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NATIONAL GEOGRAPHIC

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FROM THE FIRST TIME I saw an image developing on a piece of paper, I knew photography was magic. The real magic, I soon learned, is not the chemistry but the photograph's ability to capture and share moments that stir our senses and enhance our lives.

Seldom is that power so well used as in the photograph below. With it William Albert Allard—a talented and sensitive photographer—let us share a Peruvian shepherd boy's grief, anger, and utter desolation after a taxi struck and killed the family's flock of six sheep in his care.

The picture, in our March 1982 issue, deeply moved many readers (see Members Forum in this issue). Many of you spontaneously contributed more than \$4,000 to replace the sheep. Through



WILLIAM ALBERT ALLARD (ABOVE); HILS LINQQUIST, CARE



CARE in Peru the boy, Eduardo Condor Ramos, was found, and Assistant Executive Director Ronald Burkard presented him with six new animals. Hundreds of Andean villagers showed up for the ceremony. Eduardo, incredulous, broke into tears again and said, "God will pay you."

The balance of the funds will be used to help build and equip schools in Eduardo's district. Perhaps one should be named Escuela Allard.

Wilbur E. Garrett
EDITOR

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Its people think of it as a center of the world, says Professor Robert J. Gordon, describing a little-known, surprising South Pacific country on a . . .

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Only seven years a nation, Papua New Guinea makes slow but steady progress from Stone Age tribalism toward self-reliance and a national identity. François Leydet and photographer David Austen travel from jungled coast to isolated mountain villages.

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"The Geographic took off like a rocket with Melville at the helm." Colleagues' remembrances fill Bart McDowell's tribute to the former Editor, President, and Chairman of the Board of the Society, whose zestful life spanned 80 years.

COVER: White clay, charcoal, and store-bought paint decorate a Jiga Muguga tribesman in the Western Highlands of Papua New Guinea. Photograph by David Austen.



IT WAS NOT UNCOMMON for students at the University of Papua New Guinea to change their names. Flash Gordon attended a class I taught, and there was a Joseph Stalin on campus. Others took indigenous names. But the person behind the name remained the same, secure in his or her tribal identity. Their land has changed its name several times, most recently to Papua New Guinea, but the people's identity remains firmly fixed—ethnically diverse, fiercely independent, and egalitarian in spirit and instinct.

The students take pride in their new nation. One told me: "This is one of the centers of the world." From the perspective of prehistory, he had a point. The island was a stepping-stone between Asia and Australia in the great migrations that took place more than 30,000 years ago.

Four hundred and fifty years ago Europeans discovered and named New Guinea. In 1975, after less than a century of colonial rule by Germany and Britain, and later by Australia, the island's eastern half became the state of Papua New Guinea and the United Nations' 142nd member state.

The rugged topography of the main island and its 600 smaller islands presented formidable geographic barriers to colonization. The dominant form of Western penetration has not been by road but by air. Today Papua New Guinea probably has more airstrips per capita than any other country.

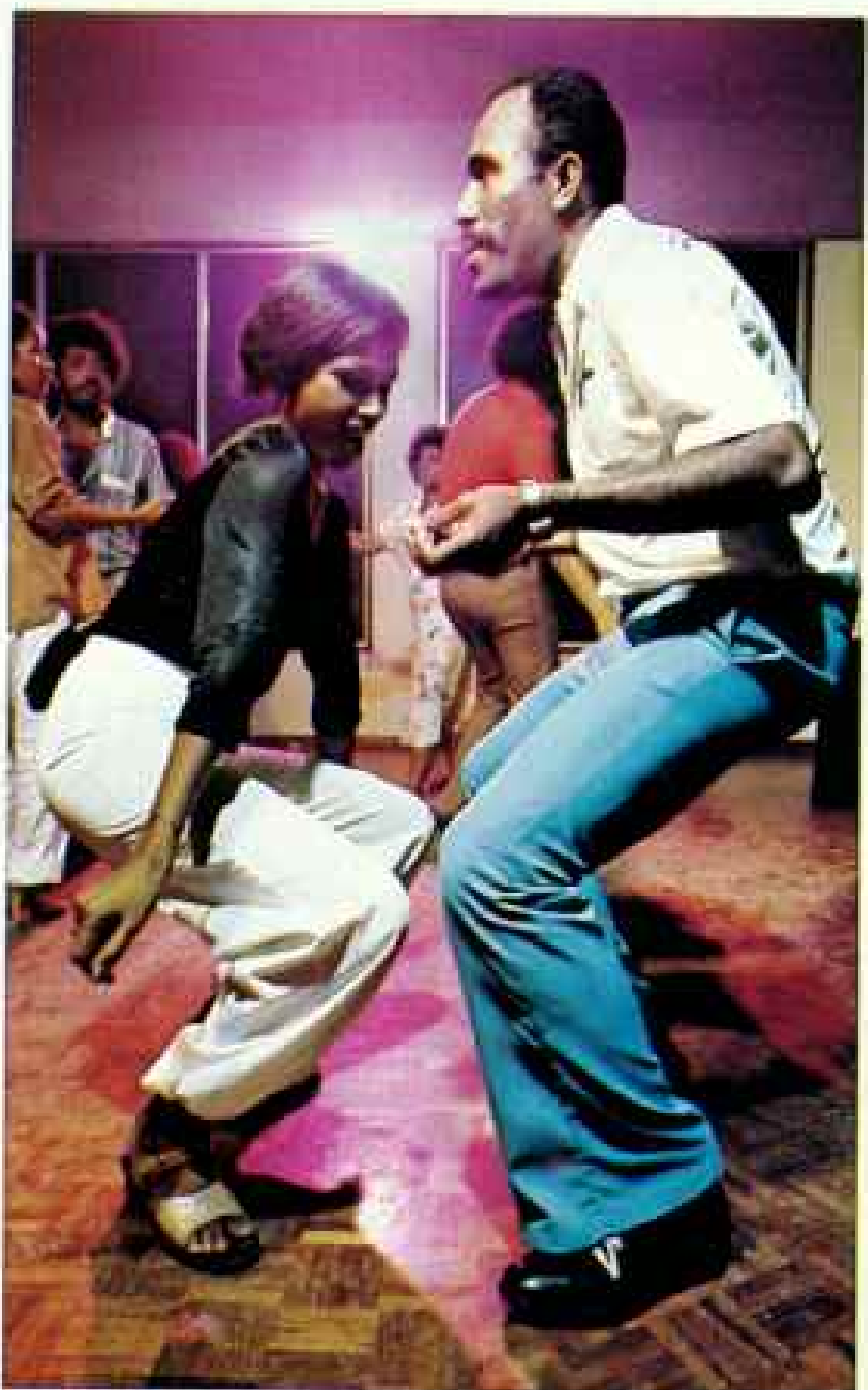
The isolating effects of rivers, forests, and mountains have helped preserve the rich linguistic

PAPUA NEW GUINEA

Nation in the Making

By ROBERT J. GORDON

Photographs by DAVID AUSTEN



Seven years independent, Papua New Guinea adds new ways to age-old values. Disco rocks the capital of Port Moresby, while in the highlands an umbrella replaces a banana leaf for shelter. But the carryall bilum bag has no modern peer.



STOP

WOK LONG ROT
OL KAR MAS STOP
SAPOS YU LUKIM
RED PELA MAK





and cultural mixture of Papua New Guinea. Perhaps a sixth of the world's languages are found there. However, recent research confirms a complex pattern of precolonial trade routes, communications networks, and migrations linking the mountainous interior and the coast. There has always been a continuous process of adapting ideas, language, and artifacts; in recent years this process has been speeded up with the improvement of long-range communications.

One example of such adaptation is the development of Tok Pisin, a pidgin language that has fast become the foremost lingua franca. It is resplendent with creative and ambiguous words like "grisman," meaning grease man, a flatterer, a fat person, and "mauswara," literally mouth water, to talk nonsense or make idle promises like politicians.

If there is one lesson to be learned from the peoples of Papua New Guinea, it lies in their ability to coexist in spite of language and cultural barriers. When fighting does occur, it usually involves related clans.

My dominant impression, after three years of teaching and researching at the university in Port Moresby, is the people's lack of ethnic tension and their tolerance of outsiders.

Pidgin warning translates "Work on road, all cars must stop when you see the red sign." A land of some 700 tongues, Papua New Guinea (PNG) promotes pidgin as a common language. Some 20 percent of the population speaks English.





Legacy of Australian rule, a catamaran sprints toward high-rise offices in Port Moresby, PNG's overwhelmingly largest city. Australia governed the land before independence and still contributes more than a quarter of the national budget. The foreign population declines as nationals gain higher roles in business and industry.

Totem of success for hunters of the Iatmul tribe in the Sepik River area, a wooden statue—probably carved in the early 1960s—comes clean of mold at the National Museum in Port Moresby (above). The museum purchases and preserves such artifacts, which are still revered by many citizens.

Dr. Robert J. Gordon, born in Namibia and now a professor of anthropology at the University of Vermont, taught and did research in Papua New Guinea for three years. François Leydet, a noted writer on the American West and wilderness, has contributed seven previous articles to **NATIONAL GEOGRAPHIC**. David Austen (see On Assignment in this issue) traveled to many corners of the young nation to make the photographs with both articles.

This can be seen in the way many Papua New Guineans had to be nudged unwillingly by the Australians into accepting independence. It is epitomized by the fact that the prime minister, Sir Julius Chan, is half Chinese. The educational organization Freedom House cites PNG as one of the better Third World countries in respecting human rights.

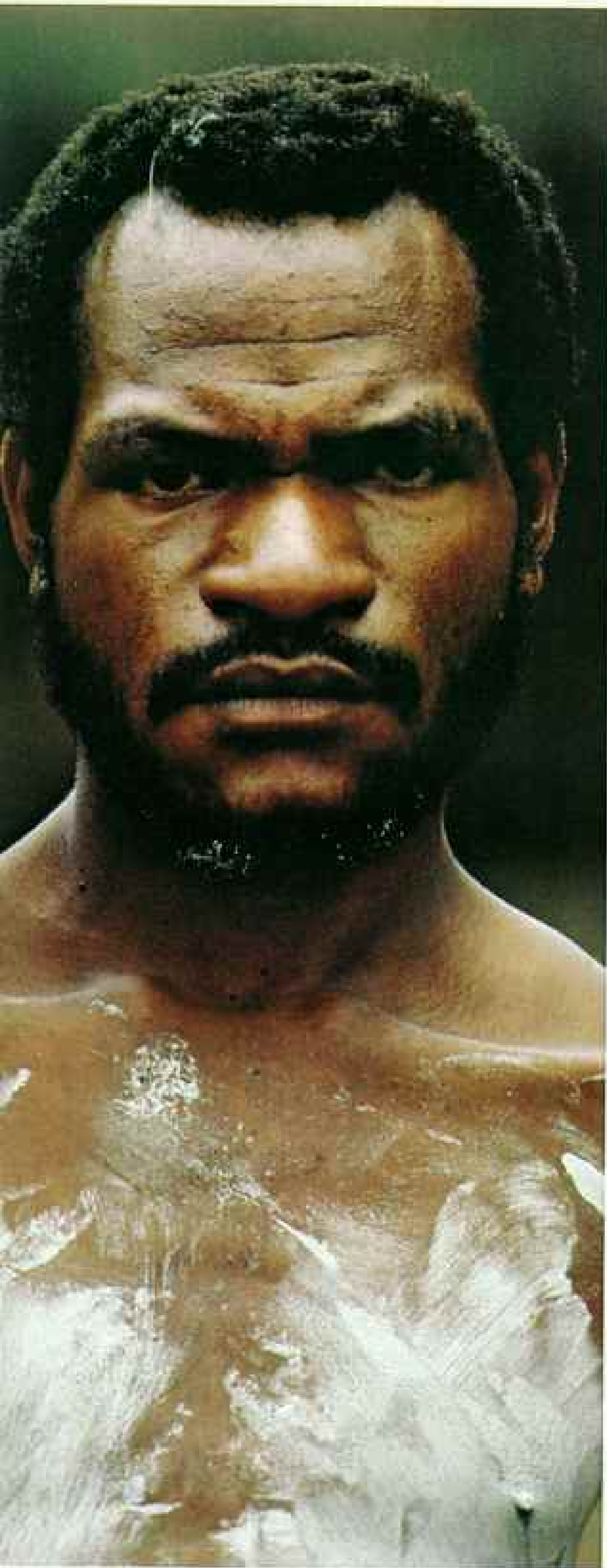
Perhaps an important clue to this remarkable tolerance lies in the nation's ethnic diversity: No group is strong enough to dominate others at the national political level. Loose, ever changing coalitions, rather than a few dominant parties, are the motive forces in PNG politics.

To govern such a fragmented territory, Australia was forced to develop a very large administration, and at independence it bequeathed the two and a half million Papua New Guineans a public service of 28,000 employees. In the first five years of independence the public service continued to grow apace, almost doubling in size to about 50,000. It is clearly the major growth industry of the country. It also provides the most visible manifestation of national integration.

Many observers believe that an important factor, which makes for the melding of national identity, is the so-called Indonesian threat. The western portion of the island was taken over from the Dutch by Indonesia in 1963, and some Papua New Guineans feel that the next exercise in Indonesian expansionism will involve them.

Papua New Guinea can be described economically as having two circuits. The upper one is





urban biased and cash dominated. Characterized by large mining and timber projects, it is more strongly integrated into the world economic system than is the second or lower circuit. This larger circuit is based on the traditional subsistence activities of the rural majority. In the highlands, however, where about 40 percent of the people reside, large profits are made from a cash crop—coffee.

But the money from the crop is not used to transform traditional farming. Rather, it is spent on consumables, and also at large and elaborate traditional ceremonial exchanges in which a prosperous grower attempts to gain prestige as a “big man.”

The expansion of the public service was in part due to the need of the government to legitimize itself by tackling the problems of poverty, malnutrition, illiteracy, rising unemployment, and lawlessness. Many officials now realize that a lot of the country's problems are themselves the product of development. Thus, the government recently withdrew a request to the United Nations for famine relief, perhaps fearing that such a precedent would increase the country's dependence on outside donors.

Such a move, even if only symbolic, bodes well for Papua New Guinea's future. * * *

The face behind the mask is a practical businessman. “Mudmen” of the Asaro Valley now enact their rituals mainly for paying tourists and photographers. Fame spawns imitators in other regions. The origin of the practice is obscure.

IT WAS A LOVELY sunny morning on Umboi's quiet little Simbana River, meandering between banks lined with nipa palms and taller trees. A large fertile island of volcanic origin in the strait separating New Britain from Papua New Guinea's mainland, Umboi feels remote. It is. With a group of 15 European tourists off a small cruise ship, I was aboard a launch about three kilometers upstream from the river mouth when we were greeted by shouts.

There atop the high right bank a throng of men, women, and children stood waving and calling to us—a spontaneous and charming welcome. Later

we learned that the villagers had never seen such a large party of tourists.

I clambered up the steep, slippery bank and followed a path beneath coconut trees to the village of Gauru. An old man met me, shook my hand, and said in pidgin, "*Yupela kam na kisim win insait long dispela haus—You-all come and catch your breath in this house.*"

He led me to a thatch-roofed, unwallled platform on stilts—the men's clubhouse, he said—and invited me inside. Then he added, pointing to the ladies in our group, "*Oligeta meri olsem—*and all the women too." In a country where women generally occupy a subservient position and are rarely allowed in the men's meetinghouses, this invitation went beyond the call of hospitality.

After a smoke with my aged friend I walked around the attractive, prosperous-looking village. The thatched, rectangular stilt houses were beautifully built with walls of planks hand-adzed from driftwood, and the bare earth of the village square was tidy. The people seemed healthy, cheerful, and neatly clothed. Some older women were bare breasted; the younger wore shifts, or

blouses and skirts of bright contrasting prints; the men and boys wore shorts or *lap-laps* (mid-calf-length wraparounds).

A village leader, a wide-awake young man named Jacob, told me in English, "We have plenty of everything we need here in Gauru. Yams, sago palm, tapioca, *kaukau* [sweet potato], coconut, vegetables, cash from copra and cocoa. We have plenty fish from the river and sea, plenty pig and cattle all around in the bush."

I noticed three piglets trotting across the square, and Jacob laughed. "We have a small health station here, and we tell the people to keep the pigs outside the fence, for good health. But with some, words go in here"—he pointed to his right ear—"and out there"—pointing to his left ear.

"You like this place?" Jacob said as we parted, pleased by my open enjoyment of it. "You come back and stay longer!"

My tourist companions were voluble in their praise of Gauru's charm, and this and other such villages may be seeing a lot more like them. Though Papua New Guinea (PNG) is still no tourist mecca—fewer than 40,000 people visited it in 1980—the number of tourists attracted to its many physical splendors and the colorful diversity of its ways of life has been steadily growing.

PNG's Diversity Charms Visitors

Just what kind of country is this Papua New Guinea they are going to see? It is a constellation of islands, including roughly half of the world's second largest island, New Guinea, which it shares with Indonesia's province of Irian Jaya (map, pages 154-5). Its population of a little over three million is divided into more than 700 linguistic groups, whose customs differ almost as much as their languages.

Though customs and languages are ancient, PNG is a very new nation. September 16, 1975, marked the end of nearly a century of colonial rule—first by imperial Germany and Great Britain, then by neighboring Australia. Papua New Guinea became a

Almost 160 kilometers from the nearest competitor, Haraula Kapali's backyard gas station in Tari fuels Highlands Highway traffic. He himself owns no car. Such contrasts abound in this land where some communities still talk by drums, yet others converse via one of the first solar-powered microwave telephone systems.

PAPUA NEW GUINEA

Journey Through Time

By FRANÇOIS LEYDET





sovereign state within the Commonwealth, with Queen Elizabeth II as chief of state, a governor-general, a prime minister, and a one-house parliament of 100 (now 109) elected members.

Independence has not yet become an unalloyed boon, and in some places the new tourists will be shocked that life still seems so primitive; others will find it enchanting. It depends upon the tourist—and the place.

In the village of Kasena, which lies northwest of Goroka, headquarters of the Eastern Highlands Province, enchantment has not arrived. Set among small plantations of shiny-leaved coffee trees, the village consists of two rows of low, circular huts ranged on either side of a long strip of bare earth. The houses are picturesque, with walls of decoratively plaited matting and smoke seeping through the roof thatch. But inside



they are dark, unventilated, redolent of smoke and of human and porcine effluvia. Pigs, chickens, and emaciated little dogs wander in and out at will.

The ground between the houses, muddied from last night's rain, was smeared with pig droppings and red splotches from chewed betel nuts. A shriveled old woman sat on a log, throwing kaukau peelings to a pet hornbill with clipped wings. A young widow

Only 50 years ago—and mainly by air—did the outside world penetrate the highlands, home to 40 percent of PNG's population. Coffee, the nation's most lucrative crop, now flourishes in these altitudes. Here along the upper Ramu River, sugarcane farming and processing begin to supply the country with sugar, a commodity once entirely imported, despite native cane.



stood zombie-like near her house, her face painted in mourning with gray-green mud.

I photographed an older man, whose appearance was fairly typical of the men of the region: short, muscular, strong featured, with aquiline nose and deep-set eyes. He was arrayed in traditional finery: feathered headdress, quill piercing the nose, pig-tooth necklace, loincloth, and *asgras* (an apron of leaves that covers the buttocks).

The excuse for this festive garb was the presence of the Raun Raun Theatre, a troupe of actors from all parts of PNG. They had come here today to entertain and educate the villagers with some skits about health.

The performance began on the ground outside one of the houses. Actors with masks

representing a dog, a pig, and a fly conveyed the message that allowing these animals inside the huts causes diarrhea in humans—a condition vividly acted out.

The second skit was a plea for birth control, featuring a drunken husband and a young woman who dies in childbirth. I wondered whether the audience of a hundred or so, which was howling with laughter, was getting the serious message behind the comedy. Children outnumbered the adult viewers by something like six to one.

While watching the show, I was struck by the contrast between the pretty, scrubbed-looking actresses in nurses' uniforms holding up posters illustrating birth-control devices, and the old crone with her clipped



Papua New Guinea

TAIL HALF of the dragon-shaped island of New Guinea plus hundreds of out islands compose Papua New Guinea, independent since September 16, 1975. PNG's mountain spine became a political boundary in the late

19th century when Germany annexed the north and Great Britain the south. Australia assumed control of the south (Papua) in 1906 and of the German colony after World War I. Indonesia rules the formerly Dutch western half of New Guinea (inset), world's second largest island. **AREA:** 463,000 sq km (178,765 sq mi). **POPULATION:** 3,006,000 mainly Melanesian, with some 30,000 Europeans and Asians. **CAPITAL:** Port Moresby, pop. 122,750.

GOVERNMENT: A sovereign state in the Commonwealth; Queen Elizabeth II, head of state.

LANGUAGE: English, pidgin, hiri motu, tribal languages.

LITERACY: 32 percent.

RELIGION: Protestant, Roman Catholic, traditional. **ECONOMY:** Industries: copper and gold mining. Export crops: coffee, forest products, cacao, copra, palm oil. Domestic consumption: rice, fish, sweet potatoes, yams. **LIFE EXPECTANCY:** 50 years. **PCI:** \$750.



hornbill or the widow with her mask of mud. But such is PNG today—in uneven transition from stone tools to 20th-century technology; from colonial dependency to national self-reliance; from allegiance to the village, clan, or tribe to a sense of national identity.

What has independence meant to PNG? A young, educated national at the University of Technology in Lae parried my question with an accusation. "In Australia I've met Aussies and other foreigners," said student counselor Peter Tasin, "who have no idea of the social, economic, and political changes taking place here. They think ours is still a primitive headhunter culture."

Lukis Romaso, the assistant director of the Appropriate Technology Development

Institute, seemed to think the foreigners were partly right. "Development has not touched the people in the bush," he told me. "They still carry on in the old ways—hunting, subsistence farming, warring with neighboring clans. They don't know what independence means. Most are where they were a hundred years ago."

The institute fosters simple technology, labor-intensive projects at the local level, such as charcoal kilns, micro-hydropower stations, and sundry small industries. He feels that these projects may be of greater benefit to the 85 percent of the people who still live in small villages than the huge mining or timber operations that attract foreign capital to the country.

It is fair to keep in mind that when independence came, almost overnight PNG's few highly trained professionals had to run a country where many people "first saw a wheel on the nose end of a plane" (as a U. S. Embassy official put it to me).

Communications were, and remain, difficult. The road system is fragmented—the capital, Port Moresby, for instance, has no highway connection with the rest of

the country. On the main island, coastal swamps and jungles, threaded by innumerable streams and swarming with malarial mosquitoes, rise inland to a jagged labyrinth of high mountain ranges. In mountain valleys a number of hostile clans harass one another in sporadic warfare. Wide stretches of ocean separate PNG's myriad large and small islands.

One thing the diverse PNG tribes have in common is that most, even the nominally Christian, believe in spirits and in the practice of sorcery. But a Star Mountains tribesman, clad only in a penis sheath, and a Trobriand islander, paddling his outrigger, are worlds apart in looks and customs. That they share a common nationality may mean little to either one.

Young Nation Faces Serious Problems

This cultural fragmentation is one of many frustrations the newly independent nation faces. At the Roman Catholic mission in Taraka, I spoke with Father Guy Cloutier, a tall, black-bearded, ascetic-looking young French Canadian, who was worried about PNG's difficulties. He was familiar with many of them from his work in Taraka, a "settlement"—part government housing, part shantytown—on the outskirts of the port city of Lae, which is second in population to Port Moresby and PNG's largest industrial center.

"There is high unemployment, and the great majority of the employed are semi-skilled or unskilled," Father Cloutier said. "An unskilled laborer makes 60 kina—about \$84—a fortnight. This may be enough for a man who's drifted in from the highlands or the islands to send home for his wife and children. Or just as likely he'll *not* send for them, marry a local woman, start another family, then ferry between them. Polygamy is legal here."

Father Cloutier continued: "The typical laborer lives in a two-room shack with half a dozen other adults and many children. On the average a woman will have a baby every two or three years. Very little family planning. Four or five kids are common."

The government's efforts to improve conditions have not taken hold, Father Cloutier believes. "It is putting all its priorities on superstructure (Continued on page 161)



PNG's first woman lawyer, Meg Taylor lobbies for a new women's prison with Goroka police commander James Nanatsi (above). The jail, housing both sexes, lacks women's toilets and facilities for nursing mothers; PNG bans baby bottles unless prescribed. Taylor grew up riding horses on her family's coffee plantation in the Asaro Valley and now tests her skill in the sport of polocrosse.



Success stories spun in a nation of new opportunity include 36-year-old Renagi Renagi Lohia (below, at left), head of the Public Services Commission and former vice-chancellor of his alma mater, the University of Papua New Guinea. Shouldering stalks of bananas, he greets relatives during a food-exchange ceremony honoring recently deceased elders of his native fishing village 28 kilometers from Port Moresby. Clan bonds remain strong, even for those who move away.

At ease with power, Sir Julius Chan (right), leader of the People's Progress

Party, became PNG's second prime minister in 1980. Though a stickler for self-reliance, Chan advocates the use of foreign capital to increase industrial and large-scale agricultural output. The nation's first prime minister, Michael Somare, leader of the Pangu Party, counters that the country is best served by encouraging grass-roots development.

Chefs taught from scratch at the catering division of Lae Technical College (right center) will feed the nation's infant tourist industry and also work in hospitals and schools.

Health care expands as the corps of



health extension officers grows. In her second year at the College of Allied Health Sciences, Maria Waria, age 17, draws spinal fluid from a child to check for meningitis (bottom right). A nurse's aide and worried mother look on. With infant mortality down, the government promotes birth control in a nation of large families.







Harnessing skilled manpower—PNG's greatest need—the Electricity Commission Training College in Port Moresby aims toward less dependence on foreign labor. Future linemen (above) practice above their teacher, himself a graduate.

At Ramu I Hydro-Power Station (left) students and instructor, in glasses, synchronize generators that tap the upper Ramu River. River-rich PNG surges with hydroelectric potential, but with few technicians it still relies largely on imported oil. Less than 20 percent of the population has electricity.

rather than basics—on things that show, like nine million kina for a new wharf. Not much of this helps the people.”

Because of its uneven development, technology in PNG ranges from the wooden digging stick with which the highland woman works her patch of kaukau to huge machines scooping up copper ore on Bougainville at Panguna, one of the world's largest open-pit mines. The 15 percent of the population who live in urban centers are relatively sophisticated, but even in the bush change has been occurring, sometimes subtly.

An “expat” (resident foreigner) in Madang opened my eyes to this. We were having a drink together in the pleasant north-coast port town, and I couldn't help comparing it with the highland village of Kasena, where the Raun Raun Theatre had taught concepts of modern hygiene.

“Appearances can fool you,” the expat cautioned. “Those highland villages may look dirt poor, but there's a lot of cash up there, mainly from all the coffee they grow. Not too long ago this fellow came down into Madang with a group of his friends. He was the real thing—nose plug, asgras, and all. To look at him, you wouldn't think he had two toea to rub together. He walked into a local car dealer, looked over the stock, and asked the manager, ‘How much for three of these?’ The manager figured it out, told him the price. ‘I'll be back,’ the highlander said.

“Half an hour later he and friends were back, with a bag that he emptied out on the manager's desk. There was the exact amount for the three cars, to the last toea. Come back in the morning, he was told; the cars will be registered and ready. ‘Nogat,’ the highlander growled. ‘Here's the money; we want the cars today!’ His friends began to growl too. ‘All right, you win,’ the dealer said. ‘You'll get them today.’ And they did!”

Automobile salesmen aren't the only ones intimidated by highlanders. Though tribal warfare is a thing of the past in most of the country—and cannibalism and headhunting no longer exist—it has resurged in the highland provinces since independence, with the departure of the tough but savvy Australian *kiaps*, or field officers.

At a curve of the Highlands Highway between Goroka and Kundiawa, I passed a man sitting on a rock, cradling a dog in his

Bonanza of copper and gold makes the Bougainville mine PNG's leading industry. Senior operator Stanis Mataria and his family (below) live in company housing built for foreign workers before the mine opened in 1972. Above mine buildings Katherine Kontarinu and a grandson harvest vegetables near where they once lived. Mine expansion has twice relocated their village.



lap and tenderly stroking its head. I waved to this fellow dog lover; he grinned and waved back, calling out "*Apinun, mastal!*—Afternoon, master!" (the term of address usually used for Europeans). On a rock by his side lay a bow and a sheaf of arrows. Several times in the next few days I passed men walking along the road armed with spears or carrying bows and arrows.

"Are those men hunting?" I asked a Goroka national. "No," he said, "they're armed for self-defense in case they run into a personal or tribal enemy with a score to settle."

Although the bloodshed is minimal compared with loss of life in PNG highway accidents, outbursts of tribal fighting worry local authorities. In 1981 the premiers of the five highland provinces pressed the national government to declare a state of emergency, but Prime Minister Sir Julius Chan refused to do so.

This disturbed Nambuga Mara, the premier of the Western Highlands Province, who said that what concerned him most was that the warriors were not fighting by the rules. "Our traditional rules of tribal fighting



say women, children, and chiefs should not be injured or killed and that no person killed should be burned. These are sacred rules, but they have not been observed lately.”

Land, women, pigs—these have been the issues over which neighboring highland tribes have long waged wars. When there were wars to fight, the men became almost full-time warriors. The *pax australiana* enforced by field officers thus deprived the men of a principal role in their lives.

The highlands may be losing their warriors, but they are gaining babies.

Public-health services introduced by Westerners have contributed to a population explosion in a region that already was densely inhabited when the first white men “discovered” it in the 1920s and 30s.

Dr. John Christie, Eastern Highlands Provincial Medical Officer, told me: “Population growth is about 3 percent per year—more than doubling every 24 years. Highland families were always large—to be a ‘big man’ you had to have a big family. But then, if a woman had ten children, six or seven would have died; now seven or eight live.”

Another mixed blessing laid at the door of Westerners is coffee planting. Australians brought it into the highlands in the 1950s, and now most of the plantings are owned by nationals. Lukis Romaso, who worries about appropriate technology, also worries about "inappropriate" coffee.

"In Simbu Province," he told me, "coffee has taken over a lot of the good flatland. Farmers have to grow their food crops on the hillsides, where the soil quickly washes away. Soon they end up with nothing but cash, and cash is no substitute for land. With a fast-growing population and much of the land growing coffee instead of food, there's suddenly a real land shortage. That's one cause of the fighting in the highlands."

Cash crops—coffee, cocoa, and copra are the big ones—almost equal copper's share of PNG's exports, and together the "4 C's" contribute 80 percent of total exports—and all involve gobbling up the land.

One sunny afternoon I took the North

Coast Road from Madang and saw how land there was being used. In the 50-kilometer drive to a point across from the island of Karkar and its restless volcano, I passed through an almost uninterrupted succession of coconut plantations, many owned by the Catholic and Lutheran churches.

"All the good soil along the coast," Madang Deputy Premier Galen Lang told me, "is taken for cash crops. There's good soil inland, too, where it's flat, but the problem is that there are no roads, so the people can't get their produce to market."

Logging Brings New Roads

Why don't the villagers themselves build their own roads? Peter Colton, provincial planner for Madang, explained: "It's not that easy to build roads through the jungle with hand tools. Probably, though, the villagers could do more for themselves."

Mr. Colton was an Australian patrol officer in the highlands 20 years ago. "Back



Survivors of World War II, caves tunneled for Japanese landing barges lure bat hunters in Rabaul, on New Britain. Captured in 1942, Rabaul served as Japan's command post in the southwest Pacific. Three cemeteries honor Allied forces that

then," he recalled, "the kiap would tell a village, 'You build a road to that point'; the next village would be told to pick it up from there. One day a week the men would be put to work building roads, and the roads would get built. You can't do that any more. They wait for the *gavman* [government] or somebody to bring the roads to them."

The somebody doing the road building in the Gogol Valley southwest of Madang is Jant, the big Japanese-owned timber company whose plant in Madang converts jungle trees into wood chips. Arenaso Masapuhafo, a young forestry officer, took me on a loop drive around the valley. Where the jungle is intact, it is a delirious exuberance of vegetation: lofty trees adorned with mosses and ferns and orchids or wrapped in the fatal embrace of strangler figs. Elsewhere large clear-cut tracts look devastated, but sections cut only six months ago are already grown over with thick brush. "The secondary forest grows a few meters a year," Mr.

Masapuhafo informed me. "What happens to the wildlife?" I asked him. "A lot of it disappears," he said.

The principal benefit of the logging to the villagers is the roads. Before the timber operation, the rural population was being whittled down, but now more of the young people are staying home. They can travel to jobs without having to move away.

Cottage Industry Flourishes

Neither timber trees nor coconut trees fuel the economy along the Sepik River, which spills into the Bismarck Sea 200 kilometers northwest of Madang. Here I found a cash crop of a different kind: "*Mipela laikim turist, I gat kaving hia*—We like tourists. There are carvings here."

The crude, hand-lettered sign, large enough to be read from a passing boat, stands on the bank at a small village on the lower Sepik. Masks, animal figures, wooden drums, and other such artifacts used to be



reclaimed the islands in 1945. Members of the Rabaul Japanese War Veterans Association mourn their fallen at a shrine above the city. Leading investor in PNG's timber industry, Japan is the top customer for PNG's products.

produced for ceremonial use only. Today such carvings have become an important cottage industry in the handsome but mosquito-ridden villages that border the mighty river, and are sold directly to art dealers or to tourists from excursion boats.

One of the oldest and most beautiful of such villages, on the middle Sepik, is Palimbei. At either end of a long grassy mall, bordered by huge trees and flowering shrubs, rears a spectacular *haus tambaran*, spirit house. Halfway between them stands the skeleton of an older *haus tambaran*, bombed during World War II—leaving only the massive carved tree trunks that had supported the structure.

I was invited into one of the spirit houses, a long, two-story building faced with intricately woven matting, the roof thatched and soaring to a peak at either end. On the ground floor, men sat on platforms smoking twist tobacco or chewing betel nut; this is strictly men's territory. Grotesquely beautiful, eerily powerful, carved masks and figures stared at me from the ceiling beams and columns.

On the second floor, initiation ceremonies are held: The boys' backs are incised, leaving patterns of raised scar tissue that resemble a crocodile's skin. No initiations today, but a stirring performance for my benefit. Two men performed, each on a *garamut*, a drum made of a hollowed tree trunk. Louder and louder, faster and faster, the syncopated rhythms boomed out as the men walked up and down with a dancing motion alongside the great drums, striking them in perfect synchrony with large wooden sticks.

As I was leaving, a man sold me a ritual flute—a long bamboo tube that can play four mournful notes. I was about to walk outside with it when the man stopped me, took the flute from my hand and walked back into the building. Returning, he handed me back the instrument wrapped in a taro leaf. "*Itambu*—it is forbidden," he explained, "for the sacred flute to be seen by *ol meri bilong ples*—the village women."

In Kanganaman, another Sepik village, I watched a woman preparing sago. Mashed from the fibrous heart of the sago palm, it emerged as an orange mush that would dry into a sort of flour. Sago and river fish are the staple diet, though nowadays they are supplemented by other food.

I happened to be out of cigarettes, so I climbed a ladder to the platform where the little village store perched. There I bought a couple of packs of PNG-made Cambridges from a charming young girl, who invited me to inspect the merchandise. There was little to buy other than tinned mackerel and beef, bags of rice and sugar. All of these, I noted, were imported—from Australia, the Philippines, or Japan.

Fewer Imports, More Self-sufficiency

PNG's dependence on imports is a major concern of the government. When I talked with Prime Minister Sir Julius Chan in his reception room at the parliament building in Port Moresby, he said, "We import 20 percent of our food. Sugar, rice, tinned meat and fish account for 75 percent of that. We've got to cut that down!"

The prime minister, a small, spare, youthful-looking man whose features reflect his mixed ancestry—his father was of Chinese blood, his mother a New Ireland woman—spoke in a quiet, firm, precise voice, looking directly at me. "We will soon be producing our own sugar," he went on. "We plan to grow a lot more of our own rice. But you don't become a rice-producing nation overnight. Rice growing is a traditional skill—people who've been growing it for centuries have developed strong backs"—here Sir Julius stood up, went through the motions of planting rice in a paddy—"so they can bend like this all day."

Then, with a little smile, he sat back in his chair and continued: "Self-sufficiency means more than just growing our own rice and *kaikai* [food]. We have huge potential resources and small population. There's a lack of appreciation of why we must go

Pork rides piggyback as hunters wade home to the village of Hauna near the Sepik River. Wild pigs are easier—but still dangerous—game when November-to-May monsoons flood the region. Revenue from crocodile skins and a canoe-borne store augments Hauna's bank account in the town of Wewak, three days away.







Death of a clan member—even by accident—demands swift highlands-style justice, called payback. A Wabia village woman was killed when she jumped from the moving truck of a Yangome villager. He gave her parents money and 22 pigs—prized as status symbols—but now his clan must also account. Wabians bristling with arms (above) arrive at a meeting ground near Tari to collect the negotiated payment of 225 pigs. A Yangome leader in a wig (left) keeps order in his ranks as Wabians argue over distribution (below). PNG courts encourage pig and cash exchanges in hopes of ending cycles of revenge killings. Perhaps a third of the men in this region prefer Western dress.





big. Small is beautiful, but big is useful. So we welcomed foreign investment at the Bougainville mine and now at Ok Tedi." A 1.5-billion-dollar project, with participation by PNG and firms from Australia, the United States, and West Germany, Ok Tedi will mine gold and copper in the Star Mountains of Western Province. It is expected to produce a major share of Papua New Guinea's export earnings by the mid-eighties

while the Bougainville deposit is declining.

Critics of Sir Julius's approach tend to see it as a repudiation of the program of his predecessor, Michael Somare, PNG's first prime minister. I met Mr. Somare, now leader of the opposition, in his office in Port Moresby. He is not a big man physically, but he is a *bik man* in the eyes of his countrymen. "Chan goes for the quick buck," he said, "the shift to a cash economy, but this hasn't



Face of the future, 12-year-old Fidelis Pukie of eastern New Britain attends a Roman Catholic mission school and harvests coconuts for copra on weekends and holidays. Resting with her broom from after-school chores, she stands as proud as her fledgling nation.

in-aid of some 200 million dollars, which currently finances more than a quarter of the national budget.

Many foreign residents in PNG, although aware of the country's serious problems, seem guardedly optimistic about the future. Chris Bryant, director of CUSO (Canadian University Service Overseas) in Port Moresby, told me, "The movement in the last 50 years has been formidable. It used to be that foreigners made all the decisions. Now Papua New Guineans are making their own. They're questioning the status quo. You ought to hear them in parliament."

Significant Changes . . . More to Come

At a morning session of parliament I heard the speaker, Sevese Morea, seated in a high chair on a platform dominating the house, open the proceedings in his sonorous baritone voice: "The chair recognizes the honorable member from Maprik."

The honorable member, Sir Pita Lus, came to his feet. He was wearing a lap-lap, long-sleeved shirt, and large boar-tooth necklace. He launched into an impassioned oration in Tok Pisin, or pidgin, in favor of a motion of no confidence in Police Minister Warren Dutton. The speech was frequently interrupted by shouts of "Hear, hear!" but the motion failed to carry.

Later I asked Mr. Morea about Sir Pita. "He has had little formal education," the speaker said, "yet he's a very effective member, one of the most eloquent orators in the house. Many of our members can't read or write. To you that may be an anomaly. To us it's the way things are, and may be for some time yet."

Governor-General Sir Tore Lokoloko, when I visited him at Government House above the harbor, reconfirmed this national philosophy of patient growth. "We are a happy people. We don't ask too much of others. We just want to go steady and slow." □

improved the life-style of the people. We believe we must build from the ground up. You talk about real development, you're talking about the villages."

Specifically, Mr. Somare is talking about rural development versus industrial development. He wants a more self-reliant economy, down to the humblest village, gradually weaned from imported goods and capital and from Australia's annual grant-

FLORIDA

A Time for Reckoning

By WILLIAM S. ELLIS

NATIONAL GEOGRAPHIC SENIOR WRITER

Photographs by NATHAN BENN and
KEVIN FLEMING

In a league by himself, 83-year-old Al Kuster fires a pitch during a Kids and Kubs softball game in St. Petersburg, Florida. The club, limited to men of 74 years and older, plays a five-month season.

Lured by the balmy ambience of the subtropics and lack of a state income tax, retirees have long flocked to Florida; people over age 65 now make up more than 17 percent of the state's population. But cloudy days may be in store for the Sunshine State as rapid growth creates strains on its natural resources and tears in its social fabric.

KEVIN FLEMING

IT WAS LIKE A SUMMONS to paradise, that television commercial, with the man standing in a burst of bright sunlight, beckoning viewers to join him under the palms, telling them (remember?) to *Come on down*.

They came, and continue to come, pilgrims to a shrine of winter warmth, most of them old enough to have cheered Lucky Lindy, down here to shuffle through their final years in shorts and a polo shirt.

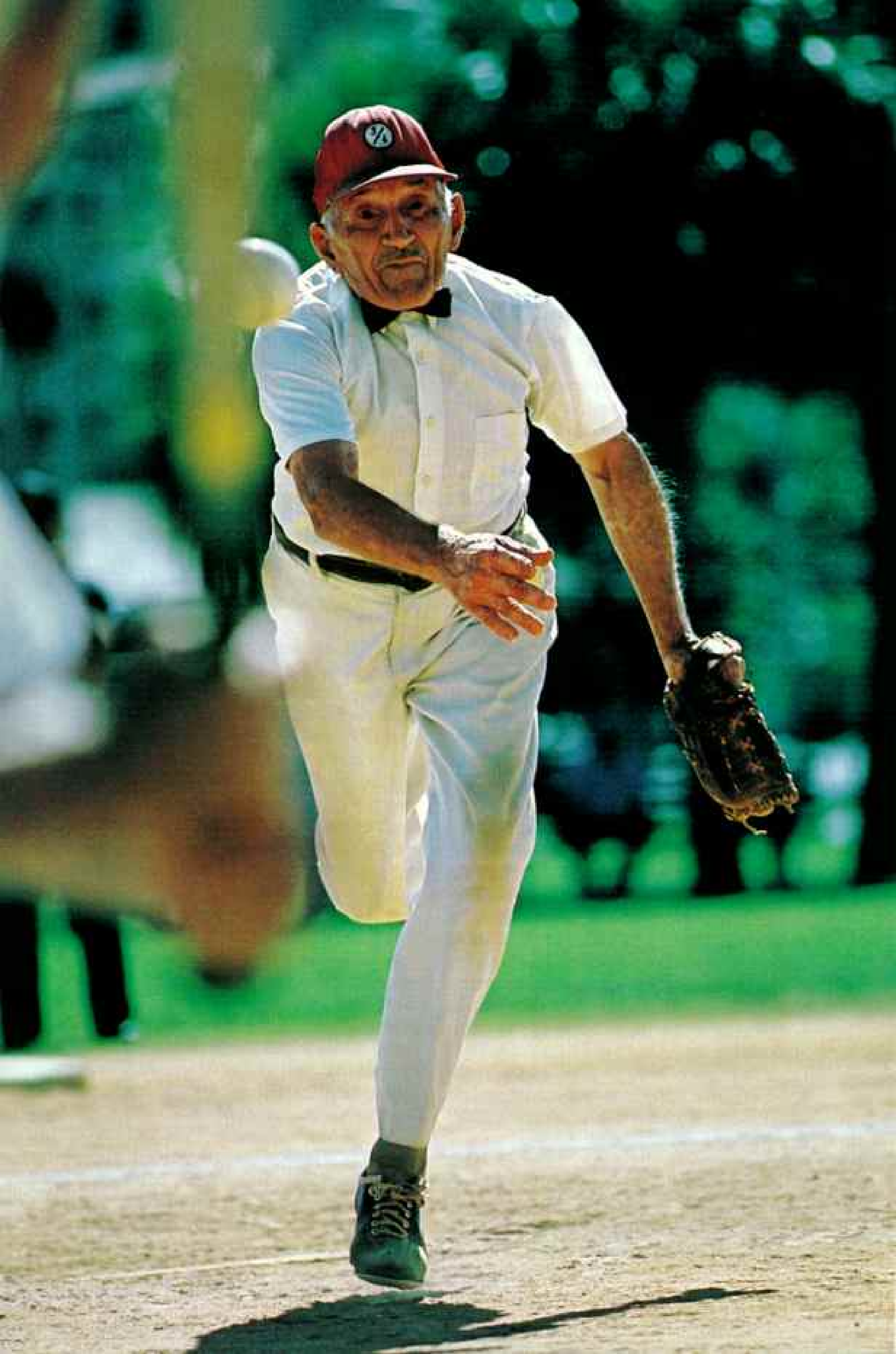
Now this is Florida, of course, but it is a Florida today's arrivals may not have envisioned as they plotted their retirement escape from the North. And had they known of the profound problems here—the high crime rate in Miami, the multibillion-dollar business in illicit drugs, the water shortage, the heavy damage to the environment, the refugees who continue to come to these lovely shores in burdensome numbers—would it have mattered?

Probably not, for the movement of people to this state does not abate. Some ten million live here now, and half again that number are expected to join them by the end of the century, putting down on land drained of its life-giving wetlands, and on barrier islands of fragile presence.

It has come to this:

The birdsongs now are fading to a whisper out of the trees and swamps, and a once noble river, the St. Johns, lies dying, wasting away in a bed of muck and marsh grass. In this, the 469th year since Juan Ponce de León first made landfall here, many of the sights and sounds of nature in Florida are the scars and cries of the wounded.

Nothing has brought about this environmental crisis so much



as the water policies of the past. In the headwater areas of the north-flowing St. Johns, for example, men drained nearly 300,000 acres of marshes, and now waters once gently channeled into the river flow into the sea. They took the bends out of another river, the Kissimmee, and the river became a ditch. They built dams and levees, and they pumped the land dry so they could farm it and build on it. They put in canals until parts of south Florida became like lattice-work, and now alligators travel those waterways, crawling ashore here and there to snap up poodles and fluffy kittens.

Mercifully, those intractable policies have been largely abandoned in recent years. The state has turned to buying land, some of which it once sold for pennies an acre, doing what it can to restore and preserve it. To deal with those who would further despoil the environment, hard-hitting new laws have been enacted. It is an 11th-hour effort, and it remains to be determined if it will succeed.

"There's a tremendous amount of work being done now," said Victoria Tschinkel, head of the state's Department of Environmental Regulation. "But if we don't get the lands purchased quickly, while we can still afford to do that, and if we don't hold by our air- and water-quality standards, I don't think Florida has a chance to curb population growth and development pressure."

COME ON DOWN. Best that exhortation be directed to the heavens, to the rains that failed to arrive on schedule in 1981. Lake Okeechobee, south Florida's principal source of water, dropped from an average level of 13.5 feet to an all-time low of 9.75 feet. Trees bordering the lake began to bend, as if in supplication for moisture. In Winter Park—a suburb of Orlando—a piece of the earth, weakened by the lowered water table, collapsed into the limestone caverns below. Swallowed up in the 107-foot-deep, 350-foot-wide hole (pages 214-15) were a house, trees, cars, pavement, and part of a swimming pool.

It has been described as a "monster," that sinkhole still sitting just off Fairbanks Avenue, alternately filling with water and then popping its plug to drain partially into the maze of caverns and tunnels below. Viewing

the crater from behind the high fence erected to keep sightseers from falling in, a visitor from North Carolina had this to say: "God done stomped on Winter Park."

It is a gentle wrath, though, when balanced against the benediction of the Everglades and the stands of virgin cypress in Florida. The Everglades are seemingly without bounds, a sea of grasses covering a large portion of south Florida. It is a marshy sanctuary for life attuned to the tropics—the spiders stalking prey on the ambrosial lips of orchids, snowy egrets hunkering on stick legs, alligators cast in the shallow waters like knobby logs adrift.

Man has tampered with these swamps, draining large sections for agriculture and construction projects. The large showy birds have been slaughtered for their plumage. Now, however, with the establishment in 1947 of the Everglades National Park, there is at least a hope of recovery for this natural treasury.

Near the west coast of Florida, the National Audubon Society maintains a preserve of 11,000 acres, where virgin cypress trees rise to more than a hundred feet. There, in the Corkscrew Swamp Sanctuary of Collier and Lee Counties, the only true stork native to the United States rears its young—if weather conditions permit.

Too much rain while the wood storks are nesting can flood the pools where the birds' food fish concentrate, dispersing that source of nutrition. Too little rain during the wet season can result in fewer pools to begin with, and the chicks, as in 1981, go hungry and die.

It isn't the drought alone. Man has rescored the dry/wet rhythm of the land to his own liking, and now the wood stork—that beautiful flier with the bill like a cutlass—must search too long and too far for the once plentiful fish. So the chicks die. Sometimes death comes in a fall from the nest high in a cypress tree, and a bandit raccoon is there to claim the prize, leaving a tip of feathers for the tragedy that served him.

WHY, THEN, are they coming here—the couple from Flint, Michigan, in the Malibu pulling a trailer, the wholesale liquor salesman from Queens, New York, wearing lemon-colored slacks,

the matron of an Order of the Eastern Star chapter in Pennsylvania? They and some 4,000 others arrive each week to take up residence in this troubled state.

They come because Florida, like Hawaii, is one of only two states in the nation with tropical weather. There are palms and poincianas, and grapefruit for the picking. More than anything, there is a glorious sanity to the winter temperatures. Florida: The date-line reads like a warm caress.

This past January, when most of the nation was suffering the fury of one of the harshest winters in memory, I went to Naples and Sanibel Island, and across the state to Boca Raton and Palm Beach. The cold had pushed down to the middle of the state, not many miles to the north, but on those two southern coasts there was a luxury of warmth and sunshine. To be there was to indulge in that delicious delinquency of skipping school.

No matter what its faults, Florida, most likely more than any other state, offers the setting for the life that commands dreams on snowy nights. The wealthy knew that long ago. They came to Palm Beach and built imposing winter lodgings—places like Mar-a-Lago, the 117-room mansion of the late Marjorie Merriweather Post (page 207).

Of all the grand and fusty places in the country, none has preserved its image so well as Palm Beach. Chinese houseboys in white jackets still walk poodles here, and retired chairmen of boards dispatch croquet balls across the lawn of the venerable Breakers hotel. Wealth is still highly visible in Palm Beach, although much of it is what the old guard refers to as “new money.”

“They have enormous financial resources, these new people, but they lack background,” a Palm Beach winter resident of 24 years told me. “They come here to fish, for heaven’s sake.” (Continued on page 184)



Stretching to the sun, wall-to-wall high rises choke Miami Beach, much as tourists do its sands. Despite Florida's bad press about drug-related crime and ethnic turmoil, the 18.5-billion-dollar tourist industry remains the state's economic mainstay. Nearly 36 million people visited last year.

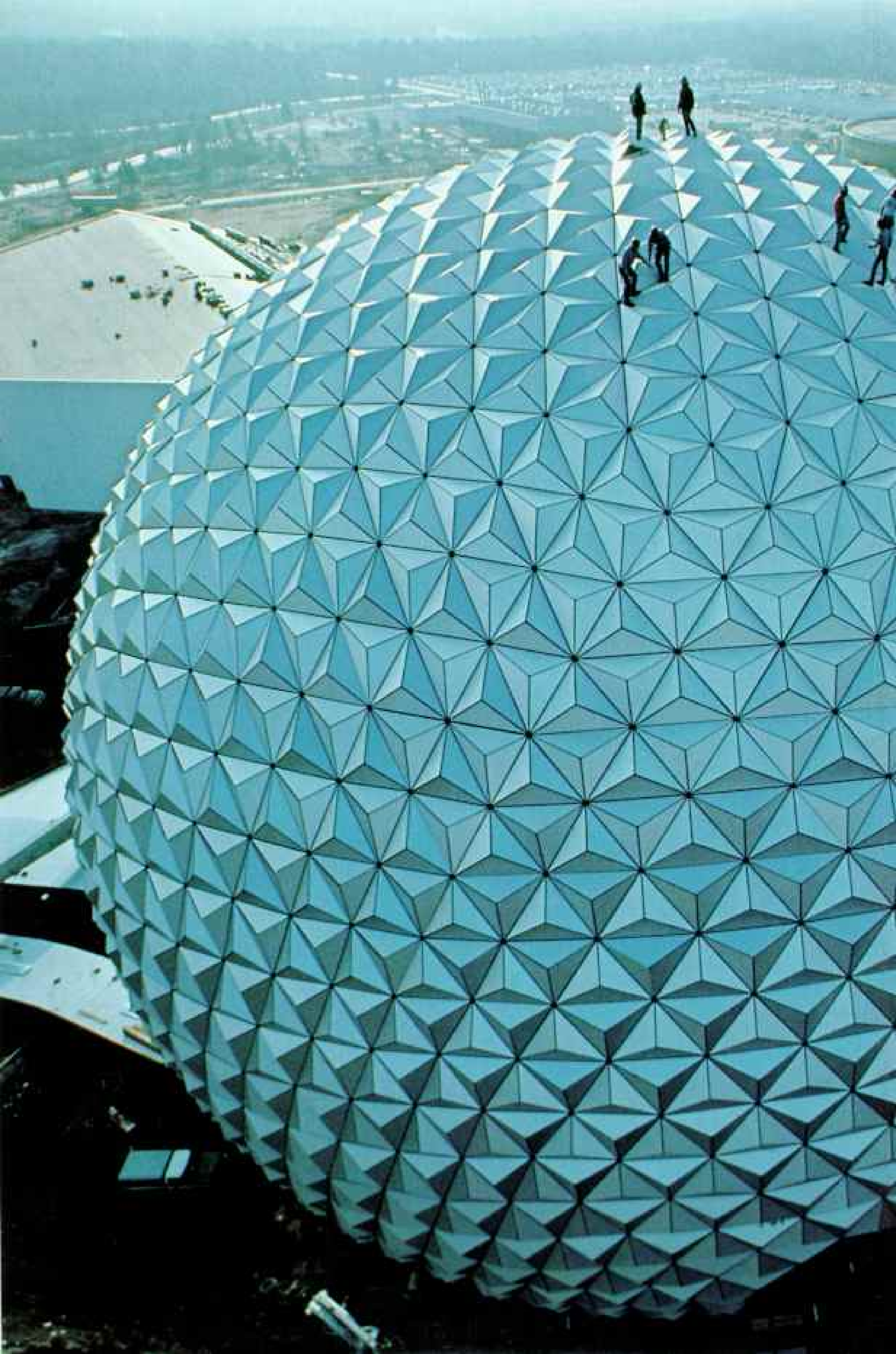


Happy landing of a different kind takes place on a half-acre helipad built for President Richard Nixon when he owned this property on Key Biscayne. Colombian



KEVIN FLEMING

businessman Eduardo Ortega, here hefting a fresh-caught jack, razed Nixon's guesthouse. "The roof leaked," says Ortega, who replaced the house with this one.





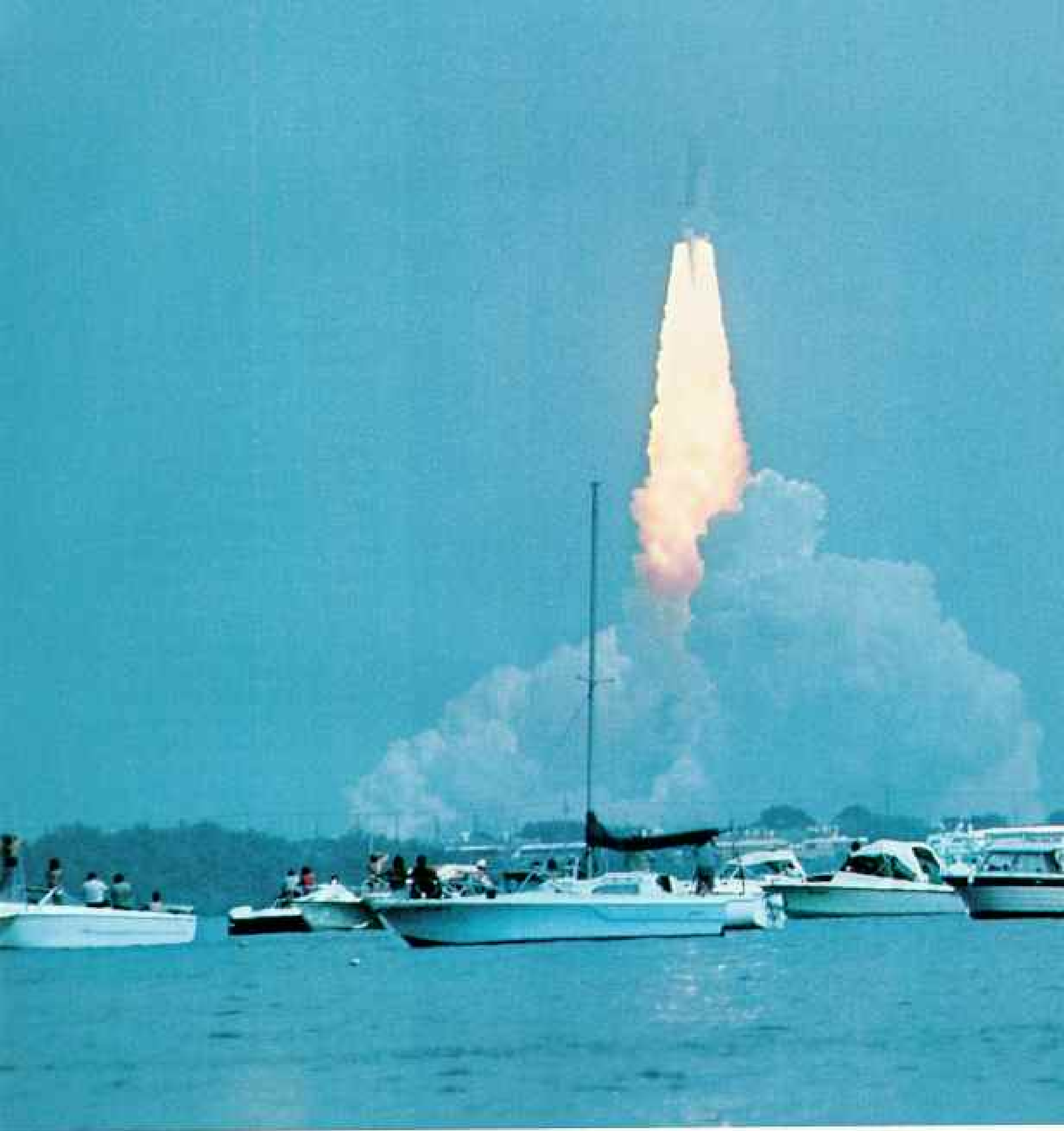
On the ball, workers bolt aluminum panels onto the frame of Spaceship Earth, the 180-foot-high geosphere that is the centerpiece of Walt Disney World's 800-million-dollar Epcot (Experimental Prototype Community of Tomorrow) Center near Orlando. It will open late this year. Visitors will ride by rail in the sphere, spiraling upward past exhibits spotlighting achievements in communications. The trip ends with a whirl through a planetarium at the top. Epcot will also showcase the foods, merchandise, and cultures of many countries.

With its companion attraction, the Magic Kingdom, Epcot is expected to draw 20 million visitors a year.

Once predominantly agricultural, the midsection of Florida has bulged with urban growth since Walt Disney Productions bought a piece of scrubland twice the size of Manhattan and carved out a fantasy land that has lured 140 million people since its opening in 1971.

Other multimillion-dollar attractions followed; today the Orlando area accounts for some 60 percent of all capital investment in the state.

KEVIN FLEMING



Two-minute spectacular—the launch of “Columbia” at the John F. Kennedy Space Center on March 22—draws a million awed viewers. After the lift-off, motorists created a five-hour traffic jam, while these boaters ten miles away made an easy getaway. Probably by next November the reusable space shuttle will both take off and land at the center. At the Visitors Center, with its panoply of

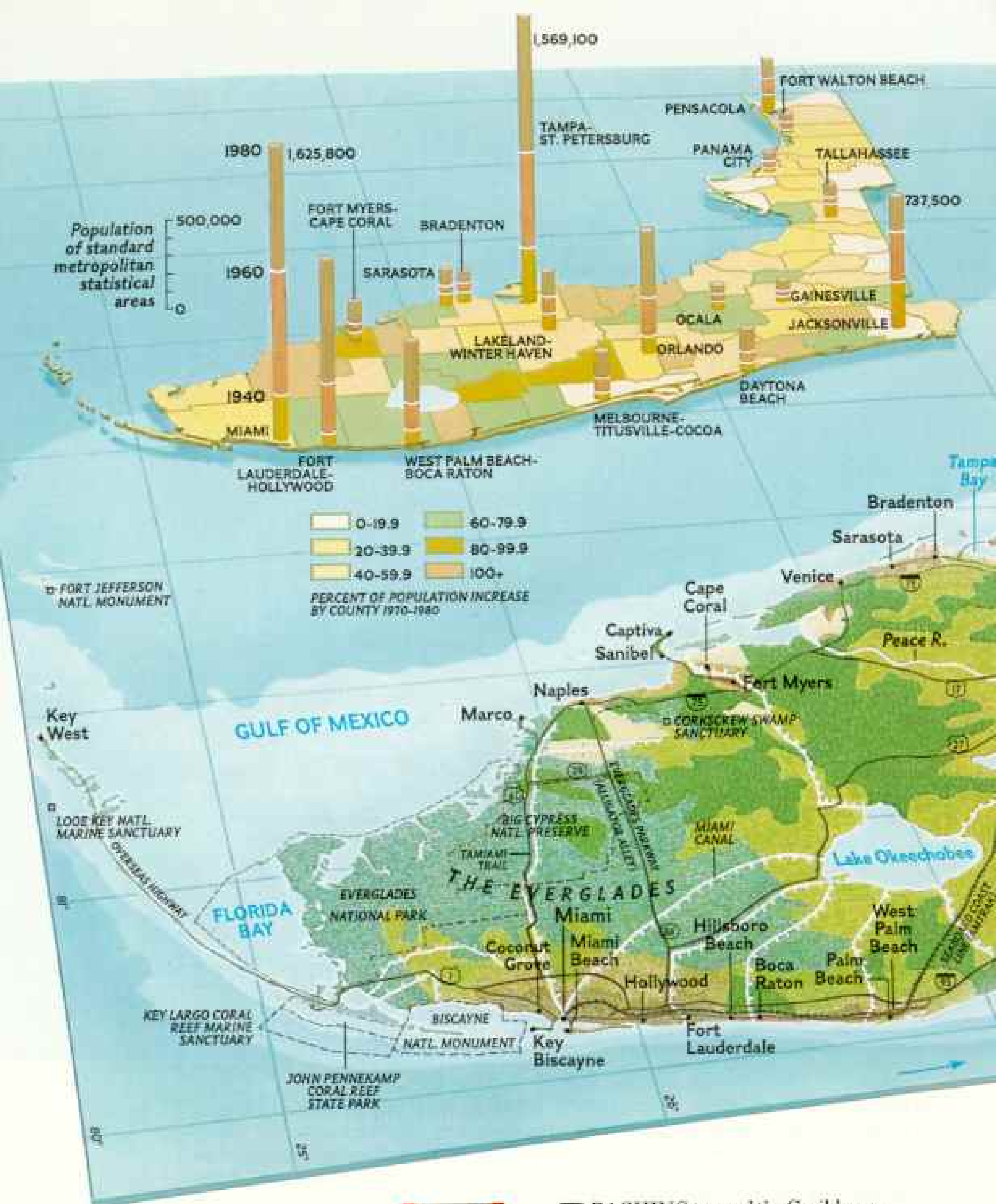


NATHAN DENN (FACING PAGE); ANTHONY FERITORE, NATIONAL GEOGRAPHIC STAFF

exhibits, lectures, and films, an employee in a mock-up Apollo space suit poses with tourists (facing page). Many visitors stay for a two-hour bus tour of the facility.

In 1961 the National Aeronautics and Space Administration selected the scrubland and hard-packed beach area near Cape Canaveral as launch site for the space race with the Soviet Union. Contractors, engineers, and developers invaded in one of the largest of the booms that have characterized the state since the

1920s. At first, growth focused on business—motels faced highways, not beaches. In the 1970s realtors began to advertise for retirees. Tourism leaped, and high-technology manufacturing mushroomed, catering first to NASA, now to commercial customers. The Harris Corporation, Florida's second largest industrial employer, makes telecommunications equipment and semiconductors in nearby Melbourne. Brevard County's population has soared from 23,500 in 1950 to 273,000 today.



FLORIDA

REACHING toward the Caribbean, Florida lies farther south than San Diego. Miami is closer to Havana than to Atlanta. Juan Ponce de León explored the coast in 1513, followed by Spanish colonizers. The United States acquired the peninsula from Spain in 1821 and brought Florida into the Union in 1845.



AREA: 58,664 sq mi (151,939 sq km). The low-lying peninsula, an exposed portion of the broad Florida Shelf, separates the Atlantic and the Gulf. To make the swampy southern third of Florida more habitable, the state in 1905 approved the dredging of canals from Lake Okeechobee. A falling water table led to saltwater intrusion, and systems were redesigned to help assure water supplies for what is now one of the fastest growing states in the nation.

POPULATION: 10,000,000, about 85 percent in coastal counties, with the population boom moving north. New residents arrive at the rate of 4,000 a week.

CLIMATE: Subtropical, moderated by the Gulf Stream; average daily temperature 73°F (23°C); 50-65 inches of rain, most from June through September.

ECONOMY: Tourism, manufacturing, construction, agriculture—primarily citrus—illegal drugs.

CAPITAL: Tallahassee, pop. 82,000.

(Continued from page 175) sake, rather than play polo."

Others have come to south Florida for other reasons.

"NOW WE WALK." Andrés Nazario Sargen closed the door of the car and waited while his aides retrieved three rifles, packed in an ironing-board carton, from the trunk. Then we set out along a narrow path through the waist-high grass of the Everglades, the four of us on a summer day of hellish heat. Twenty minutes passed before we reached an Alpha 66 military training camp.

Based in Miami, Alpha (for the beginning) 66 (for the number of those originally

involved) is an organization dedicated to the overthrow of Fidel Castro. Nazario, a short, slight man in his 60s, is secretary-general of the group that claims 6,000 members in its various chapters.

"We want to create a revolution throughout Cuba," said Nazario, who at one time was an ally of Castro in the fight against dictator Fulgencio Batista, "so we use sabotage, underground tactics. We send small groups of men to infiltrate the island and to move into the mountains." Among other things, they affix anti-Castro bumper stickers to cars in Cuba.

The camp is off Highway 41, some 25 miles from Miami. Sleeping quarters, a kitchen, and other rooms have been fashioned out of vines and branches and eucalyptus logs. On this day there were six Cubans in training, firing rifles, swinging through the trees on ropes, and subduing one another with kicks and chops in simulated hand-to-hand combat.

One of their instructors, Humberto Alvarado (page 196), was born in the United States of Cuban parents and had gone to the island to live as a youngster. "For me," he said, "disenchantment with Castro set in when I was 13 years old. I went up into the mountains to pick coffee beans as a volunteer. We were working to save the coffee harvest and bring some foreign exchange to Cuba. They took us up the mountain by truck and made us walk down. They promised us medical support, food, and other necessities, none of which we received.

"The big shots rode down the mountain, while we burned our boots walking down. So I could see then the formation of an elite within the revolution; I didn't like that."

He returned to this country in 1968. He entered the U. S. Army to get military training, and after his discharge he shopped around for an organization where he could put that training to work toward the fall of Castro. He chose Alpha 66. "It seemed to be the most active," he said.

And now he was in the camp, showing the others what the U. S. Army had taught him. He wore fatigues and an Army cap with the airborne insignia, and exuded the brio of a warrior as he moved about the compound.

There are other anti-Castro groups in Miami, including one called Cubans United. In



KEVIN FLEMING

Florida's Latin flavor grows with an unending stream of immigrants; half of Miami's 350,000 population is Hispanic in ancestry. In the Little Havana district, Cuban-born Ana Doddo carries a ship-shaped piñata across Southwest Eighth Street, known locally as Calle Ocho.

August of 1981, members of Cubans United sailed for Cuba, where they intended to stage a "peaceful invasion" of the U. S. naval base at Guantánamo Bay. But the waters were fitful under the blow of tropical storm Dennis, and the vessels of the flotilla were better suited for fishing. The U. S. Coast Guard came to the aid of some of the invaders who, by that time, were in the mission-aborting grip of seasickness.

Among those in Miami's Dade County eager to rid Cuba of Fidel Castro and Communism are 90,000 of the 125,000 boat-lift refugees who departed from the Cuban port city Mariel in 1980. Unlike the doctors, lawyers, and other middle- and upper-class professionals who fled Castro's rule in the 1960s,* the Mariel people are, in the main, unskilled and poor. Many are men toughened by prison.

A leading cause of death among the Marielitos is homicide. They kill each other, with handguns mostly. There are, of course, tens of thousands of law-abiding Marielitos living here, but, like a cymbalist among the violins, it is the shooter who is heard. This has caused anger and fear in Miami, and it has served to give added emphasis to an overall high crime rate.

IF THAT IS A STAIN on the social fabric of Miami—and indeed all south Florida—there is something else ripping it to shreds.

Some 70 percent of all the cocaine and marijuana smuggled into this country comes in through south Florida from Colombia and other shipping points in Central and South America and the Caribbean. It is a business in the state reckoned to be worth from seven to twelve billion dollars a year, ranking it among the highest income producers in the state.

"And the drug business here is getting bigger and bigger," Jim Dingfelder of the U. S. Treasury Department's Customs Service office in Miami told me in the summer of 1981. "In 1970 it was a media event when we seized a light airplane with about 800 pounds of marijuana on it. Since then, we've had a DC-6 land right here at Miami International Airport loaded with marijuana."

Profits to be made in the drug business are enormous. Some dealers who are apprehended jump bail, forfeiting bonds of as

much as a million dollars and writing it off as a business expense. They fear the courts less than they fear other dealers. For they, too, murder one another, sometimes with machine guns in daylight shoot-outs.

"The drug problem here is overwhelming," Peter Gruden said. "The whole economy of south Florida is affected by the drug traffic. Because of all the drug money, there is an inflated housing market, groceries are higher, as are gasoline and automobiles. It's a problem that's passed on to everyone living here."

Gruden is the special agent in charge of the federal Drug Enforcement Administration office serving Florida and the Caribbean. Based in Miami, he and his staff of agents are engaged in what may well be the most hazardous effort at law enforcement in the country, for seldom is a drug dealer without a concealed weapon.

Waiting is a large part of the work—waiting for the telephone calls that set raids and arrests in motion, waiting through the days and weeks and sometimes months it takes to win the confidence of a drug dealer in arranging a buy. Agents work in teams, and there is a face and personality among them to meet each of the demanding casting calls for undercover work. One is a look-alike of the flutist in "The Spirit of '76," another is a bandy-legged New Jerseyan with all the street smarts of an urchin peddling Chiclets in Rabat. There are female agents, too, one by the name of Joan, who, smiling sweetly, told me that she had recently paid \$53,000 for a single kilogram of cocaine (the sellers were arrested, the money recovered).

It is possible to buy that same amount of cocaine in South America for \$15,000. It has been calculated that the coca leaves sold by a farmer in Bolivia for \$200 eventually have a U. S. street value, as processed and diluted cocaine, approaching a million dollars.

"There has been considerable evidence obtained by this agency and others," said Gruden, "that the billions of dollars of profits from the drug business here are laundered through numerous banks in the south Florida area. The money leaves the country and then comes back in with an air of respectability." (Continued on page 192)

*See "Cuba's Exiles Bring New Life to Miami," by Edward J. Linehan, in the July 1973 *GEOGRAPHIC*.





ALL BY NATHAN BORN

Flush and feverish with construction, despite a countrywide recession that softens the local economy, metropolitan Miami skyrocketed last year with more than 1.7 billion dollars' worth of new buildings. The Palace, a 41-story apartment-condominium (left), rises on Brickell Avenue.

Florida's largest city has become a nexus for foreign investments that bankroll an estimated 50 percent of commercial real estate acquisitions. Latin American, Canadian,

European, and Saudi Arabian capital has helped foreign deposits in Miami banks reach an estimated four billion dollars.

Despite the frenetic pace, the leisurely life rolls merrily along in Coconut Grove (below), a fashionable Miami neighborhood.

Across the causeway in Miami Beach, a woman gathers an audience of passersby with Russian folk songs (above). This neighborhood is a retirement mecca for Jews of Old World origin.





SCHWEIZ
POSTES SUISSES
SVIZZERA



Freedom's shores in sight, a hundred Haitians in an overcrowded vessel reached Biscayne Bay last summer, only to be apprehended by patrol boats. Fleeing abject poverty and dictatorship in their homeland, thousands of Haitians paid smugglers and endured 600 miles of open sea to reach the U. S. Some 15,000 were intercepted in 1980, 8,000 in 1981. Many others have been absorbed into Miami's Haitian community of 40,000. A detention center outside Miami has been holding 500 to 1,500 of the immigrants until hearings can determine their status. Last fall U. S. Coast Guard vessels began to patrol the northwest coast of Haiti, helping reduce the number of refugees reaching Florida by boat.

Whenever economic or political eruptions rock the Caribbean or Latin America, waves of desperate refugees seek Florida shores. In 1980, 125,000 Cubans released by Fidel Castro came to Florida, intolerably burdening the state's social services. Not only the oppressed but also the oppressors find haven here. The state has harbored deposed Latin dictators and—ironically—a former official of Haiti's secret police.

WALTER BERRY





ALL BY NATHAN BERRY

The heat's on for drug smugglers who bring through south Florida most of the illegal marijuana and cocaine that enters this country each year—much of it from Colombia. Agents of the Drug Enforcement Administration (above) rush a Miami house where a female undercover agent is buying a kilogram of cocaine for \$53,000 cash; the sellers were arrested (below). But for every kilo confiscated, an estimated eight more slip through, feeding a multibillion-dollar business in crime.

Small towns are as involved as Miami. Everglades communities that have long winked at rum-running and alligator

poaching turn a blind eye to fishing boats and planes on night missions. The backcountry is a graveyard for dozens of crashed aircraft. This plane (facing page), never claimed, went down in Big Cypress Swamp when its fuel ran out. Investigators later found traces of marijuana inside. Some arrested dealers pay high bonds and disappear, others turn informant, while first offenders sometimes go free on probation.

To help the beleaguered state, President Ronald Reagan in January instructed the armed services to help in the war on drugs with their planes, ships, and intelligence.

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(Continued from page 185)

Early this year Vice President George Bush announced plans for the federal government to step up its war against the drug traffic. Since that time special Hawkeye planes, equipped with radar, have been put into service for the purpose of tracking small aircraft and boats transporting drugs from Latin America. At the same time, federal law-enforcement agencies in southern Florida have been strengthened.

After Cubans, Puerto Ricans make up the largest Spanish-speaking community in Greater Miami. They, together with the Colombians, Nicaraguans, and other Latin Americans, have given Miami a vibrant internationalism unlike that of any other city in the U. S. It is a community of two languages and many cultures, a place that seems aborted from the American embrace.

Miami has become the shopping center for the wealthy of Central and South America, with something like 10,000 business establishments in the hands of Cuban-Americans. The visitors come to play and invest their money and to plot revolutions. Miami now seems to have taken up the role of capital of some phantom nation forged by the bond of language.

HAITIANS, for a time, came in great numbers too—hundreds of them almost every day, sailing the 600 miles to these shores in ragtag boats, making landfall sometimes on the sands of Miami Beach, there to be pelted with grapefruit thrown by angry sunbathers.

The Coast Guard is now under orders to intercept and turn back boatloads of Haitians headed for Florida. Some still manage to run the blockade, however. Last October a jerry-built 30-foot wooden sailboat capsized in choppy waters off Hillsboro Beach, just north of Fort Lauderdale. Before long, 33 bodies washed ashore.

In the past two decades about a million Haitians have left their country because of political and economic conditions there. Half of them are in the United States, mostly in New York City. There are perhaps as many as 50,000 Haitians in Florida now.

Haitians arriving here illegally are taken to a detention center on the outskirts of Miami. "The United States accepted our

intellectuals, our businessmen, our lawyers, engineers, and doctors," Samuel Constant, director of the privately run Haitian Refugee Center here, said. "There are now more Haitian doctors in the United States than there are in Haiti. But of the Haitians coming in now, the Immigration and Naturalization Service seems to be saying that they are just poor illiterate people, economic refugees. There is no government policy for these Haitians. They are in legal limbo. As for the detention center where they are held, the right name for it is concentration camp."

Closer in there is another camp, but not one with high fences and armed guards. It is a black ghetto called Liberty City, and in May of 1980 it was the scene of a race riot that claimed 18 lives and caused a hundred million dollars' worth of property damage. Touched off by the acquittal of several white policemen charged with beating a black man to death, the riot spread with a violence and speed unsurpassed in U. S. racial troubles over the past century.

Blacks account for a little more than 15 percent of the population of Dade County. With the heavy influx of Hispanics into the area, they more than any others have felt the pain of disfranchisement. Unemployment among them is high, and Liberty City, while quiet now, remains tense under the strain of bad social chemistry.

Whatever economic hardships the latinization of Miami is working on the blacks, it might have been worse had the Cubans and others not come. They helped transform a logy winter resort into a year-round festival of construction and growth. On Brickell Avenue, in the center of the city, banks and other buildings are rising in large numbers. And in the suburbs, houses are abuilding, including a new one on Key Biscayne on the site where former President Richard Nixon had his place (pages 176-7).

Eduardo Ortega bought the Nixon guesthouse and had it demolished. "The roof leaked," he told me. He designed a new dwelling for the bay-front site, a mansion with a living-room floor of imported marble and a wall of glass measuring 50 by 18 feet.

He smokes slim cigars and wears a gold chain around his neck, and when he arrives at the site each morning to inspect the construction, Ortega—a land developer who

moved here from his native Colombia three years ago—strides through the 12,000 square feet of living space in the house and reminds himself that something must be done about the massive slab of concrete on pilings in front of the house. The federal government owns the pad, but Ortega says he owns the right-of-way to reach it, and there are no precedents for the disposition of a helicopter pad under such circumstances. Pad or not, Ortega is happy with his purchase; happy, too, that Nixon gave him a second mortgage.

THE HISPANICS are moving in, and the Anglos are leaving, moving north to Broward County and to the center of the state with its fairyland patina. They are leaving a Miami where others dance to *salsa* rhythms or hold goombay festivals, and

where cemetery workers each morning remove dead chickens, heads of goats, and voodoo dolls from the graves and fences.

"It used to be just an occasional thing," said Donald Bradley at the Woodlawn Park Cemetery in southwest Miami, "but for the past six or seven years it's been a daily problem, collecting the things left here."

It is believed that members of a voodoo sect called Santería (with African origins by way of Cuba) are responsible for the necromantic litter. As is usual in matters of this sort, the offerings are meant to appease spirits or ensure good luck.

There are some Anglos who are not likely to leave the area. In Miami Beach, for example, there is a community of old Jews of Soviet and other European origins who still speak the languages of their native countries, and who can still get angry over the



KEVIN FLEMING

A high rise for boats solves dockage problems on Key Biscayne. A craft is plucked from the racks and launched at the owner's request. A forklift returns boat to berth after the voyage. The length of boat-happy Florida's 1,350-mile coastline is second in the U. S. only to that of Alaska.



execution of Sacco and Vanzetti in 1927. As retired members of the International Ladies' Garment Workers' Union, many of them recall that it was the fiery outrage of leftist-leaning orators that helped bring about reforms in the sweatshops. They remember Franklin Delano Roosevelt with love, and when his son Elliott ran for mayor of Miami Beach in 1965, some confused the candidate with his father, telling him that since he was such a good President they would certainly vote for him for mayor.

The presence of these Jews in Miami Beach dates back to the post-World War II era. Many of their sons and nephews and cousins had been here first as members of the armed forces. The federal government in 1942 rented 349 hotels and apartment houses on the beach; at one time nearly 80,000 airmen were quartered in those chandeliered barracks.

The elders who now sit on hotel porches live in small rooms with silverfish in the closets. Their ranks are thinning, and when they've all gone, a unique chapter in turn-of-the-century immigration to the United States will have closed.

No, they will not leave. Nor will the waitresses who toil among the pickles and sauerkraut in Wolfie's delicatessen on Collins Avenue, hurling exquisite insults at the customers. "What we need in this place is a system," said an elderly waitress who has been in counter service for more than a decade. "You bring them plain rolls and they want poppy seed. They sit at the counter section that's closed, and I got to tell them all the time to move. *Move*. They come in here with their own tea bags and dunk in our water and fill up on the free pickles. We need a system, but, face it, that wouldn't work either."

A mile and a half away Chris Dundee is seated behind his desk in the Fifth Street Gymnasium, pushing papers around in search of one of his cards, the one with the picture of him together with Muhammad Ali and Rocky Marciano. In the world of boxing this is a famous gym, a place where Ali has

trained under the tutelage of Dundee's brother, Angelo. For more than 30 years, Dundee has been running this liniment-scented boxing shop. And *he* will not leave, not as long as he can continue to climb the long flight of stairs each day (why are gymnasiums never on the ground floor?) to be among his friends, including the old man with the towel over his shoulder who remembers what a pleasure it was to have handled featherweight champ "Kid Chocolate."

FORT LAUDERDALE in Broward County is a favored destination among those abandoning the Miami area. It is to the north, not many miles away, and when the sun sets on that city, Ross Hooks goes hunting for alligators. For it is then that they start to stir in the canals.

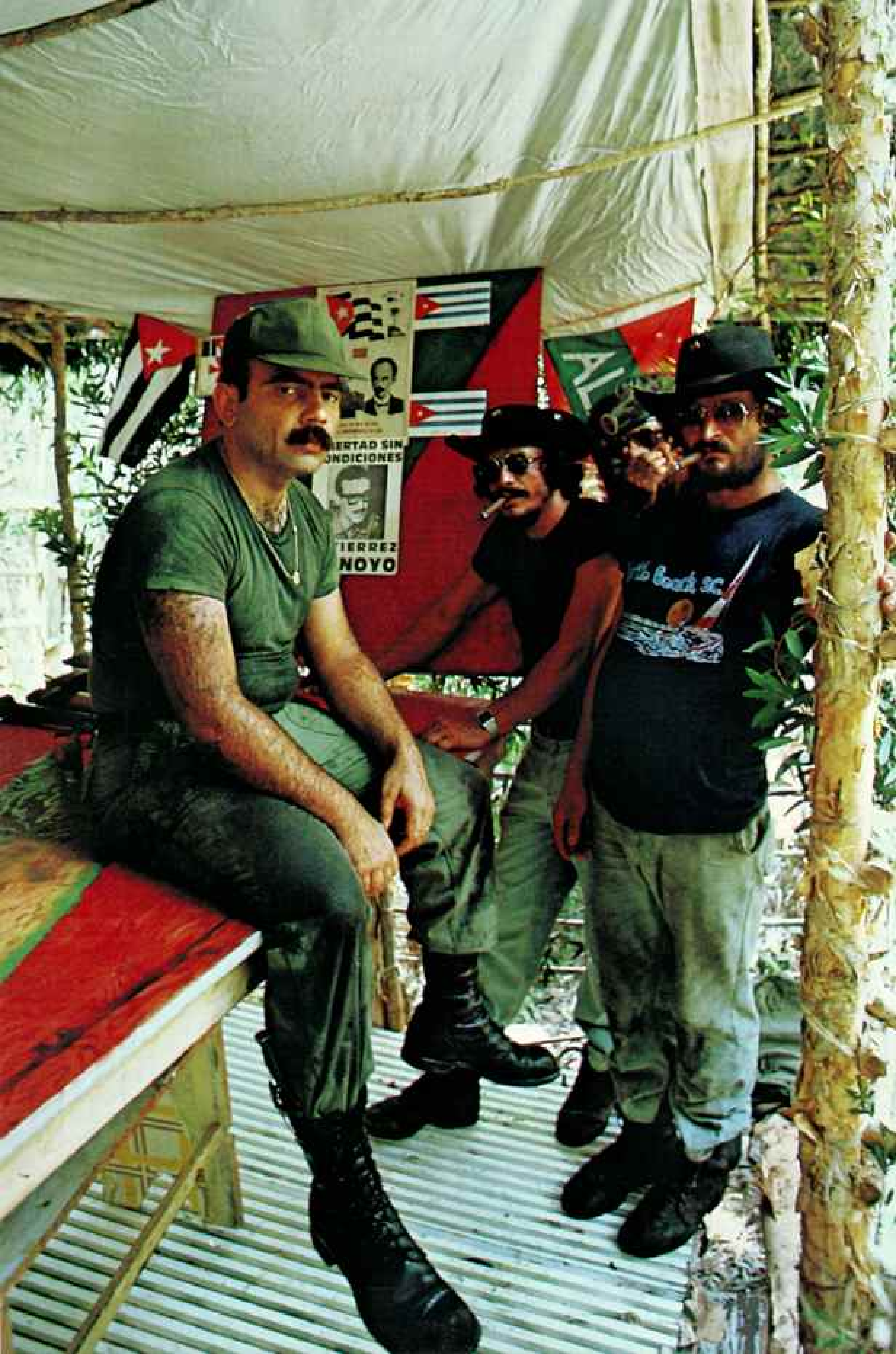
Hooks is one of about 50 alligator-control agents appointed by the state Game and Fresh Water Fish Commission. His job is to capture or kill rogue gators, those borne by the canals through trailer parks and housing developments. The need for such control is a success story in itself. Alligators have not only been saved from extinction in the state; they now fill south Florida with their snappish presence.

This night Hooks would work the waterways in the Paradise Trailer Park, and as we drove that way, pulling a 14-foot aluminum boat behind the pickup, kids made sticky by the heat of the summer night yelled, "There go the gator man, there go the gator man!"

There is no regular salary for this part-time work. Hooks receives a percentage of what the hides fetch at state auction, and he is allowed to keep and sell the meat of the animals he kills (chewy, the texture of lobster, gator tail has the taste of a chicken-fish mix).

"You find a lot of things inside a gator's stomach," Hooks said. "One trapper found a whole jar of pickles. I have found golf balls and dog collars, and that's pretty common. Gators like dogs. There was one I know of that did away with a \$350 poodle. And there was the
(Continued on page 200)

Homeward bound in their Sunday best, Jamaicans await a flight from Miami International Airport. They came in the fall, with 8,600 other West Indians, on temporary work visas to cut sugarcane; they left in the spring with gifts for home, such as the nested hats they wear. Foreign visitors spent nearly 2.6 billion dollars in Miami last year.



Be prepared is more than a Boy Scout motto in a state where the U. S. military rubs insignia with unorthodox paramilitary brigades and urban vigilantes. Compass in hand, an aviation officer candidate (right) from the naval air station at Pensacola takes to the piney woods for three days of survival training. His makeshift spear is used to hunt snakes and armadillos for food. The practice prepares for ditching in subtropical terrain.

Like a relic from the 1960s, when the CIA trained anti-Castro Cubans from Miami, a militant Cuban group named Alpha 66 (left) goes on maneuvers in the Everglades. They plan to infiltrate their homeland and foment revolution. Cuban-American Humberto Alvarado, left, teaches guerrilla tactics. The poster displays their leader, now in a Cuban jail.

To arms is the response of Miamians to the drug-related high crime rate: six homicides per 10,000 residents a year. At a shooting range in Dade County, Karen Shinn, with her husband, Brett (below), practices with a revolver. Florida law permits residents to carry handguns in their cars—and Karen does.



ALL BY NATHAN DENN







Like the yellow brick road to Oz, the Overseas Highway joining coral islets, or keys, deposits venturers in a legendary place—Key West. Railroad magnate Henry Flagler linked the “last resort” to the mainland in 1912. His railbed, destroyed in a 1935 hurricane, became the base for the highway; 37 of its 43 bridges were recently rebuilt. In Key West colorful street life unfolds under the gaze of 19th-century homes (below). “Time past has a lovely habit of remaining time present here,” says playwright and 33-year resident Tennessee Williams (above).



ALL BY NATHAN BORN

75-pound Labrador retriever playing fetch with its owner; kept jumping into the canal to retrieve the ball, and then one time, *wamp*, and he was gone, ball and all."

We found gators that night, dozens of them in the canals of the park. Their eyes shone like red jewels in the beam of the headlamp Hooks wore. We were not to take one, however. "Either I'm getting slower or they're getting faster," Hooks said after missing a six-footer with a thrust of the gig. "But that's not the problem. The problem's up there." He pointed to the full moon. "On a black night I can get right on top of them."

There is a sad irony in the preservation of wildlife in Florida. Species are brought back, as the alligators and Key deer were, only to find much of their habitats taken over by humans. It is not widely known, but there are perhaps 20 panthers still hiding in the swamplands of south Florida. Roy McBride, a panther hunter from Texas, reported on his first encounter with Florida panthers in 1981: "Panthers are still surviving in a natural wild state in a very unwild area. The entire area had tremendous human use of every imaginable variety. Hunting, fishing, prowling the woods in swamp buggies and three-wheel scooters. All highways had constant traffic day and night, and development of all sorts was in evidence in the adjacent areas. . . . Anything that would cut down on human access to the areas . . . where the panthers range, would be a definite contributing factor to their chances for survival."

In one area known to have been favored by the kingly cat, McBride found abandoned cars and a half-track. "I saw everything but a Ferris wheel," he wrote. "An hour later, while gassing up at . . . the intersection of Highways 29 and 41, I noticed a Ferris wheel parked southwest of the station. I was afraid to ask what its final destination would be."

Once there were dusky seaside sparrows on Merritt Island and the nearby mainland—900 pairs as recently as 1968—on the east coast, not far from where the Florida sky takes fire with the launching of vehicles into space. But man sprayed there to control the mosquitoes, and there were fires and artificial flooding and draining. The habitat was destroyed.

Today there are five known dusky seaside sparrows left in all the world. They are kept at the Santa Fe Community College Teaching Zoo in Gainesville. The federal government has paid the college \$60,000 to care for the birds. Each has its own cage, a spacious enclosure equipped with a sprinkler system to cool the bird on hot days. They are checked four times a day for any signs of distress. Few small birds in captivity have been so pampered. The five, it would seem, are enough to renew the race, but not in this case. All are males.

It is hoped that somewhere in Florida there is a female dusky, and so each spring a group of government naturalists scours the marshes, searching for just one more small bird with the black streaks on her white breast and the yellow wing patches. "There is hope," a biologist said to me, "but it's hope that's barely flickering."

One of the surviving duskies has been crossbred with a bird of another subspecies of the seaside sparrow, but the best to hope for using the five captives is to eventually produce a dusky of 97 percent purity. Federal guidelines for species on the endangered list require 100 percent purity. At the Patuxent Wildlife Research Center in Laurel, Maryland, scientists are testing ways to freeze the semen of the dusky.

Meanwhile, life goes on for the forlorn five, but perhaps not for too many more years. Few duskies have been known to live longer than a decade, and one of those in captivity was banded in 1972. They seem happy enough, flitting in and out of the centerpiece of saw grass in each cage, and chirping and singing as if tomorrow another, the saving one, will join them.

COME ON DOWN? Well, yes. Florida is a state of many shadings, and if there are sad tales to be told of sparrows, there are also joyous ones anecdotal to the soul of this place.

Florida in parts (16-Foot Snakes!) is the South of 30 years ago (Giant Milk Shakes and Corn Dogs!) when the screaming placards (Free Admission!) along the road promised sights to behold (See a Live Civet Cat!) just ahead (This is it! Turn here!). Snake and alligator farms and tourist cabins with a metal chair for outside sitting at each unit;

pine forests and turpentine distilleries; flowers planted in lard pails and foot-long thermometers nailed to the front porch—all that is a face of Florida.

That is the Florida of Two Egg, a town in the north not far from the Georgia and Alabama borders, where I went to visit with Mrs. Susie Hartsfield.

But first, that name, Two Egg: Two brothers, you see, opened a country store here, and they didn't know what to call the place until a youngster came in carrying two eggs and told them, "Mamma says send her one egg's worth of bladder snuff and one egg's worth of ball potash." Such derivations are, of course, suspect, but best this

one be left as is. Who knows how close Two Egg came to being called Bladder Snuff?

Both commodities are still sold in the general store at Two Egg, the snuff wrapped in a bladderlike casing, and the potash used to fertilize nut trees and to make soap.

I sat with Mrs. Hartsfield on the screened porch of her cinder-block house, and we both swatted at gnats as she told me about the time she plowed this land with a mule named Bullet. Mrs. Hartsfield was born not more than a mile from the house and had lived here all her life—all 111 years of it.

"She's got nice health," her daughter, Mrs. Levy Mack, told me. "Her health's so good, it ain't" *(Continued on page 209)*



NATHAN BEHN

Fort that never faced a battle has commanded an entrance to the Gulf of Mexico since 1846. Before Fort Jefferson was finished, invention of the high-powered rifled cannon rendered its eight-foot-thick brick walls obsolete. As a federal prison it held Dr. Samuel Mudd, convicted for setting the leg of Lincoln's assassin. The national monument greets visitors coming by boat and seaplane from Key West.





NATHAN BERN LABOVE AND LOREN LEFT AND KEVIN FLEMING

High kicks and high jinks explode in Fort Lauderdale, where college kids flock each spring with lemming-like constancy (above left). A vagabond proselytizer moves among the ranks (above right) on beaches that witnessed the invasion of some 240,000 students during Easter break this year.

Erosion has nibbled away much of the state's beaches on the east coast because of oceanfront overbuilding. But a 52-million-dollar restoration project undertaken by the U. S. Army Corps of Engineers has replaced some 13.1 million cubic yards of sand on a ten-mile stretch of Miami-area beaches, and other reclamation projects are planned for farther up the coast.

In a state where kitsch is often king-size,

a 15-foot-tall beer can and an alligator-shaped sign herald a roadside eatery called Glader Park on the Tamiami Trail (left). The trail, a 265-mile-long asphalt ribbon connecting Miami and Tampa, cuts through the Everglades, a wildlife-rich saw-grass wetland some 50 miles wide. Gators are legal grist for the grinder here, provided the meat comes from rogue animals that have strayed from the state's latticework of rural canals and wandered into inhabited areas. The hides and meat of animals taken by contracted agents of the Game and Fresh Water Fish Commission are sold to tanneries and restaurants.

"Gator is rather chewy—sort of like a chicken-fish mix," says the author, who sampled a steak.

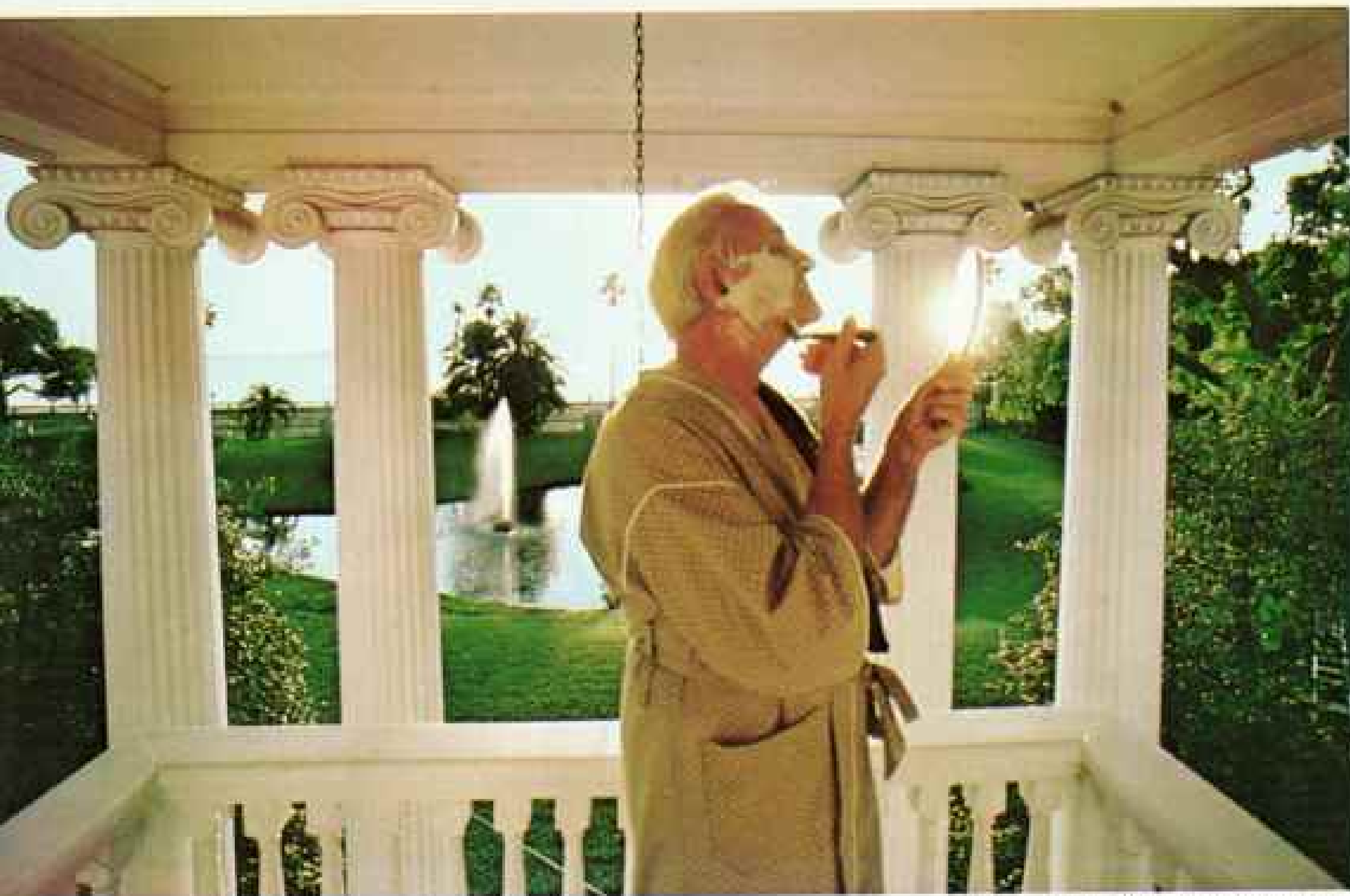


Stately as its name, the Don CeSar hotel basks in the evening sun overlooking St. Petersburg Beach. Opened in 1928, the 300-room hotel served as a convalescent center for airmen during World War II. Public sentiment later saved it from the



KEVIN FLEMING

wrecking ball and secured its preservation as a historic monument. Today's visiting aviator may fly by in an ultralight plane, at right, a motorized recreational craft popular in Florida, where the flat terrain discourages hang gliding.



NATHAN BERN (BELOW AND RIGHT) AND KEVIN FLEMING

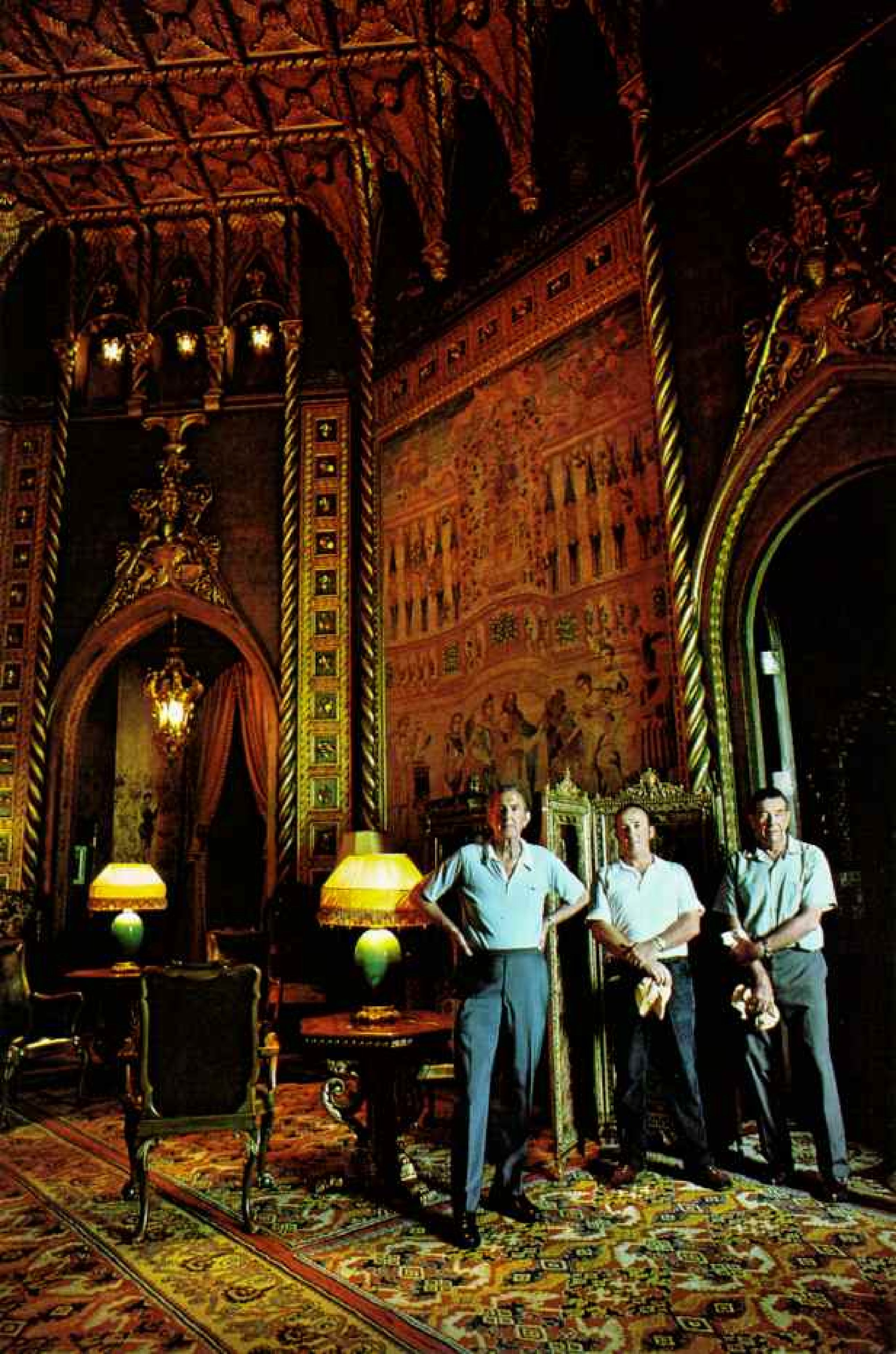


For sale: 117 rms, w/frnt vu, an ad for the Mar-a-Lago estate in Palm Beach might say. Three of the staff of 19 stand in the 36-foot-high living room (right). Owned by late General Foods magnate Marjorie Merriweather Post, the 17-acre spread was willed to the U. S. government in 1973 for use as a retreat by high officials. But the gift house, never used, was returned in 1981. It's on the market now for 20 million dollars, with the nine-hole golf course and ten-car garage included.

Elegance on a smaller scale radiates from a bay-front balcony jutting from the restored 73-year-old Tampa mansion owned by retired corporation vice president Wilbur K. Neuman (above).

"I sometimes shave out here just to watch the ships in Hillsborough Bay move by," he says.

Ritzy art deco graces an etched window in the lobby of the Senator Hotel (left) toward the southern end of Miami Beach. Some 800 buildings, most bearing the sleek lines of the thirties, are clustered here. In 1979 the mile-square area was declared a historic district.





In the velvet hush of sunrise, grooms exercise a string of polo ponies at the Palm Beach Polo and Country Club, near West Palm Beach. The green landscape surrounding Ocala, northwest of here, is famous horse and cattle country. Florida—



KEVIN FLEMING

with four Kentucky Derby winners to its credit—raises more Thoroughbreds than any state except Kentucky and California.

(Continued from page 201) even funny. The doctor gave her a blood test, and he said her blood was right better than his."

Here, at the end of a dirt road that passes through fields given over to peanuts and sweet potatoes, we are a world apart from the Florida of cabanas and jai alai. This is land to which sons and daughters sometimes return after spent adventures in the North, come home to suffer the gnats and to cook the collards.

"I'm the oldest of the children," Mrs. Hartsfield said.

"And the meanest," added her sister, Mrs. Tommie Faison, who is 109.

As far as I could determine, Mrs. Hartsfield is the oldest living person in Florida. Of all her memories, none seems more comforting to her than that of the physician she worked for as housekeeper and cook. "He sure liked my potato pies," she told me. "I shaped them thisaway, you know, and he'd eat two or three of them. They were good."

She was wearing her yellow dress, the one with the white collar, and her hair had been brushed and pinned by her daughter. And that was one of the things Mrs. Hartsfield recalled about *her* mother, how she too had fixed her hair. "She'd take my hair and put a straightening comb in it," she said, "and comb it down 'side my jaw."

TWO EGG lies toward the center of the northern reaches of Florida, which stretch from Pensacola to Jacksonville.

Few of the problems of the south have spread this far. It has been called the unknown Florida, but it's not that much of a secret. Not with every pilot in the U. S. Navy having gone through training in Pensacola; not with Panama City and Fort Walton Beach and other coastal resort towns having been longtime haunts of vacationers from Louisiana and Alabama.

There are places, though, that sit hidden under the oaks, places that reach out to touch you with their peaceableness. Madison is one.

Visually, Madison is a set piece from an epic of the Old South. There are plantation manor houses and Spanish moss, and the dogs are hounds seemingly primed for a hunt. Mrs. W. C. Copeland, Jr., lives in Madison, and she is proud of having led the

drive to get the steam engine of a cotton gin put on permanent display in the town.

"You can hear the whistle on this engine for miles," Mrs. Copeland said. "They'd blow it to let the people know when to get up out of bed in the morning, and when to eat dinner and supper."

As a former president of the Madison County Historical Society, Mrs. Copeland is an able guide to the town and surrounding countryside. She knows all about the house of Greek Revival architecture—the one with 20 columns, each 30 feet high—that is now for sale, and the historical markers that tell of times before the boll weevil came to Madison to end the cotton business.

"We have more historical markers here than just about any other county in Florida," Mrs. Copeland said. And then she led me off to a symbolic planting of cotton, in a field next to the engine with the whistle that can be heard for miles. "Now if you want to see a boll weevil," she said, "you just come over here." She pulled open a pod, and there, cushioned in the fleecy softness, was the quarter-inch-long pest, gray and long snouted and fat from its feast of lint.

Cedar Key is from another mold. Located on the Gulf of Mexico, near the mouth of the Suwannee River, it was at one time the queen of all the Gulf Coast fishing towns. It is still of that flavor, of boats chasing to the docks at sunset, of the odor of spiced shrimp in the air, of hurricane alerts and the boarding up of storefronts.

Brooks Campbell is a Cedar Key boat-builder, but he has little time for that now. At the age of 74 he has made what he believes is an important discovery. "Brother, I'm not bragging, but I've got something here no one else has ever come up with," he said. And then he told me.

"I had arthritis for 35 years. I went through the war with it, and they couldn't do anything for me in the service. I came back home and went to building boats, and I got down with this arthritis so bad I couldn't walk. So I sat down to studying, and I came up with this mixture. Within five months I didn't have any more pain. Where the arthritis went and when it's coming back, I don't know."

Among other things his medicine contains a petroleum derivative, Epsom salts,

menthol, and iodine. Bottled under his own label, the liniment is licensed by the state government for sale in Florida.

Brooks Campbell said he will make no claim for his discovery other than "it knocks the pure hell out of arthritis."

THEY ARE THE ONES—the Campbells, the Copelands, the Hartsfields—who help revive the spirit of one saddened by the sight of a St. Johns River gone bad or the breaking of a food chain with the clearing of mangroves at water's edge. Florida is like that. It pains and pleases, and when it blushes under sunset light skipping over the water, it invokes forgiveness of the former.

This is a state of such wide diversity as to make it seem like a jigsaw puzzle of ill-fitting pieces. There is the Jacksonville piece, with its scenes of corporate headquarters and a port heavily trafficked with the import of foreign cars. And Ocala, horsey and more of the West.

Key West is another piece, a cornerpiece, inscribed with Hemingway imagery and brushed with the twilight fires of incarnadine sunsets. It sits as the anchor on the chain of Florida's southernmost populated keys, down where U. S. 1 dead-ends absolutely, closer to Havana than to Miami. Brown pelicans and laughing gulls and the lushest of tropical greenery are all here, along with a lightheartedness of spirit that finds jugglers in the streets.

There are perhaps 25,000 residents of Key West, but it seems like many more, for this is a city for alfresco living. All 25,000, it seems, are on display in the streets, walking and riding bicycles and gathering in squares. It is always as if the last float in a parade has just passed and the crowd is breaking up.

Key West is still recovering from the 1980 Mariel boat-lift operation that resulted in 125,000 Cubans making landfall here. "It was much more disruptive than people realized. It just scared everyone away," Charles "Sonny" McCoy, former mayor of Key West, said. "The federal government impounded the fishing boats here at that time, and by the time they were released, they had deteriorated. That hurt. And finally, when the city was emptied out because of the boat lift, the federal census was being taken and

that meant we got less federal funds. It wasn't a very good year."

It was different by the time I visited. The tourism industry was as healthy here as any other place in Florida, if not more so. New bridges had been constructed, along with a new freshwater pipeline linking the key with the mainland.

Even with that, though, Key West will continue to remain something apart from the rest of Florida. It was that way during the Civil War when the state seceded from the Union. Key West, a place of divided loyalties, was occupied by northern troops and became a Union stronghold.

Imperishable impressions are to be had in Key West: of a kinship with the sea, and of a fragility raised by the threat of the next major hurricane, of the ghosts of former Presidents here (is there a business establishment in all the world with a nicer name than the Margaret-Truman Launderette?), and of the glassy eyes of stuffed and mounted marlins unblinking in the tepid breeze stirred by slowly turning ceiling fans.

Most of all there is the impression of gentle eccentricity. Even McCoy is not reluctant to spark his life-style with a bit of the absurd. On the morning of September 10, 1978, when the waters of the Gulf of Mexico were calm, McCoy set out for Cuba on water skis.

"No one had ever skied from Key West to Havana before," he said. "I did it—the whole 125 miles—in six hours, ten minutes. When I reached Havana, the Cubans feted me with champagne." A year later, McCoy, who is 51 years old, attempted to ski from the Bahamas to Miami Beach, but he had to give up with only eight miles to go. He swam to shore.

In the spring of this year, however, the United States Border Patrol disrupted Key West's laid-back demeanor by setting up a roadblock on U. S. 1. All vehicles traveling from Key West were subject to inspection for illegal drugs and aliens. Traffic was backed up for many miles and many hours, testing the patience of the tourist-oriented business community—not to mention the ingenuity of many of south Florida's biggest dope dealers.

In Florida's third largest city, Tampa, there is a sense of community found neither in Miami nor Jacksonville. An old social

structure remains entrenched in this one-time cigar-making capital, but changes are taking place here on a wide-sweeping scale and the pillars of tradition are likely to tumble. Tampa is beating through the recession to find vibrancy and prosperity as the heart of Florida's Sun Coast.

The region hooks over Tampa Bay and includes the cities of St. Petersburg and Clearwater. It (Continued on page 217)



NATHAN BEVAN

"Ten-box" tub laden with 900 pounds of Valencia oranges, the state's most abundant variety, awaits pickup during the April harvest near Clermont in central Florida. Most of the state's orange production goes into frozen juice concentrate, using a process pioneered at the University of Florida in Gainesville in 1942.



Enjoying the fruits of their trade, two workers break for a smoke after stacking bunches of tobacco called sheets at Big Independent Warehouse in Live Oak (above). The northern Florida auction house handles more than half the state's annual production of 22.5 million pounds.

For some makers of Tampa's renowned cigars, only imported tobacco will do. The firm of Corral, Wodiska y Ca., whose cigars sell for as much as \$2.50 each, grows much of its own leaf on a plantation in Honduras. At the Corral plant, pride in

his handiwork beams from Luis Acosta (right), who has practiced the art of hand-rolling cigars for 60 years. Though such individual attention has largely given way to mechanization, even in Tampa, premium cigars have maintained a healthy market while sales of cheaper cigars have dropped.

Fodder for a hungry mill, 20,000 cords of southern pine await processing into liner-board for boxes at the St. Joe Paper Company in Port St. Joe (above right). The company owns a million acres of forest in northern Florida and southern Georgia.



KEVIN FLEMING (CROLOW); NATHAN DENN







BOTH BY NATASHA BERRY

"It was a mighty plop," says Mae Rose Owens, who watched a large oak near her yard sink from view on May 8, 1981. It was followed within hours by her house and yard, the back of an auto-repair shop with six Porsches and a truck, and part of a municipal swimming pool. The great sinkhole of Winter Park was born.

Such phenomena occur because central Florida's limestone substructure is riddled with caverns. Overlying soil, usually buoyed by subterranean water, can collapse if the water level subsides, as during the drought in 1981. The ten-story-deep sinkhole has become a tourist attraction.

The state's central grasslands drain via the Kissimmee River into Lake Okechobee (above), helping fill south Florida's largest reservoir to 13.5 feet. Last summer the lake sank to 9.75 feet, lowest ever, exposing these boat tracks.



(Continued from page 211) is an area with more than 1.5 million people. To the south, not many miles away, sprawls Sarasota with another 50,000 residents.

But for Tampa, these cities have long been regarded as golden cages for flights through the last of life. St. Petersburg, especially, with its Shuffleboard Hall of Fame, has been stamped with a geriatric image. Much of that is changing. Even many of the famous green benches of St. Petersburg, where the elderly sought rest and fellowship, have been removed. In truth, however, the talk in St. Petersburg is still more of Lawrence Welk than of the Rolling Stones.

Tampa, connected to St. Petersburg by two bridges across the bay, does not share largely in the wealth of tourism in the area. It is a city from which phosphate fertilizer is shipped to all parts of the world, a city where sophisticated medical instruments are manufactured in plants sitting in seas of parking-lot macadam, a city tending to its core by drilling out the rot and capping the stumps with high-rise office buildings.

Tampa's Latin heritage rests now in Ybor City, where nearly a century ago Vicente Martínez Ybor opened a cigar factory. The business grew until at one time there were 20,000 people rolling cigars in a hundred factories in Ybor City. Today, Ybor City, sitting within the city boundaries of Tampa, is but a shell of what it was, but attempts are being made to repair and preserve what remains. Even without that, there is still enough there to evoke images of the time when *el lector* read newspapers and novels to workers as they rolled cigars, and the cobblestoned streets of Ybor City rang with the oratory of those demanding freedom from Spain for Cuba. It was a time, indeed, when a man could have his coffee on a patio webbed with wrought iron and look out on the morning through the thick smoke of a long-filler El Príncipe de Gales.

Of all Florida's pieces, none is more distinctive than the one that fits into the middle of the state, the piece that is Orlando,

the citrus industry, and, of course, Walt Disney World.*

Nearly eleven years have passed since the William J. Windsor, Jr., family of Orlando walked through the gates of Disney World as the first paying visitors to what has become one of the world's major tourist attractions. Total attendance now stands at 140 million.

It was in 1964 that Walt Disney Productions began to buy land in the Orlando area, acquiring holdings that ultimately amounted to more than 27,000 acres. It became a world unto its own, a world of masterful make-believe. Perhaps no one was more entranced by the park than the late Millard Jones, a Floridian who, in 1978, at the age of 86 visited there for the 500th time.

Now something new is being added to Disney World. It is called Epcot Center, an 800-million-dollar project designed to showcase future technologies, such as biomass energy, and the achievements of nations around the world.

Epcot (for Experimental Prototype Community of Tomorrow) Center opens in October. It and its parent theme park two and a half miles away are expected to draw 20 million visitors a year—seven million more than now visit the Magic Kingdom. Two years after the opening of Epcot, Universal City Florida, a 170-million-dollar park with a movie-studio theme, is to be completed, and that too will be in the Orlando area.

LITTLE WONDER, then, that at times central Florida seems overrun with frazzled parents and children wearing Mickey Mouse hats. But that's Florida's lifeblood. Tourism, with agriculture and construction, supports the legal economy.

"They are our three traditional economic bases," Governor Bob Graham said. "Now we have added a fourth, high technology." The high-tech industry has been established primarily along the east coast. Indeed, the

*Joseph Judge reported on "Florida's Booming—and Beleaguered—Heartland" in November 1973.

Early morning flyover by DC-3s spraying insecticide is a welcome sight to Marco Island residents who support control of mosquitoes that can carry encephalitis. Once a mangrove swamp, this shore was dredged and filled by a development company in the 1960s. New environmental rules prohibit such major alterations of wetlands.

state's second largest industrial employer, with about 10,000 workers, is the Harris Corporation of Melbourne. Harris manufactures information and communications systems, along with semiconductors and printing equipment. In fiscal 1981 it had sales of more than 1.5 billion dollars.

If there is a loss of ground among any of the three underpinnings of Florida's economy, it is, literally, in agriculture. "There has been pressure against prime agricultural land in the state," Governor Graham said. "We lost about 400,000 acres a year during the decade of the seventies."

It has been predicted that, if current trends continue, the citrus industry here will no longer exist in 20 years. Jack Matthews of the Florida Department of Citrus, with its offices in Lakeland, disputes that. "Acreage will probably continue to decrease," he said, "but the yield per acre will rise."

Citrus is a two-billion-dollar industry in Florida; most of it involves the production of frozen concentrated juice. The demand for frozen concentrate is so heavy that an average of ten million gallons must be imported each year from Brazil. Last year, however, imports reached 57 million gallons because of a freeze in Florida.

Predictions of a drop in the temperature can cause near panic in the state. It is a red alert, a time to man the smudge pots, and a time, too, for revolt among tourists who paid for 80°F in February.

But on this day, as I once again drive through the opulence of Palm Beach, there is heat enough to leave tire prints in the macadam. It is summer, of course, and the mansions are shuttered. At one, a caretaker is trimming the lawn, and when I stop to talk, he tells me that the life-style of old is fading.

That's it. Life-styles in Florida are changing. The average age of the residents is advancing, and for many, that cherished place in the sun is clouded with uncertainty.

So the word is being passed that the last American out of Miami should not forget to bring the flag—bring it up to Fort Lauderdale and Orlando and Tampa, up to where a radio evangelist comes on to ask the question, "Will the landing light be on when you touch down in eternity?"

Bring it up to where they can still say: *Come on down.* □



A ruffled hem of ocean drapes Pensacola Beach on the Florida Panhandle. "This country is not worth a damn," grumbled



NATHAN DEHN

future Gen. William Tecumseh Sherman, who dealt with Seminoles in the push for Indian removal in the 1840s. Immigrants, tourists, and retirees who bring their hopes to this land of endless skies and open waters prove it is worth much more.

Plight of the Bluefin Tuna

By MICHAEL J. A. BUTLER

Photographs by DAVID DOUBILET

Paintings by STANLEY MELTZOFF

WITH THE ROAR of the diesel and the whine of a 15-gear transmission, the tractor trailer pulled away from St. Margarets Bay in Nova Scotia. Our cargo: seven six-foot-long ice-packed containers. Each held a giant bluefin tuna. I had joined them for an 8,000-mile journey from eastern Canada to Japan.

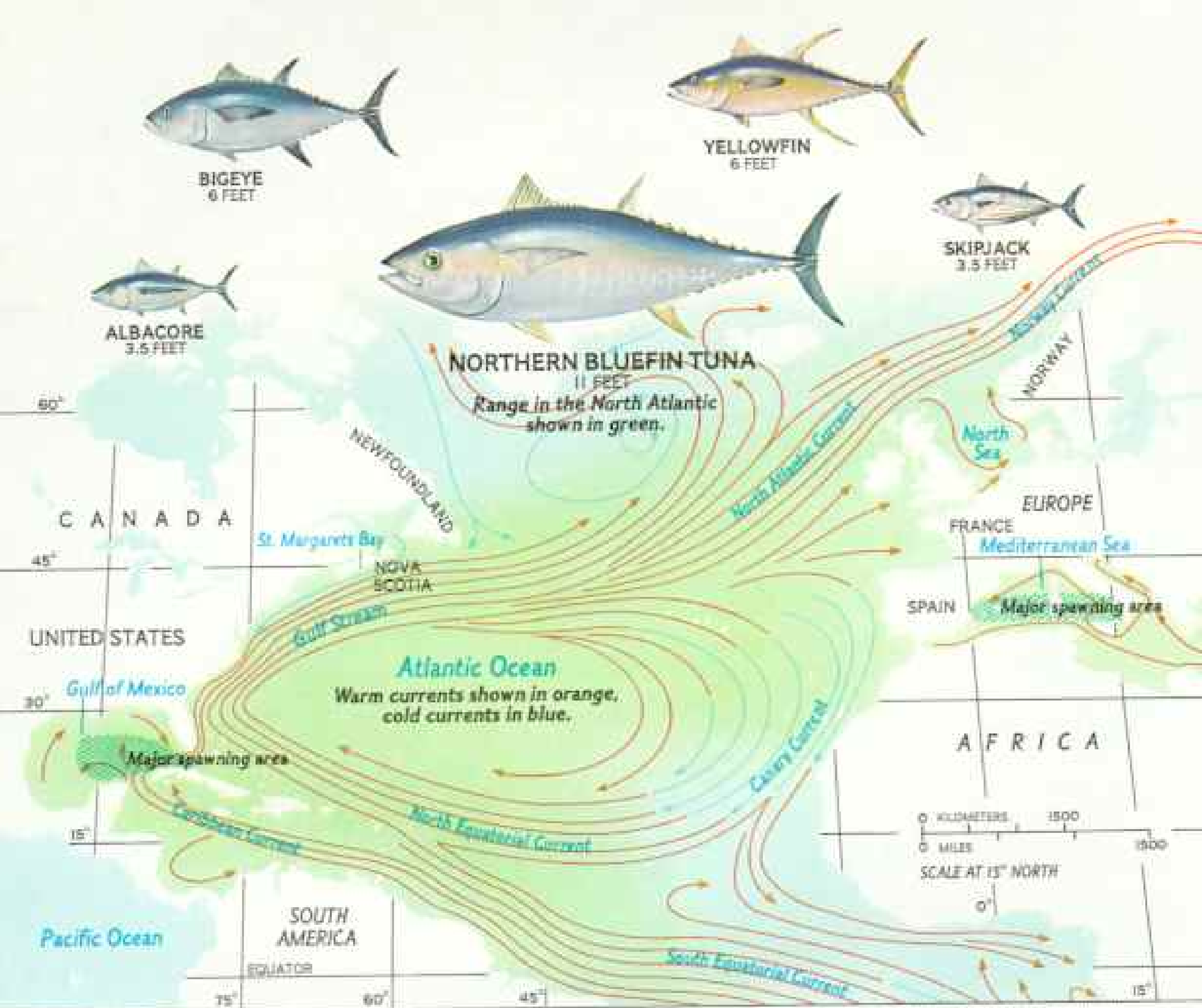
Thirty-one hours later the truck squealed to a stop at Japan Air Lines' freight terminal in New York City. We took off into predawn skies: Niagara Falls . . . the Canadian Rockies . . . Anchorage. Over the Bering Sea, with the Aleutian Islands to the south and the Soviet Union's Kamchatka Peninsula to the west, we crossed the date line, then set down at Tokyo's new Narita Airport.

Through rush-hour traffic in Tokyo I accompanied the seven bluefin to the Tsukiji Market, one of the world's largest. There a technician took their temperature, cut thin

Speed incarnate, a bluefin tuna gulps a baitfish in one of Nova Scotia's holding pens, marine corrals for the otherwise wide-ranging masters of the open sea.







TUNA PAINTINGS BY CHRISTOPHER A. KLEIN, MAP DRAWN BY ENLIJKA STEFANOFF, COMPILED BY JOHN N. TREIBER, NATIONAL GEOGRAPHIC ART DIVISION

King of the tuna tribe, *Thunnus thynnus* far outweighs the four most sought-after commercial species and yields the smallest total catch. Bluefin are fished relentlessly while migrating from spawning areas to northerly summer feeding grounds. Only sketchily known, routes coincide with warm currents. Some fish from breeding stocks on both sides of the Atlantic cross the ocean.

slices from tail and abdomen to judge fat content, flesh color, freshness. Muscle temperature was ideal—40 to 45°F; higher would indicate loss in flesh quality; lower, frozen outer layers—a bane to gourmets. These bluefin graded high, harvested in late October precisely when the flesh appeals most to the Japanese palate.

Marine scientist Michael Butler is now with the Council of Maritime Premiers based in Amherst, Nova Scotia. Artist Stanley Meltzoff specializes in painting billfish and tuna; three of his works appear in this article. David Doubilet's underwater photographs have illustrated NATIONAL GEOGRAPHIC articles since 1972.

Three containers were repacked with ice and trucked out. Regional tastes dictate destinations: Kyoto prefers reddish meat; Yokohama, pink; Osaka, oily. Four bluefin were reserved for Tokyo, which favors meat of the brightest red.

Next morning, at 5:50, a bell summoned tuna brokers in numbered hats to a tiered stand. The auctioneer, hand raised for silence, exploded with a startling "kiai!" The bluefin averaged \$6.80 a pound.

I followed one on its cart to a vendor, who carved it with a razor-sharp five-foot knife. Prime cuts, the muscle around the body cavity, now retailed for \$17 a pound. I tracked

ten pounds of it to a raw fish bar. Here connoisseurs paid \$24 a pound.

How can one explain its appeal? Artist Stanley Meltzoff put it this way: "Fresh bluefin at the peak of their autumnal fattening, cut paper-thin and eaten raw, provide an experience for which the Japanese have a vocabulary of distinctions as exquisite as that of the French for Bordeaux wines."

The traditional Japanese raw fish dish of *sashimi*, or *sushi* if it is combined with rice, is not just tuna. For many, late season *jumbo maguro*—the North American giant bluefin—is the ultimate epicurean delight. Regardless of one's income, the Japanese New Year, a birthday, or a wedding is not complete without it.

I ordered a slice. It melted in my mouth. It was 10 a.m. Thursday. Five days earlier that mouthful had been part of a bluefin swimming in Nova Scotia waters, half a world away.

Delicious. But my curiosity about bluefin is not culinary, nor do I identify with sport fishermen, for whom landing this largest, speediest, most powerful of tunas is the peak of thrills. As a marine scientist enthralled for many years by these magnificent beasts, I am interested in their future well-being.

Novelist Zane Grey boated a 758-pound bluefin in Nova Scotia waters in 1924 that for a decade remained a world record. Nova Scotia in October 1979 also set the present record with a 1,496-pound bluefin about 32 years old. Because the bluefin keeps on growing, I can imagine 35-year-olds swimming out there that weigh a ton.

Among the largest of fish, the bluefin is also one of the fastest, capable of bursts up to 55 miles an hour. Three-quarters muscle, hydrodynamically superb, with a powerful heart, ramjet ventilation, heat exchangers, and other special adaptations, the bluefin is built for speed. No predators except the mako shark and the killer whale can catch it. Because of this remarkable speed, the Swedish naturalist Linnaeus gave the bluefin its scientific name, *Thunnus thynnus*, from *thuno*, the Greek verb meaning "rush."

Scientists classify the bluefin and 12 other species of tuna, or tunny, as the tribe Thunnini within the family Scombridae. Tuna, the common name in North America, most probably originated with 19th-century

immigrant fishermen in California. Of the world's 20,000 fish species, the family Scombridae is among the most advanced, renowned for speed and endurance. The bluefin marks the zenith of this evolution.

Studying these superfish underwater, swimming among them in scuba gear in St. Margarets Bay, I have come to feel a personal affinity with them. I admire the power in their streamlined bodies and the grace with which they soar and glide within waves, much as birds do in rising air. I recognize individuals by their behavior—even know some by nickname, such as the glutton Piggy. They are quite used to divers and shiver when touched. Still there is danger. To have a thousand pounds of bluefin suddenly come at you in the murky water gives you a gut feeling for its size and speed. A close turn by a feeding bluefin can hurl you backward in an avalanche of water. I worry about a second behemoth barreling through that curtain of bubbles and not seeing me.

Delicious and Valuable Resource

My scientific fascination with the bluefin has deep roots. Aristotle in his *History of Animals* recorded observations on age and growth of tuna by ancient Greek fishermen and speculated on their migrations. The Roman naturalist Pliny the Elder wrote that Alexander the Great's fleet once met a school of bluefin so vast that the galleys had to advance in battle line to force their way through. Indeed, the tuna had caught man's eye thousands of years earlier. A Spanish cave drawing above the Bay of Biscay depicts the fish—one of the few we know to be so honored during the Ice Age.

Only 3 percent of the world fish catch in weight, tuna yet constitute one of the sea's most valuable living resources. Japan and the United States lead in catch of the principal market species, up almost sevenfold since 1948. Fishermen get \$1,000 to \$3,000 a ton for frozen tuna—the skipjack, yellowfin, albacore, and bigeye you find in cans in the supermarket. In Japan, fresh bluefin can command 10 to 15 times that price.

The bluefin frequents both the Atlantic and the Pacific. The Atlantic population spawns in the Gulf of Mexico and the Mediterranean and feeds as far north as the Arctic Circle, making it one of the long-distance

champions among migratory fish. By the age of 15 a bluefin will have swum an estimated million miles. In fact it moves every minute of its life. Prevent it from swimming and it will soon die from lack of oxygen.

Depending on age, each female carries from one million to thirty million eggs. Bluefin spawn fractionally, not releasing all the eggs in one session. The translucent eggs, a millimeter in diameter, float a few feet below the surface. The larvae hatch and grow rapidly, preyed upon by many species including their own. Bluefin reach nine pounds the first year, 640 pounds the 14th, and mature in three to five years.

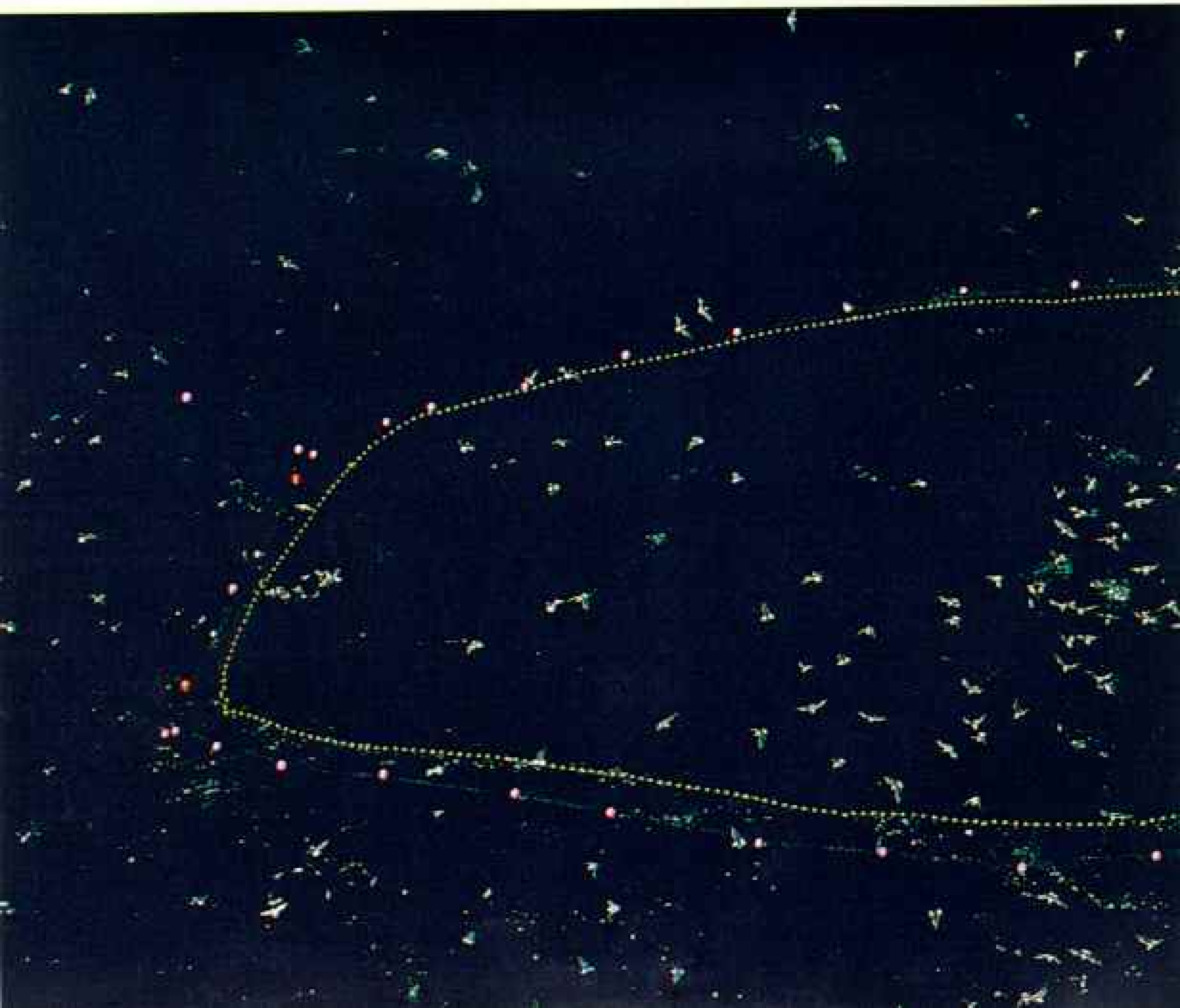
Since 1955, bluefin of all sizes have been tagged in the Atlantic and Mediterranean. The returned tags—more than 3,000—indicate migration patterns. Two small bluefin tagged off Martha's Vineyard, Massachusetts, in 1954 and recaptured in the Bay of Biscay five years later provided the first

proof of transatlantic migrations. There have since been at least 50 recorded.

Seven giant bluefin tagged in the Straits of Florida have been recaptured in Norwegian waters, lean in contrast to the resident giants, presumably from migrating across the relatively barren mid-Atlantic. The crossing takes two to four months; one tuna averaged 80 miles a day, a current-assisted cruising speed of three knots. To date only six small bluefin tagged in the eastern Atlantic have been recaptured in the west. Conclusion: The Atlantic bluefin population consists of separate eastern and western stocks with a small, variable interchange.

The predictability of the bluefin's marathon migrations between spawning and feeding grounds has threatened its survival. Every year the fish must run a gantlet of fisheries: purse-seine and longline fleets, traps, and pole-and-line and sport fishermen.

Today purse seiners account for half the





Free lunch fattens bluefin at Janel Fisheries' tuna ranch in Nova Scotia (above). Herded into impoundment nets (below) from macherel traps, at right, 800-pound fish can gain 200 more pounds in captivity. Slaughtered at their prime, they are rushed to Japan as a high-priced delicacy. Barred from U. S. and Canadian markets because of high mercury content, large bluefin off North America were sport fish until the mid-1970s, when penning and Japanese demand made them profitable.

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Jet-age fin fare, dressed Nova Scotia bluefin arrive at Tokyo's Tsukiji fish market packed with ice (below left). They are chilled to ideal temperatures for freshness during a 15-hour flight halfway around the world. Only five days before, the 1,000-pounders swam in Janel's pens, where they were selected for Japanese buyers as they reached their peak of autumnal fatness—a key selling point. Buyers in Tokyo (left) carefully inspect the flesh before bidding on individual fish (below). Purchase of a single bluefin may involve a \$5,000 investment.

Buyers cater to a range of local preferences in look, taste, and



texture. Eaten as sashimi, or raw fish, the choicest jumbo maguro—big bluefin—costs the restaurant-goer \$25 to \$50 a pound. Toro, the succulent belly meat, is especially in demand as a treat for holidays and special occasions. Other kinds of tuna—and all manner of sea life—are also eaten as sashimi. Japan catches and imports almost half of the two-million-ton world tuna harvest; another 500,000 tons goes to the United States.

Atlantic and Mediterranean bluefin catch. In 1958 the U. S. purse seiner *Silver Mink* demonstrated that the use of newly developed nylon purse seines in combination with a hydraulic device to haul in the net made catching bluefin off New England commercially feasible. From Cape Cod Bay the fishery expanded southward within a hundred-mile coastal belt to Cape Charles, Virginia. Canadian vessels also began to seine there. When fishing was poor for tropical tuna in the eastern Pacific or eastern Atlantic, superseiners arrived from Puerto Rico as well as the California clipper fleet (formerly pole-and-line vessels), swelling the new fishery to 18 purse seiners by 1963.

At St. Andrews, New Brunswick, Capt. Matt Giacalone showed me around the 250-foot *Zapata Pathfinder*. The streamlined superseiner reminded me of a Greek shipping magnate's yacht. Sophisticated in equipment—with a satellite navigation system and a helicopter to spot tuna—such a vessel would cost 10 to 15 million dollars today. The carpet pile thickened as we moved from the bridge, through the navigation room, to the captain's spacious suite with its bar and lounge, king-size bed, and golden bathroom faucets. A 20-man Central American crew also was well accommodated.

Considered the elite of the fishing world, superseiner captains and crews are paid according to their catch. A skipper can earn \$100,000 to \$250,000 a year. One fleet manager told me, "If the captain's earnings drop below my salary, I fire him."

As a seiner approaches the fishing grounds, the mast man in the crow's nest sweeps the water with swivel-mounted binoculars. Crewmen ready the seine skiff atop the stacked purse seine at the stern.

Some captains claim to have a sixth sense for the presence of tuna; tangible signs are concentrations of birds, whales or porpoises, and floating logs and garbage, which attract fish on which tuna prey.

A school is sighted! The helicopter lifts off. From it the captain will direct the setting of the seine. Over the side goes the seine skiff with the end of the net, and the purse seiner encircles the school at full throttle, 17 knots, paying out all 4,000 feet of cork-floated net, extending down about 330 feet. Explosives resound as men throw

cherry bombs to prevent fish from escaping during encirclement.

The seiner winches in the purse line to close the seine's bottom and trap the fish, then slowly hauls in the net with the overhead power block. Hoisted with dip nets into a hopper and sent by chutes to below-deck tanks, the catch is immersed in brine and frozen. The *Zapata Pathfinder's* 20 wells can refrigerate 1,700 tons of tuna—one and a half times the total annual United States and Canadian bluefin catch before the *Silver Mink's* demonstration cruise.

Fleet capacity now far exceeds the potential catch, and the fishery has fallen into erratic decline. The older fish have been depleted; one- to three-year-old bluefin predominate in contrast to the three- to six-year-olds prior to 1965.

Big Market for Young Tuna

Actually, the canneries prefer immature bluefin. Like other long-lived species, bluefin accumulate mercury with age; hence the larger fish generally exceed U. S. and Canadian legal maximums and must be mixed with younger tuna to reduce the mercury concentration, or be used as animal food. But the scarcity of medium bluefin does not augur well for the health of the fish population or the economic viability of the fishery.

Similarly, in the Mediterranean, purse seiners caught large numbers of small bluefin less than a year old (60,000 fish in one set off Sicily) prior to 1976. The Italian fleet, centered in the Tyrrhenian and Adriatic Seas, expanded rapidly in the 1970s, and together with the French fleet captured a peak of 13,000 tons of bluefin in 1976. Now their catch is little more than half that figure.

Asian longline fleets are another threat to the fragile bluefin population. In one year, 1962, Japanese fishermen set and reset 12 million nautical miles of longline—enough to girdle the globe more than 500 times. Their 400 million baited hooks brought in 400,000 tons of tuna—almost half the world catch. In 1980 the Japanese longline fleet in the Atlantic consisted of 300 vessels; they captured 4,000 tons of bluefin, 24 percent of that year's Atlantic catch.

The longline, developed by the Japanese some 250 years ago, exploits the larger tuna at depths to 500 feet during their oceanic

migrations. Fish find the bait rather than men finding the fish, as with purse seining.

Starting at dawn, men bait the hooks on drop lines and pay out the surface-floated and flagged longline from the stern while the boat moves at seven or eight knots. On completing the set—as much as 80 miles of line—they begin to haul in at midday, gaffing the fish and gutting the large ones before freezing. The crew will finish around midnight—an exhausting day's work, particularly as longliners may stay at sea three months at a time. Unlike superseiners, quarters are cramped and Spartan.

Tuna's Taste Long Treasured

Trap, or set net, fisheries go back 3,000 years to the Phoenicians, who trapped bluefin near the Strait of Gibraltar. The word *almadraba*, Moorish for "trap," came into Spain with the eighth century A.D. conquest. Barrels of salted bluefin from traps granted by the crown fed the family fortune of the Duke of Medina-Sidonia, who led the Spanish Armada. Coins bore tuna images, as still does the Cádiz town hall facade.

Nearby, the famous *almadraba* of Barbate consists of net walls anchored to the seafloor in a hundred feet of water two miles offshore. A pair of leaders, almost two miles long, guides migrating bluefin to four chambers. In the final death chamber, men raise the net floor, aptly termed "red matador," twice a day. Crews maintain and operate the trap with ten types of vessels, installing it in April and dismantling it in October, a tremendous task.

That most productive trap in the Atlantic-Mediterranean system averaged 18,000 bluefin a year from 1929-1962, and peaked with 43,500 in 1949. But it has since fallen below 2,000. Similarly, the Italian *tonnare*, a hundred strong at the turn of the century, the best of which could catch 10,000 bluefin a season, were reduced to 30 active *tonnare* by 1950 with a total catch of only 20,000 fish.

Ravenous torpedoes suck mackerel into bucket-size mouths. Prey stand little chance against the streamlined predator, among the largest and fastest of fish—a ceaseless swimmer that can sprint as fast as 55 miles an hour.





PAINTING BY STANLEY MELTZOFF



Last year the remaining five caught fewer than 500 giants.

Publicity, however, has focused on the sport fishery's decline. Take Nova Scotia, where bluefin, the local "horse mackerel," were first caught with a dory cod line about 1870. Teams from 19 nations—a who's who of international sport fishermen—once competed in the annual International Tuna Cup Match, inaugurated in 1937. Then the bluefin departed. Only one was caught in 1975, none the following year. The match has not been held since.

Newfoundland's rod-and-reel fishery, launched in 1956, peaked in 1966 with 388 giants. I first became involved with research on these magnificent beasts during that record season in Conception Bay. Newfoundland's 1981 catch: three bluefin.

Today, North Lake, Prince Edward Island, operating some 50 boats during August and September, proclaims itself Tuna

Capital of the World. From 578 giants in 1974 it dropped to a mere 55 fish last year.

Since the fleets that harvest the highly migratory tuna operate worldwide, conservation must be international. Concern over their decline led to the founding in 1966 of the International Commission for the Conservation of Atlantic Tunas (ICCAT).

The overfished bluefin had sent many warning signals. Among them were reduced catches of all size groups despite increased fishing, more recaptures of tagged bluefin, and a scarcity of new recruits to the medium and giant ranges.

In spite of ICCAT's regulations, recent data reveal a continuing decline: a 63 percent drop-off in the Atlantic bluefin catch from 45,000 tons in 1964 to 16,500 tons in 1980. Last February ICCAT nations agreed to halt bluefin fishing in the western Atlantic for two years, except for a limited annual catch for scientific purposes—to monitor



The big get bigger: Thousand-pounders (left) were proportionately fewer in the past. Overfishing has devastated all age groups, particularly middle-range bluefin—tomorrow's giants and today's most crucial breeding stock. Old-timers of 30 years, weighing 1,500 pounds, keep growing and may live to age 35. The head of a harvested tuna (above) feeds other sea creatures in St. Margarets Bay, Nova Scotia.



Superfish meets supermammal (**left**). Along with mako sharks, killer whales are probably the only creatures in the sea that can outswim a giant bluefin. A number of anatomic adaptations contribute to the bluefin's great speed. Muscles that provide acceleration and stamina make up three-quarters of its body weight. This great mass warms super-oxygenated blood pumped by a powerful heart.

Warmth increases muscle efficiency and quickens metabolism and reflexes to levels unequalled in bluefin's cold-blooded prey. Self-regulation of internal temperature greatly widens the fish's range: Atlantic bluefin spawn (**right**) in warm waters of the Gulf of Mexico and the Mediterranean. Yet the largest reach the chill coasts of Newfoundland and northern Norway in search of food.

population strength. The United States' share is 605 tons, Japan's 305, and Canada's 250, for a total of 1,160 tons.

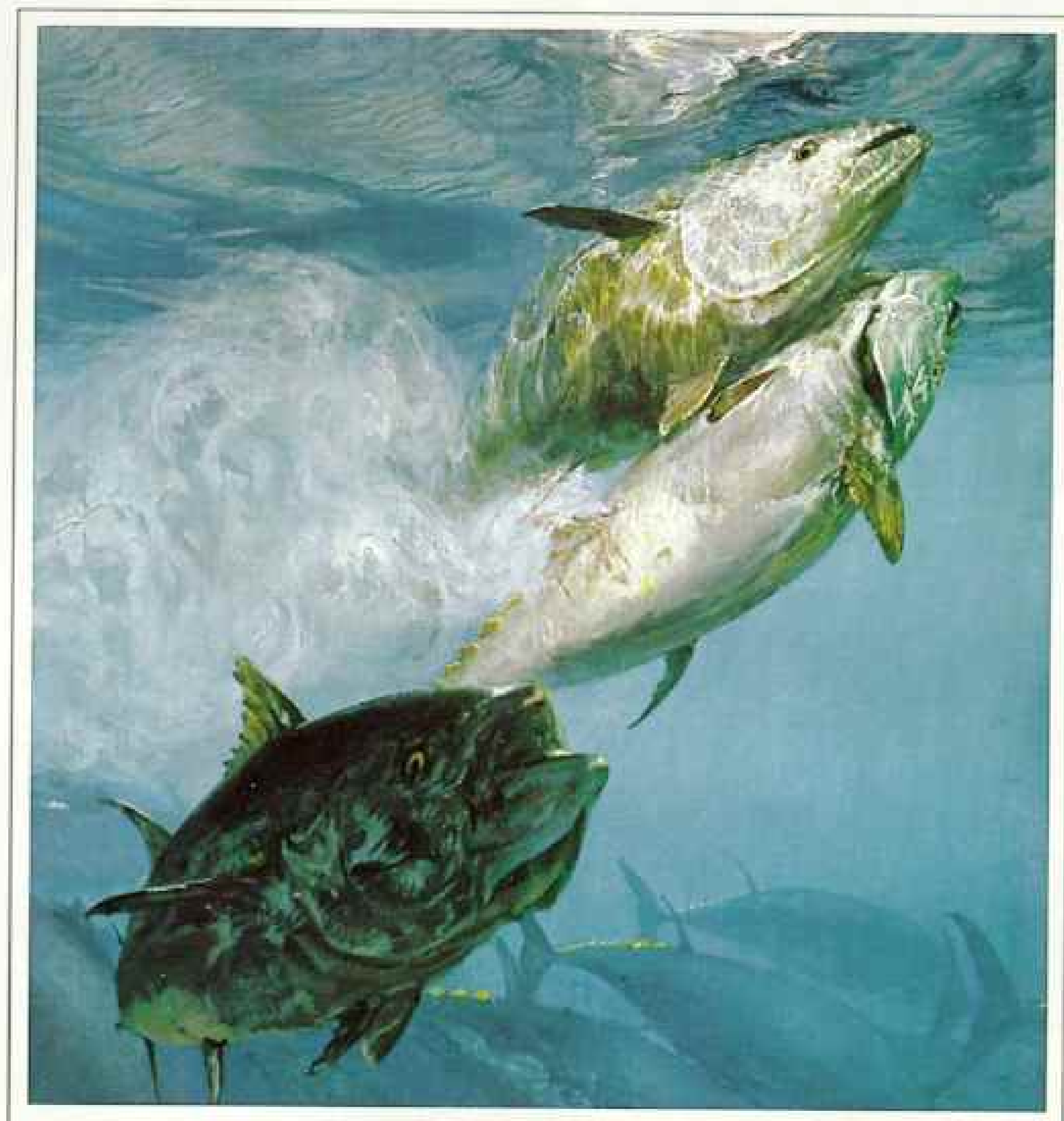
Short Supply, Insatiable Demand

While scientists battle to conserve the bluefin, the market in Japan, where fish account for nearly half the nation's protein intake, has undergone a far-reaching change.

With quality fresh tuna in short supply, catches from home waters declining, and more nations forbidding foreign fleets to fish within 200 miles of their coasts, the Japanese have resorted to purchases and joint ventures abroad. In the fall of 1971 they began to airlift chilled bluefin from Taiwan,

Australia, Norway, the United States, and Canada. In 1972 North America exported 216 giants. In 1978 the number topped 3,000. Despite the wholesale price doubling in the past five years, the demand appears insatiable. Last January 1, a 352-pounder sold at Tokyo's Tsukiji Market for a record wholesale price of \$19.35 a pound.

Until the advent of Japanese interest in jumbo maguro in the 1970s, the North American giants were primarily a challenge to sport fishermen. Mercury regulations kept them off home markets. But the Japanese accepted the mercury risk and began an enterprise so lucrative that it turned sport fisheries commercial and put "tuna jacking"



PAINTING BY STANLEY MELLZOFF

into the vocabulary. Sportsmen pay \$150 a day to charter a tuna boat in Canada, but the catch belongs to the captain. A hooked bluefin is potentially worth \$1,000 to \$2,000 to him, so woe betide the angler who blunders.

A profitable enterprise, but also unpredictable. Bluefin fail to appear in some waters—or refuse the bait. The Japanese buyers are vulnerable too. Since sashimi cannot be stored and released at a rate to ensure maximum wholesale prices, as with frozen or processed products, an unexpected glut can depress the market. A revolutionary answer? Bluefin ranching.

St. Margarets Bay, 15 miles west of Halifax, has supported a mackerel-trap fishery

for years. Second-run mackerel enter the bay in mid-June, followed as predictably by a major predator, the bluefin tuna—to be caught in the mackerel traps.

The Japanese knew of this resource, but those early-run bluefin, without the desired fat that late-run giants accumulate in northern feeding grounds, fetched only a tenth of the price. Then in 1974 Janel Fisheries brought to Nova Scotia waters the feedlot technique familiar to cattlemen. Two huge impoundment nets, suspended by buoys and cork floats and anchored to the seafloor, were placed in 90 feet of water next to one of the mackerel traps.

Fifty bluefin were impounded the first



year, pursed from that trap or towed in a cage from distant ones. In 1976 nine impoundments were constructed and 300 bluefin fattened for market. The following year the operation doubled to 18 impoundments holding 948 giants, employing a hundred people, and shipping three-quarters of a million pounds of dressed tuna to Japan at a freight rate alone of a dollar a pound. In 1978 530 bluefin were fattened in 23 impoundments. The decline in catch had begun. Last year only 116 tuna were trapped in St. Margarets Bay.

Scientists Study Bluefin Behavior

Our team from the St. Andrews Biological Station, eager to study the bluefin under confined but relatively natural conditions, began scientific work at St. Margarets Bay in 1975. The ranch owners subsequently installed an additional impoundment specifically for research and invited scientists to undertake a number of projects.

We tagged bluefin with external ultrasonic transmitters and fed them others concealed in food fish to monitor water, muscle, and stomach temperatures, swimming depth and speed, and tail beat. Picked up by a hydrophone, the signals went via underwater cable to shore-based receiving, decoding, and recording equipment.

We even undertook to weigh a live giant, anesthetized with a harpoon-borne syringe and winched out on a tubular metal stretcher. Knowing the precise weight at the beginning and end of residence at the "Bluefin Motel" would enable us to calculate how efficiently the bluefin processes its food.

Giants gain 100 to 200 pounds during their northern feeding migration, most of it in fat. Producing twice as much energy by weight as protein or carbohydrate, fat is the logical fuel for migratory fish, the equivalent of high-octane gasoline. The bluefin's fuel economy is about twice that of an equivalent-size mammal. Fat also adds to the bluefin's buoyancy and, sandwiched

between layers of connective tissue underlying the skin, acts as a turbulence damper to reduce surface friction.

Bluefin eat most vigorously at dawn, midday, and dusk. Impoundment fish, fed to satiation, can consume 8 to 10 percent of their body weight in food daily. General belief had it that bluefin do not feed at night because they rely on vision rather than smell or hearing when closing on prey. My observations showed, however, that bioluminescent plankton can provide sufficient light for night foraging—the prey fish disturb the plankton, which respond by greater light production, a fatal revelation. Bluefin exhibit no pecking order, select mackerel from different food species offered, and complete digestion in about 20 hours. Perhaps they convey well-fed contentment to other tuna. Once "wild" bluefin were observed trying to get *into* the impoundment.

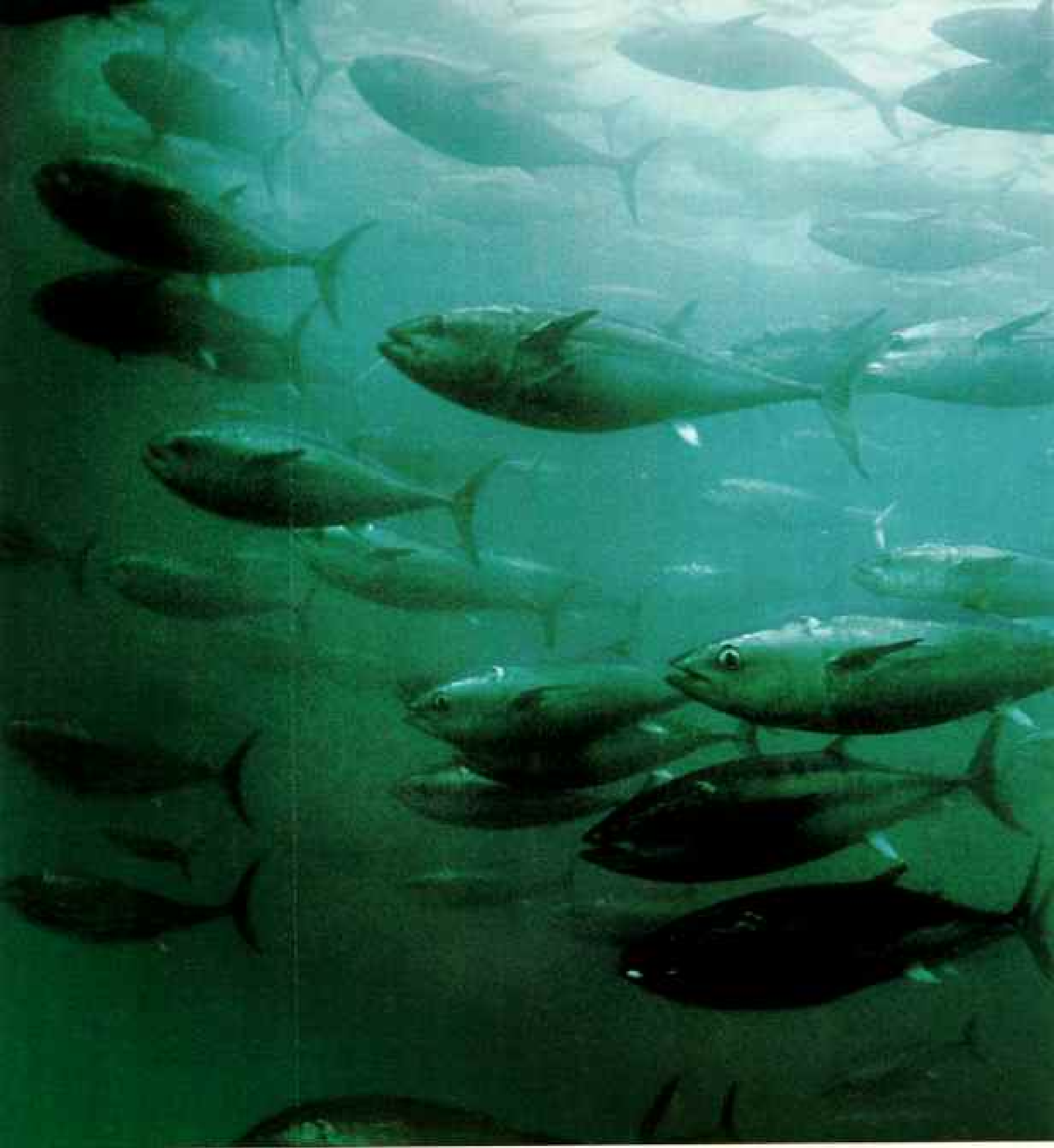
Bluefin tissues were analyzed for mercury and other contaminants, and the sexes were successfully distinguished, in the absence of external characteristics, by hormonal analysis of blood samples.

How did we estimate a fish's age? By microscopic study of growth rings—layers of calcium carbonate laid down at alternating fast (summer) and slow (winter) rates—in vertebrae and in otoliths, small bones in the inner ear.

"A Specially Remarkable Species"

From such studies and underwater observations emerges a physiological and behavioral profile of our superfish: Sighting food, a bluefin breaks formation and accelerates toward it, powered by rapid beats of the large lunate tail fin, with no waves of flexure passing down its steel-hard body as in most fish. The large flexible first dorsal fin and the paired pectoral and pelvic fins quickly retract into slots to reduce drag at high speed. The smallness of its gas bladder increases vertical mobility, with its pectoral fins acting as hydrofoils to compensate

A hemisphere from home, frozen Atlantic bluefin, caught by Norwegians and Spaniards, are unloaded in Japan. With Pacific stocks reduced, Japanese search the world for bluefin. A Japanese longline fleet in spawning grounds of the Gulf of Mexico averaged 9,000 fish per season in recent years. New international regulations may help conserve the diminishing western Atlantic bluefin stock.



for the negative buoyancy of the fish.

Just prior to impact, the retracted fins extend for directional control, the gill covers suddenly open wide, and the prey is sucked in. Ultrasonic telemetry indicates that some water is swallowed with the food rather than going out over the gills, causing a sudden drop in stomach temperature.

The bluefin swims with its mouth partly open, relying on ramjet ventilation, unlike slower fish, which rhythmically force water

through their gills to remove oxygen and release carbon dioxide. Seawater contains only about 2.5 percent as much oxygen as in the air we breathe. To get the oxygen it needs from the volume of water flowing through its mouth, the bluefin has proportionately one of the largest gill areas of any fish.

A unique circulatory system, with an exceptionally muscular heart, large volume of blood, and high concentration of oxygen-carrying hemoglobin, transports the oxygen



under high pressure to the tissues. Unlike a vast majority of fish, which are cold-blooded and dissipate heat (a by-product of metabolism) through the gills, the bluefin conserves and regulates heat, enabling it to feed in northern seas as cold as 40°F and to spawn in tropical waters as warm as 85°F. Bluefin muscle temperature of 88°F has been recorded in water less than 50°F. Paired arteries and veins with opposite directions of flow act as heat exchangers

Hope for the hard-pressed bluefin may rest with captive schools in Kinki University's laboratory pens off the Japanese island of Honshu. Netted as juveniles, bluefin raised in captivity mated here for the first time in 1979. Bluefin farming could surpass yellowtail culture, now producing 150,000 tons a year for Japanese consumers, and also provide young for release in the ocean.



The odyssey ends on a table in Kyoto, where a bluefin banquet costing \$300 includes, from left, lightly boiled chunks; rosettes and slices of sashimi; raw cuts on rice, called

and as a thermal barrier to block heat loss.

The bluefin's elevated body temperature speeds up transmission of nerve impulses, muscle contraction and relaxation (muscle power increases threefold with an 18°F rise), digestion and assimilation, compensating for its remarkably small stomach.

Indeed, as Pliny the Elder noted 20 centuries ago: "We are dealing with . . . a specially remarkable species."

We've felt a sense of urgency about the research program in St. Margarets Bay, a unique but transient opportunity. The bluefin could suddenly shun these waters, and a failing fishery would attract fewer government research funds and fewer scientists.

Also, the Japanese are making great strides in "domesticating" the bluefin. A 1978 conference cosponsored by the Japanese at the University of Languedoc in southern France considered bluefin aquaculture in the Mediterranean and the possibility of supplementing wild stocks of bluefin with hatchery-reared fish, much like our

salmon enhancement schemes. Restocking the oceans, no less!

Spawning fish captured by French and Italian purse seiners and tonnare can be stripped of eggs and milt, as with salmon and trout. Zooplankton from Mediterranean lagoons can provide food for the larvae and juveniles. An assured supply of fertilized eggs to laboratories in interested countries may turn the bluefin's fortunes.

Is the Bluefin's Future in Captivity?

"Once we overcome technical problems of supply of eggs and rearing of larvae, bluefin aquaculture will become more profitable than our long-established yellowtail culture," Dr. Yutaka Hirasawa told me at the Tokyo University of Fisheries. Yellowtail culture currently contributes 150,000 tons to the Japanese market, raised from 75 million fingerlings.

Cultured bluefin convert food into weight more efficiently than the yellowtail and grow five times as fast. They also command



sushi; and tekamaki, bluefin and rice rolled in seaweed. Horseradish, radish, and ginger garnish this repast rich enough for the most ardent lover of jumbo maguro.

a market price even higher than wild fish because of higher fat content.

Boarding the "bullet train" from Tokyo, I raced by fields of rice, tea bushes, and ripening persimmons to Shimizu on the shores of Suruga Bay. There longliners crowded the docks, and the freezer carrier *Choshu Maru No. 21* was unloading 300 tons of frozen bluefin caught by Spain's Barbate trap and the Norwegian purse-seine fleet. At the Far Seas Fisheries Research Laboratory, Dr. Shoji Ueyanagi outlined its two major programs of tuna-aquaculture research, which began in 1970: to collect and artificially fertilize eggs from ripe yellowfin tuna and rear the resulting larvae, and to capture young bluefin and develop techniques to rear them in captivity. A breakthrough came when six research installations overwintered bluefin in net cages.

One of the most successful programs is run by Kinki University at its Kushimoto and Shirahama Laboratories farther southwest on Honshu. With the director, Dr.

Teruo Harada, I inspected five circular floating cages of wire netting 90 feet in diameter, 25 feet deep, anchored offshore in the shelter of an island. Each holds a different age group, 5,000 bluefin in all. Less than half a pound when caught in 1974, and fed twice daily, the bluefin weighed 100 to 150 pounds four years later. Summer growth is particularly rapid, the very small bluefin increasing their weight tenfold in four months.

Despite high mortality during capture and transfer to the cages, and the necessity to develop an alternate food since humans consume the abundant fish species in Japan, I am convinced of the ability of Japanese scientists to domesticate the bluefin. Three years ago the fish added their vote of confidence when Dr. Harada's oldest bluefin, in captivity a record five years, spawned for the first time in captivity.

Juveniles from thousands of its fertilized eggs are now being reared—an exciting scientific challenge.

For the sake of the bluefin, good luck! □



Long thought of as poor and undeveloped, it rides the crest of an economic boom. A welder, above, works on the world's largest hydroelectric project, which has boosted the economy even further. At an isolated military post, right, two portraits and a bust of President Alfredo Stroessner reflect the pervasive authority of Latin America's longest reigning dictator. Calm and stable in one of the world's most volatile areas, it is a paradox called

WHEN THE GENTLE Paraguayan dusk descends on Asunción, a message—red as fire—shines from the roof of a downtown building. *Paz, trabajo y bienestar con Stroessner*, it reminds the capital city's half a million inhabitants—peace, work, and well-being with Stroessner.

That sign puzzles many newly arrived visitors, for it seems to be a classic political slogan—a nightly plea for popular support. And what need, one wonders, has President General Alfredo Stroessner to solicit votes? For 28 years he has ruled supreme in this California-size nation of some three million citizens. Backed by the powerful Colorado Party and the army, his government operates under a “state of siege,” renewed routinely every 90 days. His position seems eminently secure.

Yet every five years, as election time nears, Stroessner campaigns energetically. The state of siege is lifted for a day while Paraguayans vote, as required by law. And when the ballots are counted, Stroessner has won again. And again, and again.

Even his strongest detractors (most of whom have taken refuge in other lands) admit that even without a state of siege, President Stroessner would win an election handily. This despite the fact that, abroad, Paraguay is widely viewed as an oppressive land, a place where people live in fear of secret police whom they call *pyragüés*—“hairy-footed ones”—because their raids are sudden and unheralded.

The hairy-footed ones were busy in the early Stroessner days. They are active even now; a Paraguayan can still face arbitrary arrest and imprisonment without charges. But Stroessner allows opposition parties a limited voice in parliament. And most of Paraguay's citizens live within the framework of the permissible, finding “peace, work, and well-being” under Stroessner preferable to the uncertain alternatives.

To me that was the first of the realities posed by Paraguay, but I found others during two lengthy recent visits. Long one of the poorest nations of the Western Hemisphere, for example, the country now

PARAGUAY

By GORDON YOUNG
NATIONAL GEOGRAPHIC SENIOR STAFF

Photographs by O. LOUIS MAZZATENTA
SENIOR ASSISTANT EDITOR



On the upswing with a new crop of high-rise buildings, Paraguay's capital city of Asunción sheds its image as "a quiet city going a very slow path," in the words of a native. Founded by conquistadores beside the Paraguay River in 1537, Asunción served briefly as the hub of the Spanish Empire in southern South America until eclipsed by Buenos Aires in the late 16th century.

With the nation's newfound prosperity—Paraguay has the fastest growing gross national product in the Western Hemisphere—Asunción plans an extensive urban-renewal project to replace the squatters' shacks sitting on government land along the city's waterfront.



boasts one of the fastest growing per capita incomes in Latin America (\$260 in 1970; \$1,404 in 1980). Traditionally reliant on cotton, cattle, tobacco, and citrus for foreign exchange, it will soon lead the world as an exporter of hydroelectric power.

A decade ago the city of Asunción was focused on its port facilities on the broad and muddy Paraguay River. No longer. The action now has moved inland to the downtown area. Tall office buildings are sprouting there by the dozens, and fast-

charging automobile traffic only grudgingly shares the city streets with antique yellow trolley cars.

By U. S. standards, Asunción lacks the usual urban blights—slums, unemployment, street crime—yet many of those cars and about half the goods sold in the stores come into Paraguay illegally. For smuggling is an integral part of the economy.

With its stable currency and a quarter century of comparative order in a restless part of the world, Asunción has become a



banking center. Often, the banking transactions are conducted in an Indian tongue called Guaraní, rather than in Spanish.

While the number of visitors to Paraguay is on the upswing, they still totaled only 300,000 last year—not many compared to the millions who flocked to nearby Argentina and Brazil. North Americans who do visit the country, mostly businessmen, remark about the friendly people (few are out to rip off tourists) and the national flag (each side has a different emblem). Most visitors stay

close to Asunción. This is not surprising, since only three paved roads lead any distance from the capital.

More than 700 river miles from the sea, Paraguay has neither beaches nor Andean ski slopes. It does have two distinct regions, separated by the broad Paraguay River that splits the country north to south. The east encompasses green highlands spilling from Brazil, broad forests, and lowland farms along the rivers. The western three-fifths of Paraguay is a flat, often arid, inhospitable

expanse where only three of every hundred Paraguayans live: the Chaco Boreal, known by some as the "green hell."

Yet I found spectacular beauty in Paraguay, especially in the thundering cascade of Guairá Falls on the Paraná River, which forms the eastern border (page 246). In a chartered plane I flew over that magnificent cascade, marveling at the sight of a slow-moving river suddenly roaring into life, sending a rainbow-laced cloud of mist into a bright blue sky.

Not much longer will anyone witness the sight; soon the Paraná will back up behind giant Itaipú Dam, and rising waters will drown the spectacular falls.

We flew on to Itaipú, 150 kilometers downriver—one of the mightiest construction projects on earth. From above it was an ugly landscape of red earth and raw gray concrete (page 247). But to most Paraguayans it surely must be beautiful, for it symbolizes an economic future filled with promise:

I toured the project with Luis Hernando Bóbeda, an engineer on the technical control staff. "It's the largest hydro dam in the world," he stated proudly. "After it goes fully on stream in 1988, it will produce 12,600 megawatts, six times as much electricity as Egypt's Aswan High Dam."

In addition to the 18 giant turbines at this site, shared with Brazil, two other dams, in partnership with Argentina, will harness the Paraná farther downstream. "These dams have been a dream for years," Señor Bóbeda said. "It was President Stroessner who got the projects moving."

Though Argentines began buying Paraguayan properties heavily in the 1880s, there was little investment from overseas. "Businessmen just didn't trust a country that changed governments as often as we did," he said. "But Stroessner has brought us more than a quarter of a century of stability. Europeans, North Americans, and Japanese are

(Continued on page 250)

Status symbol for a member of the first family, a mansion patterned after the White House in Washington, D. C., goes up in Asunción (right) for businessman Hugo Alfredo Stroessner Mora, son of the president.

Witnesses to Paraguay's colonial past, angel heads (below right) once adorned the Jesuit mission of Trinidad, founded near the Paraná River in 1706 and now being excavated by archaeologists. At the height of the Jesuit influence, 100,000 Guaraní Indians lived at settlements surrounding 30 missions in the Paraná and Uruguay River Valleys. The Spanish crown, wary of the Jesuits' power, expelled them from the empire in 1767.





LANDLOCKED IN THE HEART of South America, California-size Paraguay has long lived in the shadow of its larger, more powerful neighbors. Following its independence from Spain in 1811, Paraguay fell under the sway of a series of *caudillos*, strong authoritarian rulers, a tradition that continues to this day.

The country simultaneously challenged Uruguay, Argentina, and Brazil in 1865, touching off the War of the Triple Alliance. The five-year conflict ended in defeat and the loss of more than half of Paraguay's population. War broke out with Bolivia in the 1930s in a dispute over the Chaco Boreal region. Although Paraguay won most of the contested territory, it was a Pyrrhic victory. It left Paraguay exhausted, and today only 3 percent of the population lives in the Chaco, nicknamed "green hell" for its inhospitable climate and terrain.

Paraguay ranks as one of the most homogeneous nations in Latin America; 95 percent of the population is of mixed Spanish and Indian descent, and most citizens speak both Spanish and Guaraní, the indigenous Indian language.

AREA: 406,752 sq km (157,048 sq mi).

POPULATION: 3,300,000. **CAPITAL:**

Asunción, pop. 560,000. **RELIGION:**

Roman Catholic (97 percent). **LITERACY:**

81 percent. **LIFE EXPECTANCY:** 63 years.

GEOGRAPHY: East of the Paraguay

River—tropical forests, gently rolling

wooded hills, and fertile grassy plains.

West of the Paraguay River—dense scrub

forests and marshes. **CLIMATE:** Temperate

east of the Paraguay River, semiarid to

the west. **GOVERNMENT:** Constitutional

with a strong executive branch.

ECONOMY: Cotton, soybeans, beef,

wheat, corn, manioc, beans, tobacco,

sugarcane, rice, fruit, vegetable oil, wood

products, cement, refined oil products,

hydroelectric power.



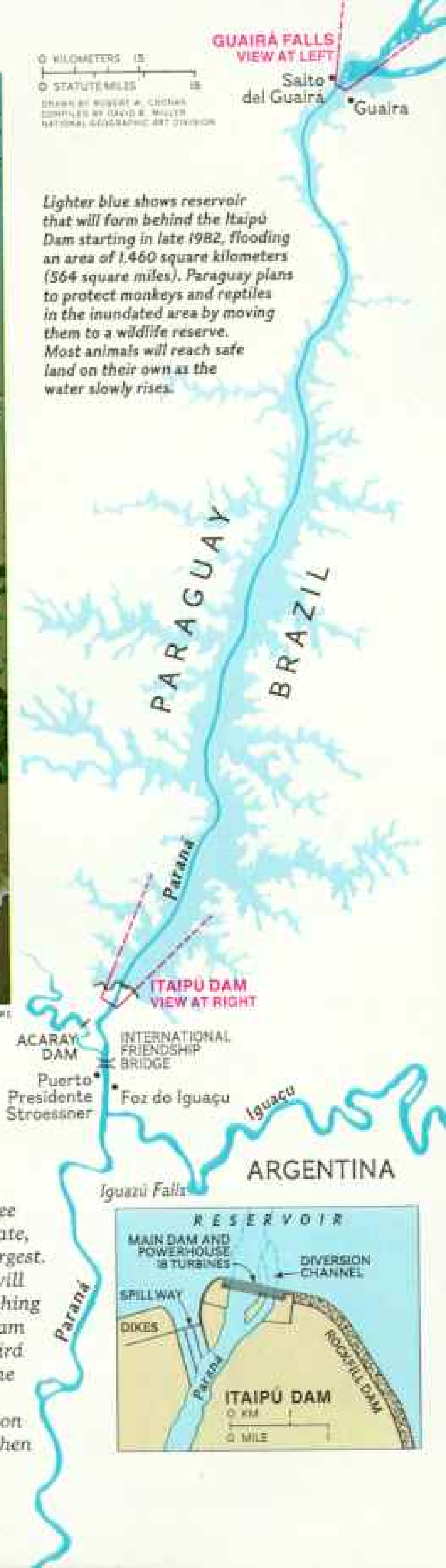
LOREN MCINTYRE

Putting a mighty river to work

AWESOME power of the Paraná River, longest in South America after the Amazon, will be tapped by one of the largest public-works projects in history. A joint venture by Paraguay and Brazil, the Itaipú Hydroelectric Development will generate 12,600 megawatts of electricity,

surpassing Grand Coulee Dam in Washington State, currently the world's largest. Damming the Paraná will create a reservoir stretching a hundred miles upstream where it will flood Guairá Falls (above), by volume the world's largest.

The major construction phase began in 1978, when





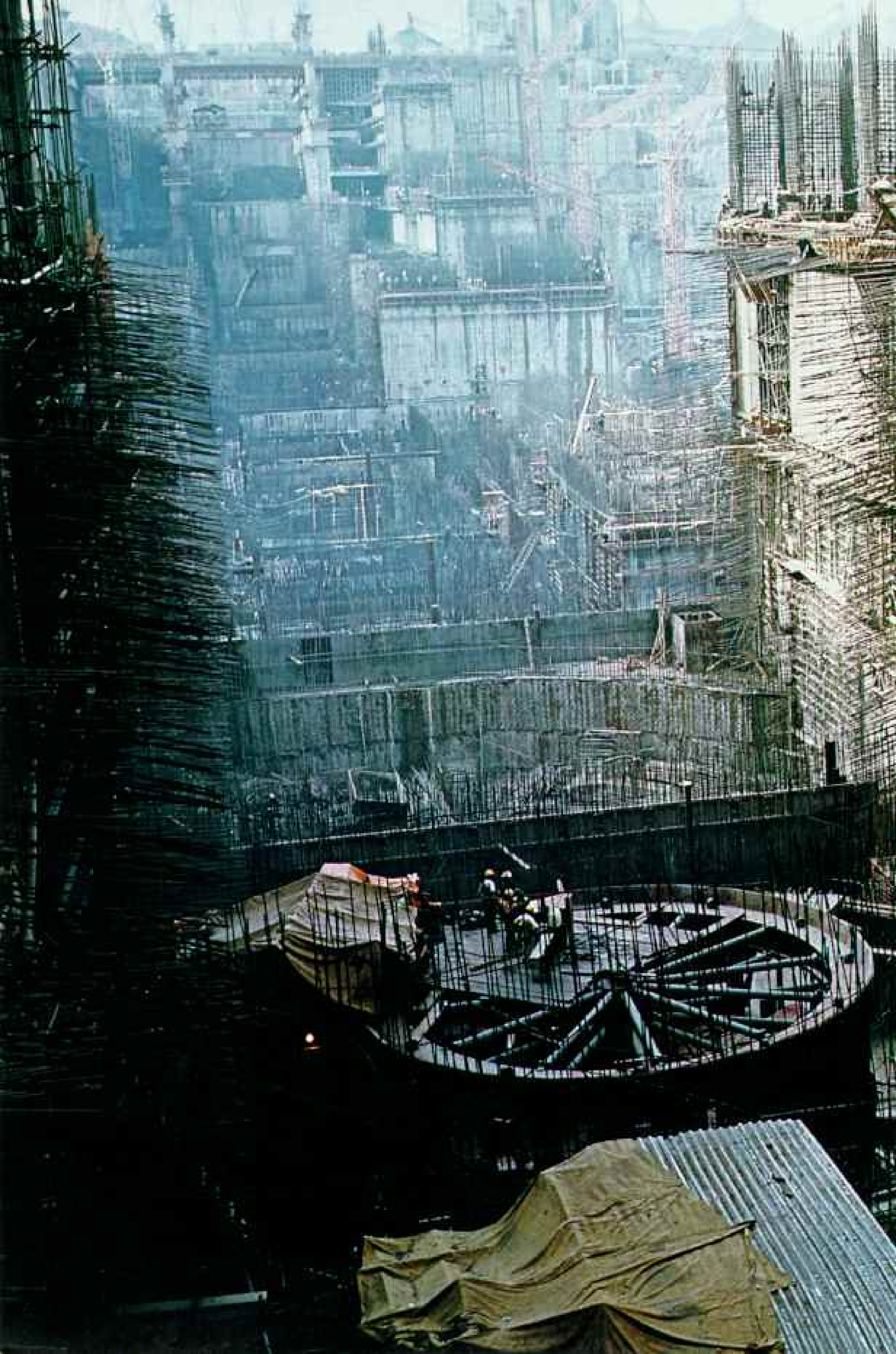
a dynamite blast opened a diversion channel (above). Since then, the Itaipu project has employed 40,000 workers in a round-the-clock effort to complete the dam by 1988.

Argentina joined Paraguay in funding two other Paraná power developments, but Brazil alone arranged Itaipu's financing and will

directly take half the dam's power output. Paraguay plans to use only 10 percent of its share, selling the remainder to Brazil at reduced rates as compensation for absorbing Paraguay's share of the cost.

Three cement plants were built near the site to supply the required 12 million cubic meters of concrete.

Housing for the turbines dwarfs workers as the dam rises toward its 60-story height (following pages). Though the 18 turbine and generator units alone will cost more than a billion dollars, that is but a fraction of the project's total price tag of 12 billion. ▶





(Continued from page 244) interested now, especially with an almost unlimited source of hydroelectricity available."

He waved toward a sea of new houses and barracks that flowed up the hills ahead of our car. "Workers' quarters. Close to 40,000 people have worked on the Paraguayan side of the dam. It wiped out unemployment and turned Puerto Presidente Stroessner, 15 kilometers south of here, into a boomtown. Puerto Stroessner has a country club now, with a golf course—something that even Asunción would not have dreamed of a few years ago."

Though there is some grumbling about the cost of Itaipú and its two sister dams (adding up to some 26 billion dollars), Paraguay is putting up little of the cash to construct them. Brazil and Argentina are paying for equipment and meeting much of the payroll. Later Paraguay will repay them with low-cost power from the new turbines. In the meantime the Paraguayan workmen are pumping welcome cash into the nation's economy.

New Lake Will Displace a City

The second hydro dam, Yacyretá, is getting under way down the Paraná, at Paraguay's southern edge. When the waters rise behind it, part of a city will disappear.

It is Encarnación. The low-lying business district along the river edge will be flooded, but replacement buildings will be constructed in the city's higher section.

In contrast to the modern Argentine town of Posadas just across the river, Encarnación has a slightly seedy look. Nonetheless, visitors are drawn by the impressive ruins of Jesuit centers known as *las reducciones*, which lie not far away.

In the 16th century, when Paraguay was Spanish, Jesuit missionaries came to convert the Guaraní Indians. They convinced the jungle-dwelling Guaraní to build stone cities, where they could be safe from warrior tribes and Brazilian slavers.

Eventually, the Spanish king, fearing that the Jesuits were growing too powerful, expelled them from his empire, and many Indians were assimilated into colonial life.

I roamed the brooding ruins of Trinidad, 20 kilometers from Encarnación. Archaeologists and rebuilders are at work there, for

the government wants to restore the mission settlement as a spectacular reminder of Paraguay's rich history.

Even in its unreconstructed state, Trinidad is a tribute to its Indian builders. The massive walls of homes and churches and the stone carvings of Christian saints have weathered the centuries well. I wondered at the low doorways that caused this modern man of average height to stoop. Perhaps the purpose was to make attackers vulnerable when entering, or maybe the inhabitants were not very tall.

The Guaraní have left a strong imprint on Paraguayan life. There is little evidence of a Castilian Spanish elite; instead, the people take pride in the fact that Guaraní and Spanish blood intermingle in their veins. Paraguayan music, like Paraguayan speech, drifts from one language to the other when emotions rise. Guaraní, it is said, is the language of love and strong feelings.

It may also be the Guaraní heritage that accounts for the curious gentleness and immediate friendliness I found among Paraguayans—for I have seen nothing quite like it elsewhere in Latin America. In all the weeks I spent in their country, I heard not one impatient retort, even from cabdrivers or shopkeepers.

That friendliness has not always extended across the nation's borders—Paraguay has gone to war with each of its neighbors. In 1865, it took on giant Brazil and Argentina, plus Uruguay. Five years later, at war's end, more than half its people were dead and vast territories were lost.

The disastrous War of the Triple Alliance is still remembered in villages not far from the capital: villages with tongue-twisting names such as Yaguarón, Paraguari, Piribebuy, Caacupé. Most were battlegrounds.

In the 1930s, Paraguay fought a more successful war against another neighbor, Bolivia, for control of the harsh Chaco. A Paraguayan artillery officer, son of a Bavarian immigrant and a Paraguayan mother, fought in that war. His name was Alfredo Stroessner, and for the next two decades he played a low-key role in Byzantine political struggles, which finally brought him the presidency in 1954. A shrewd chess player and skillful strategist, he has outmaneuvered political rivals ever since.

Though he is almost 70 years old, the stocky, balding president leads a busy life. His office day begins at five in the morning in the Presidential Palace, modeled after the Louvre in Paris. During my stay he piloted his helicopter to remote villages to dedicate new schools—Paraguay's literacy rate stands at an impressive 81 percent—and was very much in evidence at ceremonies in the capital honoring Paraguay's national heroes. But he turned down all requests for an interview.

"He rarely grants interviews to the foreign press; he distrusts them," a Paraguayan friend murmured to me. When he does, anti-Communism is often the primary topic.

"The theme of human rights," he said in 1978, "is a Trojan horse of international Communism and deserves only one response from us: All rights are respected by my government in accordance with the law and without discrimination."

Strong Words Can Stop the Presses

Actually, there are few surface signs in booming Asunción that an all-powerful ruler runs the nation. The country's newspapers often criticize governmental actions and officials, though direct editorial attacks on the president or his family have abruptly stopped the presses on occasion.

Outsiders trying to do business in Paraguay prosper only when they accept the fact that patronage and payoffs are part of the overhead costs. One of them explained the process. "The first thing to do is to find someone with *entrada*—contacts. Then do all your dealings with him or his people."

When I brought up the matter of payoffs, the businessman shrugged. "I don't know whom we are paying off. We have a local attorney who handles that end of things. Whatever cash we give him goes down in our books as 'legal fees'—and we do have sizable legal fees down here."

For a Paraguayan businessman, though,

Skyscraper headgear towers above a dancer of Asunción's Ballet Folklorico Municipal, who gingerly performs the traditional bottle dance. It is a demanding feat even though the bottles are attached to one another.







Admiring crowds fail to distract two young women from their stroll down Palma Street, Asunción's major shopping artery, on a Saturday morning.

Business is more serious at a shop in Salto del Guairá near the Brazilian border (left). Paraguay's well-stocked stores underline an unofficial side of its economy: smuggling. The biggest cash items—cigarettes from the United States and Scotch whisky from Britain—are sneaked in and later sold at enormous profits to Brazilians and Argentines. Perhaps half of Paraguay's trade goes unreported.

the key to success lies largely in family connections. If he is fortunate enough to have a high official as a relative, business is especially good.

"What is wrong with that?" asked one Paraguayan. "It would be despicable of him to just sit back and do nothing if one of his relatives needed help."

Paraguayans may have their own rules in the game of business, but they seem to play it well, judging from Asunción's many palatial homes and high-priced automobiles that jam the streets.

Cab Ride Includes Economics Lesson

Those vehicles mystified me at first. How could so many afford to drive, when an American compact car cost close to \$20,000 and gasoline more than \$4 a gallon?

The answer came from a taxi driver as he rocketed me through the city on the way to an interview. He was franker than most. "You know, of course, that a certain amount of smuggling goes on here. Well, it goes on at various levels."

He paused, twitching his steering wheel to miss another lane-changing car by centimeters. "Consider that microbus ahead of us. Made in Brazil. The man at the wheel must have been able to buy it in Brazil—more than \$10,000. Our import taxes would double that, so he probably paid the border guard to look the other way when he drove it back. He licensed it in some village—we have no national license registration here—and from then on he had no problems."

He chuckled. "Think of it as our way of fighting the rising cost of living. If a wealthy and important man buys a car, he is much too visible to avoid the tax, so the government benefits. But why should only the rich be able to drive?"

During the journey he stopped at a red light at a major intersection. "Just eight years ago there was not one traffic light in all Asunción," he said. "Now look."

I did. There were ten traffic lights at that intersection. Ten!

But there are few traffic lights outside Asunción. Of the three paved highways radiating from the capital, one leads east to Puerto Stroessner; another angles southeast to Encarnación. The third penetrates bravely into the west, the Chaco, although after

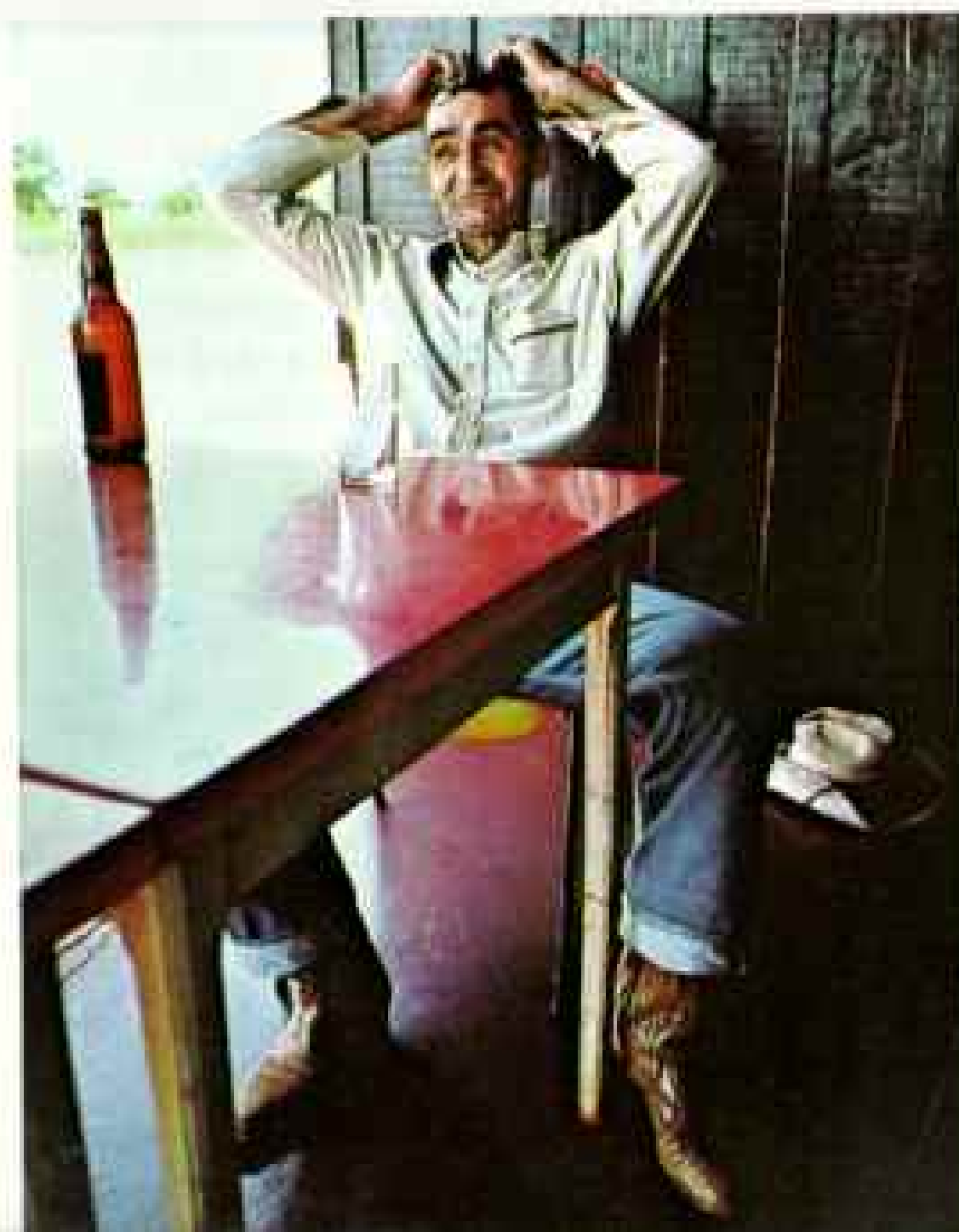
400 asphalted kilometers, it deteriorates into a rough dirt road before reaching a settlement of any importance.

Until the new dams start sending hydro-power to Brazil and Argentina, Paraguay's exports will remain modest, and largely agricultural. In essence, the economy has been self-contained, with smuggling an unofficial source of outside currency. U. S. military and economic aid has been an inconstant source of revenue—withheld by President Nixon to force Paraguay out of the hard-drug trade, and again by President Carter as a lever for human rights. That aid has begun to flow once more under President

Reagan, though at a decreasing rate as the economy prospers.

Nelson de Barros Barreto, executive secretary for technical coordination in the Ministry of Agriculture, spoke of the problems of turning Paraguay into an efficient farming nation. "We're building new roads into the countryside, to enable farm produce to reach our markets and river ports.

"Paraguayan law says that five to ten kilometers on each side of a road can be appropriated by the government for agricultural purposes if the present landowner is not using it productively. In exchange the landowner gets another tract in a more remote



section. New farmers can buy that roadside land, with government help. We will furnish the technical help to get them started, plus schools and medical clinics in their new communities."

A Spokesman for Stroessner

Having studied in the United States (he earned his master's degree in agriculture at Montana State University), Señor de Barros Barreto knows both U. S. and Paraguayan attitudes. Sometimes his frustration shows.

"The feeling in the United States is that President Stroessner is a dictator, holding Paraguayans under strict control," he said.

"Well, nobody could have held Paraguayans for 28 years unless we *wanted* to be held."

There is a tradition of dictatorial rule in Paraguay. The Stroessner era is regarded by some historians as a throwback to the 19th century, when only three men ruled for more than 50 years. Then came political turmoil.

In the 85 years before Stroessner the nation saw 44 rulers come and go. Five of them held office for less than a month, eleven others for less than a year. With Stroessner had come continuity. No longer was one *caudillo's* set of rules replaced overnight with another's.

One day, however, the calm was violently

Voices of dissent speak at their peril under Paraguay's authoritarian regime. The Right Reverend Aníbal Maricevich Fleitas (right), Bishop of Concepción, has long been an advocate of poor peasants called campesinos. Police have kept Bishop Maricevich under surveillance, monitored his sermons, and once arrested a family he stayed with.

Alcibiades Gonzalez Delvalle (left above, at center), reporter for the Asunción newspaper "ABC Color," has been jailed twice, once after criticizing corrupt officials, and again after writing of a man imprisoned for seven years without trial.

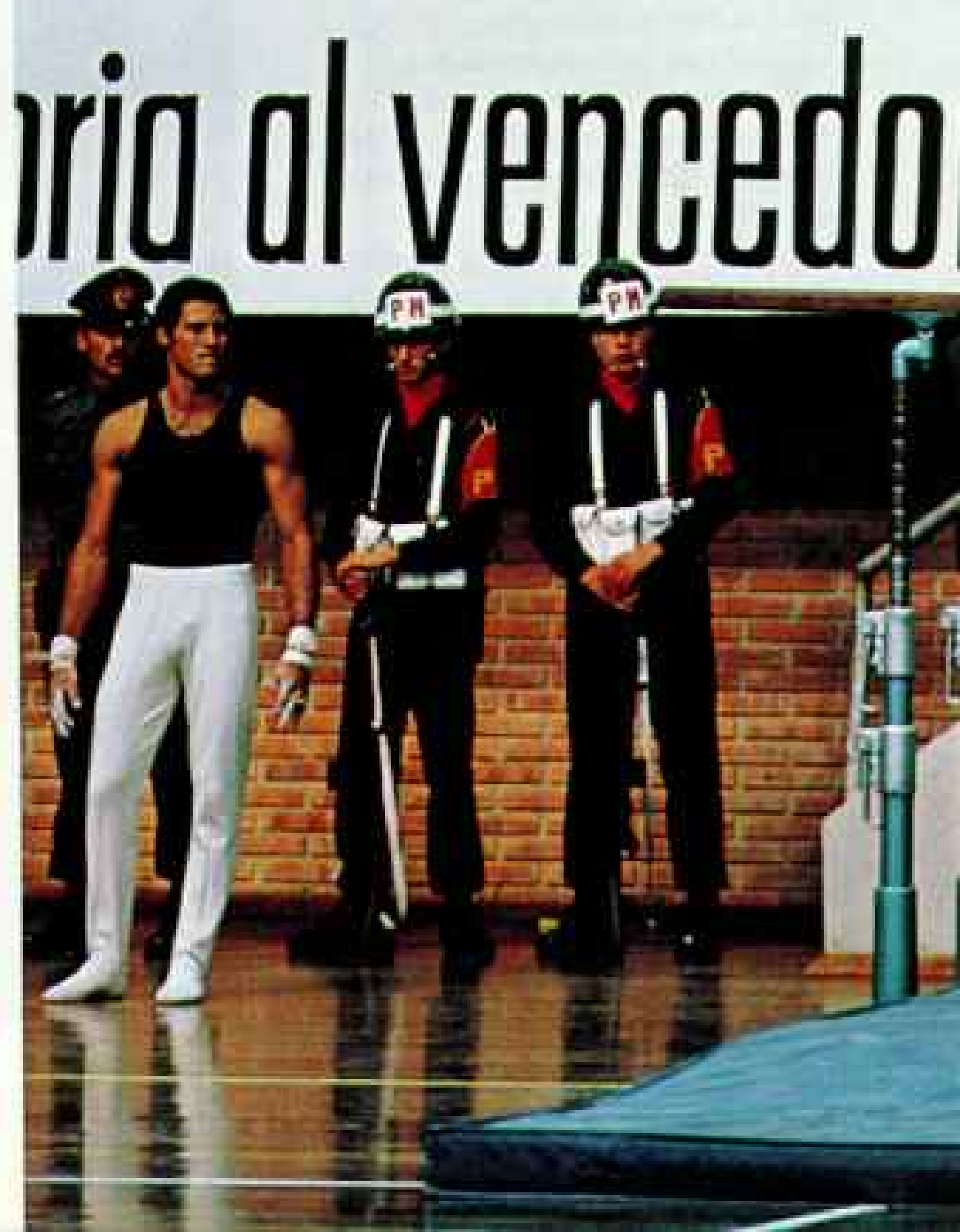
Anthropologist Miguel Chase Sardi (far left) was imprisoned for eight months during a police crackdown on his work to secure the legal rights of Indians. Chase Sardi said torture left him with broken ribs and impaired hearing in one ear. He displays a portrait of former U. S. President Jimmy Carter, whose strong stand on human rights helped effect his release.

For some, Paraguay is a haven. American expatriate "Rattlesnake" Riley Matheson (left), frustrated by government regulations while ranching in Idaho, hauled a house trailer to Paraguay where he set up a 10,000-acre cattle and lumber operation near the northeastern village of Ypé Jhuí.





Invincible ruler for nearly three decades, President Alfredo Stroessner (above, at right) chats with his top political lieutenant, Juan R. Chávez, chief of Paraguay's dominant Colorado Party. General Stroessner, 69, rose to power in 1954 when, as head of the armed forces, he led the overthrow of President Federico Chávez in a bloody coup. A tireless worker, if uninspiring public speaker, Stroessner has been described as an "elected autocrat." When his regime is accused of repression, Stroessner's usual response is that strong action is necessary against those he calls Communists. Though he has no serious political opposition, Stroessner makes frequent public appearances, as if constantly campaigning. With members of his cabinet, he sits front and center at the dedication of a new gymnasium in Asunción, while ranks of white-coated generals look on (right).





interrupted. It was September 17, 1980, the day that Anastasio Somoza, Nicaragua's former president, who had been granted asylum in Paraguay, was assassinated on a street of downtown Asunción.

The city went into shock for days; soldiers and policemen were everywhere. I grew accustomed to having my passport checked and the trunk of my car probed for stowaways. Once, I left the passport behind and paid for it with a very sweaty wait in a village military post; finally my identity was confirmed by phone, and I was released.

I was not the only one. Every foreigner in the country was checked and checked again—Paraguayans themselves were very careful to keep their government-issued identity cards at the ready.

Still, most of the assassins eluded the dragnet. "There are too many ways out of this country," a U. S. resident confided to me one evening at dinner. "Remote landing strips, hidden boat landings, unwatched border points—smugglers use them all the time. The army can put a ring of steel around Paraguay, but it won't do the job."

Slow Voyage Into Yesterday

With the manhunt under way, it became very difficult for an outsider to charter planes, so early one morning I climbed aboard a river steamer for a slow trip north. As the old ship breasted the strong current on the Paraguay River, scrub jungle moved past the port side, and a gentler wilderness passed to starboard. Companion ladders hung from both sides. Frequently, new passengers were rowed out from riverside villages to clamber aboard, carrying their bundles, as the ship moved by.

Some 300 kilometers upriver I stepped ashore for a look at Concepción. Here I found the languid pace of old Paraguay.

Concepción's unpaved streets are more traveled by oxen and horses than by automobiles; no asphalted highway connects it to the capital. It lives apart, a minor shipping port and supply station for nearby haciendas. I could find only one freshly painted building there; not surprisingly, it was headquarters for the Colorado Party.

An even more remote world lies on the opposite bank of the wide river, stretching eternally westward: the Chaco. It is a

vast region that seems to attract interesting and venturesome people. A few North Americans—individualists all—have been lured by the prospect of getting in on the ground floor of an underdeveloped area.

Robert J. Eaton is an example. Once a New Englander, he came to the Chaco half a century ago and now owns Estancia Juan de Zalazar, a thriving spread of 272,000 fenced acres with 20,000 head of cattle (pages 262-3).

The variegated past of "Rattlesnake" Riley Matheson includes stints as rodeo rider, high steelworker, and linebacker with the old Cleveland Rams football team. Later, in Idaho, he wearied of bureaucrats telling him how to cut his timber and raise his cattle, so he hooked a house trailer to his old pickup truck and headed south. Today you'll find Rattlesnake living the life of Riley near the almost inaccessible village of Ypé Jhú (Yah-Pay-Hoo) in eastern Paraguay, far from the city lights of Asunción.

A third gringo tops my list for cooperation—Frank Burkholder. We met after outsiders once more could travel at will. "If you need transportation," Frank volunteered, "my plane and I are ready any time."

We flew, one morning, toward the Mennonite community of Filadelfia, deep in the Chaco. As we neared it, green pastures and plowed fields began appearing in the bush (pages 260-61). Then Filadelfia; with its unpaved streets and one-story buildings, it could have been a Kansas town 50 years ago.

Frank circled low over the town, gunning his engine to attract attention. But he had no luck, for Filadelfia farmers work hard and siesta deeply. We landed at the outlying airport, wondering how to get into town.

Minutes later, a sleek, twin-engined plane landed. "Just what we need! That's Gen. Marcial Samaniego, Minister of Defense," Frank exclaimed. "He'll wake somebody up."

And he did. Soon, a sleek limousine and a battered truck turned up. General Samaniego waved us into the limousine, then rattled off toward town in the old truck.

I stared after him in wonder. "This could only happen in Paraguay," I muttered.

"This can often happen in Paraguay," Frank corrected with a grin. "That's how people are down here."

Not long after, we clustered around a restaurant table while the minister of defense bought cold drinks and offered me his airplane if I needed it for my coverage.

Plain People Find a Haven

Filadelfia, along with its sister communities of Loma Plata and Colonia Neuland, mark one of Paraguay's few early successes in attracting hardworking outsiders. The pacifist Mennonites, offered freedom to live and worship in their own way, began coming in the 1920s from Canada and, later, from the Soviet Union. The efficient farming complex they have established in the harsh environment helps supply Asunción with food and dairy products.

But farmers do not lead an easy or certain

life. "Though we do get enough rain," said Cornelius Walde, chairman of the Mennonite Central Committee, "it is badly distributed through the seasons. So we plant cotton, sorghum, and castor beans—crops that can weather a dry spell. We try to grow peanuts between droughts, since they have a short growing season. Most of our people plant vegetable gardens too and sometimes are lucky enough to harvest them before the plants die of thirst."

In the eastern part of the nation, across the Paraguay River, rain can be a mixed blessing. To keep dirt roads even marginally usable, barrier gates are swung shut when drops begin to fall, lest the roads become churned into impassibility. Drivers cast a speculative eye on the sky before setting out



Portraits for pay: A tourist poses with members of the Macá Indian tribe on Colonia Juan Belaieff Island in the Paraguay River near Asunción. The Indians charge 80 cents a person each

time they pose in a photograph. The money supplements their income from the sale of handcrafted arrows, spears, and belts. They earn enough to hire non-Indians to do their cooking.

Long quest for freedom by members of the Mennonite religious order led to the depths of Paraguay's Chaco region. On land cleared of scrub forest, the Mennonites created a country within a country, where neatly kept farms produce dairy products, corn, soybeans, peanuts,

and cotton (below). Since its founding in Switzerland in 1525, the sect has dispersed throughout Europe and across the Atlantic Ocean in search of sanctuary. The first of several waves of colonists reached Paraguay in 1926. Authorities allowed them to set up self-governing



settlements, to conduct their affairs in German, and agreed to honor the Mennonite prohibition against military service. At the colony's principal town of Filadelfia, students bone up on Spanish (top left).

A more recent immigrant and graduate of a Tokyo agricultural college,

Hirofumi Kubota picks tomatoes with his daughter in a Japanese settlement near Yguazú (below left). Kubota is one of 300 settlers working under a Japanese foreign-aid program to develop healthier and higher yielding fruits and vegetables.





on even a short trip, for the closing gates can trap them on some isolated stretch for days.

I found Paraguayan roads incredibly bad even when dry—carved into moonscapes of ruts and axle-breaking holes by the endless parade of logging trucks and rickety buses.

And the bridges were more horrifying than the roads. Most streams were spanned by mismatched collections of unreliable-looking logs, laid end to end between earth embankments. Mysteriously, even heavy logging trucks crossed without disaster.

Still, I liked to drive out there. The

scenery tasted of the old Paraguay. Farmers still plow with oxen, in countryside curiously resembling New England with palm trees added. Northern and tropical vegetation both thrive.

In the farming communities of easternmost Paraguay the hand of government rules but lightly. Fewer than a fourth of the farmers own their land—most are squatters who simply move onto a bit of forest, clear the land, and plant their crops.

But in recent years Brazilians have been moving across the Paraná River in numbers,



Downed in the dust, a steer succumbs to gauchos (left) during branding time at Estancia Juan de Zalazar, a 272,000-acre ranch in the Chaco.

Wearing chaps called tiradores—leather cut in strips for coolness in the often torrid Chaco—a ranch foreman at Estancia Adela declines an offer of help from his hammer-wielding son while making a lasso (below).



buying relatively cheap Paraguayan land.

Once, seeking water for my car's steaming radiator, I stopped at the home of quiet, graying Emilio Zacata near the village of Golondrina, 100 kilometers from Brazil.

I found him worried. Yes, Brazilians had been in the vicinity, claiming title to the land of some of his neighbors. He could be next.

He swept a forefinger around at his 18 acres of manioc and corn. "Land belongs to the one who works it," he said. "How can foreigners come to claim Paraguayan land? How can Presidente Stroessner permit it?"

I pointed out that his government was ready to help him buy the land, but he found no justice in that.

"Eight years ago, when I built my house here, this was forest. Now it is my life. No one—especially a foreigner—has a right to take it from me."

Learning the Cost of Criticism

For decades, brutality charges have been leveled at the Stroessner regime—by the outside press, by Roman Catholic Church officials within the country, as well as by

Saga of the Toba-Maskoy

CAST ADRIFT from their native land, the Toba-Maskoy Indians became pawns in a resettlement dispute that threatened the tribe's survival. Their roots lie in a huge section of Chaco land bought in the 1800s by the Carlos Casado Company of Argentina. As settlers encroached on their territory, the Indians became increasingly destitute. In 1980 President Stroessner expropriated 25,000 acres of fertile Casado-owned land at Casanillo to be returned to the Toba-Maskoy. The day after the Indians occupied the land, government trucks arrived and removed the entire 350-member community. Officials said that title to the land was in dispute. The convoy took the Indians 96 kilometers west to a site known simply as Kilometer 220. Five members of the Toba-Maskoy tribal council stand solemnly before Kilometer 220's scrap-wood and corrugated-tin buildings (right). The Indians found the area's hard soil virtually untillable; five persons died of malnutrition. Early this year, money donated by Roman Catholic groups enabled the Paraguayan Council of Bishops to buy a section of the tribe's ancestral land, on which the Indians are being resettled.



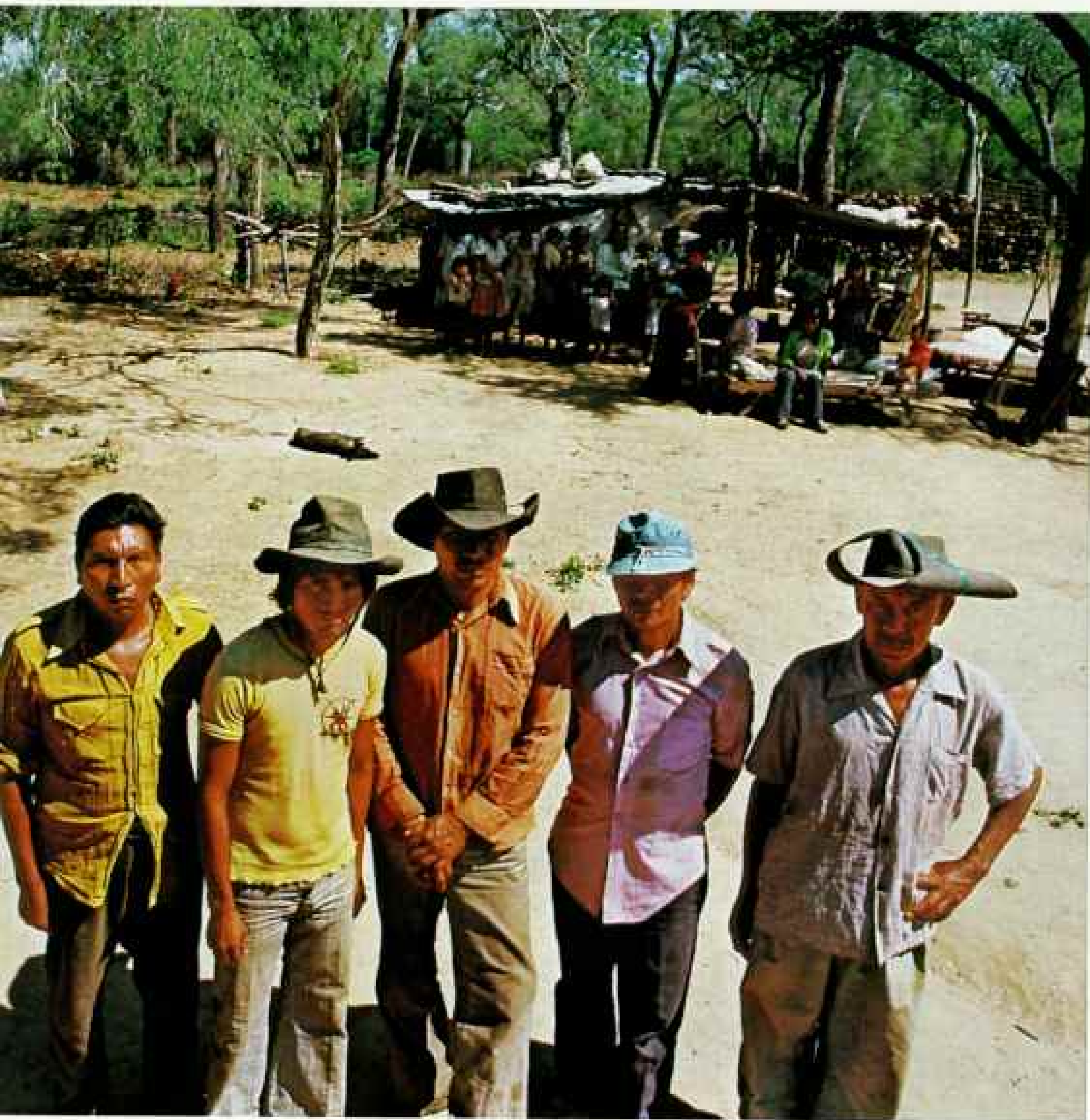
such organizations as Amnesty International. Many Paraguayans did languish as political prisoners during the early years of the regime, and there have been periodic crack-downs, the most recent being a roundup of 30 alleged Peking-trained terrorists. But for most of those seized, the detentions are reportedly brief.

"Political arrests are less necessary now," an informant said. "Most of Stroessner's opposition has fled the country or been exiled. Your State Department has put pressure on the government to release others."

There have also been charges accusing

officials of playing a role in the extermination of two Indian tribes—the Aché of northeastern Paraguay and the Toba-Maskoy of the central Chaco.

I have visited the Aché at the Chopá Pou reservation, and have talked to anthropologists who say a basic problem is that the Indians have no conception of private property. Others say the Indians regard the land as theirs. For whatever reason, if a cow wanders within arrow range, it will be shot and eaten. In retaliation, irate settlers have gone on "Indian hunts." Aché were killed; women and children were taken into homes



of Paraguayans to work virtually as slaves.

Those activities reflect no glory on rural Paraguayans, but neither do they confirm charges that the Indians are being slain with government help.

Later I made my way into the Chaco to check on the Toba-Maskoy—said to be dying of hunger and thirst because officials had moved them unjustly from productive land to an arid stretch of the Chaco known as Dos-Veinte—meaning 220—for its kilometer mark on the Chaco road.

The government obviously was upset by the charges, for Col. Machuca Godoy, head

of Instituto Nacional Indígena, Paraguay's Indian bureau, orchestrated every stop of my visit. He made very sure I examined every garden in the camp of 350 Indians, poked my head into the primitive kitchens to inventory the food, and drank deeply from one of the reservation wells. Though it is true that the Toba-Maskoy land is far from a Garden of Eden, it fell short of the hellish claims that had been made for it.

But life looks brighter, now, for the Toba-Maskoy. Under a new law Indians can own land, and Paraguayan Catholics have raised the cash to buy the tribe better land—the



Their work behind them, truck drivers unwind with a pickup game



of soccer as loads of cotton await processing in Asunción.



Teams of stolid oxen keep an unhurried pace deep in the southeastern interior as campesinos haul cotton to market. The carts, called carretas, are equipped with

same land, in fact, from which they had come. The Indians are now being resettled.

As long as North Americans see Paraguay through Yankee eyes, it will stubbornly refuse to come into focus. After all, we have been reared in a nation where drivers yield the right-of-way, where bribery and smuggling and influence peddling are dark deeds, where a president's future depends on the ballot box.

Many Paraguayans, I am convinced, view things realistically. They live, perforce, by different rules than the ones we know. Few are incautious enough to step outside that framework by too strident criticism of their government—for then they risk

being branded "Communists" and "enemies of the state."

I asked a Paraguayan once to forecast the future. President Stroessner is aging and is rumored to be in poor health. He has not publicly named a successor. What will happen when his regime ends?

"Not gunfire in the streets," my friend predicted. "Political power is divided between the military and the Colorado Party. We have grown used to stability. We see our economic lot improving. We just cannot afford to let a revolution destroy all that."

He smiled wryly at me. "Some say that the president takes too much credit for Paraguay's progress. But the fact remains that



oversize wheels for deeply rutted tracks and flooded areas. In a land with few paved roads, vast areas still lie untouched by Paraguay's rising fortunes.

there *has* been so much progress that never again will a caudillo be able to totally dominate this country. When Stroessner finally goes, perhaps there will be a military-civilian junta in charge while things are sorted out. And then—who knows—will Paraguay at last achieve democracy?”

But others were less sanguine. “After the Somoza killing,” one of them reminded me, “the military were everywhere. I think they will take control if the president dies, and we may return to the old ways again.”

He sighed softly. “It could be hard on us, since your government no longer sends out such strong signals on human rights. The jails could fill up again.”

Not long after, I shared a bench in the Plaza de los Heroes with a stranger. He too talked of his country's progress. Then as he stood up to leave, he turned to add a thought. “Those other things you mentioned; the ugly things. If they happened, they were the price this country paid for what we have.”

I stayed for a while in the gathering darkness, musing about human costs and national attainments.

Then I left too. As I walked across the park toward my hotel, the big neon sign in the distance began to flash its nightly message: Peace, work, and well-being with Stroessner. □

A Decade of Innovation, a Lifetime of Service

By BART McDOWELL

ASSISTANT EDITOR

NO HARDSHIP could dim Melville Bell Grosvenor's love of the sea. He delighted in squalls and rain for the chance to wear sou'westers. As a midshipman aboard the old battleship *Connecticut*, he sailed 18,000 miles through tropical waters, shoveling coal into fireboxes, breaking up clinkers with a slice bar.

"The heat was ferocious," he recalled years later—"16 midshipmen passed out on one watch."

He had learned to pilot a sailboat and box the compass at age 12. And though he altered course to an editorial career, Melville's seamanship persisted. Aboard his yawl *White Mist*, he explored distant lands and seas and wrote articles with a salty tang. His conversation was full of jibs and spinnakers, and he reveled in "a brisk breeze and endless new horizons."

"His love of sailing translated easily to work," notes NATIONAL GEOGRAPHIC Editor Wilbur E. Garrett. "When he took over the GEOGRAPHIC, we were like a racing crew. If someone needed a hand, you grabbed a line and pulled—and no one doubted who was in charge."

He hired me a month after he became Editor and President of the Society, and it seemed natural to call him "Skipper," a bit more personal than the memo-form MBG.

The man's interests shaped his achievements, and he followed those interests from Africa's Olduvai Gorge to lands of the great northern lights. Never a deskbound editor, he tested new films and uncovered story ideas everywhere. His Leica was always at the ready—as at the great Khmer temple of Angkor Wat in 1959 (*right*).

He loved maps and couldn't resist tinkering with them. The flat blue oceans of Society maps were soon awash with soundings, prevailing winds, currents, contours—a

graphic marine encyclopedia. Next came the first *National Geographic Atlas of the World*—his longtime ambition. Some of us predicted an expensive failure, but the Skipper always had the courage of his whims. Five atlas editions have so far sold 1.3 million copies—a publishing feat.

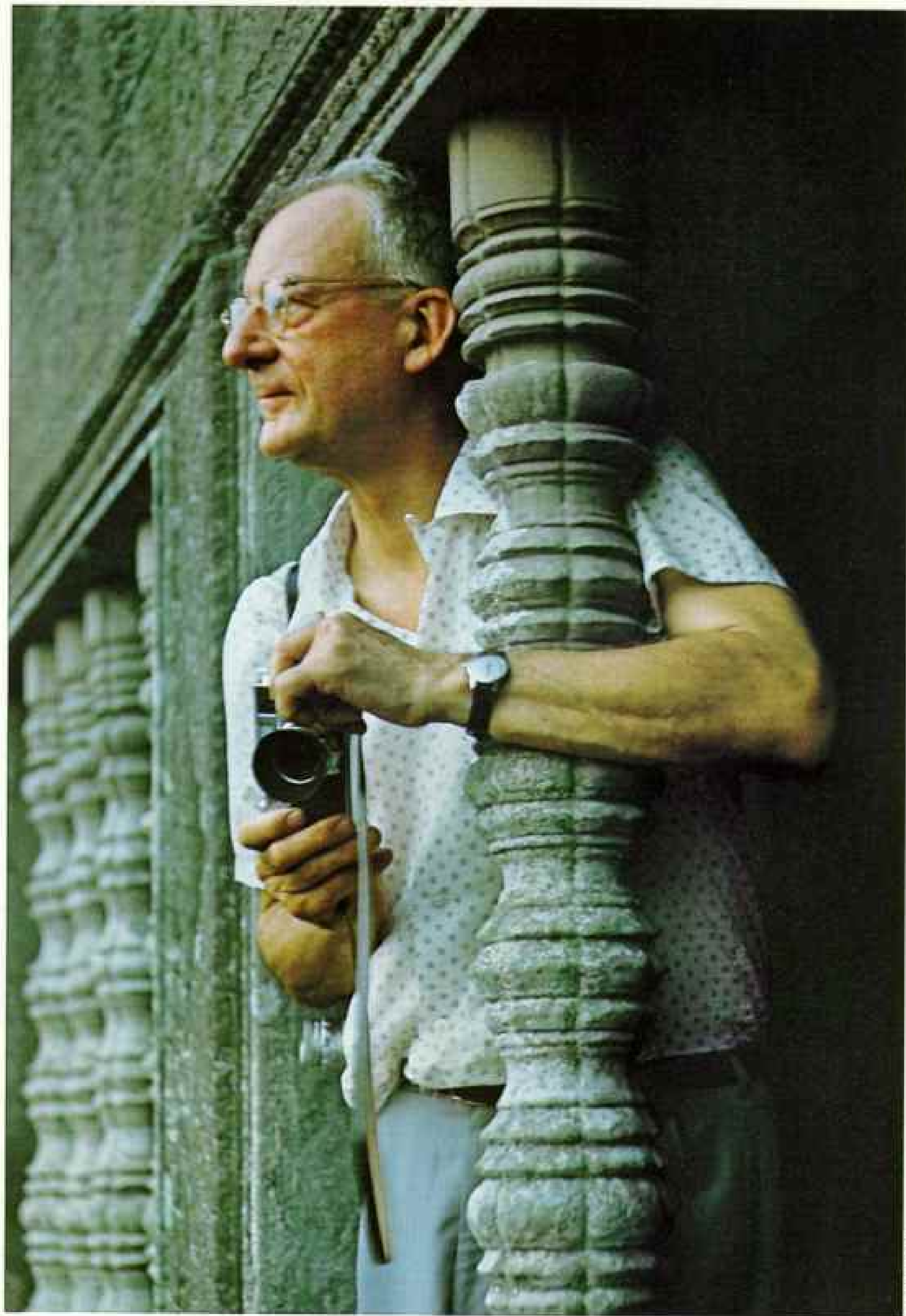
When a staff man was planning a trip to Antarctica, MBG checked distances on his office globe and found the fixed axis clumsy. Getting down on his hands and knees to see the South Pole, he grumbled, "There ought to be a globe you can pick up and turn in your hands." Therewith the Society's axis-free globe was born. Members have responded with half a million orders.

"That fabulous decade," former Editor Frederick G. Vosburgh calls the years 1957-1967, "when the Geographic took off like a rocket with Melville at the helm."

Rocket was right. New presses printed an all-color magazine. Photographs appeared on the yellow-bordered cover. Society films went on television. A new headquarters building rose in the Capital, and at its dedication MBG proudly announced, "It's paid for!" Membership doubled. The 75th anniversary of the National Geographic Society brought triumphant news: A Geographic-supported expedition had reached the summit of the world, Mount Everest. Pushing every achievement was the buoyant, boyishly enthusiastic Melville.

He came by editorial inventiveness naturally. His father was the longtime Society President and Editor Gilbert H. Grosvenor, and his grandfather the inventor Alexander Graham Bell, who brought the boy into his laboratory and tutored him in reading, math, and science.

In a 1914 letter Dr. Bell reported on his grandson's progress, and added, "He has developed his GREAT AMBITION IN LIFE,



MELVILLE BELL GROSVENOR

November 26, 1901 — April 22, 1982



which is to be an Editor like his father. . . . I have encouraged him."

The twig was already bent—enthusiasm, curiosity, kindness—even fiddling with his hair, a habit every colleague came to recognize as a sign of deep concentration.

Though he lacked Dr. Bell's luxuriant white beard, Melville resembled his grandfather in profile. And in questing manner.

"Grampy never let a chance go by to try a new idea," he later wrote of Dr. Bell, "no matter how wild it seemed."

A famous clergyman once defined genius as "childhood refound at will." That quality ran in the family.

As a midshipman at the U. S. Naval Academy at Annapolis, he found interests and friendships lasting a lifetime. When he completed his naval service, he joined the Geographic staff and patiently served a long apprenticeship.

"The Geographic was small and the budget was tight," he recalled. So he used his own savings to travel in Europe and take

Pride of three generations, Melville Bell Grosvenor views the world from the arms of his mother, Elsie May Bell Grosvenor, with his grandfather, Alexander Graham Bell, standing, and great-grandfather, Alexander Melville Bell.

Swinging on the rope of one of his grandfather's huge tetrahedral kites (right), young Melville exemplifies the exuberance that characterized his life. After graduation from the U. S. Naval Academy (below), he joined the staff of the Geographic in 1924, where his gifts of wonder and enthusiasm, optimism and vision endeared him to colleagues and served him well as Editor and President of the Society from 1957 to 1967.



DAVID BACKRACH (1986 LEFT); U. S. NAVAL ACADEMY (LEFT); GILBERT H. GROSVENOR



MELVILLE BELL GROSVENOR
WASHINGTON, D. C.

"Mel" "Gros-Vee-Nor" "Tecumseh"

photographs. "In those days, autochromes. At night I had to crawl into a hot, stuffy closet with all the lights out to reload the film magazines. It took an hour or so every night—and a suitcase full of glass plates."

He wrote photo legends, handled lecture schedules, read proofs, eventually wrote and illustrated articles. By the time he became Editor of the magazine, MBG already had 33 years' experience and an intuitive rapport with his readers.

An obscure, lean Frenchman one day

came into Society headquarters. The Skipper talked with him—and signed him on for lectures and articles. Soon the whole world knew the name and underwater researches of Jacques-Yves Cousteau. At the Skipper's urging, the Society's Committee for Research and Exploration backed the African studies of Louis S. B. Leakey. His articles turned the paleontologist into a world celebrity. MBG built his staff the same way, hiring people—enthusiastically—on his instinct for their talents. He was prescient.

A questing mind led "MBG" to probe for traces of early man in Africa with the late Louis S. B. Leakey (right) and to learn about chimpanzee behavior from Jane Goodall (below), here with then Vice Chairman of the Board of Trustees Thomas W. McKnew. Support of scientific research was a major interest of Dr. Grosvenor for the 58 years he was associated with the Society. During his tenure as President and Editor, research grants rose from \$87,000 to almost \$800,000 annually. They total \$2,500,000 today.



R. ANTHONY STEWART WITH JOHN E. FLETCHER (TOP LEFT), JILBERT M. GROSVENOR (TOP RIGHT)





"It was a challenge, and I was immediately enthusiastic," said the Editor when the National Geographic Society was asked to produce the first guidebook to the White House. Joining him and President and Mrs. John F. Kennedy at the presentation ceremony June 28, 1962 (left) were Lorraine Pearce, White House Curator, Dr. Leonard Carmichael, Secretary of the Smithsonian Institution and later Chairman of the Society's Committee for Research and Exploration, and Dr. Melvin M. Payne, Executive Vice President and Secretary of the Society.

"The White House" and the Society's other public-service books inspired Dr. Grosvenor to inaugurate the Special Publications series, whose subjects range from the universe to Gypsies. He also created the Geographic Book Service to produce larger volumes, the Society's first atlas and globe, and its first television series, winner of eight Emmys.

During his career MBG wrote 26 articles and took countless photographs on world-ranging journeys, following in the wake of Ulysses, exploring Angkor Wat, sailing



THOMAS HEBBIA FLOWER (LEFT); EDWIN STUART GROSVENOR (LOWER RIGHT)

around Sable Island—nemesis of ships—and covering the 1967 coronation of the King of Tonga. At the feast following (above), Melville—much to the amusement of his wife, Anne—ponders how to eat a suckling pig without utensils.

Applause for a decade of unparalleled Society growth and expansion of its educational mission comes to MBG (below, seated) from his staff upon his resignation as President and Editor. It was applause, too, for the man, whose private life was as courageous and adventurous as his professional one. As skipper of the "White Mist," Melville, in blue-gray oilskin jacket, takes to the seas south of Newfoundland. He shared his passion for sailing with his father, Dr. Gilbert H. Grosvenor (right), Editor from 1899 to 1954 and President, 1920-1954.



ANNE PERIE GROSVENOR (TOP); JAMES L. STANFIELD, NATIONAL GEOGRAPHIC PHOTOGRAPHER (ABOVE); EDWIN STUART GROSVENOR

Cartographer Dick Darley remembers "the way MBG hated blank spaces on any map. Antarctica really bugged him—no cities, no roads. He insisted on more map notes, more information."

Once the Skipper wanted more space for a *White Mist* story. "We need at least 55 pages," he told his friend Ted Vosburgh, MBG's successor as Editor.

Ted objected. He knew that Mel, like most photographers, was too enthusiastic about his own pictures. "That's more space than we're giving the whole solar system."

"Yes," said MBG, "but there are no *people* out there." The solar system was moved to another month.

I worked closely with the Skipper on his own stories—though not as a ghostwriter. I helped with research, sometimes with

phrases, but my drafts were merely his writing tablets. And what handwriting it was—a test of eyesight and clairvoyance, sideways, upside down, a ball-pointed tangle like lianas in a rain forest.

He loved italics and exclamation points ("Sable! Sable Island!"). I argued the virtues of understatement and finally held him to 15 exclamation points in one article. But next time around he whoopingly subverted me and used at least 40.

If the Skipper's enthusiasm was irrepressible, his temper was another matter. When a manuscript or pictures fell short of GEOGRAPHIC quality—his term—Mel got mad. But after his initial outburst, he would come around, clap us on the shoulder, and say warmly, "Nothing personal."

Once, when his son Edwin was having



trouble with term papers at Yale, Melville wrote him some good advice: "As you write, remember 'Keep it interesting' and tell it as if you were writing me or Mom. . . . *Don't try to impress with too many big words.* That's ponderous, pedantic, pontifical. . . . Keep it light and breezy. . . . If you have a good outline, the writing should flow along and suddenly become fun."

His longtime chauffeur, Ernest Funches, used to carry stacks of printers' proofs, dummies, layouts, and manuscripts—the weighty luggage of editorial labor—to and from his car. "He was a really working man," Ernest recalls. "And he loved it." He read and scribbled in the car as Ernest drove, also at night, even at breakfast: his idea of fun. Proofs and queries followed the Skipper on holidays and field assignments.

With his wife, Anne, at his side, he was an inveterate traveler, climbing over archaeological digs, fording forest streams, filling his pockets with notes. He was a pioneer in aerial color photography, taking pictures from a dirigible. When President Lyndon Johnson asked him to attend the coronation of the King of Tonga, Mel Grosvenor wore striped trousers, cutaway—and a Leica camera hidden inside his silk hat; he thus made for history the only photograph of the moment of coronation.

He always took time for people. At a party he would "radar his way through a crowd until he found someone who had been somewhere interesting," as Bill Garrett recalls. "The conversation would soon become an interview. He might have a story idea, but he was sure to have a friend."

Once, in Australia, when he and his wife were on their way to Heron Island on the

Great Barrier Reef, their helicopter crashed on takeoff. The dozen passengers were shaken. It was Melville who saw the flammable fuel spilling onto the pavement and shouted to the others, "Petrol! Get out!"

Fellow passengers described how the Skipper helped others to safety, then leaped through flames to escape. His cameras actually melted. But later when I asked him about the experience, he shrugged it off, saying only, "We were lucky."

His retirement was cluttered with his causes. He campaigned to create Redwood National Park, and he headed the National Park System Advisory Board. Universities gave him honorary degrees; nations awarded medals and citations. On his office wall hung photographs inscribed by half a dozen U. S. Presidents.

All his children followed his life's interests: His daughter Helen ("Teeny") has taught sailing since she was 16 and is an expert ocean racer; the late Alexander, a career naval officer, organized the sailing program at Annapolis; Gilbert became Editor, then President of the Society; Edwin edits and publishes *Portfolio* magazine; Sara has been a reporter and is now a graduate student in journalism.

He was, as so many friends remarked, a gentleman of the old school. And his death, on April 22 at age 80, was as gentle as the man himself. He simply went to sleep. His grave, beneath the pink bracts of a dogwood tree, was wet with a soft April rain. Sou'wester weather.

Bill Garrett said it for all of us who knew "this great, lovable man: His impact will be felt as long as there is a GEOGRAPHIC."

We wish our friend a brisk breeze for his far horizon! □



"The Skipper" steered a course that made the National Geographic Society the largest nonprofit educational organization on earth—his bequest to the enrichment of the mind of man.

NATIONAL GEOGRAPHIC SOCIETY

WASHINGTON, D. C.

Organized "for the increase and diffusion of geographic knowledge"

GILBERT HOVEY GROSVENOR

Editor, 1899-1954; President, 1920-1954

Chairman of the Board, 1954-1966



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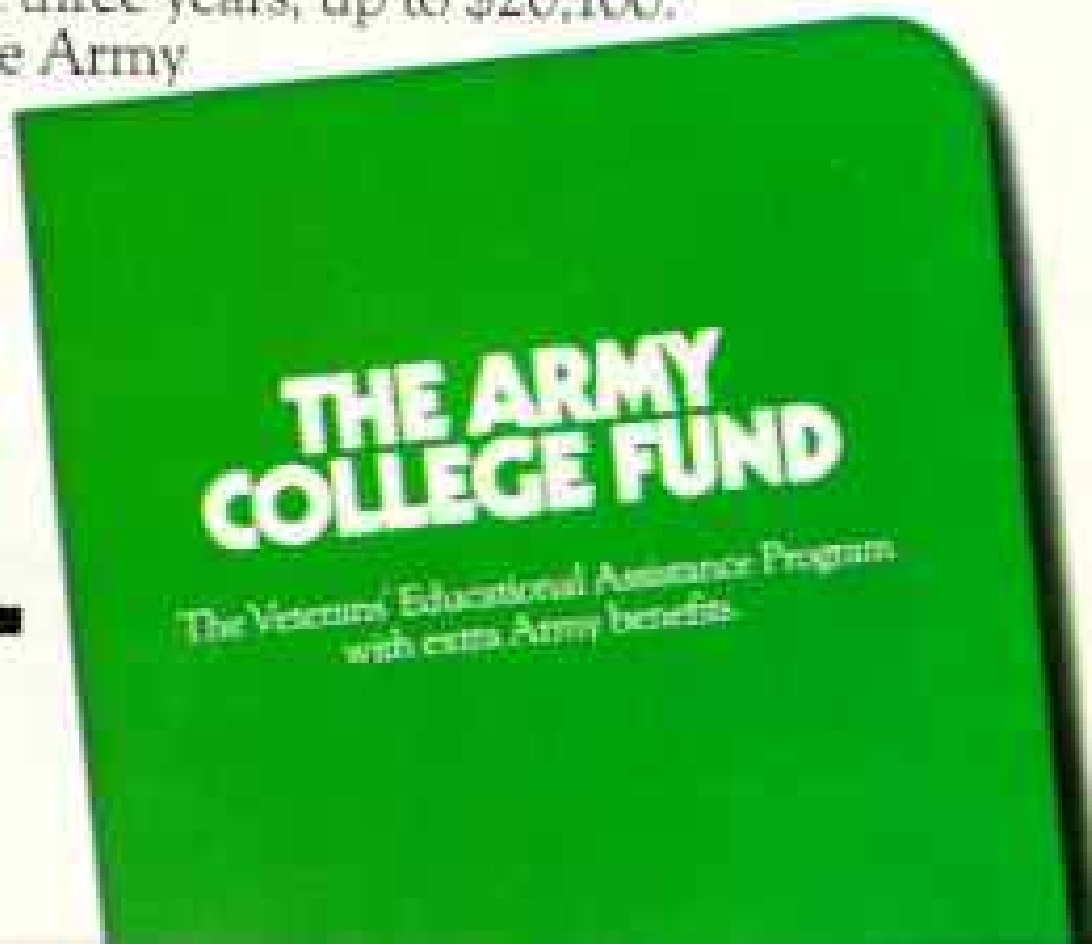
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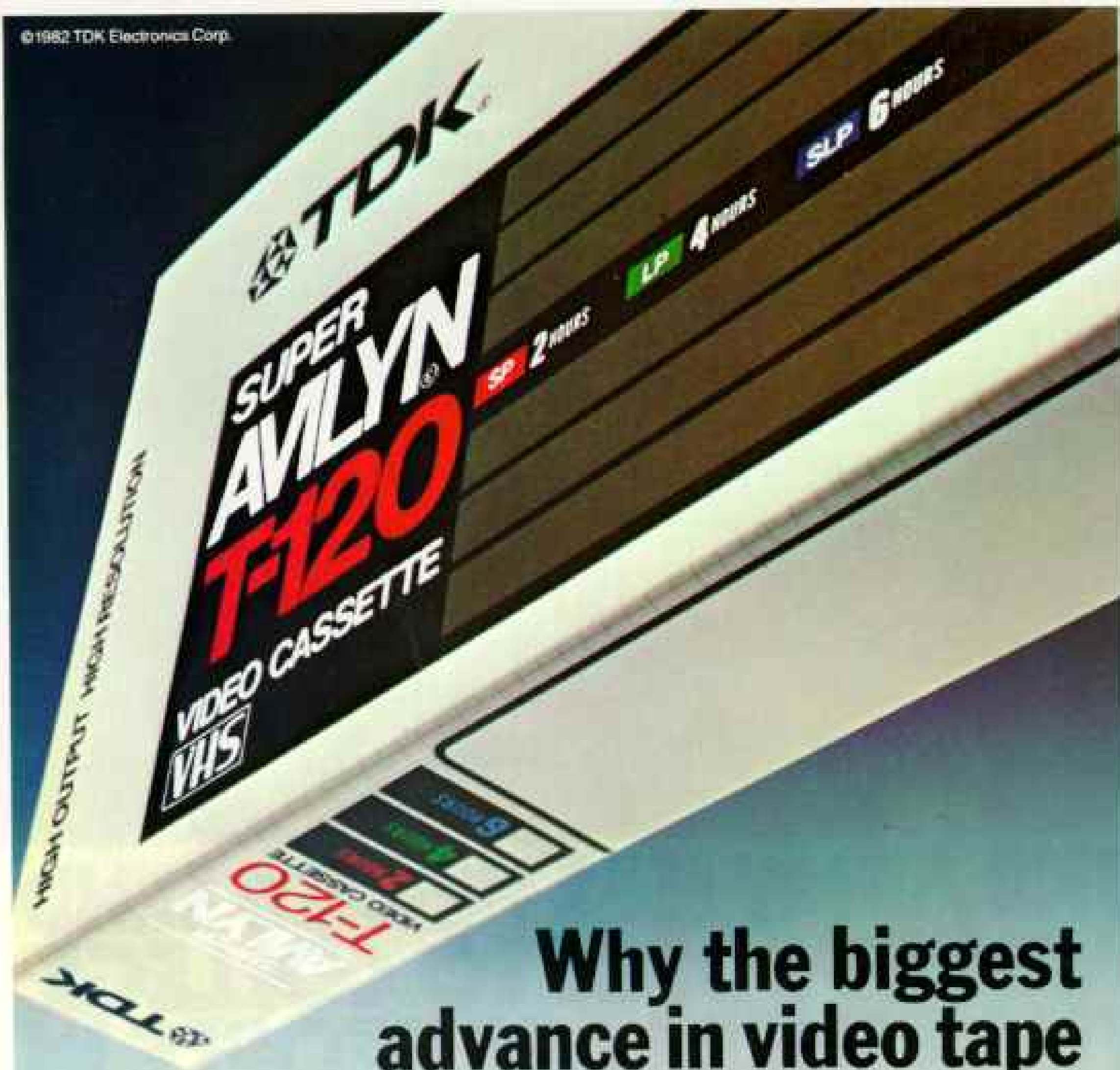
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Guarding our national forests

IN THE HEAT OF BATTLE in the Klamath Mountains of Oregon, the U. S. Forest Service's crack Rogue River Rough Riders fire-fighting crew holds the line against flames (right). Across the West, more than 50 mobile crews stand ready to help save the nation's forests from uncontrolled wild-fire, a role the U. S. Forest Service has played since its founding in 1905.

Protecting and managing timber is but one of the Forest Service's jobs. With 191 million acres under its stewardship, from grasslands to deserts to mountains, the agency oversees mineral production, grazing rights, watershed control, and myriad other uses of the public's land. All are growing in demand. Many are in conflict.

Today the clamor for resources raises anew questions about how best to tap these national treasure-houses: Should ancient forest giants be cut to make room for young stands of fast-growing conifers? On 25 million acres designated as wilderness, can mineral exploration be permitted without opening Pandora's box? Next month the GEOGRAPHIC explores our national forests' past, present, and future. Share an understanding of the choices facing us — nominate a friend for membership.



CHRIS JOHNS

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OCTOBER 1982 THROUGH DECEMBER 1983

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Members Forum

ANGKOR

In 1978 I came close to realizing a dream. Recalling Osbert Sitwell's injunction, "Whoever has the chance to see Angkor and doesn't is mad," I tried to arrange a surreptitious tour of the temple complex. Although I was agonizingly close (110 miles), my ardor was blunted both by reports of a genocidal regime in Kampuchea and by unsavory tour guides. Thanks so much for taking me to Angkor (May 1982), however vicariously, with your excellent story and pictures. I just hope the complex survives long enough for me to make a real visit.

Steve Nash
Flagstaff, Arizona

I was disappointed to read in "The Temples of Angkor: Will They Survive?" that "United States saturation bombing of suspected Viet Cong sanctuaries had killed thousands of Khmer." I respectfully point out that your statement is in error. The sanctuaries were not a suspicion, they were a fact. There is no proof that thousands were killed. If you have a problem with Dr. Kissinger's account in the *White House Years*, I suggest Guenter Lewy's *America in Vietnam*.

Douglas A. Alderson
Don Mills, Ontario

The historical division of the U. S. Department of Defense confirmed that thousands of Khmer were killed by American bombardment. The official figures indicate more than 11,000 killed.

I have just visited your Angkor exhibition at the United Nations. It quite movingly details the urgency of your call for help. My concern is that there is no suggested way of responding for someone like myself. What is the current situation? Has a committee been established or a fund?

Patrick Steede
New York City

Before restoration can begin, the region must be demilitarized. At present we know of no fund for the preservation of Angkor. You might wish to convey your concern to Amadou-Mahtar M'Bow, Director-General of UNESCO, United Nations Building, New York, N.Y. 10017.

KAMPUCHEA

Sisophon, Tonle Sap, Phnom Penh, Battambang—I've heard many stories of each place over the past three years, told by the 150 Khmer refugees who now call Mount Pleasant, Michigan, "home." My thanks for making those places come alive for me in words and pictures (May 1982). I've ordered 20 additional copies for our families. They will be glad to have such heartening photos as those of Phnom Penh coming back to life and of rice once more turning bright green in the fields. Our families will wallpaper their walls and their hearts with your photographs!

Joan Shipers Memering
Mount Pleasant, Michigan

I find it shocking that our country supports Pol Pot when his actions are no less abominable than those of Hitler toward the Jews. It seems to me that the Vietnamese had no choice but to invade Kampuchea, and that they have only improved conditions there.

Madeline Wirt
Kansas City, Missouri

Our government has stated it supports the continuing claim of Democratic Kampuchea to a seat in the United Nations, not because it approves of that regime but because the U. S. does not wish to endorse the Vietnamese invasion of Kampuchea.

THE INCREDIBLE POTATO

Your article (May 1982) was interesting and had pertinent facts. Who would still believe that potatoes are fattening when it takes seven pounds, or about 23 potatoes, to get enough calories for a day? Thank you for a well-researched article on the "humble spud."

Irma B. Vyhmeister
Silver Spring, Maryland

I am pleased to see someone point out the world reliance on potatoes and their nutritional value. As a producer of both Norland and Red Pontiac, I am totally convinced that the names are exactly reversed in the photographs on pages 680-81. The Pontiac is recognizable by its very deep-set eyes, whereas the Norland is recognized by its shallow eyes and distinctive eyebrows.

Keith Kuhl
Winkler, Manitoba

You have a very sharp eye; the labels are indeed reversed. The specialist we consulted agrees that an error was made. The confusion evidently arose because one variety can have different conformations depending on where and in what kind of soil

it is grown. The Kennebec, for instance, tends to be longer the farther south it is grown; in some areas the Russet Burbank has very deep eyes.

I enjoyed immensely "The Incredible Potato." The author states that the nickname "spud" is appropriated from the small spade used to dig it. This differs from what I was told many years ago by a professor at Utah State University. He said that a group was formed to protest the cultivation of the white potato, calling it a food of the lower class. The protesting group called itself the Society for Prevention of Unwholesome Diet, nicknamed SPUD.

Orville D. Carnahan
Murray, Utah

We knew of the Society for Prevention of Unwholesome Diet, but in the opinion of most experts "spud" was already a nickname for the potato when the group was born, and the group made up its title from the nickname.

SEINE

Thank you for "The Civilizing Seine" (April 1982). The picture of ravaged Le Havre brought back memories. In late 1944 my army buddy and I headed for the bombed-out section of the city. We saw complete and utter devastation. A well-dressed, middle-aged gentleman said with a sad, calm voice in heavily accented English, "Look, look. Your bombers did this. Why?" We had no answer except to say how sorry we were. But Le Havre was not all bitterness. I remember very tenderly an elderly, childless couple. They became sort of adoptive parents to my friend and me. When we received orders to move out, and were saying our last good-byes, that grand old lady wept—just as my mother had wept when I left for the war two years earlier.

J. C. Murgiano
Greenwich, Connecticut

KENTUCKY

In "Home to the Heart of Kentucky" (April 1982) Nadine Brewer referred to chiggers and blackberries on page 528. I was born and raised in Kentucky and never heard of any relationship between blackberries and chiggers. You get chiggers from weeds and wild flowers that grow where the blackberries grow.

Fred Miracle
Auburn Heights, Michigan

Chiggers can be found not only on blackberry bushes, but also on golf courses, in orchards, or wherever vegetation abounds.

Members Forum

SIX DEAD SHEEP AND PAIN

I was greatly moved by the photograph of the boy with his dead sheep in your March 1982 article on Peru. It inspired this poem:

Six dead sheep and pain.
My son and I study this scene in NATIONAL
GEOGRAPHIC:
A Peruvian boy weeping, his six
car-struck sheep
Strewn behind him like someone's lost
laundry.
I am careful; with scrutiny I pass from
boy to the sheep,
I strain to count them, and look closer for
blood, or a touch of staging.
One is lost in the fold of the page.
Behind them a field; potatoes?
And a man with a sack. He does not seem
concerned.

Nor is my son concerned with him,
or the sheep.
"What did his daddy do to make him cry?"
(This is the only reason boys cry.)
"Nothing," I say, and explain about the
sheep.
My son studies the way the boy's
stocking cap,
Pulled snug, has pressed the upper loose part
of the ear
To his head. Perhaps someone has just now
run rough-jointed fingers
Through his hair. With these large hands
cupping his face,
They may have told him, "Be strong."
And then the cap, pulled hastily on, has
crimped the ear,
Like what happens when sledding, when a
bush has grabbed your head,
And the hat, pulled hastily on with one
ungloved hand,
Doesn't quite fit.

My son is concerned with this; the tears too,
And the blue wool sweater patched with
yellow.
Six dead sheep and pain. That is your story
for now.
Good night.

Brent Weisman
Reisterstown, Maryland

.....
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On Assignment

FOREIGN TELEPHONE SYSTEMS can be the bane of those on assignment, but for Senior Writer *William S. Ellis* a phone proved to be a lifesaver.

"I was in Lebanon this year, driving south from Beirut, when we stopped to make a call," he said. "Two blocks away—we would have been there if we hadn't stopped—a car bomb exploded, killing seven persons. Of course the phone was out of order, but who cares?"

That was not the only turmoil Ellis has encountered in his 25 assignments for *NATIONAL GEOGRAPHIC*. In 1972 he chronicled the violent birth of Bangladesh after it split off from Pakistan. In 1977 he described black unrest in South Africa, and in 1979 the despair of boat people who fled Southeast Asia after fighting erupted between China and Vietnam. And in a forthcoming issue, he reports on his most recent visit to war-torn Lebanon, which he last wrote of in 1970.

A veteran of both domestic and foreign assignments, Ellis found the distinction sometimes blurred in Florida. Below, he watches as a rifle-toting trainee follows an instructor through an Everglades camp of Alpha 66, a group of Cubans dedicated to the overthrow of Fidel Castro. "Miami has become a bridge between the United States and Latin America," Ellis says. "I heard Spanish spoken there more often than English."

BILL ELLIS BY NATHAN BERN



*With an Asaro Valley
Mudman, PNG
Feb. 1981*

DAVID AUSTEN

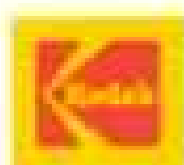
INSTANT SNAPSHOTS helped free-lance photographer *David Austen* make friends as he explored Papua New Guinea on his first *GEOGRAPHIC* assignment. Austen, like many photographers, always carries an instant camera. "Offering portraits is a fine way to introduce yourself," he says, "and provides an opportunity to thank people." When he wanted his picture taken wearing a mud mask, above, he handed the camera to one of his new friends.

Indiana-born Austen spent several years in Europe before moving to Australia eight years ago to cover Asia and the Pacific. Recently on assignment in Indonesia, he hiked with a team of scientists into the crater of an active volcano, 2,168-meter (7,113-foot) Mount Galunggung on the island of Java. Six hours after the party returned from the summit, Galunggung erupted, hurling rocks more than four miles and through the tile roof of their headquarters. Lacking a hard hat, David covered his head with a chair cushion.

Ringling Museums' Medieval Fair, Sarasota, Florida. Shot with an 80-200 mm zoom lens at f/5.6 at 1/25 sec.



*The more you care about color,
the more you need Kodacolor II film.*



America's Storyteller



©Eastman Kodak Company, 1982.



Photographed by David Cavagnaro. *Hawaiian Monk Seal: Genus: Monachus Species: schauinslandi*
Adult weight: Approximately 172kg (male); 27.3kg (female). Adult size: Approximately 2.1m (male);
2.3m (female). Habitat: Only among Leeward Hawaiian Islands, a string of tiny coral and rock islets
extending over 1,000 miles northwest from the main islands. Surviving number: About 500.

Wildlife as Canon sees it: A photographic heritage for all generations.

The Hawaiian monk seal is one of the world's few true living fossils. Unaffected by evolution for 15 million years, these shy creatures now survive only on remote rocky Pacific islets far from civilization. And they are in very real danger of disappearing.

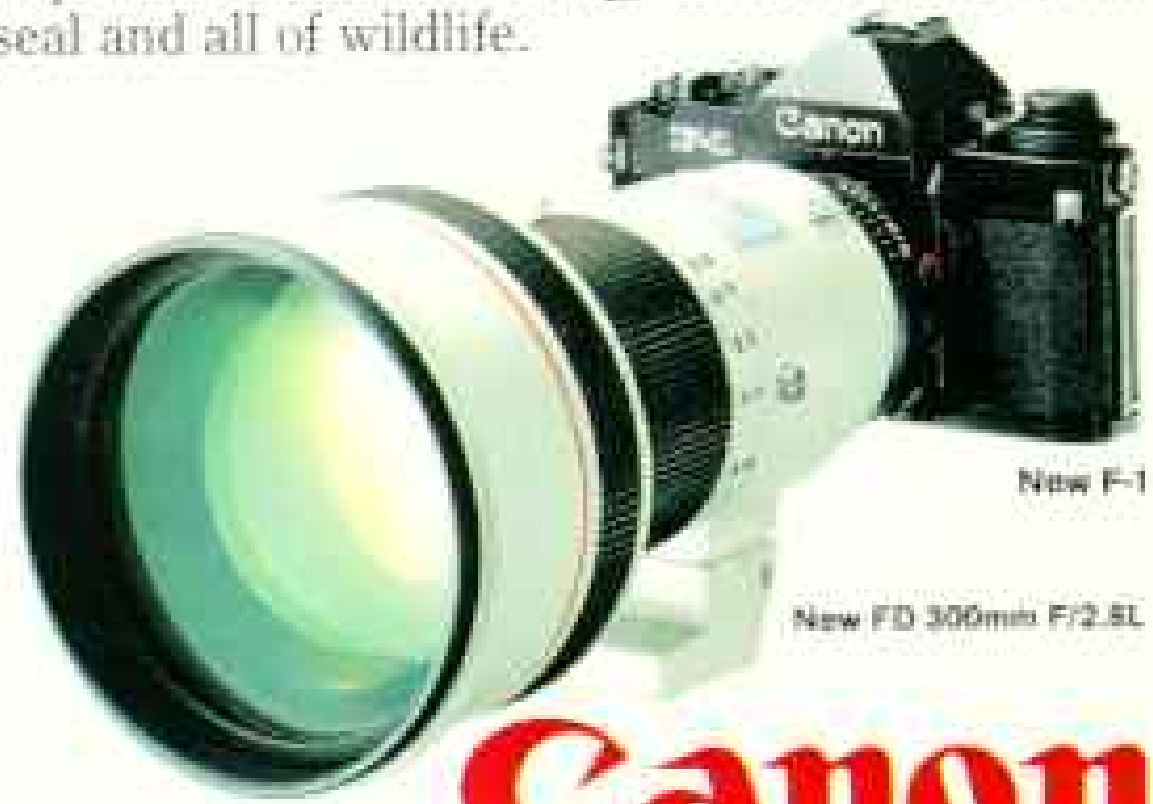
There would be no way to bring the Hawaiian monk seal back if it were to vanish from the face of the earth. Photography offers a way to record and help save this living fossil and the rest of wildlife for posterity.

As a scientific research tool, photography can show how the Hawaiian monk seal lives in its natural habitat, thus giving wildlife conservationists the information they need to save it.

Perhaps more important, photography is an effective way to convey to people the rare beauties of creation. Words alone can never equal the contribution to a deeper understanding of wildlife

evident in this dramatic natural habitat photograph of a Hawaiian monk seal mother and pup.

And understanding is perhaps the single most important factor in saving the Hawaiian monk seal and all of wildlife.

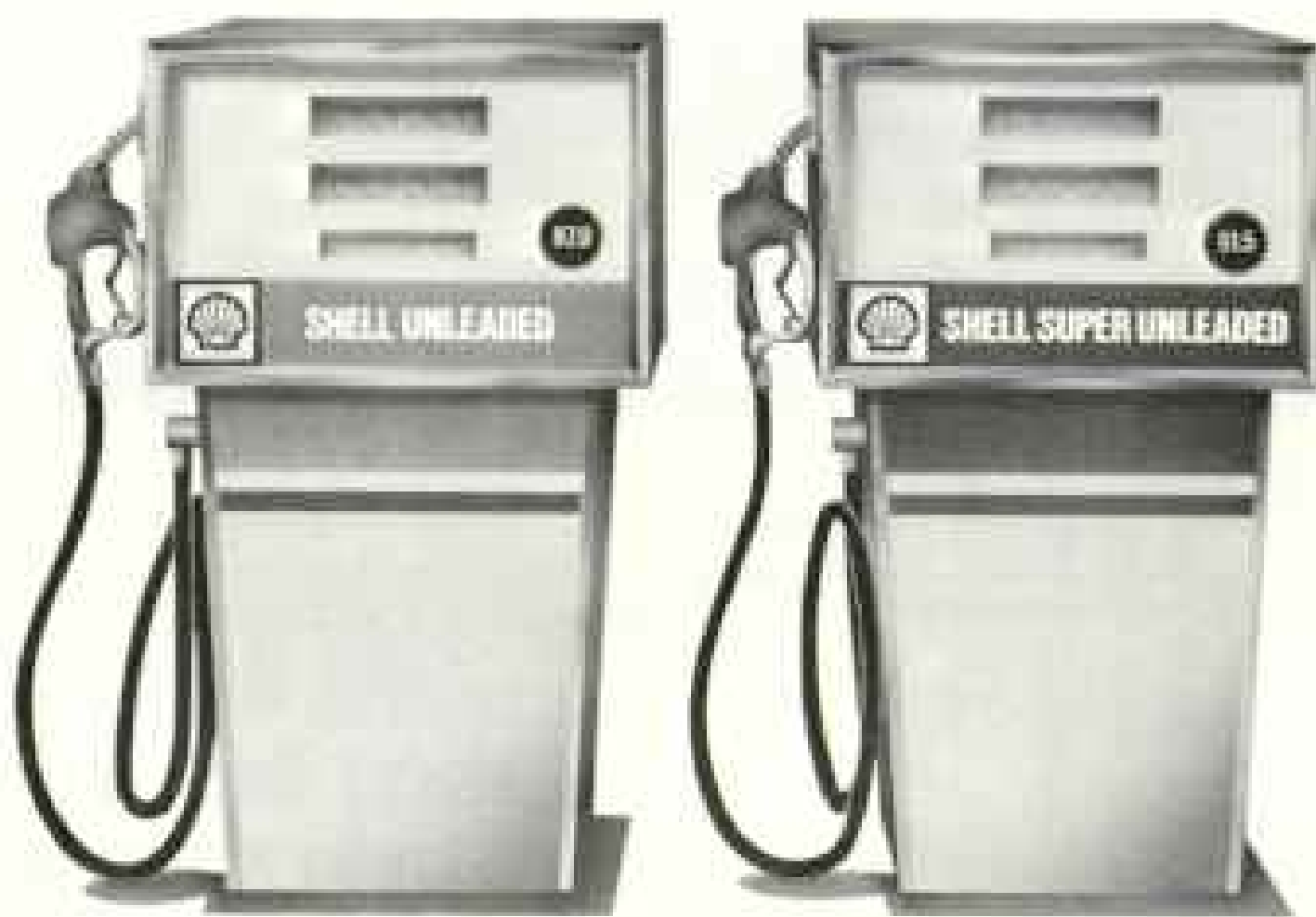


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**Take 5 minutes to
read this. You may
help save a life.**

An estimated 100,000 Americans have Tourette Syndrome. Although not fatal, it can be a living nightmare.

Tourette Syndrome is a physical disorder often mistaken for psychological illness. To be treated, it must be correctly diagnosed.

Here are four essential characteristics of Tourette Syndrome:

- Onset between 2 and 15. Tourette Syndrome always begins between these ages. It is chronic and lifelong.
- Involuntary muscular movements. Fast eye blinking, head jerking, facial grimaces, knee jerks, other body movements.
- Uncontrollable noises. Involuntary grunting, snorting, sniffing, throat clearing, barking, other odd noises. Also involuntary profanity in some patients.
- Symptoms vary over time. Symptoms change, replacing one another, over time. They vary in frequency and severity, and always disappear during sleep.

Undiagnosed and untreated, Tourette Syndrome can have devastating effects on the patient and family. That's why correct diagnosis of Tourette Syndrome is the first and most important step to treating it. If you suspect that anyone in your family, or a friend, may have Tourette Syndrome, or wish to make a tax-deductible contribution, write:

TOURETTE SYNDROME ASSOCIATION
41-02 BELL BOULEVARD, BAYSIDE, NEW YORK 11361



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Their snug-fitting design and double-pane insulating glass reduce energy costs. And help keep out drafts and keep in comfort.

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Dress up your house with Perma-Shield angle-bay or bow windows in the size that suits it best. Your Andersen dealer can help. He's in the Yellow Pages under "Windows."

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Naturally, you value all your possessions. Some may even be irreplaceable. But if your present homeowner's insurance reimburses you for any loss, however inexpensive, it's probably costing you more than it's worth.

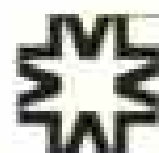
Many homeowners feel insurance should serve one purpose: to protect against unaffordable loss. That's why Metropolitan offers a deductible of 1% of your

dwelling coverage that reduces basic costs 25% a year. In other words, by assuming responsibility for your minor losses, you could end up saving money.

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