history and through many cities in America and Europe. *Philadelphia*, where independence was born. *Boston*, where the secret Committee of Correspondence was formed. *London*, where the colonists' representative was rebuffed by the King of England. *Saratoga*, a British defeat that was a turning point in the war. *Paris*, where Benjamin Franklin obtained an important alliance with the French. *Yorktown*, where the last major action of the war took place.

The site of each event, as well as the event itself, will be commemorated.

Proofs of each ingot will be accompanied by personalized cachets individually postmarked at the post office serving the site where the event occurred—on the 200th anniversary of that event. Thus, subscribers will build a complete collection of The Official Bicentennial Ingots in their original commemorative cachets—postmarked on the anniversary dates and at the places where the Revolution took place.

The Bicentennial Council of the Thirteen Original States has appointed The Franklin Mint, the world's foremost private mint, as the official minter for the series. Subscriptions for Proof Sets—the only sets that will ever be issued—should be sent directly to The Franklin Mint, Franklin Center, Pennsylvania 19063 and must be postmarked by November 30, 1973.

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It's a bitter irony that at a time when Americans enjoy unprecedented prosperity, we seem to be running out of everything from gasoline to clean air.

Most people concede that internal combustion engines are a major cause of air pollution. They also know that the sheer number of them has a lot to do with our fuel shortage.

What may surprise you is that diesel engines have been and can continue helping us solve both problems.

For one thing, diesel engines pollute far less than gasoline engines even without special emissions attachments. What's more, a diesel powered vehicle can travel much farther on a gallon of fuel than a similar gasoline powered machine. Also, diesel fuel is cheaper.

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Diesel engines are not a cure-all for the fuel shortage and dirty air. But it's good to know that where useful work is needed they do it well and with minimum harmful side effects.

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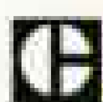

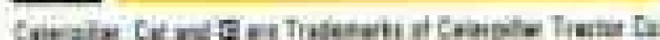

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The people in away from these Their cars had

The people in these crashes were in cars equipped with an air bag passive restraint system. Inflatable bags that automatically cushion driver and passenger in a frontal-type collision. Inflating, protecting, deflating in less than one-half second.

But the people in these crashes were lucky. Extraordinarily lucky.

Because there are only 1,800 air bag equipped cars on the road today. Used—in a program of on-road testing of air bag reliability—by the U.S. Government, Allstate and several other major companies.

The air bag's record in this program has been most impressive. It has *never* failed, in a real-life crash, to work to protect the occupants as it was designed to do.

In over 35 million miles of on-road testing has the air bag system *ever* inadvertently deployed? Yes. *Once.*

Once, in over 35 million miles of driving, one inadvertent inflation of the air bag has occurred. (The result? A minor hand injury to the right front passenger. However, the driver was completely unaffected and stopped the car without incident.)

But despite its impressive record of performance—including a mounting number of air bag successes like the ones shown here—the protection of air bags is still not available to the public.

We hope this situation is about to change.

Several years ago a Federal regulation was adopted that would have required *some kind of* passive restraint system in all 1974 model cars. But that

68 mph into a parked car. Injury: broken wrist and knee cap.
Lap belt: not in use.

Source: St. Louis Post-Dispatch. Photo by Scott C. Dine.

35 mph into utility pole. Injury to driver: slight nose fracture. Injury to passenger: sore shoulder.
Lap belts: not present.

these cars walked crashes. air bags.

Source: Photo courtesy of KTTV, Los Angeles.

20 mph head-on collision. Injury: none.
Lap belt: in use.

deadline was called off. Now 1976 is the target year. So the debate continues over what kind of passive restraint system should be used in cars sold to the public. (A debate that's failed to produce any system as effective as air bags.)

We believe after *years* of air bag laboratory tests and over *35 million miles* of successful on-road testing, the time for debate is over.

Today air bags are technologically ready to be installed in production-line cars. One car manufacturer, General Motors, has announced plans to offer air bags as an option on some 50,000 1974 cars—Cadillacs, Buicks and Oldsmobiles. We hope other companies will follow their example.

There's little doubt that some of the people in the crashes shown here would have been badly injured or killed if they'd been driving cars without air bags. A look at these photographs makes that clear.

Each year thousands of people are killed in automobiles. Well over a million more are seriously injured, many maimed for life. How many lives might be saved, how many injuries prevented, if air bags were available to every new car buyer?

The air bag is ready for America now. And America, Allstate believes, is ready for the air bag.

For details on the air bag and its record of performance, write to Director of Automotive Engineering, Allstate Insurance Company, Northbrook, Illinois 60062.

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Look at both sides of this Kodak Carousel custom H projector. On the outside, it's as handsome as a costly stereo. So you don't have to hide it somewhere between shows. (Note the smoke-tinted dustcover that snaps on in place of the 140-slide tray.)

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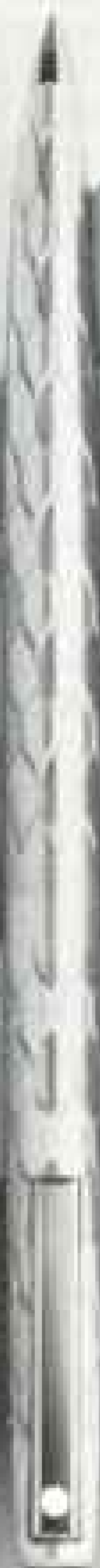

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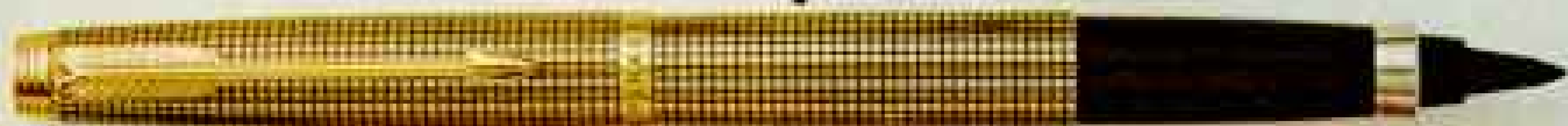

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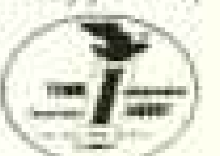

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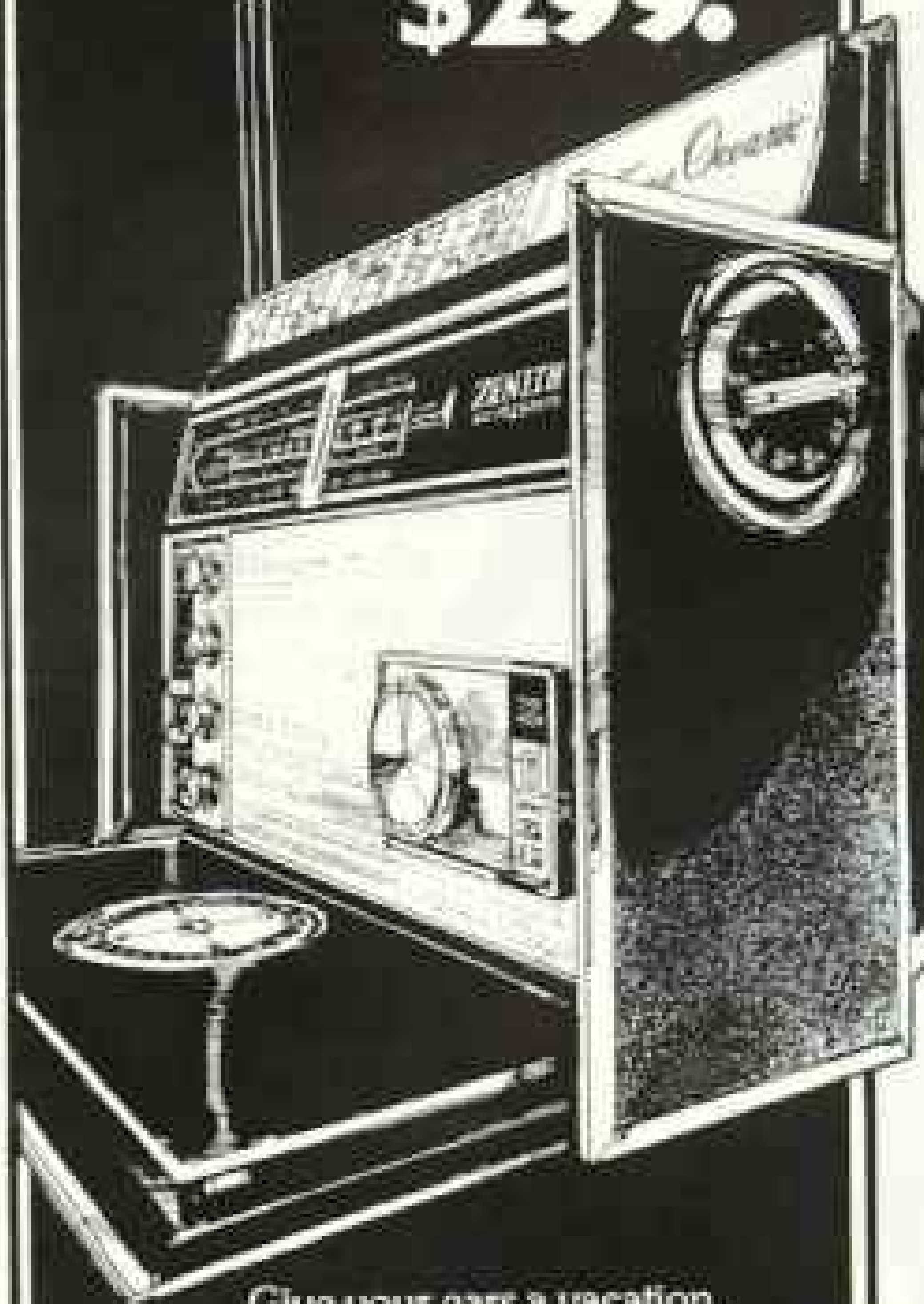

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This frail doll whispers of Peru's lost civilizations

Raggedy Andy of a forgotten time, he wears homespun cape and cap, with coarse wrappings for arms and legs. His rouged face is fashioned of wood, the hair of fiber.

Carved and clothed by a Peruvian craftsman, probably about 800 years ago, the 23-inch doll and his small puppetlike companion survived the years in a bone-dry grave. Now he is carefully preserved in the Smithsonian Institution. No mere curio of some ancient toyland, he probably served as an offering to the dead. The pair were unearthed in Peru's desert, a virtually rainless ribbon of land along the coast. Here colorful textiles entombed for thousands of years preserve their brilliance; objects as delicate as feathers weather the centuries intact. Time has not dulled the doll's black hair or frayed his garments. Even the red paint on his face has not paled. In such frail images Peru whispers of ancient civilizations.

Inland, Peru shouts of past glories. High in the Andes, on a mountain saddle above the twisting Urubamba River, sun-worshiping Incas built the temple city of Machu Picchu. Hand-hewn granite blocks of the citadel lay hidden under dense jungle growth until 1911, when Yale professor Hiram Bingham "rounded a knoll and suddenly faced tier upon tier of Inca terraces rising like giant stairs." Supported by the National Geographic Society, Bingham explored and cleared the site. In the GEOGRAPHIC for February 1915, he reported his discoveries in detail.

Readers have since returned many times to Peru. Lured by tiny doll or mammoth ruin, they find lost civilizations vividly unveiled in the pages of NATIONAL GEOGRAPHIC.

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And you love her with a warmth
it takes a thirty-some-year-old woman
to understand.

Diamonds make a gift of love.

Someday, you're going to need a Nikon

According to photographer Morton Beebe, he and a writer companion were the first two men ever to walk on both ends of the Earth. And they did it within the same year! Beebe took these photographs, with his Nikon cameras. The frosted Major on a floating ice island near the North Pole. The ship near Cape Hallett, in Antarctica.

It was a challenging assignment for man and camera. Temperatures hovered around 60° *below* zero. Beebe often lost the tip of his nose, frozen to the metal of the camera. Cameras were often left outside in the cold, because heavy layers of frost would form if they were brought inside. They had to be operated with gloves, or with stiffened fingers which often stuck to the camera. And there was little time for photography: the arctic day was just three hours long at that point.

Beebe got the photographs, as you can see. The Nikon cameras performed faultlessly. As they have on so many other difficult assignments, in the hottest, coldest, most humid and driest parts of the earth. That's how rugged, how reliable a Nikon camera is. That's why it's the near universal choice of serious photographers everywhere. Although we don't recommend using a Nikon in extremely cold temperatures without special preparation, Beebe did it ... with regular off-the-shelf cameras.

It may be a sunny 75° day in your backyard, but someday, somewhere you too, if you're serious about photography, are going to need a Nikon. You're going to need one of its many unique capabilities. One of the over 40 incredible Nikkor lenses of the Nikon System. Or maybe, if you get around like Morton Beebe, you'll need the incomparable precision and reliability. But you *will* need a Nikon. Maybe tomorrow. Be ready. We'll help you get ready ... ask your dealer about the Nikon School of Photography, coming to your area soon. Write for Folio 19. Nikon Inc., Garden City, N.Y. 11530. Subsidiary of Ehrenreich Photo-Optical Industries, Inc., (In Canada: Anglophoto Ltd., P.Q.)

CHOOSE AN ORGAN LIKE YOU'D CHOOSE AN ORCHESTRA.

Audition an organ with some of the same criteria a conductor would use to audition an orchestra.

First consideration: Size.

Like an undersized orchestra, a too-small organ could lack the right combination of power, range, and color to satisfy your musical appetite.

Since modern organs last for decades, underbuying is an enduring mistake.

If you do need a small instrument, make sure it incorporates the advantages of big instrument technology.

Yamaha makes a full range of organs, and even the small models have considerable variety and power.

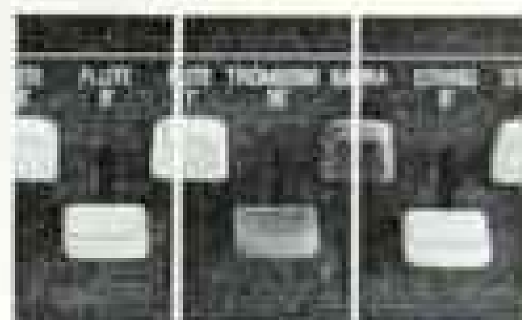
Conductors need a *large range of sound* to work with, and so do organists.

The smallest organ you should consider should have a minimum of three divisions worth of range for versatility: two keyboards and a pedalboard.

Larger organs, like the Yamaha E10R, have extended keyboards for wider tonal range.

One organ, the Yamaha DK40, has five divisions of sound instead of just three.

Choose an organ with a selection of tone colors from *each basic family of the orchestra:* brass, woodwinds, and strings.



Don't expect literal imitations of their sound. Rather, look for similarity in terms of sound character.

Avoid organs with whole families of color missing. Even the smallest Yamaha provides colors from the three basic families, and most also have a fourth family, percussion.

Yamaha *Auto Rhythms* borrow the rhythm section of the orchestra electronically.

They automatically play a variety of beats—from rock to bossanova—at the speed and volume level you predetermine.

Another Yamaha feature, ABC (Automatic Bass Chord) adds full harmonic accompaniment (and makes full-sounding organ music easier to play).

When an orchestra requires a *unique sound or effect*, it usually brings in extra musicians.

Many Yamaha Electones have those extras built right in.

Banjo, accordion, piano, harpsichord, chimes, Hawaiian guitar, and vibraphone are available.

So are Wah Wah (New Orleans jazz), Repeat (mandolin style), Glide (steel-guitarish), and Touch Vibrato ("crying" strings).

There are other extras, and it's helpful to try them all.

Like a fine orchestra, a fine organ can be called upon to do almost anything in the world of music.

If it's appropriately matched to its job.

For more information on organ buying, see your Yamaha dealer.

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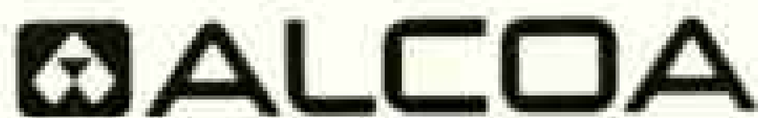
Aluminum Company of America, 815-L Alcoa Building, Pittsburgh, Pennsylvania 15219.

Aluminum: Pass it on



Off we go, into the wilds you ponder.

Marlin tournament, mountain hunt or up the lazy jungle river. If wild country adventure is your thing, why not have it all?

Island-hopping or mountain-topping. Over jungle, desert or timeless tundra, your Beechcraft Baron takes you above wild country to more wild country. Takes you in comfort and safety. Twin engine, built-better-than-it-has-to-be safety that's chalked up millions of pleasant, relaxing flight miles during the last decade.

Men who like rugged adventure like their equipment the same way. Rugged. (Want to dive for sunken treasure in "bargain" scuba gear?) That's why Beechcraft Barons have been on so many rough mountain strips, jungle clearings and salt flats. That Beechcraft reputation for true-blue, straight-arrow dependability is never scared off by the call of the wild.

But what if you're not a pilot? The biggest adventure of your life is yet to come. Today's programmed flight training procedures can make a proficient pilot out of you in a lot less time than you think. And you'll enjoy every fun-filled hour of it.

Next time you find your chin propped up on your hand and your mind a thousand miles out yonder, jump right up and start out on the biggest adventure of your life. First stop—your Beechcraft Dealer. Just tell him you want to go where the wild goose goes. He'll understand. He'll put you on to a couple of throttles that can open up a new way of life. A new kind of freedom. The wilds you ponder will suddenly loom into sight. A thousand miles will become a mere four-and-a-half-hour junket. Dreams turn into plans and become unforgettable adventures. You have it all. The wild country is your getaway place whenever you break away from the canyons of commerce.

If you can't get to your Beechcraft Dealer right now, you can at least take a first step by sending for the free Beechcraft Adventure Kit we have for you. Just use the un-coupon below.

THIS IS NOT A COUPON!

It's sort of an un-coupon. If it isn't a crime to cut up a page in National Geographic, it ought to be! However, we have a dandy gift for you, and we'd like you to send for it. Now!

SEND FOR YOUR FREE ADVENTURE KIT. You'll get one of the most fascinating maps of the U.S.A. you've ever seen. Anywhere. Really a fun and adventure chart to set you free from the dull routine. A special calculator in the kit shows you how close each adventure is in pleasant hours of Beechcraft flight. Everything you want to know (almost) about flying is answered in this interesting gift kit for readers of National Geographic. **WRITE ON YOUR LETTERHEAD TO:** Beech Aircraft Corporation, Department A, Wichita, Kansas 67201. Ask for the Beechcraft Adventure Kit.

Give us your name, address, occupation. Pilot? Aircraft owner? Thank you!