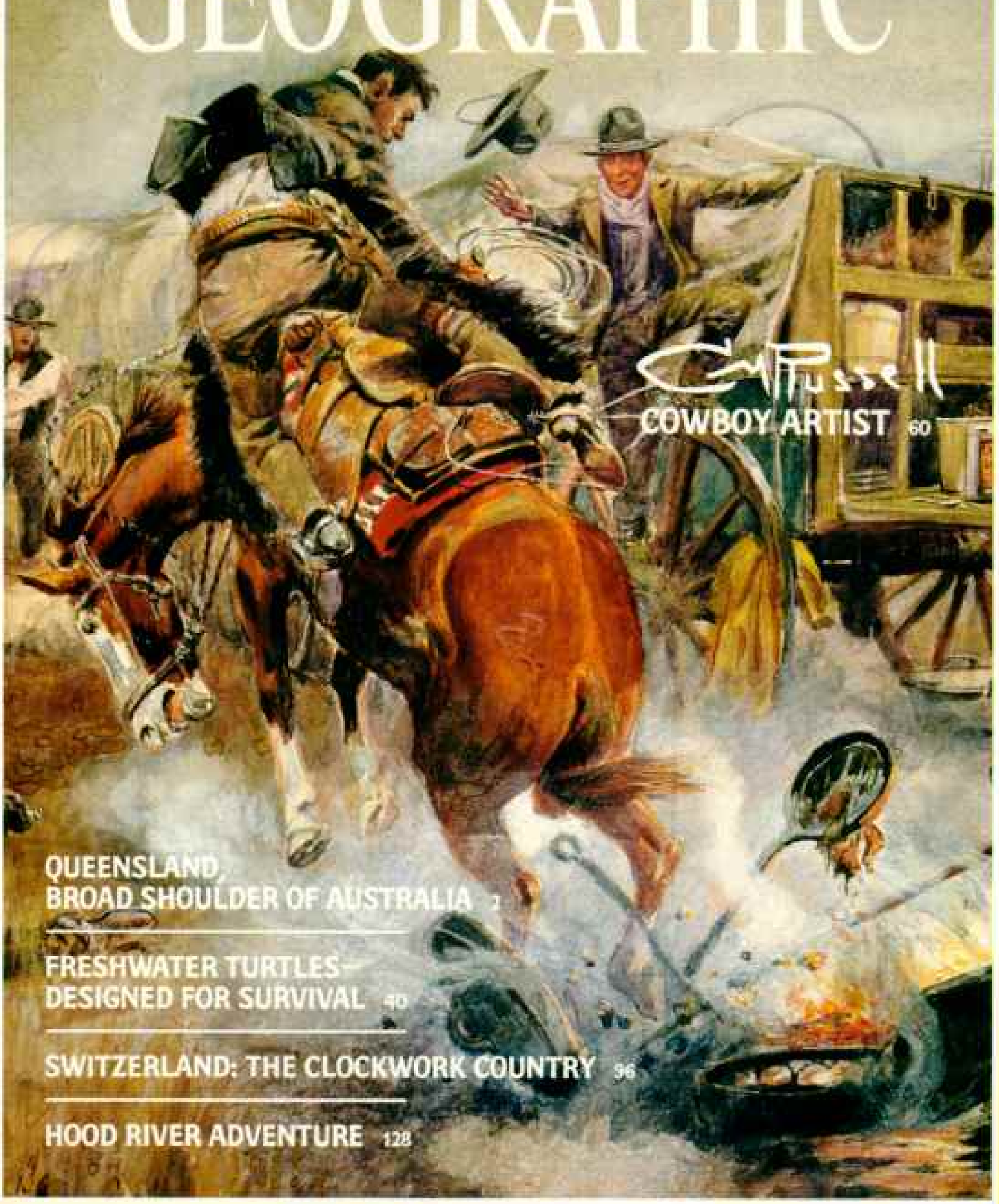
VOL. 169, NO. 1 JANUARY 1986

NATIONAL GEOGRAPHIC



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

FOR ABOUT 1,500,000 of you, this is the first GEOGRAPHIC you have received as new members of the Society. Welcome aboard. For the other 9,000,000 or so opening your January magazine, welcome back. Together we are entering our 98th year as an institution devoted to the "increase and diffusion of geographic knowledge."

That may seem a long time, but everything is relative. A few weeks ago my neighbor, who lives a mile down a rolling gravel drive from our rural mailboxes, came to get his mail on a one-speed bicycle. Retired U. S. Army Maj. Gen. Sidney P. Spalding will be 97 this year. With typical optimism he started a dairy operation six years ago.

We hope you'll agree we're also wheeling along at a good clip as we approach 100. Last year the Society published more magazines, maps, and books than ever before. We started a new cable television series and a new research journal and awarded more dollars in research grants than in any previous year. This year we hope to maintain the pace. We'll have to, because it seems that no matter how fast we move, the world moves just a little faster—like the mechanical rabbit at the dog races.

In November, for example, we presented the most up-to-date report available on the study of early man. At publication time President Reagan presented a Society gold medal to Kenyan Kamoya Kimeu, a valued assistant to anthropologist Richard Leakey in East Africa. When Richard and his co-worker Alan Walker arrived for the White House ceremony, both brought new discoveries that they somewhat gleefully told us had already outdated our article, which was still coming off the presses. We'll bring you those finds as soon as possible.

December led off with an exclusive report by Robert Ballard of Woods Hole Oceanographic Institution on how his team and his French associates found and photographed S.S. *Titanic* deep in the Atlantic. If these partners return for further scientific exploration this year, we'll bring you that report also.

We like to think the optimism and curiosity that led to the founding of the Society 98 years ago this month are just as alive and well as ever, and we hope those same qualities will keep all of you—especially 60-year member and neighbor Spalding—feeling as young as we do, and that we'll all celebrate the Society's centennial together.

Wilbur E. Garrett

EDITOR

NATIONAL GEOGRAPHIC

January 1986

COVER: *An uninvited guest wreaks havoc in "Bronc to Breakfast"—a detail from a Russell watercolor. The Mackay Collection, Montana Historical Society.*

THE NATIONAL GEOGRAPHIC MAGAZINE
IS THE JOURNAL OF
THE NATIONAL GEOGRAPHIC SOCIETY
FOUNDED 1888

BROAD SHOULDER OF AUSTRALIA

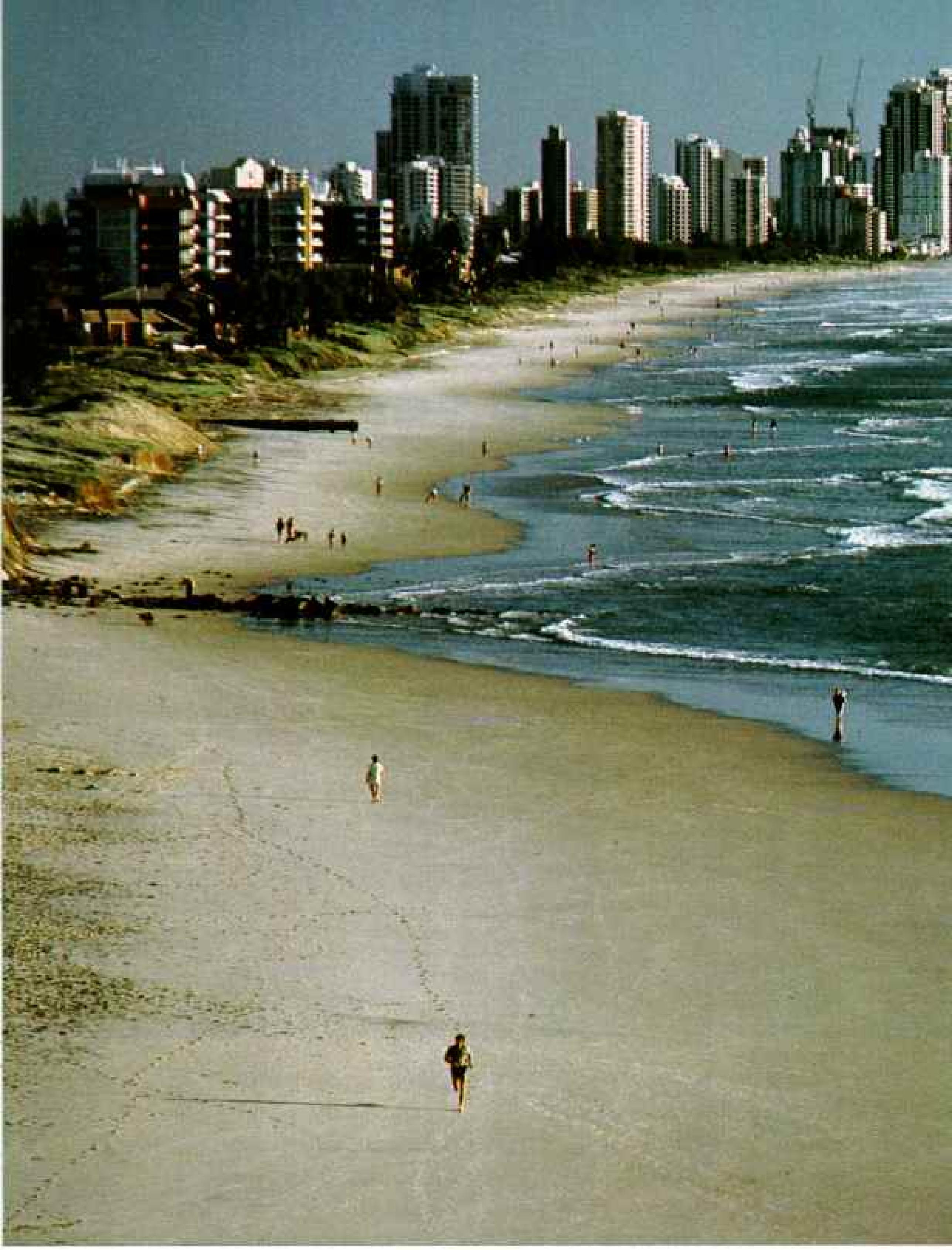
Queensland

By WILLIAM S. ELLIS Photographs by DAVID ROBERT AUSTEN

NATIONAL GEOGRAPHIC SENIOR WRITER

With a wager on the line, an Aboriginal stockman whoops it up at the annual Bedourie Race Meeting in a tiny community thronged for a day by a few hundred neighbors. Cattle roam stupefying distances here in the west, while elsewhere rain forests and seaside resorts offer contrast in a state whose people bet heavily on hard work and traditional values.

Road warrior hauls about 200 cattle in a double-deck rig whose third trailer is hidden by "bull dust" powdery enough to mire the unwary. Such hazards make an 18-hour marathon of this 250-mile run to saleyards in Mareeba from Dunbar Station. There Tim Wallis (facing page) lathers away grime using a tank that must also fill his radiator and keep him alive if stranded in the merciless outback. The pay is good for today's wheeled drovers, but the old rigors remain.



Southerners flee winter winds for the Gold Coast. The state's tourist trade, generating 3.5 billion Australian dollars a year, is fed by the high rises of Surfers Paradise

and the sands of Miami Beach, foreground. Approval for the first gambling casino in this resort strip came recently, delayed by moral strictures.

Mud mates Richard Kim, left, and Kristian Arthur are the only children the same age at Lawn Hill, an isolated cattle

station. Less harmonious relations between the state and its indigenous peoples are strained by land disputes.

THERE IS A ROAD sketched in the sandy orange earth of interior Queensland, and if you can stay with it, surviving the solitude and the heat that sets ghostly images to dancing in the air, it will take you from Windorah to Betoota Hotel. And going, you will learn something about a world of another time.

Birds are all about the road, some of them large and in curious flight. There are also wallabies and kangaroos, wild boars and lizards with whippish tongues. There are water holes given over to growths of hibiscuses ablaze in color, and termites in mounds taller than a man. Beyond all that are horizons at a distance too far to imagine, except at night when the stars of the Southern Hemisphere press down on the land like a skullcap of light.

Queensland is Australia's second largest state, with about 22 percent of the nation's landmass (map, page 16). Most of that is without human presence—a push of outback and tropical wilderness carrying north across Capricorn to the Torres Strait. At the top, pinched to a sharp point and sheathed in fitful waters, is the Cape York Peninsula. It is one of the few places left on earth, this peninsula, where the natural order of things still prevails.

Windorah and Betoota Hotel are in the southwest, in a region called the Channel Country. Little rain falls there—less than eight inches a year—but when it does, with force enough to buff the pebbles in the soil, it sometimes happens that the Channel Country becomes a vast garden of flowers and grasses. It doesn't last long, but there is time enough to marvel at the change before the sand is back, pushing against the mulga trees and the spiny spinifex.

Night comes quickly to Windorah, with a rush of blackness holding over the hotel-pub and the grocery store across the dirt road. There is a service station too, a greasy legacy of the 1930s. Taken together, they are enough to make of this place a small refuge in the bush.

Joe Geiger, the publican at Windorah, spoke to a traveler who was in search of a meal and a bed: "Once a fellow parachuted out of an airplane and landed on the grassy strip in the middle of the road out there. He did it because we told him if he landed there he'd get a free case of beer." There were others at the bar, among them drovers in from a day's work on the cattle stations, two electricians down from Longreach to repair a generator, a helicopter pilot without a job. They sat on the tall stools, saying little.

Queensland is so big (its borders will hold four Japans with room to spare) and so empty in the middle that to venture there is to evoke the pioneering spirit. So it was on leaving Windorah in the morning after the steamy night when mosquitoes and doltish bugs rioted in Room 4 of the Western Star Hotel. It was November, thus summer in this turnabout part of the world. One of the electricians said the temperature would likely rise to 40 degrees (104°F) that day, and he added that he did not understand why anyone would want to go to Betoota Hotel.

The reason, of course, is that Betoota Hotel is on the way to Birdsville.

More than that, these outposts give to Queensland its resonance of character. For this is a roughhewn piece of Australia where time turns back to an era when struggle and hardship sat as the tribunal for survival.

Understand, not *all* of Queensland is like that. It has its large city, Brisbane, the capital, and there is extensive resort development, with high-rise condominium buildings, along the coast. They assemble cars in Queensland and take minerals from the ground in large quantities. As the state is the guardian of the Great Barrier Reef, to which tens of thousands of visitors from other lands are drawn each year, there are three international airports here.

BUT TO TOUCH the soul of Queensland, it is best to turn inward, trailing plumes of dust all the way to the place Dick Ford calls home.

On this day he is one of the three residents of Betoota Hotel (it is the name of both the locale and the one building there). Dick Ford does not sleep in the hotel; rather, he and his friend, George Northeast, pass the nights on cots set up outside the old building, covering their faces with towels to escape the bugs. During the day they sit at a small table, drinking beer and dropping the ashes from their cigarettes into the tops of snuff tins. They often talk of the past, when both

were drovers, working in saddles, "walking the cattle to market," as they say.

"Those days are all over now," Dick Ford said.

"All over," echoed Northeast, who, at 71, is the elder of the two by nine years.

Beleaguered by the sight and sound of each other, Dick Ford and George Northeast fall into an embrace of new life when a stranger walks into the hotel. And so they listen through the day for the sound of an approaching car or truck.

There is a connection here, no doubt, with the bushwhacking of formality in the remote regions of Queensland—the rush to set up a rapport before the stranger moves on, before the chance is lost. Thus Ford drew deep and full from his well of solitude and splashed the words on an American William he right away called Bill.

"I met a lady from Cincinnati," he said. "I was in the war. George there drinks his beer from a bottle, but I have to use a glass because of some problems I have with breathing. Why don't you look at my pictures in the envelope on the table. Cincinnati? Could have been Cleveland she was from. Anyway, she stopped here and we had a yak."

That's the way it went on my visit to Betoota Hotel, a visit I would not have a chance to repeat during my stay in Queensland. Months later word came that George Northeast had died and that Dick Ford was mourning the passing of his friend.

In Birdsville, too, there are Queenslanders waiting to give of their goodwill. One of them is Raymond "Taffy" Nicholls, a lean, sinewy man with a smile like a rent in canvas. For seven years he was the keeper of the pub at the Birdsville Hotel, an establishment sitting at the end of an old cattle trail on the edge of the Simpson Desert. Now his time is spent building a house and tending to his collection of Aboriginal artifacts. With the noonday sun at his face, he tugged his hat until a screen of shade fell across his eyes, and said, "This is just a small cow town now, but in ten years it will be something."

In the meantime Birdsville remains one of the most isolated settlements in Queensland. Once a year thousands of persons fly and drive there for the Birdsville horse races, but when that is over—when 50,000 cans of beer have been drained—Taffy Nicholls and the other 100 permanent residents pool their strength and go back to living with the dust and withering heat. The water they use comes up from a well 4,000 feet deep at a temperature of 99°C, and so they are joyful when the rains come.

It has been that way for many years, and yet there are stirrings of change in Birdsville

Two-thirds of the town *of Betoota Hotel, former cattle drover George Northeast and his chum inside, hotel publican Ziegmund Remienko, wait for a new face to drift into town. Not all is monotony in this way station between Windorah and Birdsville. Thursdays, the mail comes.*

and Windorah and through much of this broad-shouldered land. It is as if Queensland is in a lathe, being turned and shaped, for better or worse. In some places, such as the Gold Coast south of Brisbane, the change has been severe, while in others the state's rawness has barely been touched.

Australians from other states are moving to Queensland in large numbers, for it offers sun, warmth, the sea, and low taxes. At the same time, it remains good sport in Sydney and Melbourne to depict the state as a barnyard, its inhabitants as yokels. Queensland and Queenslanders "are different," it is often said, usually with some condescension.

TO BE CERTAIN, there are clearly defined differences between Queensland and, say, New South Wales. And clearest of all are politics and government policy. Refined even more, it is one man in whom the difference is defined.

His name is Johannes Bjelke-Petersen, widely known in Australia simply as Joh. He is the premier of Queensland. Born in 1911 in New Zealand of Danish parents, Sir Joh (he was knighted last year) has held the premiership since 1968. Before that he was a member of parliament for many years. All that time he has walked under a cloud of controversy, eschewing diplomatic niceties while spreading his gospel of blunderbuss fundamentalism. Yet, he has become a folk hero, winning reelection by landslides.

Joh limped into his office in downtown Brisbane and explained that his dog had bitten him on the leg. "I was away from home so long, campaigning for reelection, that he didn't recognize me," he said, smiling. "Now as to Queensland. . . ."

He became then an evangelist, praising and damning and filling that office with the electricity of unshakable conviction. Listen:

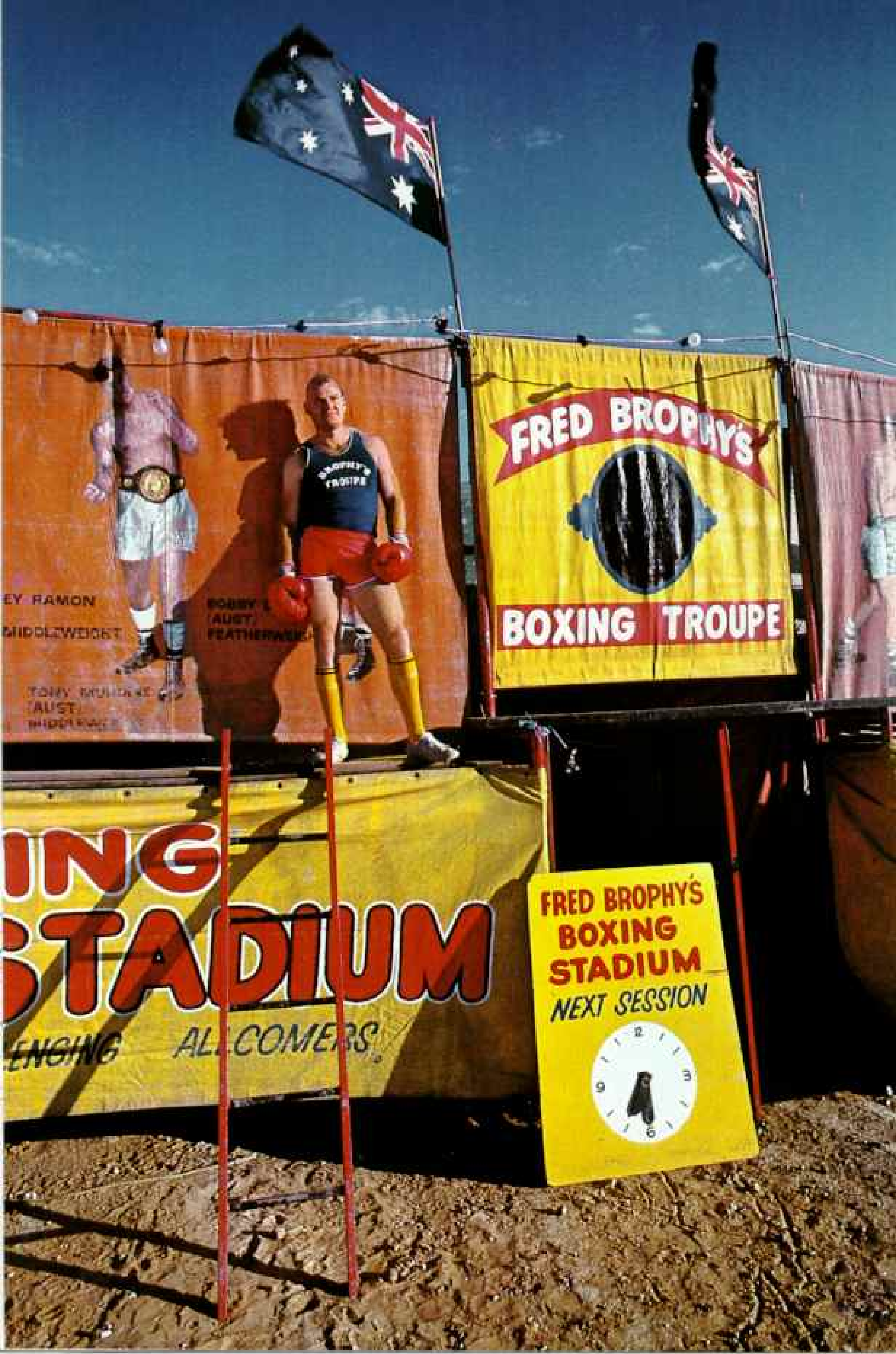
• "Unions demand more. Higher pay. Never stops. But in this state we resist it very strongly." (Australia today is under Labor Party rule.)

• "We are the only one of the states against all the ordinary taxes—petrol tax, tobacco tax, bed tax, beer tax, or capital-gains tax. It works. It's simple. Business goes where it can get the best deal. You couldn't keep people out of Queensland if you stood there at the border with a stick. They are coming

At the end of the earth, *about 2,000 tough people and their cattle inhabit 155,000 square miles of the Channel Country (**above**). The name comes from narrow valleys, upper left, carved by streams that meander from the north during the "wet" from November to April.*

*Between the valleys and the Diamantina River, foreground, live the 100 souls of storied Birdsville. Pilgrims traverse formidable distances for the honor of quaffing a beer in the hotel (**right**), seen amid the dregs of the annual Birdsville races, when thousands descend. At the airstrip a temporary control tower was erected, and five imported air traffic controllers attempted to direct 180 incoming aircraft. Said one official of the aerial circus: "They're bloody mad!"*


BIRDS


FRED BROPHY'S
BOXING TROUPE
FRED BROPHY'S
BOXING
STADIUM
NEXT SESSION
ALL COMERS!

in here at about a thousand each month."

• "More rights for Aboriginals? Well I think everybody, not everybody but many people in high places, have gone mad. I always maintain that if an Aboriginal came and held his bare toe up, they'd lick it. And you can write that if you like. The federal government gives them all this money. They won't work. They don't need to work. They get more money than they can spend. The Aboriginal people wouldn't be here today if it wasn't for the United States of America, together with our people who fought the Coral Sea Battle."

Our meeting was not to end without the premier's delivering himself of a final salvo: "People have got rocks in their heads."

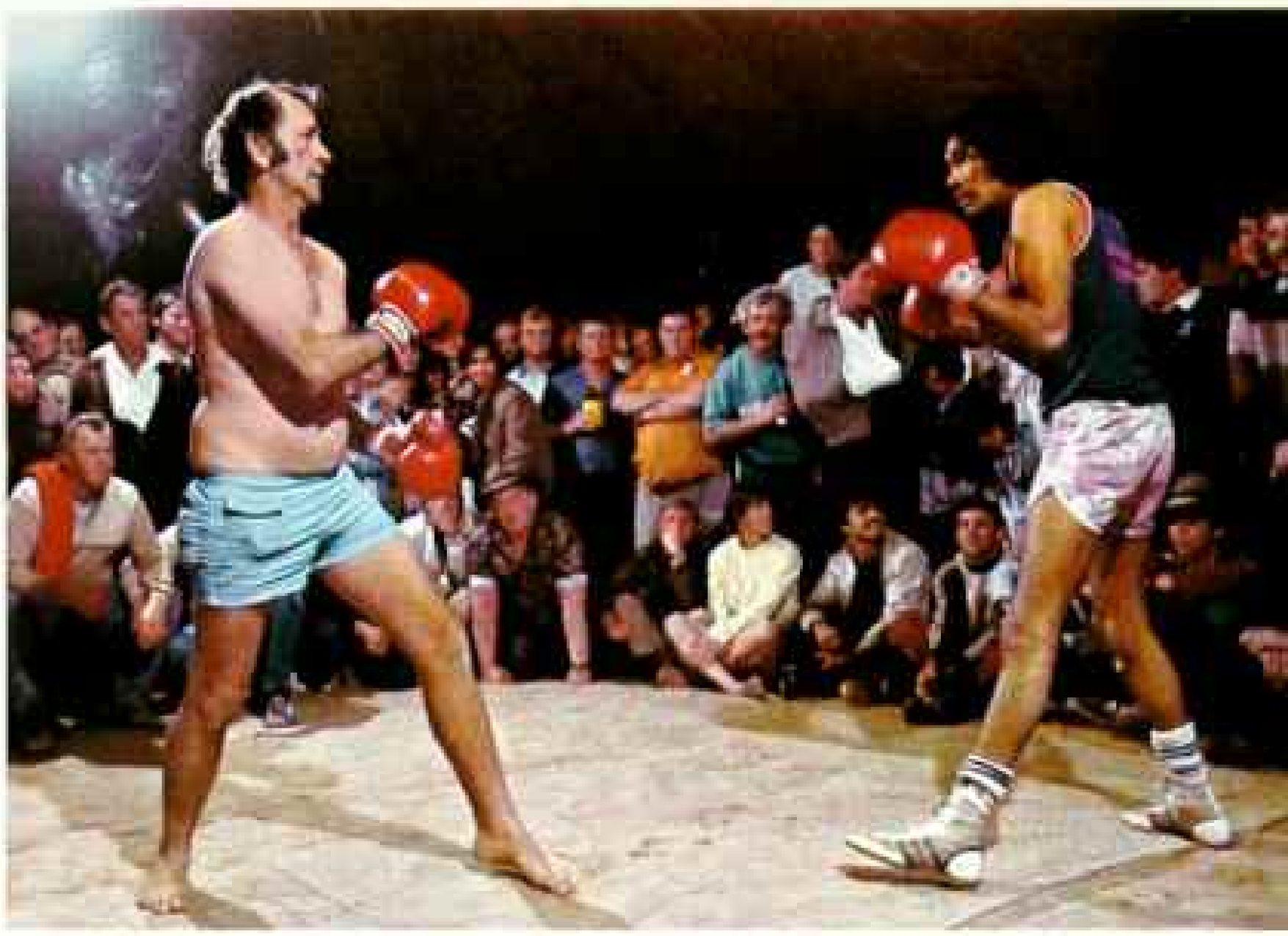
SO, NO, QUEENSLAND is not afire with socialism. Enterprise is as free here as any place in the world, but when it threatens the environment, battle lines are drawn. It happened when designs were being made on the vast mineral wealth in the ocean floor around the Great Barrier Reef. The winner was declared at 9:30 a.m. on Sunday, October 30, 1983, when an official of the federal government announced that as of that time nearly all of the Great Barrier Reef was within the boundaries of a national park covering almost 135,000 square miles.

In all the oceans and all the seas there is nothing quite equal to the biological extravaganza of the 1,250-mile-long chain of reefs and coral islands off the east coast of Queensland. This living thing has continued to grow for thousands of years, and to see it, to touch it, to be in awe of its beauty and in fear of its perils is an uncommon experience.

There are many jumping-off points for the Great Barrier Reef, perhaps the most popular among the more than 350,000 visitors each year being Queensland's third largest city, Townsville. It was there that I set out on a boat owned and skippered by an Italian immigrant who came to love the reef at an early age. "I came here in 1952, took one look under the water, and I've been here ever since," said Doug Tarca as he swung the new 72-foot catamaran away from the dock and pointed it toward our destination 38 miles out in the Coral Sea. "Even when I'm old, I'll just put a flipper on my walking stick and keep on diving here."

Tarca is an entrepreneur, and the Great Barrier Reef is his main product. He now has plans to anchor a floating hotel in the lagoon of one of the 4,000 reefs in the chain —at a cost of 33 million Australian dollars (equivalent to $23 million in U. S. funds).

To journey to the reef and not get wet—not, at the least, to snorkel—is to be denied a sense of intimacy with a carnival of life. There are the angelfish, pucker-lipped and



***Step right up** and take it on the chin. Locals who last three one-minute rounds with boxers like Warran Duffy from New Zealand (**facing page**) are 20 dollars richer. Performing during the Birdsville races, Fred Brophy's is the last boxing troupe still touring the outback. "Pretty Boy Floyd" (**above,** at right) takes on a volunteer in the ropeless ring; knockout victims land in the crowd.*

TERRITORY AS VAST as Alaska and Washington State combined, Queensland was explored by Lt. James Cook, who in 1770 first charted its coast. In 1824 a penal colony "for the worst class of offenders" from Sydney was established near Moreton Bay at a site where Brisbane later was settled. The new colony of Queensland was separated from New South Wales in 1859. Two years later the ill-fated Burke-Wills expedition reached the north coast. The east coast is fringed by the Great Barrier Reef, today protected as a marine park.

AREA: 1,727,000 sq km (667,000 sq mi).
POPULATION: 2.5 million, including more than 50,000 Aboriginals and Torres Strait islanders.
MAJOR CITIES: Brisbane (capital), 750,000; Gold Coast, 174,500; Townsville, 100,500.
ECONOMY: Minerals, including coal, bauxite, gold, copper, silver, lead, zinc. Agriculture, led by cattle, sheep, sugarcane, grains, cotton. Tourism.

boggle-eyed, and the triggerfish, splashed with such colors as to be a cutout from an artist's palette. And there are tentacles in languid sway, ready to deal in death by paralysis. A clam that looks as large as a moose brings to mind a question that has endured in memories since the movies of one's youth: Will the creature *really* clamp its massive jaws over the leg of a diver? It will.

Above all, there is the coral itself, the living landscapes in the sea created by polyps by the billions, whose skeletons form the massive reefs. Some of the coral is soft, some hard, some sharp as a needle, some blunt and knobby. There are castles of coral and flowers of coral, lacy fans of coral and mushrooms of coral—a gallery down there, in 20 feet of water, of form and color.

Some of the coral is white, a sign of death on the reef. The killer is the crown-of-thorns starfish *(Acanthaster planci)*. As large as two feet across, the starfish feed on the living tissues of coral, leaving the skeleton. They go through a reef like a brushfire, erasing the colors and halting the rapid march of life.

There are sharply opposing opinions in Queensland concerning the starfish threat to the Great Barrier Reef. One expert, Dr. Robert Endean of the University of Queensland, terms it "a major problem." As much as half of the entire reef chain, he claims, may now be under attack by the crown-of-thorns. He puts much of the blame on shell collectors who have taken most of the giant triton mollusks from the waters. The triton is a natural predator of the adult starfish.

Other scientists insist that the current starfish infestation, which began in 1979, is part of a natural cycle. The coral needs thinning anyway, they maintain, and since it eventually regenerates itself after dying, no lasting harm is done.

Either way, bleached coral is not good for tourism on the Great Barrier Reef. Some tour operators attack the starfish with injections of copper sulfate. It is lethal, but it has been estimated that it would take a diver 15 years to clear one heavily infested reef.

So the reef often can be sinister. Something beautiful acts the siren, and something equally beautiful is lured to its death. "It's gorgeous down there, but eerie," a tourist told me. "You can almost hear things breathing, sucking in and out like an iron lung. I mean everything there is eating everything else, and when you watch that for so long, the beauty turns into ugliness."

WITH THE DESIGNATION of the Great Barrier Reef as a marine park, no longer will oil drilling and other commercial activities stand as a threat to the unique underwater environment. Controlled fishing will be permitted, along

Gentle as a lamb *when spinning stories for granddaughter Anna, state premier Sir Johannes Bjelke-Petersen is a lion against opponents. In office since 1968, Premier "Joh," a fundamentalist, preaches against taxes, unions, pornography, Aboriginal land rights, and the national Labor government.*

Fingers of light *point to the blessings of Darling Downs in the southeast. With only 5 percent of the state's rural area, the fertile region yields 23 percent of the total farm output, contributing grain, cotton, dairy goods, pigs, and cattle; one huge feedlot near Toowoomba is known as "Beef City."*

with increased tourist activities, such as cruises and water sports. But there will be no machinery tearing into the sands of this largest of the world's marine reserves.

Not that Queensland lacks mineral riches. The state is a major supplier to the world of bauxite, used in the making of aluminum. There are massive reserves of coal here. Oil and gas wells have been brought in, and foreign investors are after the uranium known to be in the ground. Indeed, one can literally stumble over wealth.

It was in 1979 that a local high-school student reached down and plucked a 2,000-carat sapphire from the dirt. Such prizes have drawn men and women to the Anakie gem fields in the central highlands of Queensland for more than a century. Some found their fortunes. Most failed. The fields, where gemstones are uncovered in a river wash dating back two to three million years, continue to supply many of the world's sapphires, but no longer is there a feel of an El Dorado about the place. The full-time independent miner, the one consumed by a dream, is a curiosity now.

When I came across one working a piece of ground near Rubyvale, I spoke my name and asked his. He hesitated. "Smith," he said. "Ray Smith." He was a young man, but the suspicion with which he regarded me was as old as prospecting itself. "Of course I expect to strike it big," he said. "That's why I'm here, isn't it?" Then his wife appeared at his side, leading two anvil-headed boxer dogs on leashes.

"Pretty dogs," I said.

"These dogs are *not* pretty," she replied.

"Handsome?"

"That's better."

It was not a warm encounter.

As new economic patterns are emerging in Queensland, so too is the state undergoing modifications in its social behavior. Approval has been given for the opening of two gambling casinos, for example. Also, some newspapers in Brisbane now carry classified advertisements offering services by prostitutes. At the same time, the *Playboy* or *Penthouse* magazines sold in Queensland are not the same as the ones on the newsstand in, say, Sydney. To meet standards of morality in print, as set by law, there is less nudity in the Queensland edition.

All of that pales when set against the rumble of controversy regarding the state's policies toward Aboriginals.

Queensland has the largest population of indigenous peoples, more than 50,000, of

any state in Australia. Militancy among them is on the rise, and so is the premier's resolve to stand firm. The major issue is land rights, a theme played many times in many lands, involving other indigenous peoples. Only here, the issue has pitted the state not so much against the natives as it has against the federal government.

It is the policy of Australia's Labor government in Canberra to return traditional Aboriginal lands to the people. To prevent that from happening in Queensland, Premier Joh has readied himself for battle.

"We are looking at ways and means right now of legally stopping the frightening prospect of aggregation of Aboriginal land in Queensland," he said. "What the federal government wants to do is give control of the whole northern coastline of Australia to Aboriginals. How do we defend our country, or keep exotic diseases out, if white people are denied access to our northern coastlines?"

IT IS NOT that the Queensland government is insensitive to the needs of the Aboriginal people. But rather than helping them make their own way in society, the policy is one of paternalism. About a third of the

World-class statistics *emanate from Mount Isa and its mines, where Shane Hart* ***(above)*** *has a hot job in a copper smelter. Mount Isa is the world's top producer of silver and lead, Australia's largest copper source, and one of the country's leaders in zinc. So isolated is this regional capital that the city council governs nearly 16,000 square miles—the world's largest city in area, as big as Switzerland.*

The state grows 44,000 tons of cotton a year, including bales awaiting tarpaulins ***(above right)*** *on a farm on the Darling Downs.*

Aboriginals in Queensland live on state government reserves, such as the one called Yarrabah, near the coastal city of Cairns. This is the showplace reserve, a settlement of neat houses in a tropical setting of lovely beaches and trees heavy with fruit.

To the Aboriginal this was land created in the Dreamtime, the mythical time of beginnings, and it was made sacred by the presence on it of spiritual beings. "I think we should have this land," said Mike Connolly, a 32-year-old Aboriginal and former vice-chairman of the reserve's council. "The time has come for us to manage ourselves."

Mike Connolly's people have been here for at least 40,000 years. They came, most likely, over the land bridge that once linked

Queensland with New Guinea. The land, silent then, was theirs to take; to them, spirits came alive in the trees and rocks. But with the arrival of Europeans many thousands of years later, these native people with their flat facial features, dark skins, and, strangely, often light-colored hair, were written out of the making of modern Australia.

MOST ABORIGINALS live in the north, many in the Gulf country and the Cape York Peninsula. Arrival at one of these reserves is by a 40-year-old DC-3 that touches down on a dusty field. The terminal is a shed, and if the reserve is the one called Kowanyama, the route to the center of the settlement is over land rutted and worn by alternate flooding and drought. Nearly a thousand Aboriginals live at Kowanyama now.

Maude Fraser, a gentle, thoughtful woman, once headed the reserve's council. She was born there, and attended a mission school where the Aboriginals were locked in their dormitory rooms each evening from five o'clock. She is not among those pressing for more self-determination.

"The state has done a lot for us, but the commonwealth wants us to go out on our own," she said. "We're not ready for that. We have Aboriginals who come here and tell us what we are due. There are other Aboriginals who come here and say, 'Why do you want to live like the white people?' We get

it from both sides. But I speak in honesty when I say it is too soon for us to do it alone."

There is a canteen in Kowanyama, and that, Maude Fraser said, is the cause of many of the problems on the reserve. As chairwoman of the council, she pushed through a ruling limiting sales of beer to five cans per person except on Friday. "On Friday," she said, "they can have six."

It has been estimated that one-third of the community's total income is spent for drink. In one six-night period the canteen had gross sales amounting to $47,000.

Patrick Eric is an old man who sits for most of the day in the shade of the veranda of his house on the reserve, smoking a pipe with no stem (he draws on the stub of the bowl) and waving flies away from his face. A crocodile mangled one of his legs when he was young, and now he walks with a limp. "I worked at a cattle station for 30 years," he told me. "My last drive was in 1950, and I haven't been on a horse since."

It was a Friday when we talked, and the old man said that was good because it would be a six-beer night at the canteen. "Last night was good too," he added. He laughed easily in the manner of so many elderly Aboriginals who have the facility for turning a casual encounter into a friendship. Patrick's eyes were hidden in the shadows of his hat—a fine hat baked in hot sunlight until faded and limp. It was high crowned, and the brim rolled around his ears and brow like a skirt lifted in the wind. Stained and torn, it was a headpiece of character, not simply a hat, but a *hat*, a Legionnaire's kepi, a knight's casque, Yasser Arafat's kaffiyeh.

Such hats are worn by Queenslanders like medals for service in the bush. Sometimes they are hung with bits of cork dangling on strings to keep the flies away. However, the major purpose of the hat is to provide protection against the north Australian sun. Nothing so marks the fool in Queensland as a head bared to the skies.

Long before there was a Kowanyama reserve, this part of Queensland was at the

Little hope *can be offered to a woman of Kowanyama by Dr. Geoff McDonald* ***(left)****, a visiting government physician. She is dying of cancer, yet seems impervious to pain.*

Social ills stem from the reserve's canteen, where constable David Kitchener keeps order ***(right)****. Beer sales swallow one-third of the community's income, even with a daily limit on the amount each customer may buy. Jobs are painfully few for Kowanyama's nearly 1,000 residents; some work as seasonal stockmen.*

Politics whipsaw Queensland's indigenous peoples, who number more than 50,000, the highest state total. Federal policies promote free title to traditional native lands—an ominous prospect to the state, which seeks to keep its Aboriginals and Torres Strait islanders as leaseholders. Themselves divided, some demand their rights, while others believe they are not ready for them.

heart of the other Aboriginal world, the one called the Dreamtime. That history has been chronicled in a vast landscape of rock art, some of which may be among the oldest in the world. Called the Quinkan Galleries, the art is spread over more than 6,000 square miles in a region seldom visited by whites. Most of it was discovered by one man, a former airline pilot who for years looked down on the wilderness from his cockpit and wondered.

"I KEPT asking myself, what did those fellows—the Aboriginals—leave in that bloody country down there?" Percy Trezise said. "Then in 1959, when they were building the road to Laura, the workers came up a hill one day and there was a really outstanding gallery of paintings."

In the years to follow, Trezise, now a well-known artist, spent much of his time exploring the massive gorges and red plateaus of the Cape York Peninsula. "I found rock art everywhere," he told me as we sat in the cool open area beneath his stilt-raised house in Cairns. "There was no traditional Aboriginal life left when I started looking. I got the stories from the real old fellows who had been initiated into the ceremonial status."

The trip by road from Cairns to Laura is punishing, but, for the adventurous, rewarding. And once there, moving from cave to cave, where the spirit figures of the Dreamtime play out their lives on the sandstone walls, the experience becomes memorable. In one gallery there is a painting that spreads for 100 feet, a solid mass of almost 400 individual figures. There are depictions of sorcery, and of animals not known now.

Percy Trezise said there are still many more galleries to be found. He is convinced that some of the paintings predate Cro-Magnon rock art found in France and Spain. "We have solid evidence that some of the work was created before the Ice Age ended in the Cape York Peninsula," he said. "I have no doubt that the oldest art in the world is right here."

When the rains come late in the year, the road to Laura is impassable, as are most of the roads on Cape York. Greenery spreads across the land, and the gritty air is cleansed. For now, however, there is only blackness in the late evening sky. Here in Bamaga, on the top of the peninsula, the "wet" is still a month away.

Bamaga is a small settlement of about 1,500 people, all but 125 of them Torres Strait islanders and Aboriginals. The water, from the Jardine River, is good, but the soil is poor. About the only thing that grows well is the cashew tree. Goanna lizards scuttle along the narrow dirt roads on their interminable journeys, and grass-eating termites are in the fields, building their towers.

IT SEEMS an unlikely setting for a history lesson, but to stop off here is to be transported back 40 years. Bamaga is a museum from the Second World War. British and American aircraft were based here in the 1940s, and much of their legacy remains in and around the community.

I went into a heavily treed wilderness and found the old taxiways there, along with hundreds of fuel drums, black now with age. Max Patton, an employee of the Queensland government, led me into a place where there was no road, only trees and thorny shrubs—and the wreck of a military DC-3. "Seven people died in the crash," Patton said. "They say the plane was carrying a load of Spam when it went down."

At another site close by we came across the wreck of a British Beaufort bomber, its belly ripped open in the crash. "There are others too," Patton said. "I have a plane's cowling that I found. It has the words 'Wilkie's World' on it."

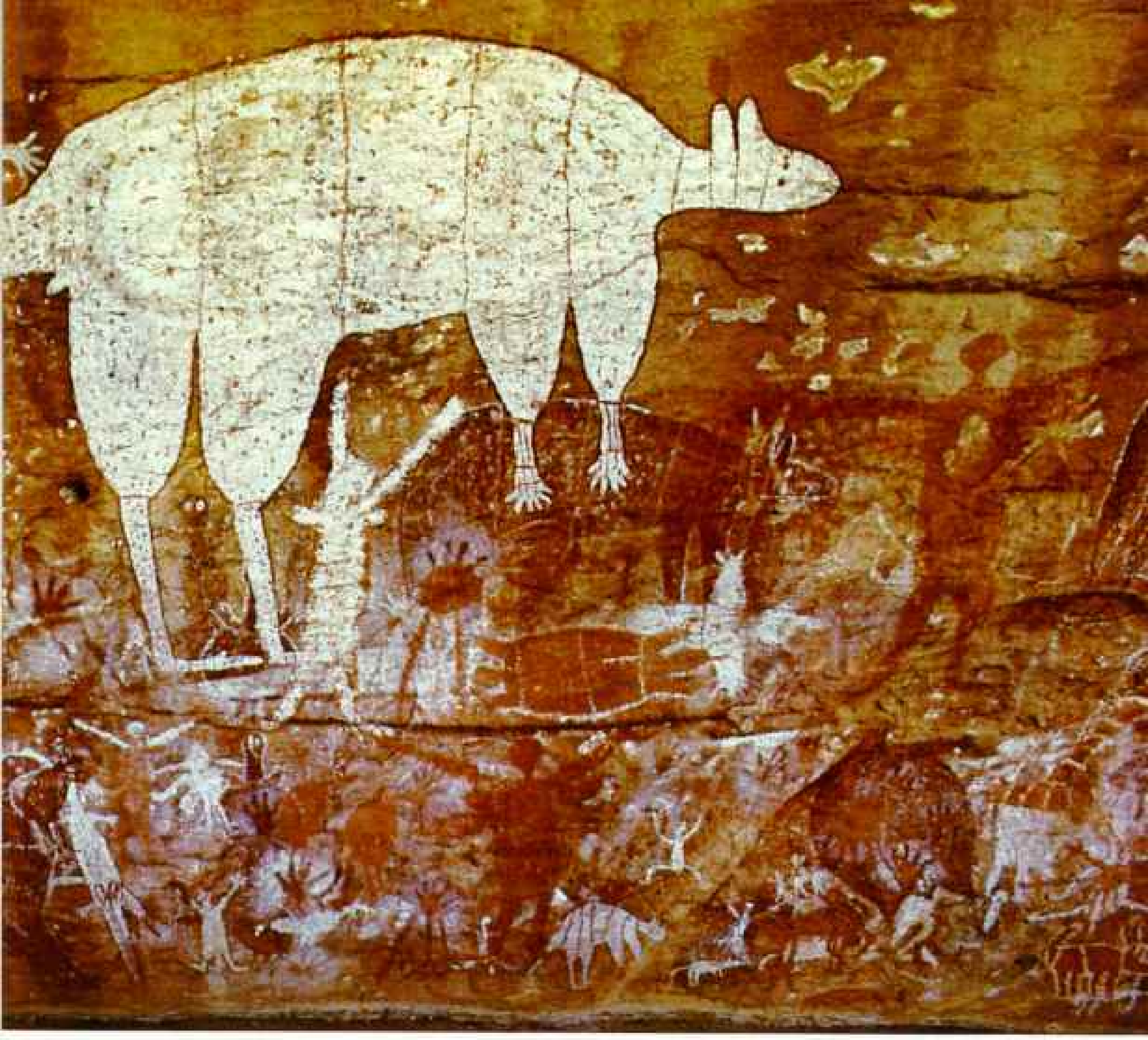
So much of Bamaga is seen through the mind's eye: The barracks and itchy blankets and butts stubbed out in tin cans nailed to the end of bunks—that camp scene where now the eucalyptus has taken over; a bomber on a glide path for landing, now a wedge-tailed eagle soaring in the haze; the camaraderie of allies in war, and the emptiness left behind after victory.

It is not gentle water that washes against Bamaga's shores. There are sometimes three tides a day as Endeavour Strait rises and falls as much as 18 feet along its span to

Spirit of the present *absorbs the Coglin family (**right**) on Kowanyama Aboriginal reserve as they watch video recordings—a far cry from rock art created by their ancestors across the Cape York Peninsula (**above**).*

Some 400 ancient figures adorn a 100-foot-wide cliff face. They include kangaroos, crocodiles, human fertility figures, and unknown animals that may recall the Aboriginal creation myth of the Dreamtime. More than 1,000 sites have been found here since 1960.

Other exciting evidence of Australia's past is coming to light at Riversleigh Station, where fossils of 100 previously unknown mammals have been discovered (pages 38-9).



Lanes were reserved for horses *only 46 years ago when Story Bridge opened, but Brisbane has come a long way since* ***(above)****. A major port bustles downstream at the mouth of the Brisbane River. The twin Australian Mutual Provident towers, at center, preside over a 15-year boom, stimulated by government incentives to foreign investors. Because few of Brisbane's 750,000 residents like to live in the sky, the city has sprawled over 470 square miles into an Australian Los Angeles.*

Low taxes have helped spur an average monthly influx of 1,000 Australians and other immigrants into Queensland. While many settle in Brisbane, the state remains the only one besides Tasmania in which most of the population lives outside the capital.

Its cultural and educational assets offer the rest of the state a breath of fresh air, and the city gets one itself in Lord Mayor Sallyanne Atkinson ***(right)****, having a predecessor's robe tailored after her inauguration last year. First woman to rule city hall and first successful Liberal, she is also a career journalist and mother of five.*

Thursday Island. North of Thursday is the Torres Strait, Queensland's link with Papua New Guinea.

Indigenous to Queensland, Thursday Islanders are lighter skinned than the Aborigines, and their skills are attuned more to the sea than to the land. Most of them are superb mariners and fishermen. They too are becoming more vocal in demands for a better way of life. During World War II many islanders, as members of the armed forces, loaded ammunition and other supplies on ships. Their pay was seven dollars a month —half that of a white with the rank of private. It is said that when they went on strike, they were threatened with death by firing squad.

In 1983 a group of islanders brought action against the federal government to recover the lost wages. Asking 50 million dollars, they were offered 7.4 million.

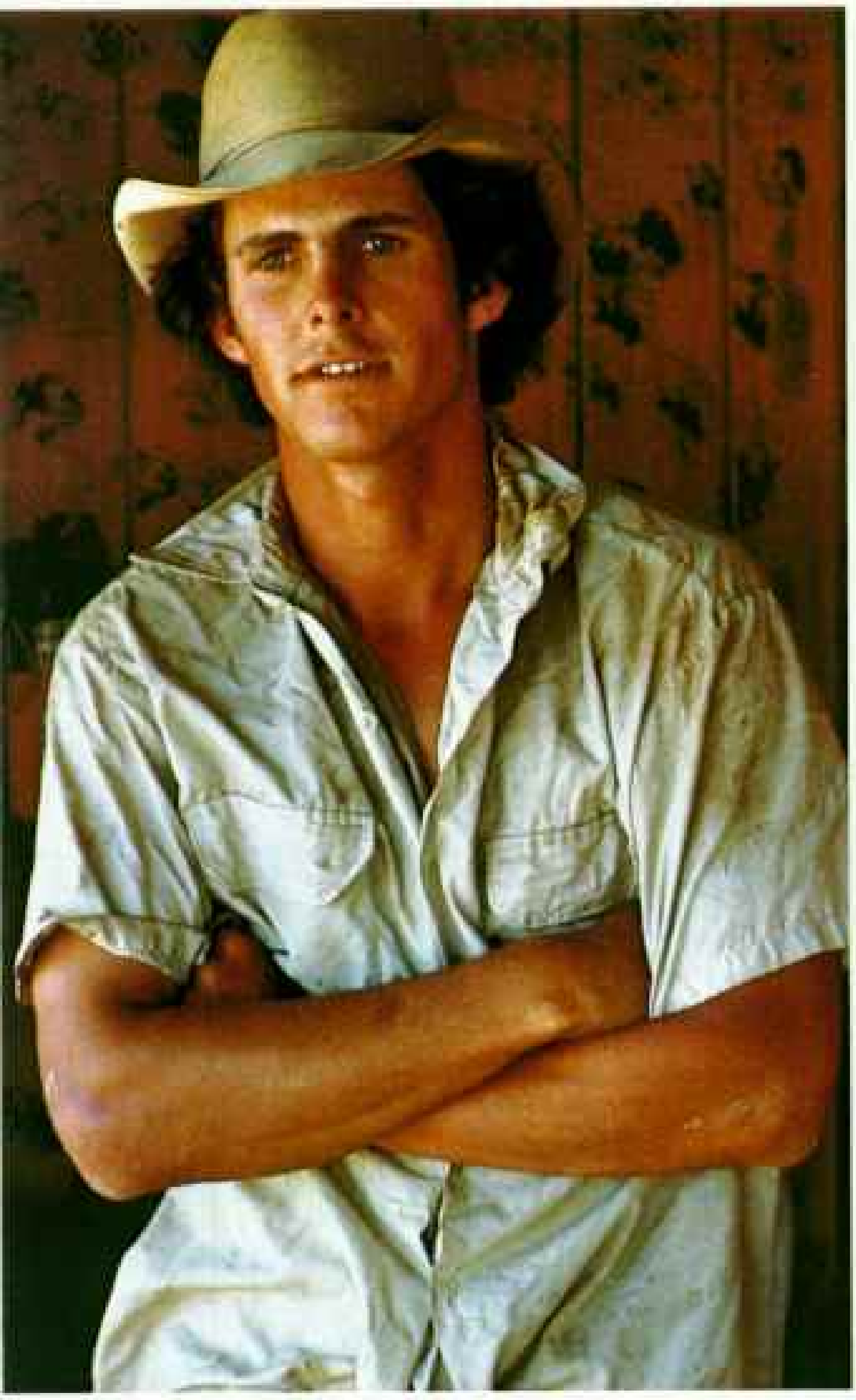
Thursday Island is a hard place of heavy drinking. Pearl culture was a major industry there for many years, but that is dying out now. "One of the problems is we can't get enough oysters in which to cultivate the pearls," said Isao Shibasaki, managing director of Oceangem Pearls Pty., Ltd. "We're capable of doing a couple of million dollars in business here a year, but with this shortage we do between $300,000 and $400,000. We have to pay $8.50 for each oyster."

Men gather in the four bars on the small island and talk about reefs where the fish gather in large numbers. They talk about taking 60 squid in an hour and wrestling turtles the size of a manhole cover. By law, only islanders and Aboriginals are allowed to take the big sea turtles. "We just take a black bloke with us when we go for turtles," said a Cypriot who, like other foreigners on the island, seems to be on leave from the responsibilities of life. "That makes it legal."

Thursday Island, Bamaga, and all the north of Queensland make up a frontier like no other in this nation of frontiers. To move south from there along the shore of the Coral Sea is like descending the rugged heights of a mountain to the pastures below—to Cairns (pronounce it Cans), for example, perhaps the most attractive of all of Queensland's towns. Cairns is the place from which to set out in pursuit of the black marlin, and one American who comes here each year to do that has become a cult figure in Cairns. He is, of all people, Lee Marvin, the film actor.

Then down to Innisfail, made soggy by as much as 140 inches of rainfall a year, and below that, Dunk Island, one of two dozen offshore resorts along the eastern coast. Lt. James Cook first came across the island in 1770. Then, as now, it was a piece of rain forest in the sea. A resort hotel has been built on Dunk, but otherwise the island is little

It's lonely at "the top" *of the continent —Cape York Peninsula—where telephone repairmen Dale Halbert (**right,** at left) and John Meehan penetrate bruising bush by horseback to inspect the only line; here wheeled vehicles sometimes cannot tread. It's hostile territory too, occasionally posted in no uncertain terms (**above**).*



Classic outback hat *is a badge of honor for stockmen like Shane Tully* (**above**), *learning the ropes of cattle raising at Donors Hill Station near the Gulf of Carpentaria. Queensland's nine million beef cattle constitute nearly half the nation's total, and the state exports some 300,000 tons of meat annually to markets abroad, principally the United States and Japan. Helicopters replace horses to muster herds on the Cape York Peninsula at huge Dunbar Station* (**right**), *largely unfenced and bigger than Delaware.*

changed since Cook's discovery. There are palms and the lush ferny growths of the wet tropics. There are wide beaches of white sand and the soft lapping of surf.

Down again past Queensland's vast fields of sugarcane to the Sunshine Coast: Nambour, Maroochydore, Caloundra. Unlike the glittering Gold Coast south of Brisbane, the development attracts not out-of-state vacationers but Queenslanders in search of comfortable and quiet seaside.

Finally there is Brisbane, a city uniquely drawn from the character of Queensland. In area it is sprawling, covering 470 square miles, but with a population of less than a million. In the beginning Brisbane was a penal colony; the first convicts arrived from Sydney in 1824. It was then a part of New South Wales and remained so until the establishment of the new colony of Queensland in 1859.

Brisbane is a city where evangelists stand on downtown street corners and exhort sinners to mend their ways. Shorts and flip-flop sandals are acceptable dress on the streets, and eating a meat pie at the movies is no less fair dinkum. The capital city is, in short, a gathering of the rough honesty and openness that is Queensland.

Indeed, there are only a few places in all of Queensland invested with an aura of gentility. One of them is the town of Toowoomba.

Heavily English in tone, Toowoomba is in the green, hilly Darling Downs region inland from Brisbane. There are camphor laurel, jacaranda, and liquidambar trees along the streets of the town, and there are parks filled with flowers. Because the elevation is high, there is a freshness to the air.

Darling Downs is agricultural, with wheat a major crop. It has been said that a farmer can work the black volcanic soil of

Distance is no obstacle *to faith and friendship. After christening Josephine Joy McCosker, the Reverend Bob Heathwood holds the child of Terry and Leslie McCosker, to the left of the baby, at Lawn Hill Station. One of the famed Flying Padres, Mr. Heathwood, of the Uniting Church in Cloncurry, covers nearly 40,000 square miles.*

the region for a hundred years without using fertilizer. It is cattle country too, but not like that farther inland, where ranches are as big as some nations and where a cow is not so much herded as hunted.

OF ALL THE RURAL ECONOMIC activity in Queensland, none is more vital to the well-being of the state than the cattle industry. There are nine million head of beef cattle in the state, nearly half the number in all of Australia. And it is beef highly prized in the United States and other lands, for there has never been hoof-and-mouth disease here.

Major changes are now taking place in the industry. Ten years ago the herd in Queensland numbered more than 11 million, but with severe drought and periods of economic slump, it has continued to decrease. More and more of the land is being put to other uses, such as the growing of wheat. "The big trend now is to cattle-grain diversion," said Rick Farley, deputy director of the National Farmers Federation. "The cattle industry is in a big melting pot at the moment."

In addition to horses and cowboys, the helicopter is now used for mustering cattle on some large stations. It beats low over the scrub, setting hooves to stamping, stirring the bile in a rank bull. Sometimes the pilot will put a load of buckshot in the hide of an animal to get it moving (there has been at least one complaint of metal found in beef processed in Queensland), and if, in the end, the beast stands his ground, he is killed with a shot from a powerful .44 magnum.

But even the helicopter has its drawbacks. "The cattle get used to it," said Reg Williams. "After a while they don't react."

Reg Williams is 78 years old, and he still rides horses in hundred-mile endurance races. He made a lot of money in the gold fields of the Northern Territory, and he pioneered tea growing in New Guinea. But most of his life has been spent in the outback, for he is, before all else, a cattleman. At one time he had 3.5 million acres of land under his control.

"When I was in the gold mines," he said, "I used to consider New York and London as suburbs of Australia. I used to visit them regularly. But I soon got sick of that life. I haven't got much in common with the people of the cities. I love to talk to my own people, the ones in the bush." And because he wants to keep alive the tradition of the cattlemen who gave to Queensland its leathery character, Reg Williams has been a leading force behind establishment of the Stockman's Hall of Fame and Outback Heritage Centre, scheduled to open in the town of Longreach in 1988.

Outback clothing and riding gear manufactured by Williams are sold in 700 outlets

throughout Australia. His kangaroo-hide low boot with elastic sides is the footwear most often used in the bush. There are straps on the boot with which to pull it over the foot—pull it on and then rake it through the red dust, rest it in a stirrup, walk softly in it, as Peter Cannon did, so as not to let the crocodile know you're after him.

Cannon squeezed the strands of barbed wire together, and I climbed through the opening behind him. He put a finger to his lip. In his other hand was a rifle.

I had once again been drawn to the far north of Queensland, this time to visit with Peter and Julia Cannon on the cattle station he manages, a moderate-size spread, by Queensland standards, of 600,000 acres. And now we were after a 14-foot crocodile that had taken up residence in one of the water holes on the station.

Moving in silence, we came to the top of a rise. The rifle was raised, but there was no crocodile to be seen. "He's in there," Cannon said, looking down on the water hole. "I've been after him for 18 months now."

THE CATTLE STATION is called Rutland Plains. It includes 30 miles of shoreline of the Gulf of Carpentaria on the west coast of the Cape York Peninsula. There is an airstrip on the property, along with roads that carry through a wilderness throbbing with the movement of wildlife. The cattle herd on Rutland Plains numbers about 10,000.

Peter Cannon, a young Englishman, has managed the station for several years, utilizing those 600,000 acres as a suburbanite would a backyard garden patch. "This isn't such a large station," he said. "The one next door is almost two million acres."

On the Cape York Peninsula, "next door" more often than not is a brave journey away. Schooling is by radio ("Good morning, class. Over."), and so is most medical care. The station is the world, and for Peter and Julia Cannon, together with their two young children, Phoebe and Padraic, the world is a beautiful place.

They live in the property's main house, a handsome structure once used as a pub before it was taken down and reassembled at Rutland Plains in 1940. Sharing the quarters with them is a small dog that appeared to be on the point of collapse when I first saw it. Julia explained: "He was bitten by snakes three times last week, and then he fell into the cattle tick dip."

Unlike most of the stations in the north, Rutland Plains is fenced. Still, in effect, the cattle are hunted at muster time. "We muster one paddock clear and then go back and shoot what's left," Cannon told me. "Then

Sprucing up *for the Goombungee Debutante Ball, Wendy Owen* ***(left,*** *at center) and half-sister Alitia check father Graham's bow tie.*

Oscar, the pet camel, kibitzes the lessons of Kristina Schrader ***(above left)*** *of Sandringham Station, who studies by radio on the School of the Air.*

There is an unusual approach *to the fourth green, and golfers must take their chances, for a rule at the Yeppoon Golf Club states, "A ball hitting a kangaroo—*

when it's clean, we can take cattle back in." In that way, he explained, they are able to control the possibility of disease. One paddock covers 300 square miles.

The trend now in Queensland is to run more Brahman cattle. And so it is on Rutland Plains. Brahmans do not need as much water as conventional breeds, and, more important, they have more resistance to ticks. A shorthorn will go only two or three miles from a water hole in order to be able to get back every day, while a Brahman will walk as far as seven miles from the water. Whatever the breed, the cattle have to be mustered before the wet season sets in, for when that happens, Rutland Plains is afloat.

DISTANCES mean little to the Cannons. I drove off with Peter one morning, and we traveled for three hours on the station before coming to the windmill in need of repair. Along the way we saw cranes and pelicans, eagles, parrots, geese, kangaroos, and wallabies. We continued on to the end of Rutland Plains, to where it dissolves into a stretch of sandy beach on the shores of the Gulf of Carpentaria. We walked on that beach and picked up

play as is.'" Here on the east coast 40 years after World War II, Japanese tourists stage a friendly invasion to share Queensland's abundant elbow room.

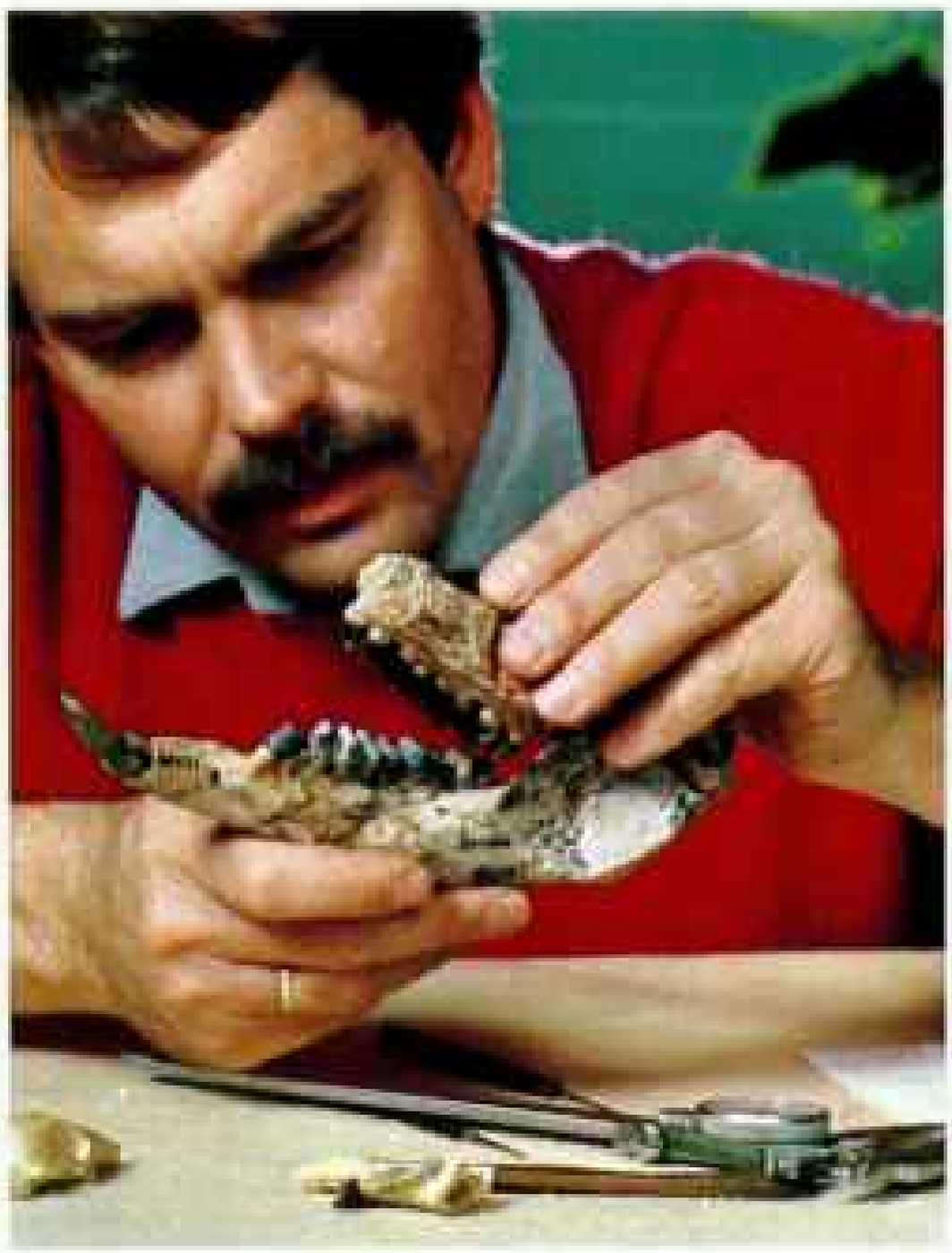
large glass fishnet floats that had washed up from . . . from where? Indonesia, maybe. We touched the water and found it warm, but it wouldn't do to swim there. There are sharks, and sea nettles full of poison.

Not many people, not even Australians, have seen the beach of Rutland Plains. A woman named Felicity Taylor, a friend of the Cannons, is one who has. She told me that she sometimes camps on the edge of the beach, sleeping in the open, feeling a sense of Genesis.

That's the way it is in so much of this big shoulder of land on Australia's east. Queensland's interior and its north are not about to be overrun by fumy civilization. While there are some species of wallabies, such as the bridled nail-tail, now classified as endangered, there are still enough kangaroos to permit a harvest of a million each year. And there are the emus, still here in heavy numbers since the days of their spiritual role in the Dreamtime. In Queensland nature has no alternative; it is too much with this place.

December came, and with it, the wet to Rutland Plains. Julia Cannon wrote to say that Peter picked her a bouquet of lilies from the water on the airstrip. □

Queensland Fossils Expand



FOLLOWING HIS TEAM up a limestone ridge in Queensland's far northwest on an invigorating May morning, paleontologist Michael Archer paused for a tardy colleague. Looking at the rock beneath his feet, he nearly collapsed with excitement. The ground bristled with the teeth and jaws of fossil mammals that lived 15 million years ago. His shout brought team members, who, despite prickly spinifex grass, crawled around a ten-square-meter area and spotted fragments of 100 mammals representing some 30 species never seen before. It was one of the final days of the 1983 four-week field season, Archer's fourth year exploring Riversleigh Station, a cattle ranch half the size of Delaware. Earlier discoveries were mostly turtles, crocodiles, and birds. Particularly startling among the new finds were two species of bats that resembled those in well-dated deposits in France, a boon to fixing fossil chronology in Australia.

In 1984 and 1985 the research group—

Incredible carnivorous kangaroo (Ekaltadeta ima) wrestles a python (Montypythonoides riversleighensis), one of many in the deposits. Scoring on the marsupial's teeth indicates it crunched bone.

Bobcat-size marsupial lions (a new species of Wakaleo) stabbed with long, powerful incisors. Large claws on the thumbs could rend prey; the opposable first toes on the rear feet suggest that the animals could climb like opossums.

A primitive rat kangaroo (Wabularoo naughtoni), which browsed on undergrowth, possessed such unusual jaws that it was assigned to a new subfamily (Bulungamayinae). It is one of a dozen new kangaroo species found so far.

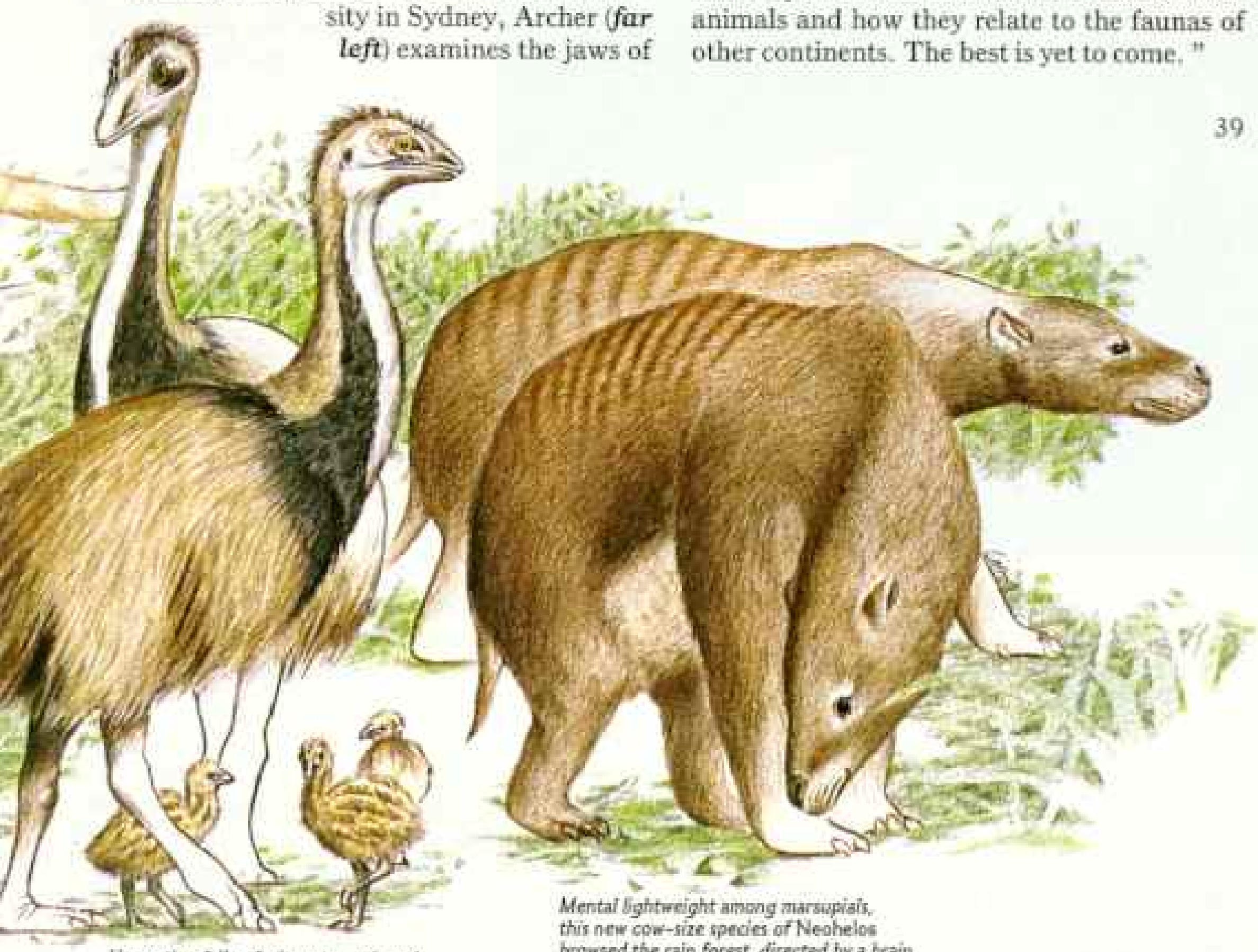
Australia's Prehistoric Menagerie

including Archer, graduate student Suzanne Hand, and senior preparator Henk Godthelp—returned to wrest fossils from the rock, supported by an Australian Research Grants Scheme award and helped by a Royal Australian Air Force helicopter that lifted out 30 tons

of specimens. To date, Riversleigh fossils have raised the count of Australian mammals older than two million years from 70 species to 170.

In a laboratory at New South Wales University in Sydney, Archer (***far left***) examines the jaws of *Neohelos*, a giant marsupial that browsed the area, which was then a dense rain forest pocked by shallow ponds. A painting (***below***) portrays this pouched mammal and a few of the other unique creatures found, including a carnivorous kangaroo and marsupial lions. When these animals died at waterside, their often intact carcasses sank to the limy mud bottom, where bone turned to fossil. One mystifying find—nicknamed "Thingodonta"—was a rabbit-size creature with huge projecting incisors and sharp cheek teeth (***left***). It may have been a placental mammal rather than a marsupial.

Finding the Riversleigh deposits is "like stumbling across the Rosetta stone," Archer believes. "We will continue the search in the 99 percent of the area not yet explored. New specimens undoubtedly will help us determine the diversity and rates of evolution of Australian animals and how they relate to the faunas of other continents. The best is yet to come."



Harvesting fallen fruit, nuts, and seeds, flightless birds of the extinct family Dromornithidae towered two to three meters tall and probably weighed 300 kilograms (660 pounds).

Mental lightweight among marsupials, this new cow-size species of Neohelos browsed the rain forest, directed by a brain barely the size of a tennis ball. All marsupials shown, characterized by two lower incisors, belong to the order Diprotodonta.

FROM MATERIAL PROVIDED BY AUSTRALIAN JOURNALIST BRUCE STANNARD; PAINTING BY ALLEN CARROLL, NATIONAL GEOGRAPHIC STAFF, FROM RECONSTRUCTIONS BY PETER SCHOUTEN, PAUL WILLIS, JEANETTE MUIRHEAD, AND MARGARET ARCHER; PHOTOGRAPHS BY DAVID ROBERT AUSTEN

DESIGNED FOR SURVIVAL

Freshwater Turtles

IN THE TWILIGHT underwater my eyes pick out a double silhouette: two helmet-like shapes floating 30 yards away in the faint shadows below the surface of the river.

Through my face mask I watch as the two shapes break the surface briefly overhead like miniature islands, then join together and sink slowly down toward me at the bottom of the racing current.

The two shapes are a mating pair of freshwater turtles known as peninsula cooters. The female is as large as my diving flipper, the male less than half her size. He rides like a hitchhiker atop her carapace, while green strands of algae resembling gossamer threads trail from their shells.

To me the moment is pure magic, for few observers have been lucky enough to witness the mating of aquatic turtles. As I hold my breath, the female cooter cavorts across the underwater stage, yellow markings on her shell flashing like emblazoned chevrons. Her mate clings tightly to her with taloned hind feet as their courtship ritual begins.

With forefeet pressed to each side of her yellow-and-black neck, the male gently tickles her with his needle-sharp claws. Like kites reeled in on a string, the pair drifts slowly downward, shells immobile but legs and tails parading.

Twenty feet below the surface I kneel, camouflaged in a forest of aquatic plants. Suddenly the male cooter slides backward on his mate's shell, his tail curving beneath her own. At this moment mating takes place. The pair passes by, oblivious of me in the trance of their embrace.

I follow the turtles toward an underwater thicket of coontails and naiads that sway in the swift current like spruce trees in a winter wind.

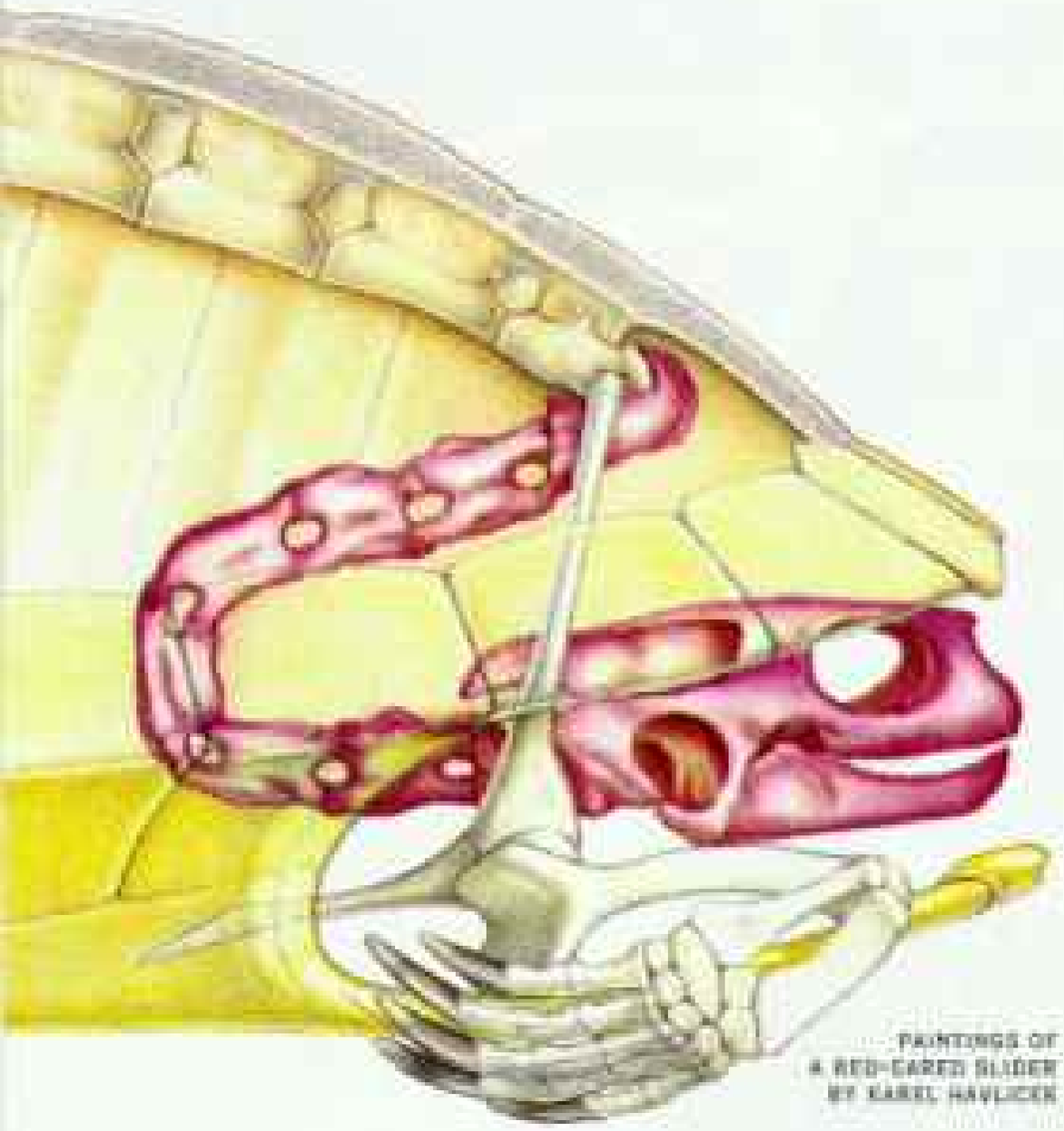
But I come too close, within ten feet. The male cooter suddenly breaks away from the female, and both vanish into a bed of tall arrowheads. The moment has passed; I surface slowly, filled with the wonder of what I have just seen.

That episode in a spring-fed Florida river known as Rainbow Run was one of the high

With the greatest of ease, *a peninsula cooter swims with author Christopher White* ***(above)*** *in Florida's Rainbow Run. A relative, a Suwannee cooter, cruises the same waters* ***(facing page)****. Contemporaries of dinosaurs, turtles are the world's oldest surviving reptiles.*

By CHRISTOPHER P. WHITE

Photographs by
WILLIAM R. CURTSINGER



PAINTINGS OF A RED-EARED SLIDER BY KAREL HAVLICEK

To stay out of harm's way, *most turtles can fold their necks and retract into their shells* ***(above)****. Eight cervical vertebrae, compared with the seven of most mammals, provide flexibility for the retreat maneuver—only one of the many anatomical features that have aided the reptile's survival. The ancestral tree of the turtle includes this horned Meiolania platyceps from the Pleistocene* ***(below)****, here examined by Dr. Eugene Gaffney, a paleontologist at the American Museum of Natural History in New York City. The earliest turtles, as we know them, date back 185 million years.*

points in my recent year-long study of freshwater turtles. Among ponds and streams from Massachusetts to Florida and Alabama, photographer Bill Curtsinger and I stalked 20 of the 32 species of freshwater turtles native to the eastern United States.

We quickly learned that these turtles are a far cry from the legendary tortoise whose slow but sure gait won him victory in the race with the hare. In fact, aquatic turtles are extremely wary and fast. The smooth softshell turtle, for example, can outswim a brook trout, one of the swiftest freshwater fishes. Thus it's hardly surprising that the courtship dance of the peninsula cooter has never been described fully until now.

AS A BOY in Maryland I was fascinated by turtles, whose order, Testudines (from the Latin *testa*, meaning "shell"), includes freshwater turtles, terrapins, sea turtles, and tortoises. My early studies revealed the great variety of turtles—250 species worldwide—as well as a lineage that puts dinosaurs to shame.

Some 275 million years ago, even before the Appalachian Mountains were completely formed, remote ancestors of turtles roamed the earth. Known from fossils, they are called cotylosaurs, or "stem reptiles," since they represent the main line, or stem, from which all reptiles are descended.

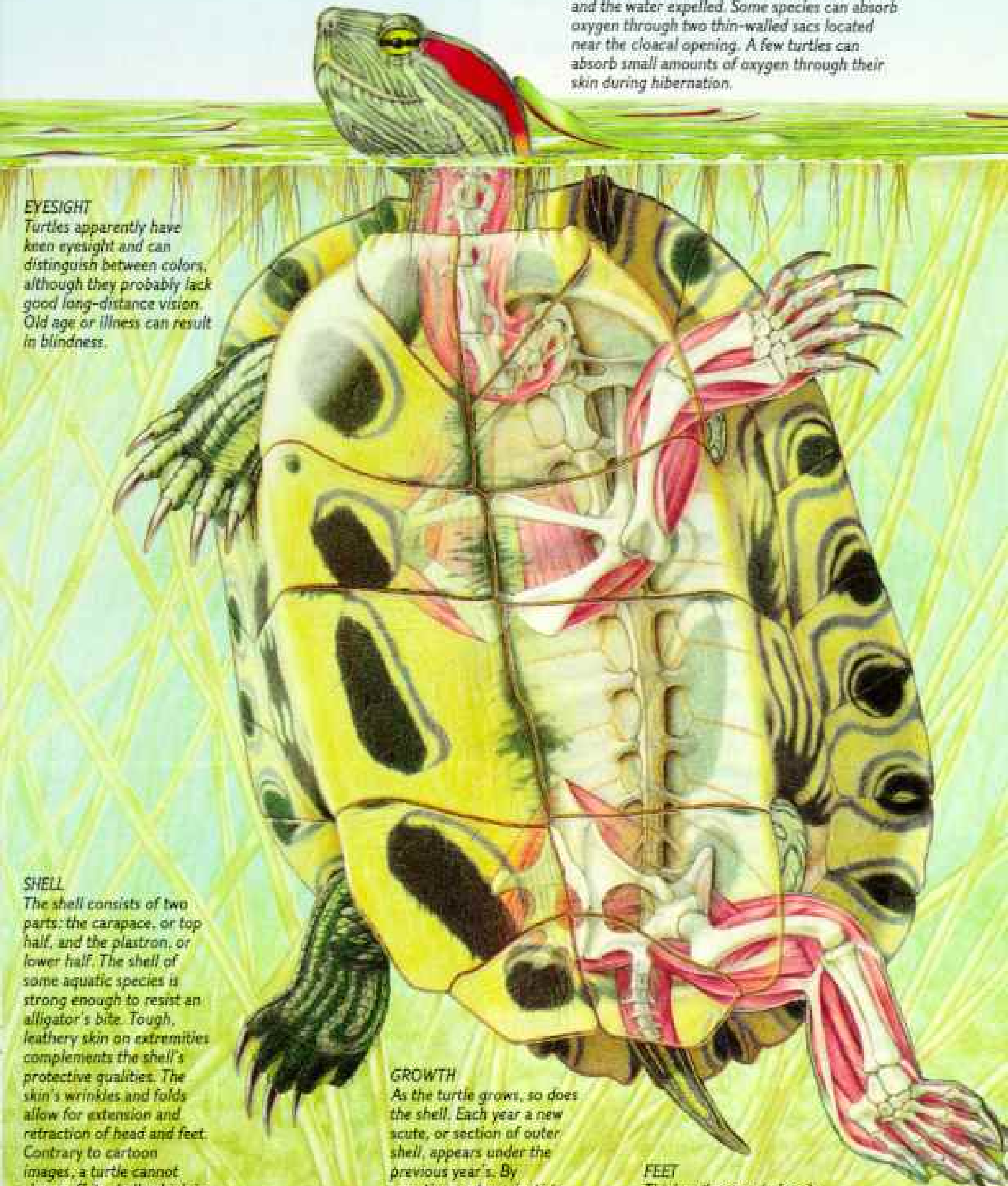
The first recognizable turtles appear in the fossil record some 185 million years ago, still many eons before the dinosaurs had reached their peak. And when the dinosaurs had departed—extinguished by some still unknown condition or event—the turtle survived, with its unwieldy dome perched upon its back.

Certainly that dome has contributed to the turtle's continued existence. Masterpieces of natural design, some shells can deflect the teeth of an alligator.

"Turtles seem to have hit on a good, conservative thing," says Dr. Archie Carr, a world authority on Testudines. "Turtles," Carr adds, "clung to their basic structural design, while many other animals experimented their way into extinction."

The shell marks the turtle, each species bearing its own coat of arms (pages 44-5). My own favorite is that of the spotted turtle, *Clemmys guttata*, sprinkled with dozens of

In addition to breathing through a set of lungs, freshwater turtles can use their mouth cavity in gill-like fashion. Water is drawn through the nostrils, oxygen absorbed in the mouth cavity, and the water expelled. Some species can absorb oxygen through two thin-walled sacs located near the cloacal opening. A few turtles can absorb small amounts of oxygen through their skin during hibernation.



EYESIGHT
Turtles apparently have keen eyesight and can distinguish between colors, although they probably lack good long-distance vision. Old age or illness can result in blindness.

SHELL
The shell consists of two parts: the carapace, or top half, and the plastron, or lower half. The shell of some aquatic species is strong enough to resist an alligator's bite. Tough, leathery skin on extremities complements the shell's protective qualities. The skin's wrinkles and folds allow for extension and retraction of head and feet. Contrary to cartoon images, a turtle cannot shrug off its shell, which is attached to the rest of its body by the backbone.

GROWTH
As the turtle grows, so does the shell. Each year a new scute, or section of outer shell, appears under the previous year's. By counting scutes scientists can age a turtle, much like aging a tree. But lack of scutes in some species, shedding and abrasion in others, makes estimates of age difficult in older individuals.

FEET
Thick nails come in handy for shredding food and digging in mud. Webbing between toes increases speed while swimming, yet still allows some species to walk underwater and browse on aquatic plants.

yellow polka dots. Another beauty is the juvenile map turtle, *Graptemys geographica*, whose carapace markings resemble contours on an ancient chart.

Poet Ogden Nash celebrated the turtle in delightfully inexact verse:

> *The turtle lives 'twixt plated decks*
> *Which practically conceal its sex.*
> *I think it clever of the turtle*
> *In such a fix to be so fertile.*

In fact, the turtle's sex is often revealed by size—in many species the female is larger than the male. As for fertility, some species of freshwater turtles are slow in reproducing, one of the factors that threaten their survival in an increasingly hostile world.

Nash was correct, however, about the "plated decks." Every turtle has two, the upper, called the carapace, and the lower, known as the plastron. Most turtles can retract all four limbs as well as their head between the two shells.

Unlike some land turtles, however, many aquatic turtles have no hinge in their plastron and cannot close their shells. Their best defense against terrestrial enemies is still a quick dive into pond or stream.

LITTLE WONDER that the turtle occupies an honored place in many mythologies. In ancient China a legendary turtle named Kwei reportedly directed the creation of the universe and presided over China's fate.

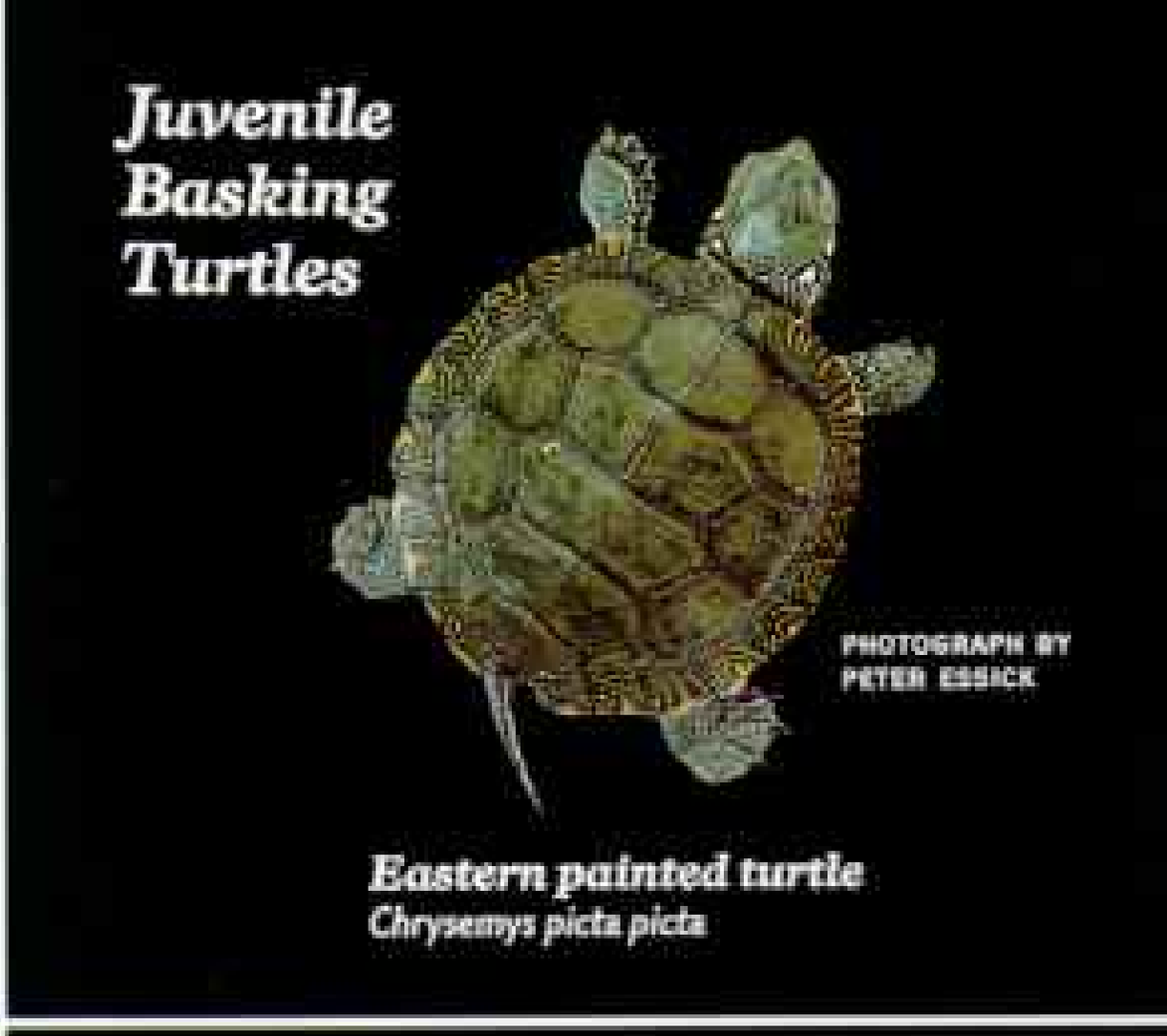
Some North American Indian tribes believed the world was an island borne on the back of a great turtle, and Hindu mythology envisions the universe as supported by four elephants standing on a turtle's back.

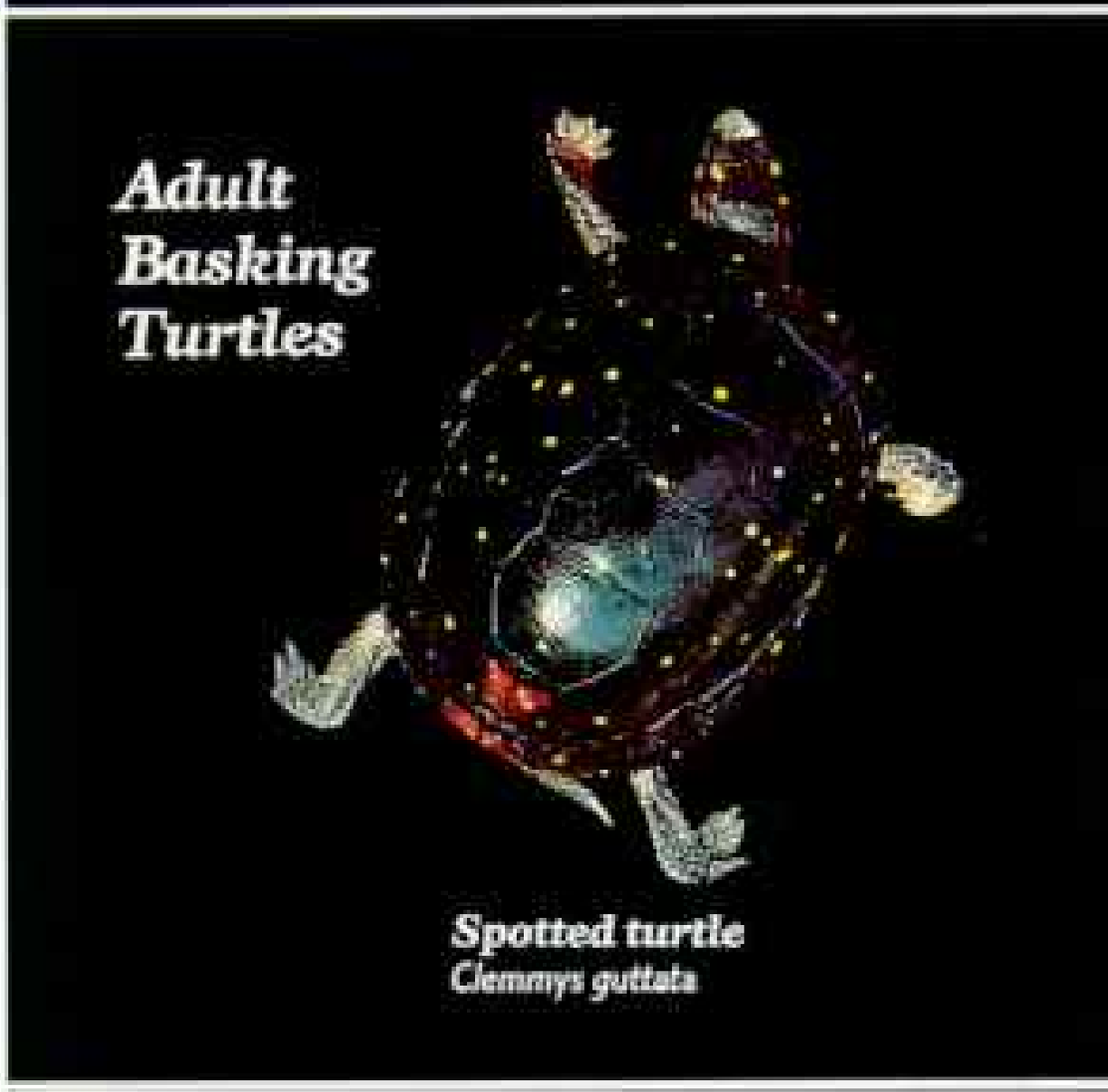
Folk legends credit the turtle with extremely long life, a fact now well established. The oldest known freshwater turtle, a 70-year-old alligator snapper named Hulk, lives at the Philadelphia Zoo.

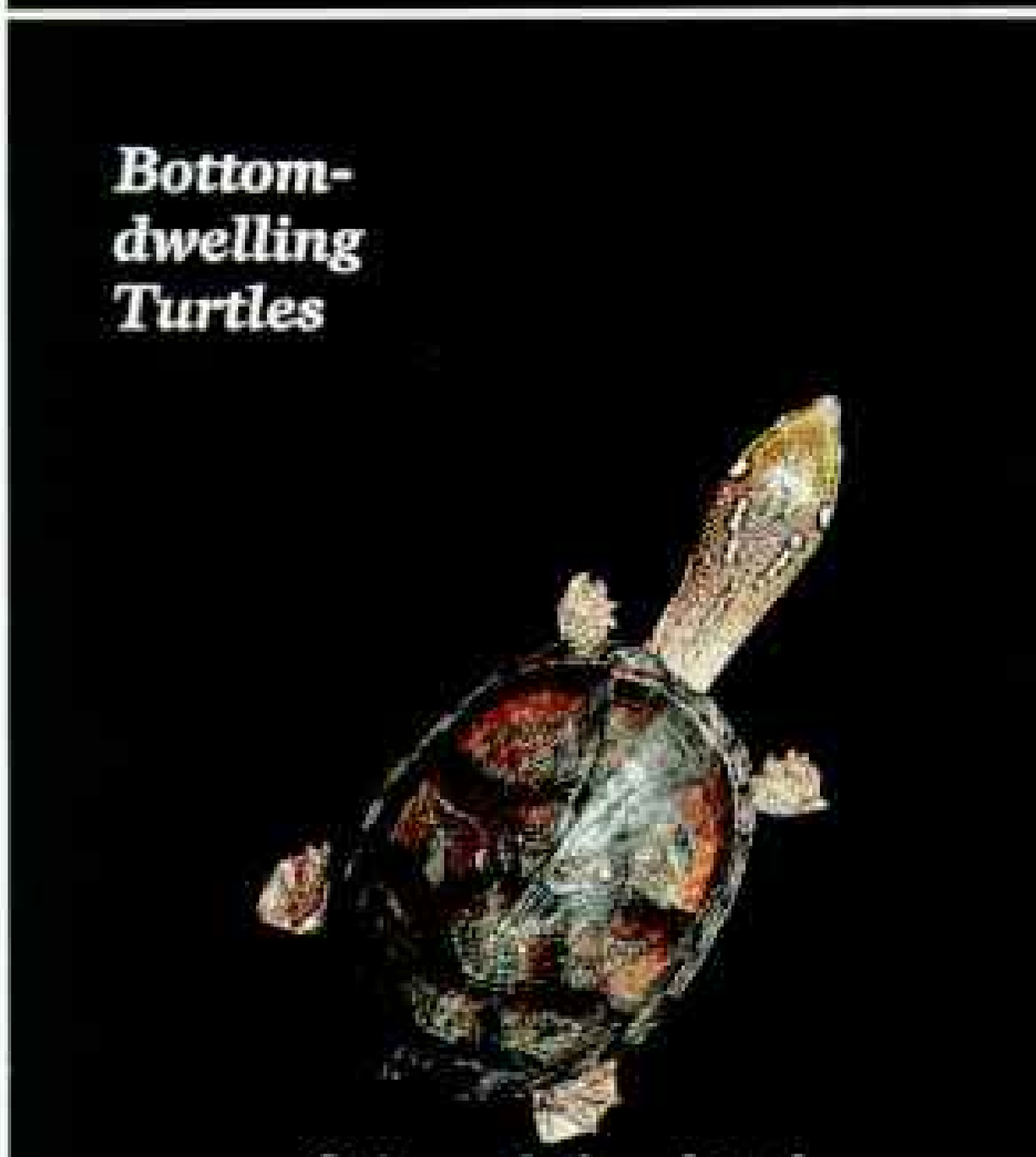
Freshwater turtles vary in size from the

***A turtle portfolio** includes animals patterned with dots, splashes, and hieroglyphs. Unlike some land species, many aquatic turtles cannot close their shells. Freshwater turtles include more than 180 species worldwide.*

JUVENILES (TOP ROW) SLIGHTLY LESS THAN LIFE-SIZE;
OTHER SPECIMENS APPROXIMATELY 1/3 LIFE-SIZE







River cooter
Pseudemys concinna ssp.

PHOTOGRAPH BY
PETER ESSICK

Suwannee cooter
Pseudemys concinna suwanniensis

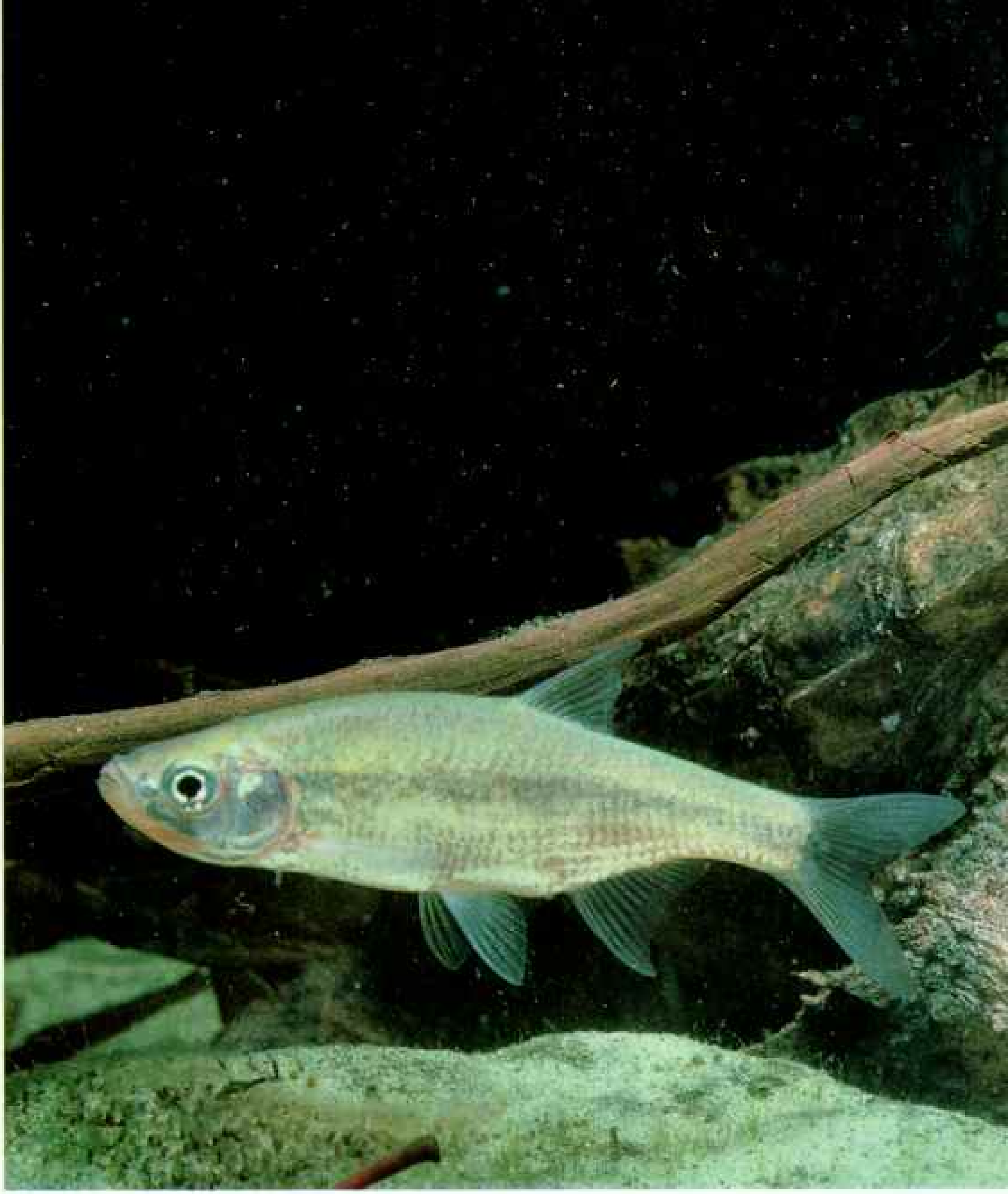
Black-knobbed sawback
Graptemys nigrinoda nigrinoda

Yellow-blotched sawback
Graptemys flavimaculata

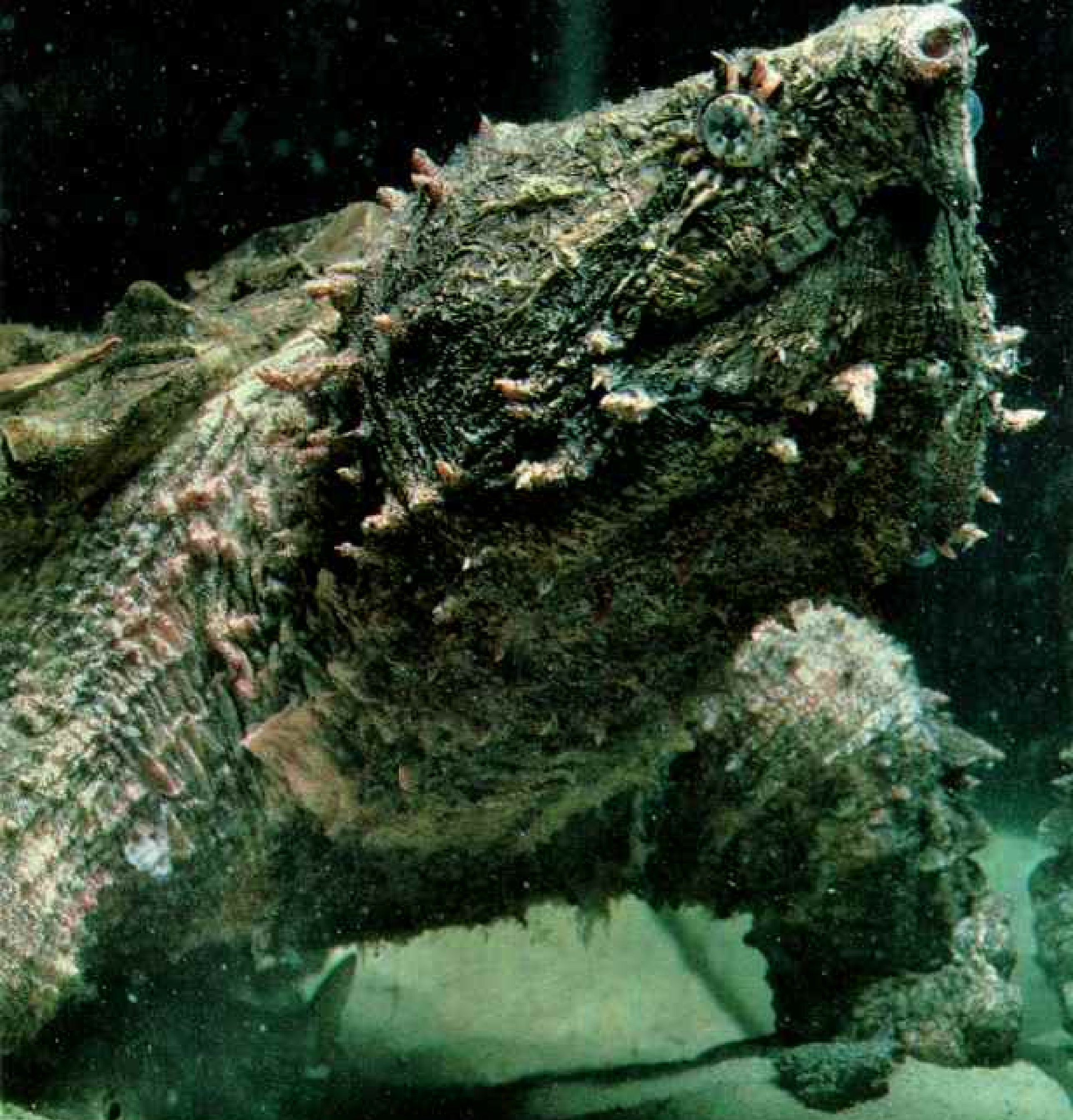
Peninsula cooter
Pseudemys floridana peninsularis

Common snapping turtle
Chelydra serpentina serpentina

Gulf coast spiny softshell turtle
Trionyx spiniferus asperus



Trick or treat? *An alligator snapping turtle hunkers on the bottom of an aquarium as its unwary prey swims by* (**above**). *The young snapper's jaws open to reveal a rose-colored wormlike appendage projecting from its tongue* (**near right**). *The unsuspecting minnow is literally lured into its jaws by the ruse* (**far right**). *Alligator snappers—which can weigh as much as 250 pounds—don't have discriminating appetites, says the author. Anything that wanders by is fair game. Dissected stomachs have contained baby alligators, raccoons, snakes, acorns, shoes . . . even other turtles. Snappers are aptly named. One, being boated, bit a sizable chunk out of a wooden canoe, according to a 1950 account. Feeding habits vary according to species. Suwannee cooters are predominantly vegetarian, and loggerhead musk turtles favor snails.*



stinkpot, a three-inch-long, eight-ounce variety that exudes a musky fluid when disturbed, to the alligator snapper, a giant native of the south-central United States that can weigh in excess of a hundred pounds. A behemoth at Chicago's Brookfield Zoo tipped the scales at a record 250 pounds.

The bite of the alligator snapper is legendary. Folklore has it that even if the turtle is decapitated, the head will live till sundown. Backwoodsmen in the Southeast claim that the animal can bite a broomstick in two and will hold on to a victim until the sky thunders. According to Uley Bass, a veteran Florida turtle hunter, there is some truth to this claim.

"Late one night 16 years ago," Uley told me, shortly before he died, "my son and I pulled an old 75-pound alligator snapper out of a swamp. Like a fool I put the snapper right behind me in the boat. After a time we got stuck in some reeds, so I reached back for a paddle and slam!—something hit my hand so fast I didn't know what had happened. Then all of a sudden there was blood everywhere, and my son was shouting, 'Dad, two of your fingers just dropped into the bottom of the boat!' "

During our study of 20 species of freshwater turtles, Bill Curtsinger and I soon learned to be wary of all snapping turtles, including the alligator snapper, as well as the equally aggressive stinkpots and other musk turtles. Better tempered are the painted and spotted turtles, yellow-bellies and red-bellies, map turtles and false maps, sawbacks, and cooters. The diversity of freshwater turtles is remarkable. By contrast, only five species of terrestrial turtles are found in the entire United States.

For years a lucrative pet trade in turtles flourished in this country and abroad. In

*"**If I told you these critters** weren't in trouble, I'd be lying," says Al Redmond of Dawson, Georgia, who gave up trapping alligator snappers for sale to restaurants six years ago when it became apparent the reptiles were being fished out. Now he traps snappers, like this 90-pound male (**above**), for breeding purposes.*

1975, however, the federal government banned the sale of hatchling turtles in pet stores because the animals carry *Salmonella*, a bacillus that causes fever, nausea, and sometimes death among humans.

Long before they were pets, turtles served a more practical function—that of food. Turtle bones and shells found at early man sites indicate that turtles were consumed in prehistoric times. On southern plantations before the Civil War, turtle meat provided protein for slaves. The term "cooter" in fact, used colloquially in the Southeast for many large basking turtles, may derive from the West African word *kuta*, meaning "turtle."

STUDIES of longevity among turtles are hampered by the fact that subjects tend to outlive researchers. "It would have taken at least two generations of scientists to study that 70-year-old turtle in Philadelphia," jokes ecologist Dr. J. Whitfield Gibbons of the University of Georgia's Savannah River Ecology Laboratory.

Fortunately for Whit Gibbons his specialty is the yellow-bellied turtle, a comparatively short-lived pond species whose maximum age in the wild is about 30 years. Whit and his colleague Dr. Justin Congdon developed an ingenious identification technique for the turtles they study.

"We discovered that each yellow-bellied turtle has a unique pattern of markings on its plastron," Whit told me. "We still notch or drill holes in the turtle's shell, but we also put each specimen on a photocopier and duplicate the unique bellyprint for our files."

Since 1967 Whit Gibbons and his team have marked or copied 15,000 individual aquatic turtles (page 53). They also use radiotracking to study turtle migration among seasonal ponds by gluing miniature transmitters to the carapaces. Portable direction finders pick up the radio signals from as far as three-quarters of a mile overland and a quarter of a mile underwater.

One early spring morning I joined Whit and Justin tracking a turtle through loblolly pine woods near their Savannah River laboratory. The specimen we were tracking was soon located—a male yellow-belly burrowed in the pine needles to escape a recent cold front. After he had identified the turtle specimen, Whit covered it again with pine needles. "On the next warm day," he said, "this fellow will come out and continue his search for a new pond.

"Turtles burrow to escape drought too," Whit added, "but that can backfire. In the spring of 1981 a drought hit our area, and hundreds of aquatic turtles burrowed down in the bottom of a nearby pond. The pond dried up, but many of the turtles stayed put, until the skunks and raccoons found them and started digging them up. Pretty soon that dried-up pond looked like a boneyard.

"But interestingly, about 300 yellow-bellied turtles in that same pond escaped. Before it dried up completely, the yellow-bellies took off in a mass exodus for the only pond remaining in the area—about a third of a mile away.

"Well, how did they know the pond was there? Justin and I think they saw it, reflected in the form of polarized light in the sky. If

*From his ponds he releases hatchlings into the wild. A pile of 1,200 skulls remains from Redmond's last harvest in 1979 (**above**).*

A nest-robbing crow *makes off with a newly laid turtle egg* ***(top)****. To protect the Plymouth red-bellied turtle against predators such as skunks and raccoons, Dr. Terry E. Graham, a biologist at Worcester State College in Massachusetts, places a milk crate over a nest* ***(above)****. The Plymouth red-belly* ***(above right)****, declared endangered in 1980, numbers about 300 today. Its habitat is limited to 14 ponds in southeastern Massachusetts.*

it's true that yellow-bellied turtles can actually see reflected water that far away, it may explain how they and other pond turtles migrate so easily from pond to pond."

Many freshwater turtles have the ability to remain submerged or buried in mud for weeks at a time. In addition to normal lungs, these turtles, like frogs, have an auxiliary breathing system. Blood vessels on the surface of their skin can absorb oxygen directly from water. This enables turtles in colder climates to retreat in winter to the bottoms of streams and ponds and hibernate till spring.

As winter gives way to spring, the basking turtles live up to their name. From ponds and streams countless sawbacks, cooters, maps, and sliders rise to the surface where they compete for choice sunning spots on rock ledges, banks, stumps, and logs. Space is sometimes short; one warm afternoon at Lake Purdy in Alabama I saw basking turtles stacked one on top of another, like slates on a roof.

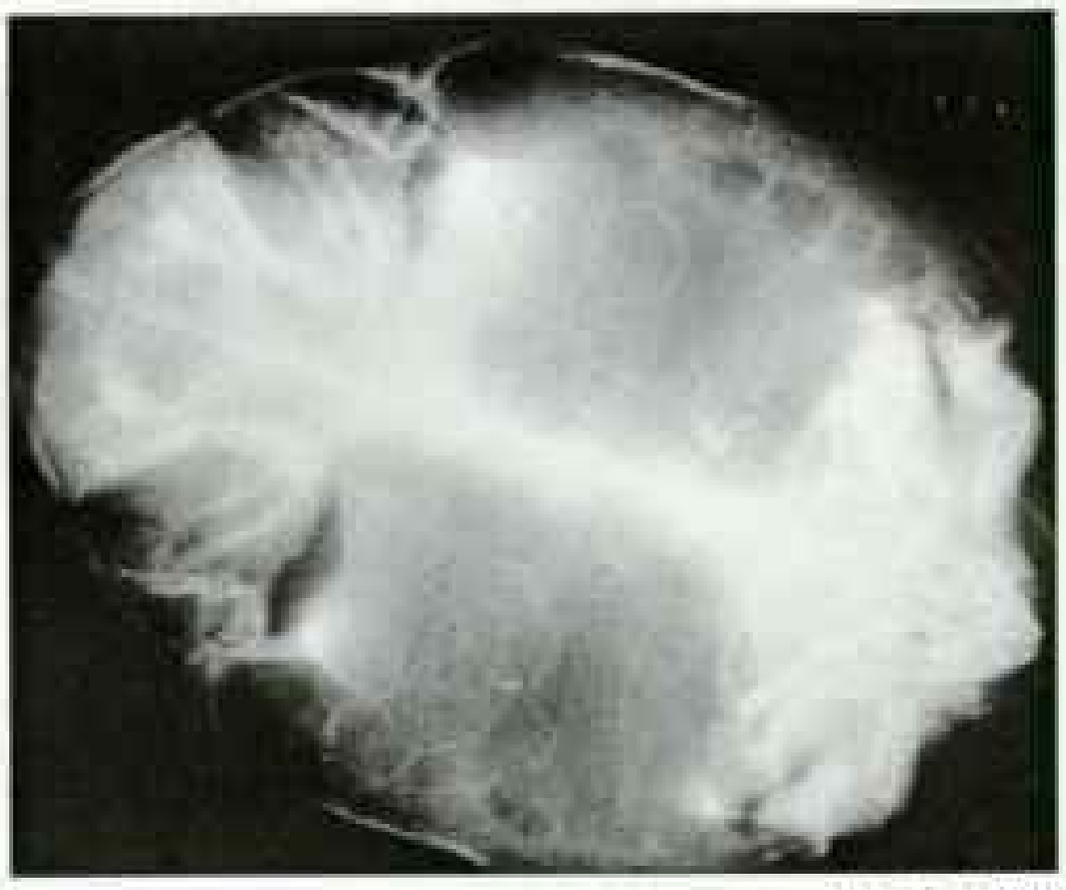
By mid-April in the Southeast mating among freshwater turtles is under way, and each species has its own courtship ritual. Among spotted turtles this consists of a wild chase by the male after the female, with much thrashing and circumstance.

In a more graceful vein, common snapping turtles perform a face-to-face ritual in which male and female sweep their heads from side to side in opposite directions. After several minutes of this metronomic display, the partners slowly return their heads to dead center and stare at each other for a time before mating.

Painted turtles include a sort of tap-dance routine in their courtship. The male of the

To take an egg count *without dissecting the animal or disturbing a nest, researchers at the Savannah River Ecology Laboratory in Aiken, South Carolina, X-ray a female Florida cooter* ***(left)****. An X ray of a Plymouth red-bellied female reveals more than a dozen eggs* ***(below)****. The onetime dosage of radiation is minimal; the procedure does no harm to eggs or turtle.*

Many aquatic females lay their eggs in solitude near the water's edge. Their hind feet are used to dig, arrange the eggs, and cover the nest. In northern zones most eggs are laid by mid-July, leaving enough time for incubation and hatching before the start of cold weather.



TERRY E. GRAHAM

species has elongated front "fingernails," reminiscent of those of an ancient Mandarin. Swimming backward in front of the female, he caresses her face with his toothpick claws. If interested, she responds by tapping his outstretched limbs with her own rather stubby nails.

Whatever the form, such rituals lead to mating, nest digging, and egg laying—the latter two functions performed by the female on her own, sometimes in secrecy.

"I've rarely seen one of my females actually lay her eggs," says Joel Smith, a veteran Florida turtle rancher.

Joel's ranch near the town of Bell has ponds in place of pastures. Here he raises alligators—not alligator snapping turtles, but real alligators—and softshell turtles, both considered delicacies.

"I started raising softshells in 1978," Joel told Bill Curtsinger and me. "We have more than 300 breeding stock, but softshells take eight years to mature, so we won't have our first harvest for a year or so yet."

With Joel's ranch manager, Vassie Jones, Jr.—who in southern fashion goes by the name Junior—we went prospecting for turtle eggs along the edges of the ponds.

"They lay on dry land," Junior said of the turtles, "and they don't waste time. A female softshell can dig a nest, lay her eggs, and be gone, all in just a few minutes." Junior thrust a long metal rod down through the soft earth, especially in areas that looked disturbed. When the rod suddenly sank a few extra inches, Junior knew he had found an egg chamber. Six or eight inches down he came to the clutch—28 perfectly round, pure white eggs nearly the size of Ping-Pong balls. Junior put them in a bucket, taking care not to rotate any off center.

"They're different from bird eggs. Turtle embryos develop upright, that is, with the carapace on top, the plastron underneath,

and the yolk sac underneath that," he explained. "If you roll the egg over, the embryo could be crushed by its own yolk sac, or a membrane could tear. You have to put them down the same way you pick them up, or they'll never hatch."

Back at a ranch shed we watched Junior stack the eggs alongside hundreds of others in an incubating room whose temperature is kept at a constant 87°F. "Come back in 64 days," Junior said, "and these'll be hatchlings instead of eggs."

WHEN AQUATIC TURTLES leave the water to lay their eggs, many females dig a single chamber near the water's edge and cover the nest. At least three varieties of turtles, however, follow a practice called triple clutching that still puzzles scientists.

Peninsula, Florida, and Suwannee cooters all dig a main nest where they lay most of their eggs—usually 16 or 18—then add a smaller pocket on either side in which they lay one or two eggs each. Some scientists believe the pockets are decoys, designed to draw a predator's attention from the main clutch, but Archie Carr has his doubts.

"I've never trusted the decoy idea," he told me one day in his office at the University of Florida. "Two or three eggs in little side pockets aren't going to fool a hungry raccoon—they probably act more like a beacon. And why do only these three turtles practice triple clutching? Damned peculiar.

"The only explanation I can think of is that triple clutching is a behavioral relic from Pleistocene times—times when those cooters may have been plagued by predators now long extinct." Dr. Carr smiled.

"But I can't think of any predator so small of appetite or dim of wit that he'd be fooled. It's still a mystery, and I've been losing sleep over it for 30 years."

Thanks to modern predators, chiefly man, laws are now being enacted to save threatened species of aquatic turtles. Commercial trapping of the Suwannee cooter and the alligator snapping turtle—both considered delicacies among turtle gourmets—is now prohibited in the state of Florida. Yet other states still allow commercial harvesting of the alligator snapper, which is becoming increasingly rare throughout the

Making a turtle ID, *Dr. J. Whitfield Gibbons, senior ecologist at the Savannah River Ecology Laboratory, photocopies yellow-bellied turtles, each uniquely marked on its lower shell (**top**). A print (**above**) identifies a male Florida cooter followed as part of a migratory and population-density study.*

Southeast. As a result Al Redmond has taken matters into his own hands.

A former turtle trapper, Al now breeds alligator snappers on his farm in Dawson, Georgia (pages 48-9), and releases as many as 4,000 hatchlings a year into streams and rivers where numbers are few.

"Six years ago," he told Bill and me, "I realized that almost single-handedly I was trapping the alligator snapper right out of existence in Georgia—in one week of 1978 I caught more than three and a half tons of turtle. Other trappers saw how easy it was and started working the streams too. Snappers were plentiful then, but nothing's *that* plentiful, so I quit and started raising them instead." He led us to a holding tank and with a quick move hoisted out a 118-pound male alligator snapper.

"This is what it's all about," he said proudly. "Do you know how long it takes to replace a turtle this size? You wouldn't live long enough to see it."

He gazed fondly at the huge, unlovely creature in his arms. "Come on, tell me that's not a dinosaur."

Despite the growing threat to freshwater turtles in the southeastern United States, none has yet been placed on the federal government's list of protected species, though the alligator snapper and seven other species are being considered.

By contrast, a basking freshwater turtle native to New England is not only protected but also has been declared endangered—the last stage on the environmental scale before extinction.

AS SUMMER slowly retreated before autumn along the Atlantic coast, Bill Curtsinger and I journeyed to Massachusetts to study one last aquatic turtle—the beautiful and imperiled Plymouth red-bellied turtle, *Pseudemys rubriventris bangsi* (pages 50-51).

At Worcester State College Bill and I found out just how close the Plymouth red-belly had come to extinction. "When the red-belly was declared endangered in 1980," biology professor Dr. Terry E. Graham told us, "the total population was estimated at no more than 200 individuals. They were scattered in 11 small glacial ponds, some of them located on cranberry farms in Plymouth County, over a radius of about ten miles."

Thanks in large part to Terry Graham's work, however, the Plymouth red-belly continues to survive, and its chances may even be slightly improved.

"Since 1980," Terry told us, "we've found three more ponds with red-belly populations, and I estimate the total number of adults to be about 300. That's better than 200, of course, but the remains of red-belly skeletons found outside Plymouth County suggest that original stocks may have been considerably larger."

With Terry we visited several ponds in the area, checking stocks and examining specimens caught in basking traps—ingenious devices consisting of floating ramps on which turtles climb to sun. The ramps are surrounded by steel-mesh pens that catch the specimens when they dive off. Terry measured several red-bellies to record their growth, then returned them to the ponds.

"The greatest threat to the species," he said, "is loss of habitat in the form of human development around the ponds. Many old

PAINTING FACING PAGE BY KAREL HAVLICEK

Courtship *begins on a pond surface when a male red-eared slider tickles a female's neck as he swims backward and she forward (***facing page,** *top). The two sink to the pond bottom, and the male climbs atop the female's shell, curling his tail under to mate, lower left.*

*Portrait of a loggerhead musk turtle shows its distinctive chin whiskers, or barbels (***above***).*

nesting sites are now in people's backyards."

One of Terry's major assets in his fight to save the red-belly is a volunteer army of hundreds of schoolchildren and parents to whom he has lectured on the turtle's plight.

"There are hundreds of small glacial ponds in the area," Terry explained, "and I could never check them all for nests or resident populations. Leads come from phone calls by people who know the red-belly is in trouble and want to help it survive."

Others have helped by removing ponds and surrounding areas from the threat of development. In 1978 the privately funded Nature Conservancy bought Crooked Pond, a red-belly habitat. Acquired by the U. S. Fish and Wildlife Service in 1983, the Massasoit National Wildlife Refuge is the first federal sanctuary ever established for an imperiled freshwater turtle.

PERHAPS the most encouraging news comes from the laboratory. In 1981 Terry Graham injected several egg-bearing female specimens with Pitocin, a drug used to induce labor in pregnant women. The drug had the same effect on the turtles, and the survival rate of hatchlings in the laboratory was 87 percent. By contrast, Terry estimates that no more than half of all red-belly eggs and less than 10 percent of newborn hatchlings survive to swim in the wild, thanks to such predators as raccoons. Some of Terry's laboratory graduates now live happily in Crooked Pond.

Equally encouraging is the discovery that the temperature of a nest or incubation

Faster than a speeding diver, *a Florida softshell turtle outswims the author, who wears flippers* ***(left)****. Softshells can lay as many as 33 eggs, which hatch in two months* ***(top right)****. A softshell has a snorkle-like snout* ***(middle right)****. It can shimmy into mud at the bottom of a swamp, extend its snout above water, and remain comfortably hidden. Like other aquatic turtles, softshells breathe through lungs but maintain a second source of respiration through their skin. The underside of a softshell shows the capillary-rich tissue that allows oxygen exchange underwater* ***(right)****.*

Riding alligator-back, a Suwannee cooter basks in the Florida sun.

chamber appears to determine the sex of hatchling turtles. While incubating painted and map turtle eggs at the University of Wisconsin, biologists J. J. Bull and R. C. Vogt found that a constant temperature of 77°F produced all male hatchlings, while a temperature only ten degrees higher yielded all females. Laboratory experiments with alligators have produced the same results, though in reverse order.

This discovery has led some scientists to speculate that the dinosaurs may have vanished from the earth because cooling temperatures produced too many males without females, or perhaps the reverse. Either condition would have proved fatal in the long run. Unlike the dinosaurs and for reasons still unknown, the turtles and crocodilians managed to survive.

Terry views the discovery regarding incubation temperatures as a potential asset for the red-bellied turtle. "Turtles are polygamous," he explained to me. "It takes only a few males to mate with a large number of females to increase the population, yet the normal ratio of males to females is about equal. If we could produce more females by controlling incubation temperatures, we might double the population in a few generations. But that's way down the line, and meanwhile the Plymouth red-belly needs all the help it can get."

WENDELL METZEN

Basking steps up the metabolism of the cold-blooded turtle.

As winter settled over the New England landscape, Bill and I returned to Rainbow Run in Florida for a final dive. On the day we arrived, the weather was overcast. No turtles basked on their accustomed logs, so Bill and I dived to the bottom of the crystalline stream. There we happened on a female Florida snapping turtle we had seen nearly a year before. She was recognizable by a long notch in her shell, probably the result of an encounter with a disappointed alligator or the propeller of a trapper's boat.

We watched as she stalked the stream bottom, moving weightlessly over the sand like an astronaut on the moon. One hundred and eighty-five million years ago her ancestors had roamed the forests and waters of the earth. They had survived the dinosaurs, and they were here when the newcomer, man, emerged on the planet a mere four or five million years ago.

The snapper turned from us at last—huge, armored, stately in her movements. I watched her swim away into a jungle of wild celery that waved like pennants in her wake. The last I saw of her was the keel of her beveled shell, disappearing among the underwater shadows.

To me that shell, that coat of arms, had become a symbol of survival. God and man willing, I thought, its owner and her kind will endure for eons to come. □

Charley Russell
COWBOY ARTIST

By BART McDOWELL ASSISTANT EDITOR

Photographs by SAM ABELL

C. M. RUSSELL MUSEUM, GREAT FALLS, MONTANA

***Two loves**—drawing and cowboying—vied for the soul of Charles Marion Russell, much to the benefit of American art and history. Today just one of his paintings might be worth a ranch in Montana's Judith Basin, where in 1882 he started wrangling horses, as Gerald Mack does today (**opposite**).*

IT STARTED ONE SNOW-SWEPT DAY a century ago, during Montana's catastrophic winter of 1886-87. In the bunkhouse of the OH Ranch a 22-year-old cowboy detached a scrap of cardboard from a collar box and fashioned a watercolor the size of a postcard.

That picture today is almost as famous as the name of the young wrangler whose artistic career it launched, Charles Marion Russell.

I first saw Charley Russell's pictures in my grandfather's den. I was a small boy in Texas, and my grandfather had framed some Russell prints—cowboys and animals in sweaty action—and hung them on a wall beside some deer antlers.

Since my grandfather had once been a wrangler himself and scorned all drugstore cowboys, I knew from the first that Russell pictured life as it was, rough and real, "with the bark on," as Texans say. I've been on Russell's trail off and on ever since, from Montana's Judith Basin to the California beaches he lampooned and so enjoyed.

But please: I'm not an art expert, historian, anthropologist, or bronc rider. They're all equipped to praise the uncanny honesty of Charley Russell. It's his canny *dis*honesty that I especially like: the touch of caricature, the pin he jabs at pompous baloons, the droll hyperbole of his stories, the schoolboy snicker of his deliberately misspelled letters. His humor reminds me of my own Uncle Bert—and perhaps that's the secret of the Russell mystique: Throughout the American West, he's a friend of the family. He turns the pages of our own family album.

I've lately been talking to cowboys and Indians about Russell. And to some other unlikely critics—trappers, loggers, junk dealers—as well as other artists, collectors, and gallery directors. Charley Russell holds his own and then some. Russell scholarship is flowering in books.

Charley Russell's is the only statue *(Continued on page 67)*

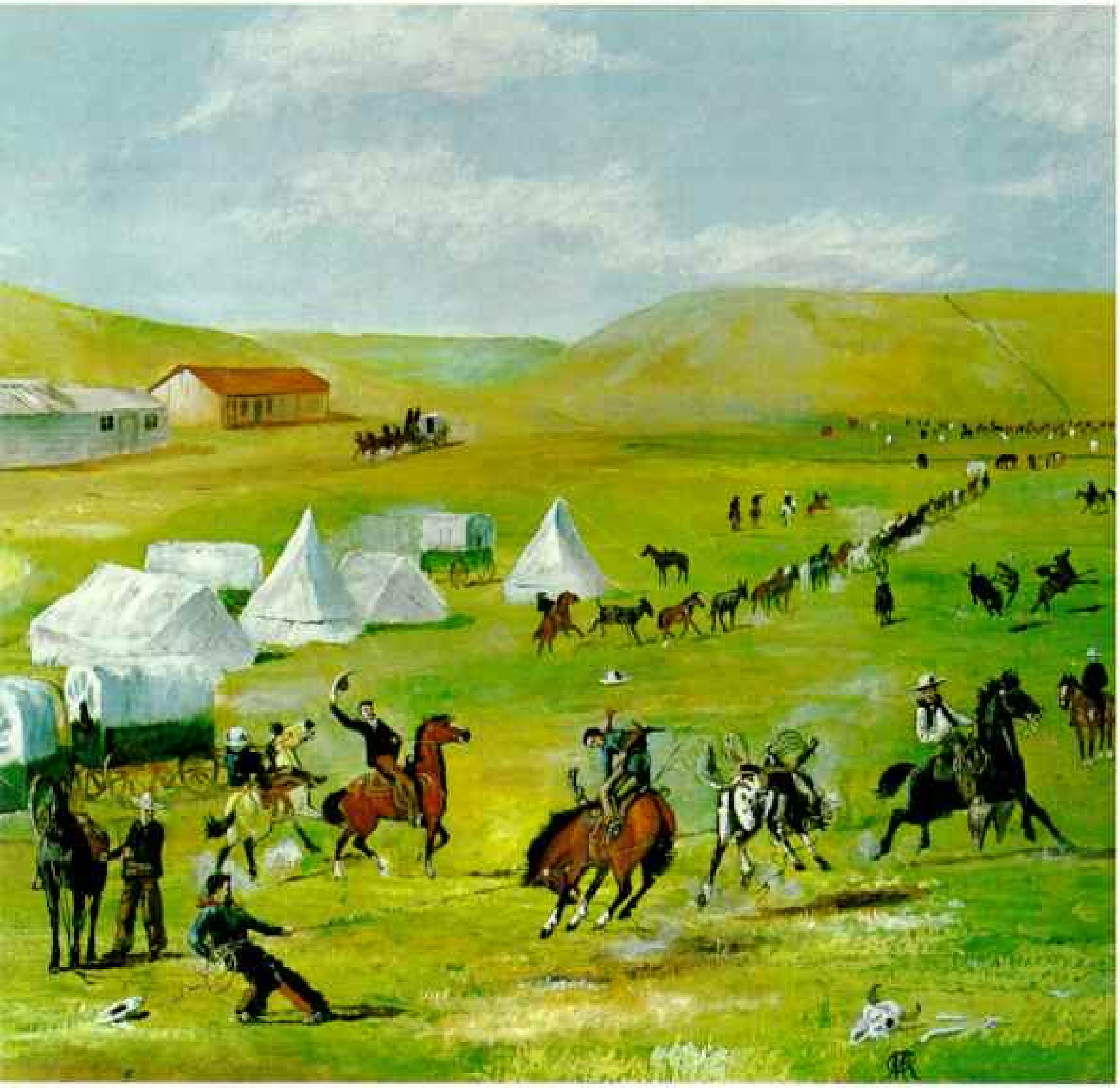
PAGE FOLDS OUT ▶

Homage to the red man *and his vanishing era was celebrated in hundreds of Russell's works, especially those depicting the last gasp of a heroic tradition of native America—the Indian buffalo hunt. By 1900 he was unrivaled in his ability to depict the animal whose skull he chose as his emblem. He captured the hunt's drama in a 1919 painting called "Fighting Meat" (**left**). The 1914 drawing (**below**) reflects the features of Young Boy (**above**), a lifetime friend and subject of many works. The appended note—sent to a judge—expresses Russell's feelings for America's Indians.*

"This is the only real American
He fought our chief for his Country-
To day he has no vote
no Country and is not a citizen
but history will not forget him

W. J. WILLIAMS FAMILY COLLECTION (LEFT)
H. C. EKLUND, MONTANA HISTORICAL SOCIETY (TOP)
C. M. RUSSELL MUSEUM (LOWER)

***A primitive exuberance** marks Russell's early works, the most famous of which, "Cowboy Camp during the Roundup" (**above**), depicts the spring cattle roundup at Utica, Montana, in 1887. Commissioned by Utica saloonkeeper James R. Shelton, the painting is packed with Russell's cowboy friends from the Judith Basin, many of whom appear in an 1884 photograph that shows Russell seated in the front row, third from left (**right**).*



AMON CARTER MUSEUM, FORT WORTH (ABOVE); C. M. RUSSELL MUSEUM

(Continued from page 60) of a full-time artist in the U. S. Capitol Rotunda. A wildlife refuge bears his name; so does a mountain of stone. The C. M. Russell Auction of Original Western Art in Great Falls, Montana, once a year and for one brief weekend turns Charley's hometown into one of the world's most lucrative art markets. Thousands attend and spend more than half a million dollars in three days.

Forgers pay the highest compliment to him with a cottage industry of Russell fake making. Last year the dean of Russell scholarship, Fred Renner, alone found 39 forgeries. No wonder. Sixty years after the artist's death a good Russell canvas is worth the price of a cattle ranch. Not bad for a cowboy who once rode night herd for $40 a month.

BUT FOR ALL the success of his 4,500 pieces of art, Russell the man is almost as celebrated as his works.

"I like Charley Russell because he's taken me back in time," wrote Joey Nardinger, age 11, a schoolboy in Great Falls last year. "Charley and I have walked across Montana together. We have laughed with our friends, lived in Indian camps, and herded cattle on stormy nights. . . . Charley touched us." Joey won an essay contest for the best of reasons: simple honesty.

Russell even keeps scholars honest. Again, Fred Renner, age 88. A Montanan by birth, he knew Charley personally from

boyhood on. Fred and wife Ginger own one of the great private collections of Russell paintings and sculpture and tend the single greatest archive of Russell facts.

When Dale and Joan Stauffer come visiting the Renners, it's like a class reunion. The Stauffers are doing research on Charley's wife, Nancy, for a biography Joan is writing. "We stay up till 3 a.m. gossiping about Charley and Nancy," says Joan. Remarkably, Russell scholars share sources and facts like a neighborly cup of sugar.

If his neighbors still feel nostalgic about him, that's only natural. Charley Russell himself had a sentimental attachment to lost causes and times gone by, to virgin forests, unplowed plains, and roaming buffalo herds. He preferred cowboys and ranchers to the nesters who turned sod "grass side down." While Sitting Bull was still alive and George Custer not long dead, Charley heatedly defended the red man as the "real American." He lived with Indians and learned their sign language. He always wore the bright-colored sash of a half-breed—"peculiar in my dress," he admitted. "I am eccentric (that is a polite way of saying you're crazy)."

He was an outspoken conservationist ("man cant win much fighting nature"), an environmentalist before the word was in fashion; he called cars "skunk-wagons," and as a reluctant passenger he swore mightily whenever the speed exceeded 30 miles an hour. "In tame countrys on a good road an autos all right," he wrote, "but if your hunting for aney thing wilder than a Doctor take a horse."

Charley protested the extermination of wild horses, writing, "If they killed men off as soon as they were useless Montana woudent be so crowded." That was Charley: spelling rebelliously and thinking Montana crowded.

He was a man's man who loved the outdoors and hunting trips, but he would not himself kill an animal for sport.

"If a fellow got throwed off a bucking horse," one cowboy neighbor recalled, "Charley would actually turn white until the rider got on his feet again, and then he would hightail it to get pencil and paper to draw a comic picture of the happening." Or maybe he'd make a phrase ("he's sittin on the ground with two hands full of corral dust").

Women's fashions sometimes shocked him ("every rag she's wearing wouldn't pad a crutch"). But he also expressed a chauvinist's admiration: "I used to think that men could stand more punishment than women, but I was wrong. In winter a girl wears a fox skin, but her brisket is bared to the weather, and there ain't nothing on her warmer than a straw hat. . . . No sir, a woman can go farther with a lipstick than a man with a Winchester and a side of bacon."

When young artists or storytellers sought his advice, he insisted "sinch your saddle on romance." Certainly Russell did. And yet, when squeamish Easterners objected to one

"Waiting for a Chinook," *Russell called this small watercolor, painted in the winter of 1886-87 to describe the effects of a brutal winter on cattle in the Judith Basin—and the longing for a chinook, a warm wind from the southwest. A wordless message to a cattle owner, it earned Russell immediate local fame.*

MONTANA STOCKGROWERS ASSOCIATION, HELENA

of his Indian paintings—the tribe's dogs were lapping at the blood of fresh-killed game—Russell refused to change his painting: "Tell 'em that's the way it was." Romantic, yes, but he was a very real realist.

CHARLEY WAS BORN during the Civil War, on March 19, 1864, near that crossroads city St. Louis, Missouri. From the early 19th century his family had looked West and prospered in coal mining and brickmaking. And around the dining table in their sumptuous house, relatives talked about the fur trade, scouts, trappers, and Indian skirmishes. Nephew Austin Russell admitted that Charley "did have half-breed cousins . . . a great-uncle who was a squaw man, and two other uncles who got scalped."

From his earliest days young Charley insisted he was going out West. By age ten he could ride his pony, Gyp—and also model figures in mud. Soon he was drawing crude pictures of Indians and playing hooky from school. When a military academy failed to straighten him out, his parents arranged for 15-year-old Charley to go West and work on a sheep ranch. Surely, gritty reality would bring the boy to his senses.

From a train window the youngster first saw the Great Plains; then, switching to a stagecoach, he got a closer, wider look. The prairie stretched forever, as gold as all Castile, until distance turned the mountains blue. When the stage stopped to rest the horses, Charley found his first buffalo skull, the horned head of a bull bleaching in the sun. (The buffalo skull meant something special to Charley. In his early pictures he would paint a buffalo skull somewhere in the foreground; later, he joined a stylized skull with his own signature; and still later he would copyright that logo. He would even one day call his summer lodge Bull Head. That skull was his *memento mori*.)

Meanwhile, back at the ranch, Charley quickly learned to despise sheep. "I'd lose the damn things as fast as they'd put 'em on the ranch," he later recalled. And in all his life he did only one picture of sheep.

His carelessness cost him his job and gave him a bad name. He was broke and hungry when a tough fellow with a scraggly beard came along and offered him a meal of elk meat, beans, and coffee. This was Jake Hoover, a trapper, hunter, and prospector, who sold meat and skins.

Charley threw in with Jake, as folks there phrased it, helping out with chores in exchange for food and lodging. This limited partnership lasted two years.

"His cabin was in Pig-Eye Basin over in Judith country," Charley recalled. "You could see deer from the door of his shack 'most any day . . . he'd as soon take a shot at men as kill one of them deer. . . . Every livin' thing around there liked old Jake. Pine squirrels would climb into his lap an' sit on his shoulder."

Today deer in the Pig-Eye Basin graze, alert but fearless, in much the same way. And game is still plentiful in these parts.

ONE WINTER DAY photographer Sam Abell and I rode a snowmobile in a dazzle of snow spray up the Judith River's South Fork. A blanket of white hid the works of man—roads, fences—and preserved the tracks of elk and coyotes. This was mountain country turned neo-virginal, given back to nature, the very Montana that Jake Hoover and Kid Russell knew.

"I remember Jake's old log cabin," notes Mrs. Ken Perry. "My father used it for an ice shed."

Time and snowfalls brought down the roof and rotted logs. And Picky Perry's father, William Trask, finally rebuilt the cabin, faithfully using hand-hewn logs conforming to Charley Russell's paintings of the place.

When we arrived, the cabin stood solid and tight, a fortress against the winter. On Jake's own stone hearth we built a fire to thaw our fingers and dry soggy gloves. Claustrophobic quarters. No wonder Charley and Jake were outdoorsmen.

"It must have been a hard life sometimes," thinks Picky's son Lanny, himself a professional trapper from time to time. "Great-granddad Trask said he once found a dead man with his hand caught in a bear trap. It could have happened to any trapper working alone. He buried the man and kept the trap."

Lanny's Uncle Bill Perry, who made his living as a trapper, remarks that "beavers

brought trappers to Montana, and we still have them. A skin brings $20 on average. I catch some and leave the rest for seed. . . . Hoover might've also hunted wolves and lions. Bobcats, too."

We speculate a bit—the influence that skinning and butchering would have had on a potential artist who had never formally studied anatomy.

And what does Bill think of Russell's work? "Greatest painter that ever lived!" Ever catch Russell in a mistake? "Well . . . several of us trappers were talking about Russell's pictures, and we decided—*maybe* —he'd put a bear's back paw on the front in one picture." An anatomical lapse, though, seems no stranger than trappers discussing an artist's work.

LONG BEFORE KID RUSSELL turned professional painter, Montana people talked about and saved his sketches. For that reason museum visitors today can watch a primitive Kid Russell as he grew up, learned his craft, and became an astonishingly sophisticated artist. Like seeing Grandma Moses evolve into Georgia O'Keeffe.

First, of course, came the living experience, material he would paint all his life. Cowboying began for Charley in the raw spring of 1882, when he started as night wrangler for about 400 horses. Soon he was night-herding cattle. It was the loneliest work a cowboy could do: He was a human substitute for a fence. A night herder kept cows from straying off or stampeding in the

THOMAS GILCREASE INSTITUTE OF AMERICAN HISTORY AND ART, TULSA (BELOW LEFT); DAVID L. ARNOLD, NGS STAFF (ABOVE)

"I was a wild young man," *Kid Russell admitted. He loved to paint cowboys on the loose, as in "A Quiet Day in Utica," held by Janis Rosman. A later painting, "The Camp Cook's Trouble," shows a horse running amok. "Smoking Up," an early example of Russell's sculpture, once owned by Theodore Roosevelt, captures the same unbridled spirit.*

SIEBEL STUDIO, PHOENIX.
FROM THE FREDERIC G. RENNER COLLECTION

night, calming them down with the reassuring sound of a human voice. Charley sang to the cows for the next 11 years.

Lonely as the night job was, it gave the Kid time by day to watch other cowboys in action. And time to draw pictures. He drew everything—and *on* everything: tobacco kegs, shoe boxes, cracker boxes, mirrors, the lining of a Stetson hat, birchbark and buckskin, a bank vault door, even a green silk petticoat.

THERE CAME the searingly hot, dry summer of 1886, and people noted some strange natural omens: Beavers stored twice their usual winter supply of willow limbs; muskrats grew fur curiously thick; ducks and geese flew south weeks early.

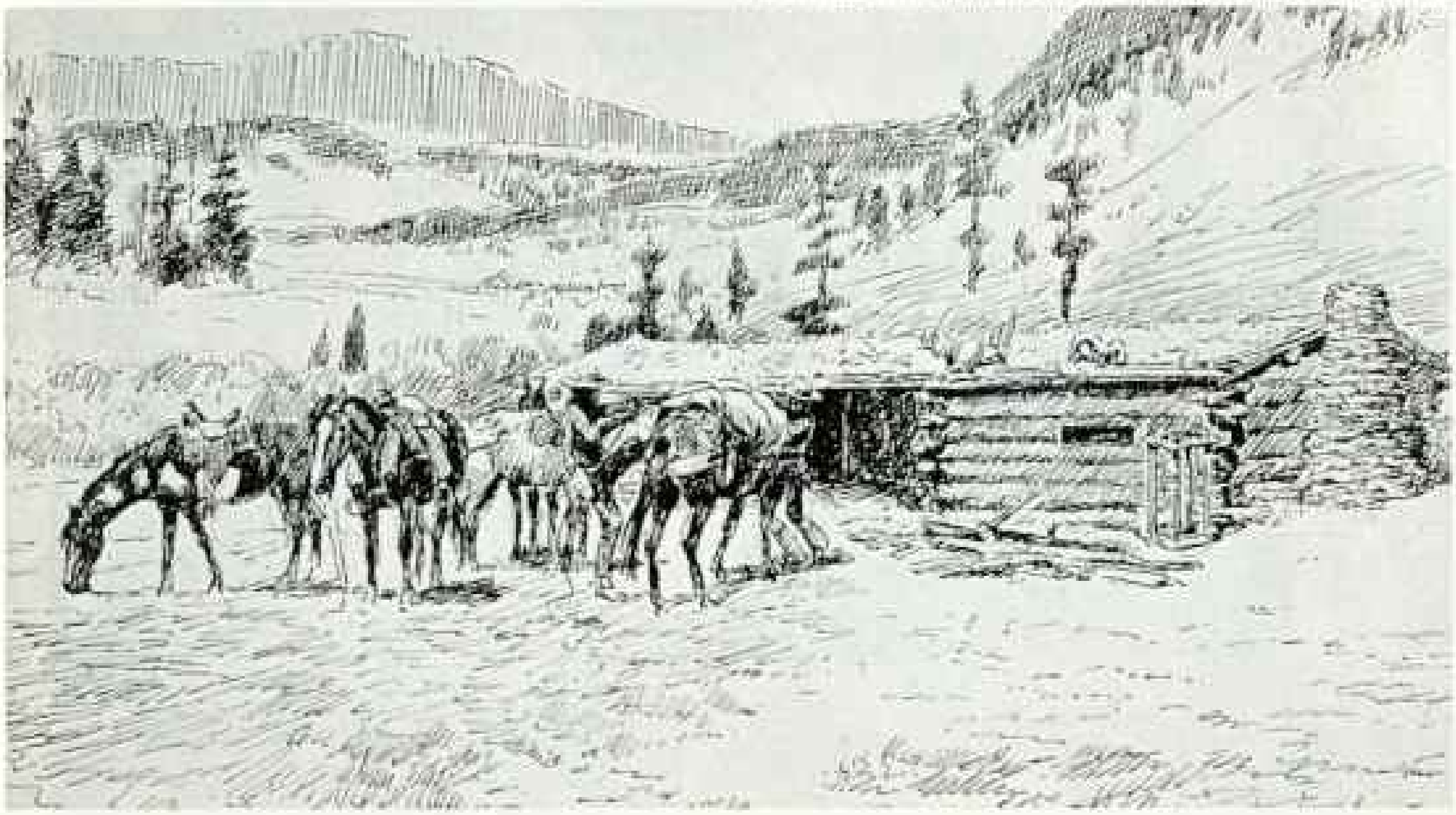
During the October roundup in the Judith Basin, temperatures plunged. One lightly clad young cowboy—not Charley—came indoors after night herding and observed that "fools go way up into the Arctic Ocean hunting for the North Pole, and it ain't over half a mile from right here."

Heavy November snows continued into December, and then in January came a chinook, a thawing wind from the southwest. Late in January a killer storm blew in with 60-mile-an-hour winds. Slush hardened into an icy shield, and livestock could not reach the grass beneath that crust. Starving cattle ate the wool off dead sheep, then fell dead themselves. Before a chinook blew in on February 27, some ranchers lost 90 percent of their cattle.

Jesse Phelps was not much luckier. In the bunkhouse of his OH outfit near Utica, he struggled with a letter to his friend Louie

A wilderness finishing school *for the greenhorn artist, Jake Hoover's cabin on the South Fork of the Judith River* ***(below,*** *during a visit by Russell) was Charley's home for two years, shortly after his arrival in Montana. Working with Hoover, a professional trapper and hunter, he would learn most of what he knew about animal behavior and anatomy, vital to his future work. An on-site reconstruction* ***(left)*** *mirrors the cabin in his drawing* ***(bottom)****.*

C. M. RUSSELL MUSEUM (ABOVE); BUFFALO BILL HISTORICAL CENTER, CODY, WYOMING



Groomed for success *by wife Nancy, seen here in their 1896 wedding picture* ***(above)****, Russell grew from a raw talent into a prolific artist of international renown. An inspiration to humorist Will Rogers, he was a storyteller without peer, who loved to fashion miniature figures from beeswax while he talked. In a 1916 photo, cowboys admire a Russell tale thus embellished* ***(below)****.*

C. M. RUSSELL MUSEUM (ABOVE); MONTANA HISTORICAL SOCIETY

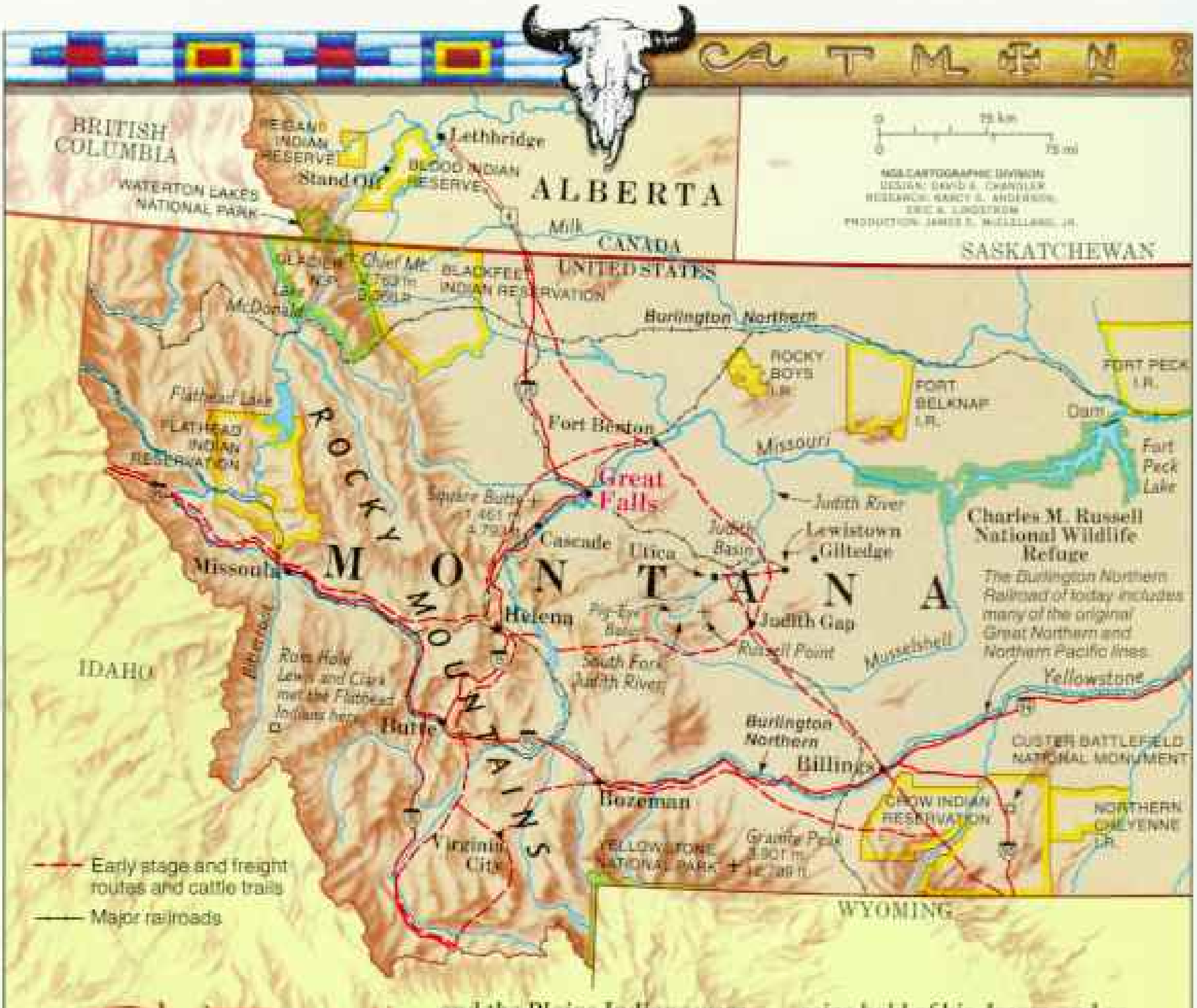
Kaufman in Helena "to tell him how tough it is." Phelps got some help from Kid Russell, who roughed out a picture of a skeletal cow circled in the snow by wolves. Under it he lettered a title: "Waiting for a Chinook."

"Put that in your letter," said the Kid. The picture told it all.

"Louie don't need a letter," said Phelps, and sent only the watercolor to Helena.

When Kaufman got that picture of a dying cow wearing his own Bar-R brand, he got drunk—and then showed his fellow ranchers what the winter looked like. "Waiting for a Chinook" won instant, lasting fame (page 68). Visitors still buy copies of it as a postcard all over Montana.

YEARS AGO I talked to some old-timers whose families had weathered that terrible winter. Old Lear Flannigan recalled the tales about the ranches when the chinook finally thawed the snow: "You could step from one carcass to the next



C. M. Russell

Before fences and railroads had altered the landscape, when Montana was still a territory and the Plains Indians were still struggling to defend their ancestral freedoms, that's when the parents of Charles Marion Russell allowed their rebellious 15-year-old son to seize hold of his dream and go West. They hoped that young Charley would get the West out of his system and return to the family business in St. Louis. He never did.

one all along the Judith." Bill McGregor could himself recall other bad winters there: "I seen it 51° below one day."

Lear Flannigan remembered that in '87 his family "went seriously broke," as he told me. They started again, milking cows and selling butter—"once sold a wagon load of butter to the gold miners at Giltedge."

Gradually Montana came back. As early as the spring roundup, a saloonkeeper in Utica named James Shelton asked Charley to paint a picture to hang on the wall behind his bar.

The young cowboy took a piece of canvas about two feet wide by four feet long and painted the entire town of Utica with the roundup in the foreground. People could identify every cowboy by name. "*And* their horses. *And* their saddlemakers," said one old-timer. Jim Shelton was sitting outside his saloon. Horses were bucking, cowboys waving their hats, and the stagecoach was racing dustily into town (pages 66-7).

"I used to meet that stagecoach pretty near every day," recalled old Bill McGregor. "Stage changed horses in Utica. It had four horses, mostly old spoiled saddle horses, too tough to be rode much but tougher

Courted by an early moon, *Square Butte unfolds in spacious grandeur 20 miles west of Great Falls. A backdrop in numerous Russell paintings, this mile-*

wide tableland of rock can be seen from the town's outskirts, and Charley sometimes rode out to view it for inspiration when he was "fighting a painting."

***Romantic notions** of an artist's life in a drawing from the 1890s (**bottom**) contrast sharply with the reality of a sketch of Russell at work (**below**). In 1903 his dream studio (**right**), now open to the public, rose next to his house in Great Falls, and he filled it with rough furniture and Indian paraphernalia. Here he delighted in cooking cowboy meals of beans, bacon, and biscuits.*

"CHARLIE PAINTING IN HIS CABIN" FROM THE AMON CARTER MUSEUM

"MY STUDIO AS MOTHER THOUGHT" FROM THE AMON CARTER MUSEUM

than hell. Stage made ten miles an hour—average.

"Yes, Utica was quite a little town. Four bars, two hotels, two big livery barns." It had about 100 residents in the 1880s—and about a fifth of that today. Instead of a stagecoach, Utica now has a museum and historical society, locally maintained.

Ken and Picky Perry are among local history buffs. Their living room sports some reproductions of Russell's paintings (one titled "A Quiet Day in Utica"), and they collect oral history from old-timers on tape. We listen to Lear Flannigan's sister Lilly, at age 92, talk about Charley Russell: "He was *all right*. He used to come by my Granddad Reilley's place every week for buttermilk." Meantime, we sample Picky's apple pie and gourmet milk from the Perrys' Holstein, Dolly Parton.

Utica has always served more than milk. On a Saturday night at the Oxen Yoke Inn

"SMOKE SIGNAL" FROM THE C. M. RUSSELL MUSEUM

cowboys come to drink a local favorite called alternately a slammer or a snakebite ("It needs two names—double-strong"), a sweet drink, gaseous and ghastly. Times change. Baseball caps may outnumber wide-brimmed hats (caps fit better inside a pickup truck), but Russell pictures still liven conversation. Prints of some funny ones hang in the saloon men's room.

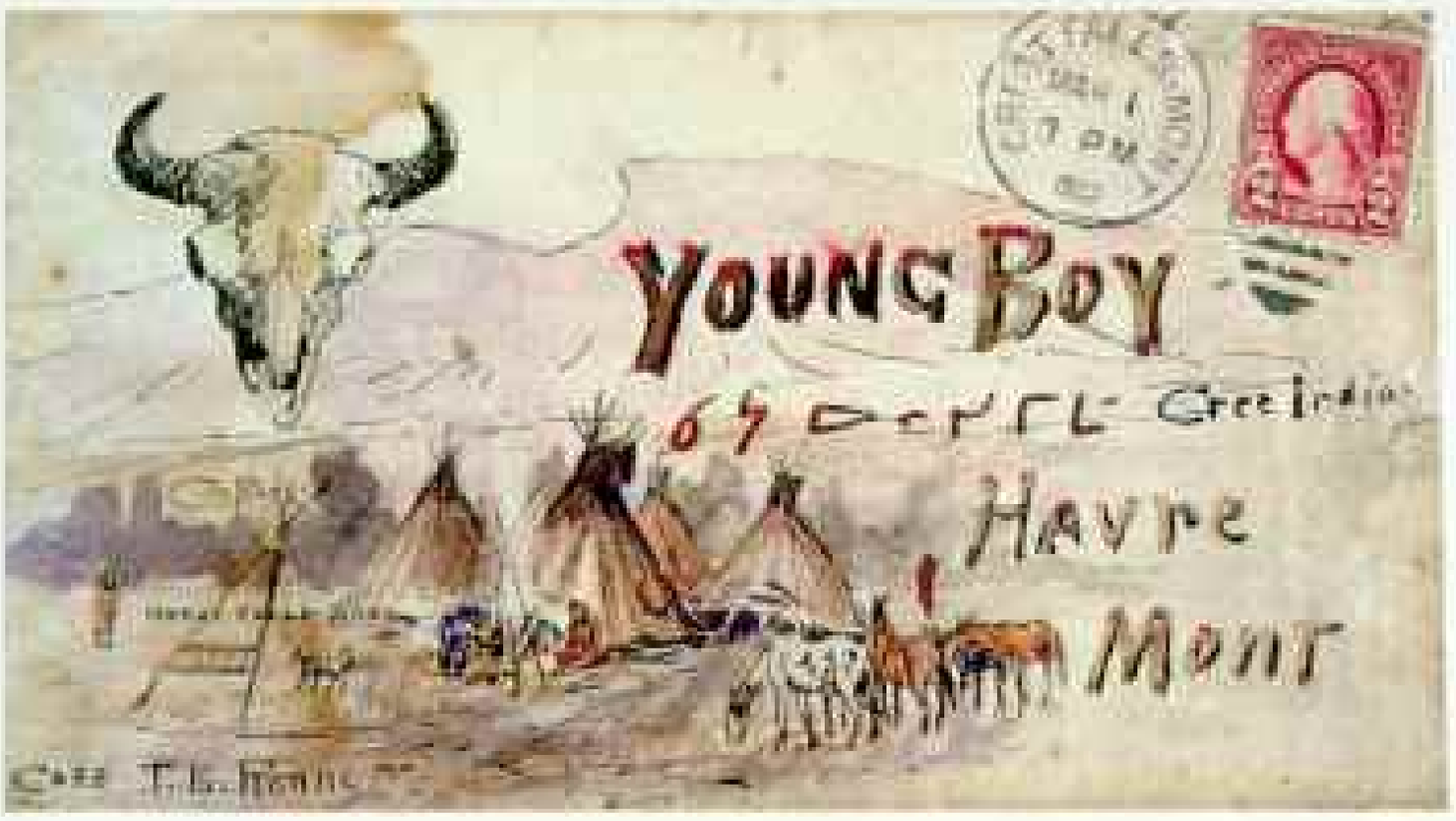
Charley would have liked that. "I have always been what is called a good mixer," he once remarked. "I had friends when I had nothing else. . . . I was a wild young man. . . . I drank, but never alone, and when I drank it was no secret."

FRED RENNER says Charley's whiskey consumption has been exaggerated. "No cowman would permit drinking on the job," says Fred. "And he really didn't trade paintings for drinks. Saloonkeepers commissioned his paintings,

and people assumed Charley had traded for a drink. He quit drinking entirely in 1908."

Fred documents only one specific incident when Charley Russell was really drunk. "It was about 1893. He and a friend, Finch David, were staying in different hotels, and a saloon was in between them. Each one insisted on walking the other home—and each time they'd pass that saloon, they'd have another drink. Back and forth. They were staggering when a policeman picked them up. He put Charley to bed and told Finch, 'You go to your own hotel—if you weren't a friend of Russell's, I'd put you in jail.'"

Just once—documented. "There's a difference in whiskey—some's worse than others," Charley observed. He knew his



"brave maker" or "trade whiskey," as they called the terrible stuff. "If a man had enough of this booze, you couldn't drown him. You could even shoot a man through the brain or heart, and he wouldn't die till he sobered up."

When Kid Russell got paid, according to one friend, he split his money "two ways—wine and women." But, always the romantic, Kid Russell was respectful of the hardest tarts, girls now remembered only as Dutch Lena, Lil, and Lou. He gave them sketches and watercolors and bright posies painted on platters. Years later, Charley's nephew reported, the middle-aged owners of these trinkets would ask Charley to touch up the faded colors a bit.

DURING THE LATE MONTHS of 1888 Charley got to study the ways of Indian maidens. On an extended visit to Canada he lived for a time with the Blood Indians of Alberta, kin of the Blackfoot confederacy. Some say he considered taking a squaw as wife. At least he used many as subjects for some of his most valuable paintings.

Sam and I followed Charley to the Canadian Blood Indian Reserve at Stand Off, Alberta, to see it—as Charley described it—in winter. Stand Off sits on a wide stretch of undulating prairie; the southern horizon is serrated with the splendid mountains of Glacier National Park, chief among them Chief Mountain, abrupt, steep, set apart.

"Here they have fresh air to a fault," Sam observed, when a cold, surgical wind lopped off his cap. The sun was shining, but gusts stirred dramatic ground blizzards, blurring peaks with sunlit snow falling upward from the earth.

"This is the time in winter when we could always tell which families were lazy," said big Rufus Goodstriker, our impressive Blood guide. "Lazy people didn't put up enough wood or food for the whole winter. They had to go to other tepees and ask for handouts of berries, meat, and wood."

At age 61 Rufus looks like the tribal personage he is: gray braids and strong Indian features, a rock talisman and grizzly-bear teeth hanging from a thong on his chest. He moves quickly—he was once a marathon runner and boxer. He is now an herbalist and patriarch—10 children, 14 grandchildren—the owner of three school buses and a large log house.

"Goodstriker is a bad translation of my name," he explains. "It should be more like Lucky Man—and I *am* lucky." The Bloods have surnames both epic and earthy: Iron Horn, Takes the Gun Strong, Melting Tallow, Getting Good Things, Tailfeathers, Weaselfat.

Rufus shows us around the 550-square-mile reserve. The buffalo-skin tepee vanished with the wild buffalo; Bloods now live in bleak, boxlike houses with vacant yards of snow or mud.

But in the reserve headquarters we sit down together to thumb through some

THOMAS GILCREASE INSTITUTE OF AMERICAN HISTORY AND ART (FACING PAGE); C. M. RUSSELL MUSEUM

Labors of love, *as thoughtfully executed as his commercial works, hundreds of Russell's illustrated letters and envelopes* ***(facing page)*** *are today highly valued collectibles. Earthy and humorous, Russell's "Paper Talk" was spiced with creative spellings and grammar. Scholars agree that they were not a sign of illiteracy but an extension of Russell's art. Written to his neighbor Albert Trigg, the above letter describes Russell's boyhood initiation into gun handling with an overloaded gun.*

Cinematic tension *pervades "When Shadows Hint Death," an oil from 1915 that depicts the dread of an encounter with Indians, here seen only as shadows. Though famous for action scenes, Russell in many of his works was also able to focus the viewer's imagination on action to come.*

prints of Russell Indian paintings, and the old days revive. We contemplate paintings of buffalo hunts, where tides of animals move like William Turner's oceans. We note the Russell signature.

"I belong to the Buffalo Society," Rufus remarks. "Members are not supposed to break skulls—any skulls—for they are very sacred. The spirit of the buffalo is known in our prayers as leader of all four-legged

DUQUESNE CLUB, PITTSBURGH

animals. The domesticated buffalo is different. He has no spirit, no freedom, no soul. When I see a buffalo in the zoo, I cry sometimes."

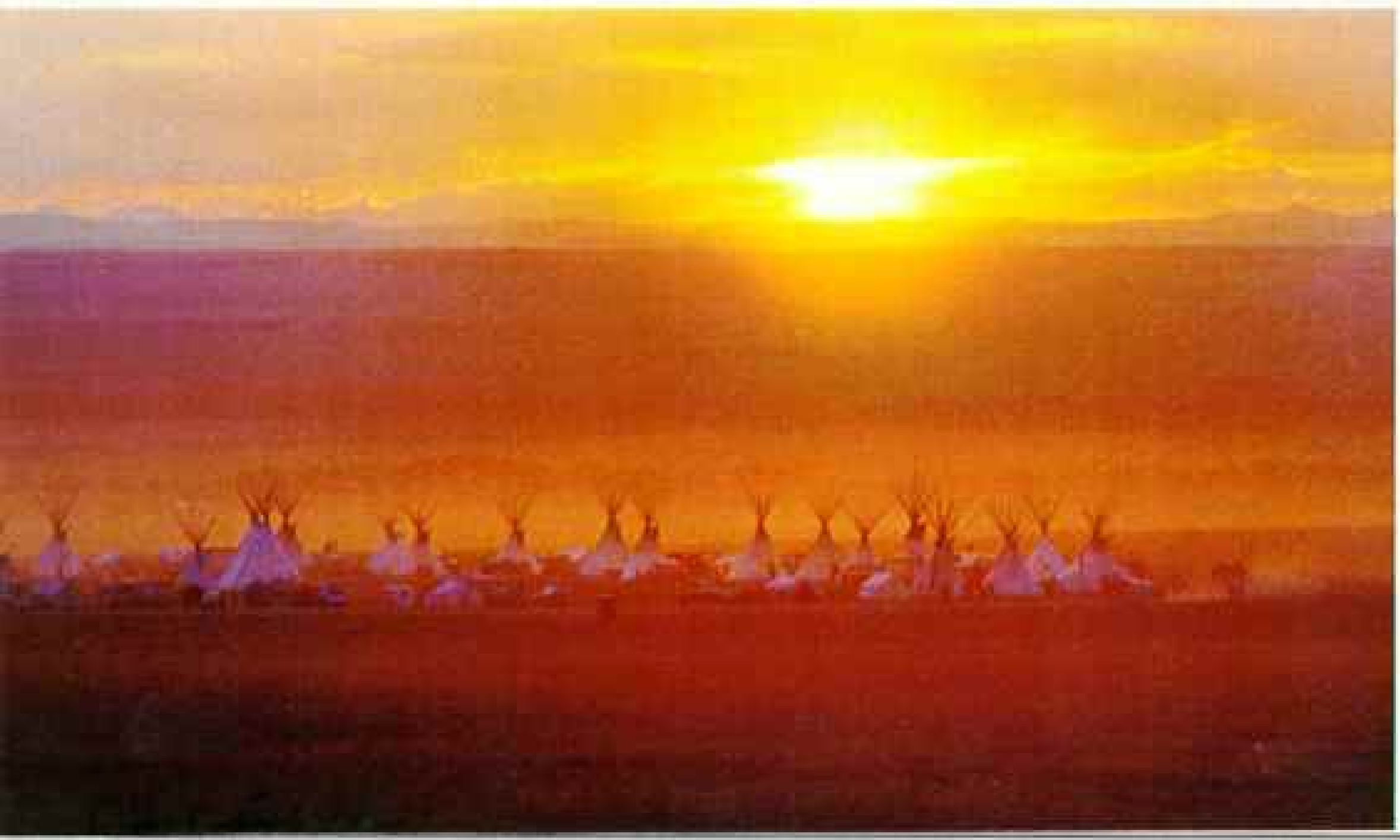
We turn to pictures of daily living. "You see, this woman's face is painted up—an elder has painted her. They don't paint their faces themselves. . . . Here women are bringing home meat from a hunt. Our women are spoiled today. . . . Look at that buffalo skeleton: It was killed by a white man, because Indians always used everything—the tongue and blood for ceremonies, the rib bones to make little sleds for children, the sinews for sewing. . . .

"That red hand mark on the horse—it was made by an elder, a blessing for the horse for war or a hunt. Everything is spiritual.

"When a mare had been bred to a good buffalo-chasing horse, that mare was tied

*"**I'm all Injun but my hide,**" wrote the artist in a story—and to underscore his affinity sometimes dressed the part, as in this photo from a family collection **(below)**. During a trip to Canada in 1888, Russell stayed with the Blood Indians, kin of the Blackfoot confederacy, a visit that inspired "Indian Hunters' Return" **(right)**. They gave him the name Ah-wah-cous, or antelope, which he used on occasion to sign letters. Today on Alberta's Blood Indian Reserve, tepees rise again each summer for their Sun Dance **(right, bottom)**.*

MONTANA HISTORICAL SOCIETY, MACKAY COLLECTION (RIGHT); C. M. RUSSELL MUSEUM (BELOW)



Talking sign, *Indians assure two cowboys that their lost friends are nearby in "Lost in a Snowstorm—We Are Friends," one of Russell's earliest oil paintings, done when he was 24. Russell himself became adept at Indian sign language—universal to the Plains tribes—during his sojourn with the Bloods, who called him the "picture writer."*

every morning with her baby colt in the middle of gopher holes. The colt learned from the first to dodge gopher holes. . . . And to break a young horse, they would touch the colt all over his body and take him into a river shoulder deep. He couldn't buck because he would have to put his head under water. . . ."

Katie Wells, age 72, concurred: "Most of us have pinto horses—the best horse for the Bloods." Katie noticed the beadwork and

AMON CARTER MUSEUM

designs in Russell's paintings. "Our designs are angles. Other tribes had flower designs. It's so *real*, what Russell does. His paintings show what our life was like."

THE BLOODS GAVE CHARLEY an Indian name: Ah-wah-cous, or antelope. (On at least one letter Charley used this name—with the head of an antelope instead of his usual buffalo skull.) But they also gave him indelible memories. He learned to live without sugar or salt: "I missed the sugar only a few days . . . But I never got used to doing without salt. . . . I dreamed about it."

And friendships. His most consistent subject was Young Boy, a dignified Cree who brought Charley handcrafts, shields, designs, which later appeared in a host of Russell oils, watercolors, and other works —every detail anthropologically accurate. In fact Fred Renner estimates that only

George Catlin painted more tribes of North American Indians than did Charley Russell.

IN THE SPRING of 1889 Charley—wearing moccasins and rags—had returned to Montana Territory, cowboying for his grub, painting for fun.

And not just painting. He carried a discolored lump of beeswax in his saddlebag or pocket and played with it from time to time, modeling figures of animals or caricatures of people. Sometimes he would talk to someone with his hands hidden and busy. In a few minutes he would present a freshly modeled figure to the person he was talking with—a pig, a bear, or something fanciful, unseen by them or even by his own eyes until the presentation. Once in a while, if he had trouble drawing something, he would model a figure in beeswax and copy the model on paper or canvas.

He had trouble with composition sometimes. To fill out a canvas he might arrange a fallen tree or a boulder to pull the picture together. He learned more about colors.

But as his paintings changed, so did the Judith Basin. Fences had arrived. And sheep. Charley trailed cattle north to the Milk River for free grass.

Lonesome. It was a word Charley Russell spelled variously but used a lot. It caught the spirit of night-wrangling horses in the rain and hot days trailing cattle alone under the Big Sky. It explained the sadness of cowboy

songs, the homelessness, the rip and roar on rare trips to town.

We sense that life even today, riding a helicopter over Charley Russell country in late winter. Beyond some cursive drifts, perpetual wind has worn down one snowfield so a yellow, last-year stubble bristles through the white. Ice clogs the serpentine of streams just starting to thaw.

Near a snug ranch house the haystack has dwindled. The chopper's noise quiets the world so a silent dog barks steam. Cows plod single file in their leader's tracks, and a straggling calf is running, tail outstretched, to find its mother. Toward the horizon dark roads lead T-square straight; fenced indentations show us Air Force "rocket ranches," as local folks call them. ("Not near dangerous as gopher holes," one cowboy said.)

Our engine changes pitch. We climb, and the pilot points. Geese are flying north on their promissory course. We surprise two deer who leap in unison as on pogo sticks.

At eye level we approach Russell Point, formidable stone namesake for our Charley; and, straight down, we see the back of a bald eagle in flight. A solitary view of a big, humanless land. Lonesome.

CHARLEY GAVE UP the lonesome life in 1893 and moved to Great Falls, selling an occasional picture and earning enough to live sparely. The landmarks around Great Falls—like the sawed-off bulk of Square Butte and the arabesques of the Missouri River—found their way into Russell pictures. So did the landscape of Cascade, a bit upstream.

"My father's ranch was seven miles from Cascade," notes Fred Renner. "And I've found the same spots Charley Russell painted there." He was as true to topography as to Indian beadwork.

But Russell found more than scenery in Cascade. "Charley was wintering there when he met Nancy," notes Fred.

Since Cascade had "maybe a hundred people and everyone knew everybody," Fred Renner's family knew them both. Blonde 17-year-old Nancy was living with the Robertses, helping out with household chores. Charley was 14 years her senior and had what he admitted was a fuzzy reputation. He courted her, then proposed marriage, but she said no. It took him almost a year to convince her. As an inducement, he gave her his favorite horse, Monty.

They began married life with $75, as Nancy later recalled, and a one-room shack in Cascade. (It's still inhabited, enlarged a bit, equipped with a bathroom, but still only large enough for newlyweds.) They stayed

MUSEUM OF WESTERN ART, DENVER

*"**Whose Meat?**", painted in 1914, portrays a confrontation whose outcome is left to the imagination. Not a hunter himself, Russell loved to join hunting expeditions for the vicarious thrill and the chance to observe wildlife. He had a special fascination with bears, seen in many of his paintings and sculptures.*

Nostalgic opus *from the year before Russell's death, "Laugh Kills Lonesome" (**above**) exemplifies the wistful quality and bolder color of his later work. Russell painted himself in this picture as a night wrangler in a slicker, at right, stopping by the chuck wagon for a hot cup of coffee. Although such scenes have all but vanished from cowboy life, a group of ranchers (**right**) travels by wagon train to recapture the times and attend the centennial of the Montana Stockgrowers Association.*

MONTANA HISTORICAL SOCIETY, MACRAY COLLECTION

a year, then moved to Great Falls, where travelers could see and buy Charley's paintings. Their budget also improved as soon as Nancy became family business manager.

As a boy, Fred Renner got to know the Russells. "Great Falls had about 8,000 people, horse-drawn streetcars, and wooden sidewalks hotter than hell on bare feet. The doctor got the first car about 1905. In winter they'd flood a vacant lot, and when it froze kids could skate. I'd watch men on the Missouri River cut ice—maybe a foot thick."

As American as Currier and Ives. Charley got to know their work—and everyone else's—on trips that he and Nancy took to New York City to sell his pictures and get commissions for illustrating books and magazines. While Charley talked shop with other artists, Nancy cornered collectors and owners of galleries. Charley himself proved colorful copy for newspapers like the *New York Times*.

Among the growing New York skyscrapers Charley never felt quite at home. ". . . . everybody lives high here," he wrote a friend at home, "but . . . I'm camped above timber line myself . . . give me the camp where I savy the people."

BACK IN GREAT FALLS, the Russells were soon able to live with greater style among the solid citizens on Fourth Avenue North. Nancy saw to the completion of a log studio made of telephone poles in the yard, so Charley no longer needed to paint in the dining room. In this log-cabin studio he did the paintings that earned him national fame.

Using a Dutch oven there, he also cooked special meals to serve old cowboy friends—including dried-apple desserts and, at times, venison. It was the place where, as he said, "the bunch can come visit, talk, and smoke while I paint." His paintings seemed to carry on those conversations. They were narratives in oil: adventure yarns, whimsies, poignant tragedies, satires.

"My earliest recollection of Charley Russell?" muses Fred Renner. "I was six or seven, and I was going up First Avenue in Great Falls, and I saw a man wearing a six-shooter. The time had passed when you saw men with guns in Great Falls. I spoke and he spoke and he went down the street."

In summer the Russells usually headed for their camp on the forested bank of Lake McDonald, in what is now Glacier National Park. Friends and neighbors followed them there for visits, and Charley was at his boyish best, building absurd statues out of birchwood with beards of moss, painting while chatting with his guests, getting dressed up as an Indian—convincingly—for snapshots.

Room by room the cabin grew into a rustic lodge. It stands almost unaltered today, its grove of red cedars framing a view of mountains and lake. A fireplace preserves the holiday spirit, for in the wet cement Charley and an artist guest scratched the figures of wild animals, hunters, and, of course, the skull of the bull buffalo. An etched date reads 1907.

Autumn cheer. *After 20 childless years, the Russells adopted a son, Jack, here seen with his parents in a 1918 Christmas photo (**below**). "He was a little two months slick ere when we put our iron on him," Russell wrote to a friend. The joys of fatherhood, along with an artistic prowess at its peak, were cut short by Russell's death, his heart weakened by a goiter removed too late. All Montana mourned on October 27, 1926, when pallbearers carried the artist from his Great Falls home (**facing page**) to the horse-drawn hearse he had requested.*

CHARLEY WAS APPROACHING the exuberant peak of his powers. Not just in painting, for he also turned to sculptures, many of them cast in bronze.

Prodded by Nancy, critics took note, and the Russells were cultivated by celebrities. Theodore Roosevelt got a handsome bronze called "Smoking Up." The Prince of Wales was presented a Russell painting at the Calgary Stampede of 1916.

The Montana legislature turned down well-known artists to commission Charley to paint a mural in the State Capitol in Helena: a 25-by-12-foot oil showing Lewis and Clark's historic meeting with the Flathead Indians in what later would become Montana. Charley had to raise the roof of his log studio and stand on movable steps to work on the big canvas. Meticulously he recreated the historic landscape in the Bitterroot Valley, but he carried realism a step further, showing the event mainly from the Indian point of view: The explorers were small figures in the background; the Flathead Indians dominated the foreground at almost life-size.

In those days, the historical perspective seemed reversed. But not today. Representative Roland F. Kennerly, himself a Blackfoot, sits below the painting when the house is in session.

"People can see that this land was stolen from the people up on the wall," he laughs. His father, Leo Kennerly, knew Charley Russell "and was proud of it."

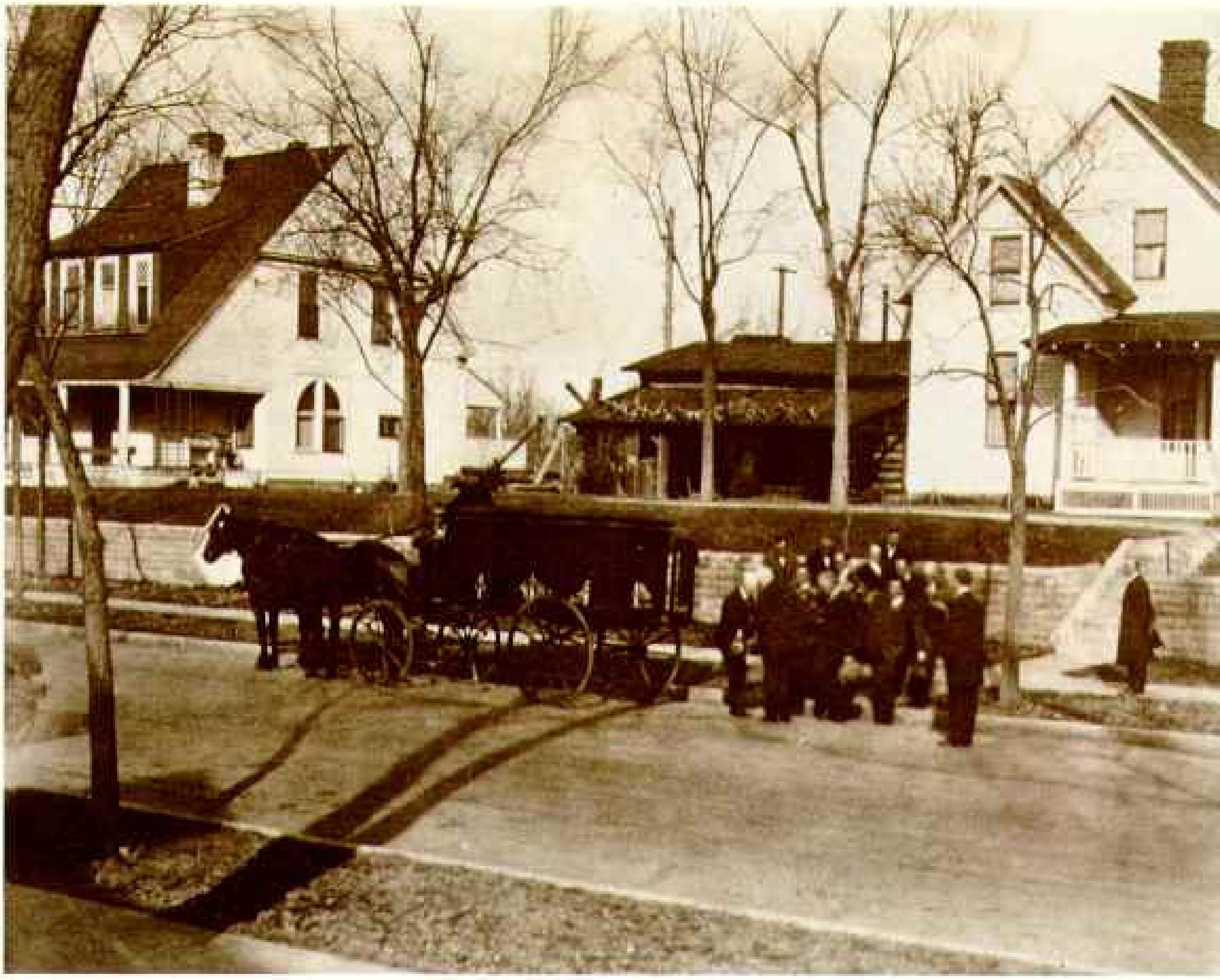
I talked with Representative Ramona Howe, a Crow, during a recent 90-day legislative session. "I'm marking off the days like an old sheepherder," she admitted. Representative Howe runs both sheep and cattle on her ranch, and "I have a Remington print of Indian hunters hanging in my home. But my friends object because one saddle is a squaw's parade saddle. It would hinder a hunter. I've never caught a mistake like that in a Russell."

Russell partisans criticize Remington's putting cowboys and Indians on cavalry horses and his lack of ranch accuracy, though the Easterner's paintings—especially of non-Western subjects—still fetch a greater price. "But the gap is closing," notes Denver Museum of Western Art director William C. Foxley, who buys the works of both artists—and prefers Russell.

SOME GREAT FALLS CITIZENS still recall Charley Russell's heyday as the town's most famous resident. A 13-year-old boy delivered groceries to the Russell home and remembers Mister Russell as "always courteous and nice to me."

The same lad sold old bottles and mint leaves for juleps to Sid Willis's Mint saloon. Willis was an early collector of Russell art works and displayed them in his saloon.

"It was only as I grew older that I got to appreciate Charley Russell as an artist and a great one," recalls the former delivery boy, a



BOTH FROM C. M. RUSSELL MUSEUM

man who served as a history-making U. S. senator, and now as ambassador to Japan, Mike Mansfield.

When the Russells traveled, Great Falls neighbors got colorful letters illustrated with sometimes prankish watercolors. Old friends shared Charley's adventures in England, among castles and titled hosts, and in California, where stars of the young motion-picture industry lionized Charley—and bought pictures from Nancy.

"Most of the moovie men Iv met are good fellers," Charley wrote writer Ted Abbott. But "the beautiful cow boy that makes love . . . aint the same man that spures his horse of a thirty foot rim rock . . . they usto say that camres wouldent lye but Holleywood has quired that talk. . . ."

Will Rogers was a close friend; he and Charley looked enough alike to be brothers—and when the two of them were together, Will left the storytelling to Charley. Douglas Fairbanks, Bill Hart, Tom Mix —they were all active Russell admirers.

But California, Charley noted, "is a good country for lawyers and preachers ones tying the others untying an thair both busy." He preferred closer family life. After long childless years Nancy and Charley had adopted a baby boy, Jack, who sometimes accompanied his folks on trips to avoid Montana's cold weather.

"Little Jack . . . gets lots of out doors . . . the countrys open here and all we do is range heard him. . . ."

The family even started a winter home in Pasadena—a big, multilevel New Mexico-style house with a skylit gallery to show off Charley's paintings. The thousand-square-foot room now boasts Indian handcrafts and one Russell print, "Waiting for a Chinook."

"Ours is the first large family to live here," notes Mrs. Frank Repetti. "We have seven children. No, we don't own any Russell originals. But our obstetrician owns two."

Christmas greeting *from beyond the grave* **(above)**, *Russell's last and most apt benediction was mailed to friends by his widow after his death. On a snowswept buffalo ranch in Alberta* **(facing page)**, *decomposing skulls of Russell's favorite wild animal symbolize a time long past, but not forgotten, thanks in large part to the artist himself.*

While the house was being planned, the Russells named it Trail's End. Prophetic name—Charley never saw it completed.

As his health grew uncertain, Charley mixed brilliant autumnal colors on his palette, the nostalgic hues of sunset and twilight. Sadly he wrote: "The West is dead! You may lose a sweetheart, but you won't forget her." He had few regrets. "I'm glad I lived when I did—not twenty years later. I saw things when they were new."

Doctors gently told him he had only a short time to live. "Don't tell Nancy," he warned the doctors. They did so anyway, and she insisted, "Don't tell Charley." Each had always protected the other.

THOSE LAST DAYS came alive for me when Jack Russell showed me through the family's Great Falls house. "A piano used to sit there," he said, chuckling. "I carved my initials in it once—which didn't endear me to the family."

Jack's laughter stopped as we moved upstairs to a front dormer bedroom. "This was my room, but Dad was sleeping on a bed right there when he took sick." It was the night of Sunday, October 24, 1926. "When the doctor came, they moved me to another room. Dad died right there."

Nancy wanted the bad news kept out of the paper until a neighbor, a close friend of the family, could be told personally. She found a horse-drawn hearse—from Cascade, where her life with Charley had begun. A borrowed horse carried Charley's empty saddle in the procession. The whole mourning town closed down.

Charley lies buried now on a hilltop with a vast, last landscape of Montana. His headstone is a boulder, as durable as art.

In his book *Trails Plowed Under*, Charley wrote about the death of an old cowboy buried on the prairie "with the end-gate of the bed-wagon for a headstone, which the cattle have long since rubbed down. . . . It sounds lonesome, but he ain't alone, 'cause these old prairies has cradled many of his kind in their long sleep." □

SWITZERLAND

The Clockwork Country

By JOHN J. PUTMAN
NATIONAL GEOGRAPHIC SENIOR WRITER

Photographs by
COTTON COULSON

IT WAS TO the little port of Ouchy, on Lac Léman, that I came to try and sort out things. There was a terrace, and from it on clear days you could see across the lake to France and the Alps beyond; on cloudy days a mist fell like a curtain across the water so that a line of white sailboats might appear as ghostly swans, the great multicolored spinnakers of larger boats as medieval banners. On fine weekends the lakefront would be crowded: flights of bicyclists in club colors; elderly women with canes, determined chins, bent backs; lovers, arms around each other; children; dogs; elderly men, their frail bodies seemingly held erect by tightly buttoned tweed jackets, sharply creased trousers.

There was a profound sense of time, or was it timelessness, at Ouchy. Foreigners have come here for many years, to holiday, to find repose, to die in tranquillity. I liked to walk the grounds of its grand old hotel, so laced with balconies it appeared a huge birdcage, doors popping open with the sun, occupants emerging. Amid the tulips, pines, and cedars of Lebanon lay a cemetery for guests' pets. There lay Tosca; Poupette; Taffy, My Beloved Friend. There lay Toots; Micky, Ma Petite Parfaite; Joe, the Faithful Companion; and Darling Topsy—Born Philadelphia 1921, Died Lausanne 1934.

Stepping out *to welcome spring, members of Zurich's professional guilds collect bouquets from onlookers as they parade in traditional dress during the Sechselāuten festival, the city's farewell to winter. Though as orderly as the watches they make, the Swiss always leave time for celebration.*

*"**A land blessed** with unusual contentment," wrote novelist Hermann Hesse of the Appenzell, where picture-book dairy farms dot the rolling green hills below the Alpstein range. Here traditional Swiss handicrafts and folkways endure,*

and yodeling can still be heard above the lowing of cattle and the clanging of their elaborately decorated bells. Little of Switzerland's mostly mountainous terrain is arable, and only 6 percent of the population farms for a living.

One may be forgiven for speculating on the lives played out in the presence of each.

The city of Lausanne rose up the mountainside above in tiers, as neat and orderly as the vineyards surrounding it. Often I took the little cog metro that leads from lakeside to the highest streets: Bicycles and dogs are welcome; the last leg is taken by an elevator; there are music boxes in the stations. At Ouchy I would drop a 20-centime piece in the box and watch with fascination.

Mustachioed cavalrymen charged round and round on a carousel; a tiny corps de ballet danced in circles; a principal ballerina turned more slowly, her face doll-blank. Through the glass you could see the clockwork mechanism: a cylinder slowly turning, its teeth methodically striking musical forks to produce the melody.

Why was it, I wondered, that the music box always reminded me of Switzerland, the Swiss?

SOME WEEKS EARLIER I had come to this small, rich nation (it would fit twice over within the borders of Indiana) to look into recent developments and to probe the character of its 6.4 million hardworking inhabitants. There had been surprises. I found a neutral nation armed with perhaps more weapons per square mile than any other in Europe. I found a nation, having been spared two world wars, preparing for a third and nuclear one so vigorously, with miles of underground shelters and war caverns, that there seemed a second Switzerland, a sort of doppelgänger, underground. In that eerie world of granite and concrete one's footsteps ring hollow.

I found a political system engineered to prevent strong leadership: The presidency, for instance, rotates each year like clockwork. I found contradictions: While a woman serves in the highest federal council, two cantons bar women from even voting.

I found trade union members as solicitous of their employers' financial well-being as of their own. And that the passage of time, like some great avalanche, had swept the mountain farm family (that Swiss family so firmly resident in our minds) down into the small towns and cities of the valleys, so that only

Switzerland

BORN IN DEFIANCE of its pugnacious neighbors, Switzerland dates its beginnings from a 13th-century defense pact formed by the valley communities of Uri, Unterwalden, and Schwyz. Strong democratic traditions and an unflagging policy of neutrality bind together peoples of disparate cultures within a country that recognizes four national languages.

AREA: 41,288 sq km (15,941 sq mi). **POPULATION:** 6,349,000, including one million resident aliens. **CITIES:** Zurich, 357,000; Basel, 178,000; Geneva, 159,000; Bern (capital), 142,000; Lausanne, 121,000. **RELIGIONS:** Roman Catholic, Protestant. **LANGUAGES:** German, French, Italian, Romansh. **LITERACY:** 99 percent. **LIFE EXPECTANCY:** 76 years. **ECONOMY:** With few natural resources other than hydroelectric power, Switzerland imports raw materials for factories renowned for producing quality goods. Exports make up 25 percent of the gross national product, and Switzerland enjoys one of the world's highest per capita incomes. **INDUSTRIES:** Machinery, metalworking, chemical and pharmaceutical products, textiles, watches, tourism, international banking, insurance. **EXPORT CROPS:** Dairy and tobacco products.

Switzerland: The Clockwork Country

6 percent of the Swiss now work the land.

I found in the Swiss a pride in their tiny country, its achievements; but also frustration, uncertainties. Theirs is a complex society, speaking four national languages, united not by culture but by will.

Above all I found a relentless pursuit of security. You could see it in their army, their civil defense, the way they spend more for insurance per capita than any other people on earth. Whether this springs from simple prudence or shadowy anxieties is not clear. But surely some things they fear: to perish in somebody else's war, to lose their freedom, to see their confederation fly apart like some music box gone suddenly amok.

IT WAS a lovely part of Switzerland, the Pre-Alps, modest ranges leading up to the great mountains themselves. There were cows on the hillsides, apple trees in blossom, old wooden farmhouses as elegantly fashioned as clavichords. I had set out early to take a look at the Swiss Army, for the Swiss believe neutrality is a policy for the strong, not the weak. The army consists, upon mobilization, of 625,000 men and women, 800 main battle tanks, 300 jet fighters, thousands of cannon and missiles, hundreds of prepared positions and underground bases. I was interested in those underground caverns.

The colonel was waiting for me up a narrow valley, by a set of steel doors leading into a mountainside. We entered: past the detoxification room, the foot-thick concrete-and-steel blast door. "The galleries," he said, "were cut into solid rock. There is more than 500 feet of granite over our heads." An electric cart ghosted by. "The facility is 'NBC' protected—protected against nuclear, biological, and chemical weapons."

We entered one room; it was some 300 feet long by 60 feet wide, the ammunition stacked on pallets as neatly as the Swiss stack their stovewood. How pretty the 105-mm howitzer shells, in their shiny gray and yellow jackets. There were boxes of hand grenades, artillery fuses, 20-mm antiaircraft rounds, Rapier missiles, step mines. "When the poor soldier steps on such a mine," the colonel said, "it comes up here"—he gestured to his chest—"and explodes.

"All types of ammunition are stored here," he said. "It's for reserve, not for the mobilization, and replaced regularly." There were similar caverns nearby. "These are very narrow valleys; if a nuclear bomb destroys this one, others may be preserved."

From that narrow valley we drove into a larger one. The colonel's car suddenly swung off the road, up a farmhouse drive, into a barn. I followed—and discovered that the back of the barn opened into another mountainside cavern. The colonel smiled; the deception

(Continued on page 108)

A river of skiers *surges across Lake Silvaplana during the Engadine Ski Marathon (**facing page**). Some 12,000 skiers, from novices to Olympic champions, take part in the annual 26-mile run from Maloja to Zuoz. Icicles bedeck a panting finisher (**above**), whose low entry number indicates a good pre-race ranking.*

Spring snow *dusts the men of Appenzell-Innerrhoden (**overleaf**), who gather for the Landsgemeinde, the annual vote by show of hands. Though Switzerland granted suffrage to women in 1971, the right to vote in the two Appenzell cantons extends only to men.* ▶

Dependability and discretion *characterize Switzerland's banking system, the third most important in the world after the United States and Great Britain. Although numbered accounts are still used, banks insist that a few officers always know a depositor's identity. At the Pictet bank in Geneva* ***(above)*** *Claude de Saussure discusses a client's investments. Such small, exclusive institutions specialize in tailoring portfolios to individual requirements. Many foreign governments and firms retain Swiss banks to handle cash receipts* ***(below)*** *and precious metals such as platinum ingots* ***(right)****.*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had been complete. "In wartime this would hold command posts; stocks of weapons, food, medicines; facilities for major repairs of guns and tanks."

We walked through a passage for trucks; a turntable facilitated quick turnarounds. There were humming generators and air blowers, stairs and corridors leading in different directions, recruits working on cannon. "They will be incorporated into this place, serve here every year, learn to work underground." There are many such supply points in Switzerland. "Each has everything," the colonel said, "a sort of shopping center but"—he smiled—"wholesale only."

IN THE JURA MOUNTAINS, not far from the West German border, a major bent and lifted a steel plate. I followed him down into the earth and into an NBC-protected shelter for some 30 soldiers. I looked around the cylindrical room with its bunks, its racks for gear and weapons. "Like a submarine," he said, "but here they can survive an artillery bombardment."

After that bombardment, they would scurry through a tunnel to their gun position. We walked there on the surface, found two big-mouthed mortar barrels protruding from a ground-level turret. Such guns can fire some 20 rounds a minute, have a range of more than five miles. "The passages in the Jura," the major said, "are limited, our fire plans already fixed.

"There are hundreds of such emplacements," he added, "all around the borders of Switzerland, always ready." A motor whined: The barrels disappeared into their turret, a false tree stump swung into place over them. We seemed again in an idyllic forest, with butterflies and the murmur of mountain streams.

War, of course, presupposes casualties, and the careful Swiss have made their preparations. The military hospital at Moudon resembled an American community college—pleasant low buildings, a quadrangle, young men lounging in the shade. But the young men wore camouflage and holstered 9-mm pistols. They were recruits, doing their first 17-week military training. Thereafter, until age 50, they would return regularly for refresher training. Among their equipment were the distinctive rectangular leather bags of the medical troops. "Bandages, mostly," the colonel said. "Experience shows that they are one of the most needed things—bandages, big bandages."

We went down steps into the underground part of the hospital. "Three-bar protection here," the colonel said. (A bar is a unit of pressure; in a three-bar shelter each square foot can resist a force of three tons.) Here were operating theaters, intensive-care units, medicine-production laboratories, wards with beds in orderly rows. The only sound was the ghostly hum of the air compressors. "We have found it cheaper to keep them going, rather than to stop and start them for exercises," the colonel said.

There were 200 beds in the protected area, 300 on the surface. Eleven of the army's 48 hospitals were like this one, the colonel said, but already there was a new doctrine. "Everything underground; everything protected by three bars."

We had finished our tour of the protected area and stood now just outside the great door, in an antechamber.

"Here you will have the chief surgeon who must decide the principles of triage: Who will be admitted for treatment, who will not. It is difficult in any case, because you have to change your principles of triage as a function of the number of patients coming in. If a few, you can take the badly injured. But the moment you are taking 40, 50, 60 in one or two hours, it's finished—you clearly have to decide which ones have the best chance." I paused, a vision of Armageddon in my head; the colonel walked on, matter-of-factly.

THE SWISS STRATEGY, aimed at preventing a penetration by NATO or Warsaw Pact forces in case of a conflict between the two, was simple: "The army fights," the chief of the general staff told me, "from the borders, across the whole country, to the last stand." He had no doubts about his citizen-soldier army (only 3,500 professionals): "In a militia army the biological law is respected the best. Defense is a biological thing, to scratch the one that attacks you, to bite him, to kick him."

An attacker would confront an army prepared to blow up every bridge, railway, road, tunnel, riverbank, or mountainside to impede him. "Some 2,000 charges are

A neutral nation *always ready for war, Switzerland requires all able-bodied men to take periodic military training from age 20 to 50. Near Geneva, dentist Jean-Denys Duriaux bids good-bye to daughter Stephanie before leaving for a three-week refresher course.*

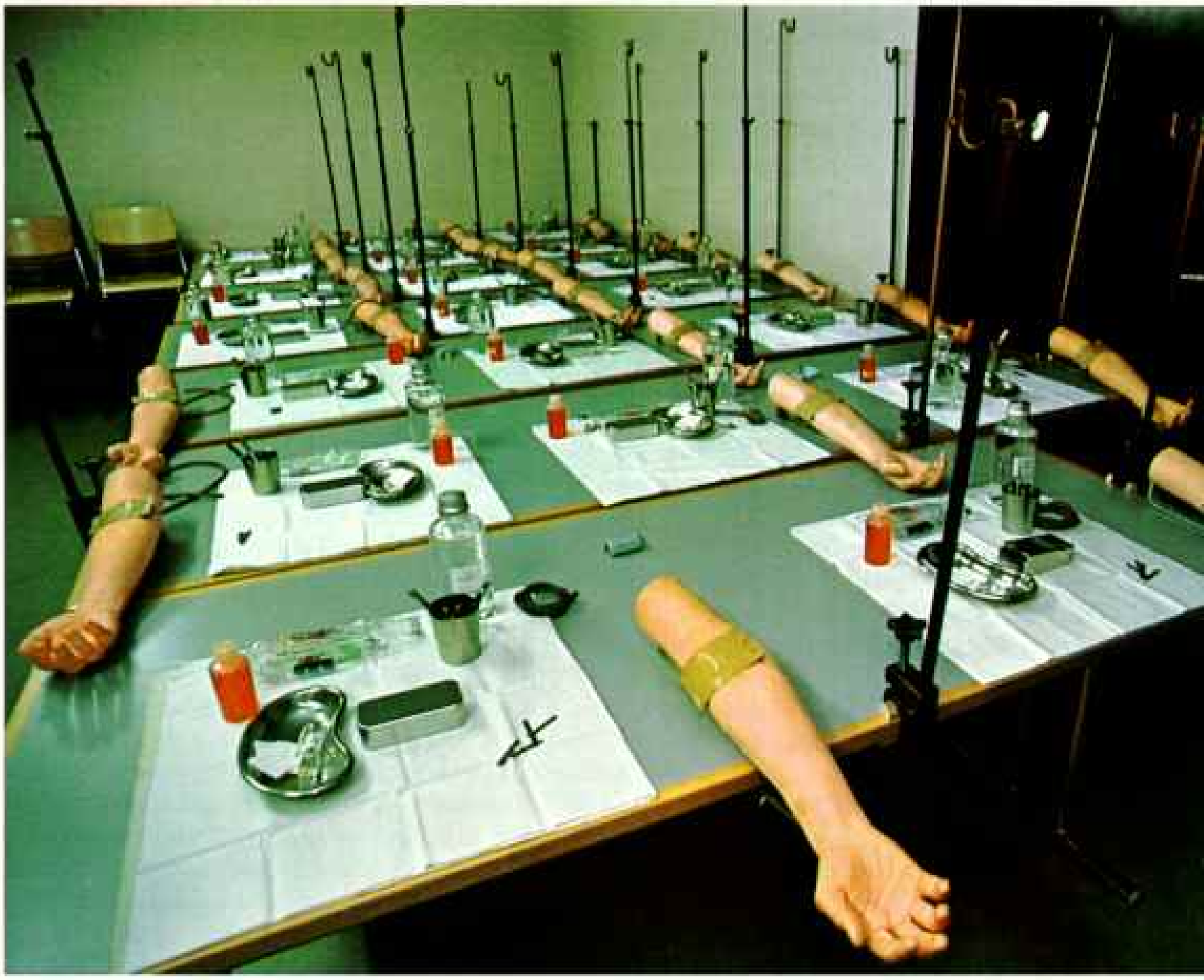
already in place," the general added.

The main battle would take place in the Mittelland, the lowlands in the north, where most Swiss now live, most industry stands, where an enemy could deploy mechanized forces. The Pre-Alps to the south are fortified with redoubts, while in the Alps themselves, deep in rock, lie the control and command centers, and the war caverns of the air force. I had heard about these caverns, fitted with every service and repair facility, even hoists to hang planes from the ceilings and so create more space. "We prepare our planes at low level in the cover of the mountains," a pilot had said, "then go up with surprise, to hit the enemy from underneath; then go down again into the valleys."

The Alps are crucial: "As long as we keep this area in our hands," the army's chief planner said, "Switzerland will not be destroyed!" In the center of those Alps lay three great mountain fortresses, each guarding a

*"**Excellently armed** and absolutely free," observed Niccolò Machiavelli about the Swiss. Today the nation maintains a 625,000-member militia able to mobilize in 48 hours. Plastic gloves and a gas mask prepare a soldier for maneuvers simulating "NBC"—nuclear, biological, and chemical warfare (**left**).*

*A movable tree stump camouflages twin retractable mortars (**facing page**) protruding from an underground bunker. In a military hospital (**below**) artificial arms are used for medical training.*



key pass, each so secret that I could not visit or even have them pointed out to me.

"These are not just two or three cannon on the ground," the planner said, "but systems covering a large area, with antitank guns, howitzers, a fixed fire plan. The people are underground; they don't have to look out. They can fire indirectly, without exposing themselves. An enormous amount of fire. An enemy might try an air assault, but it is very difficult: All is under rock, it is difficult even to discover the entrance."

AS THE LITTLE white steamer pulled away from Brunnen, rain beat against the windows and mist concealed the mountains surrounding us. I thought of what anthropologists tell us about certain primitive tribes: how they have a sacred place where some unknowable spirit dwells; how they repair there in times of crisis; how they take boys there for the rites of passage; how it provides them, even when they are away from it, with a certain sense of orientation. The steamer bumped against the landing; I got off and took the path to the place called Rütli.

It was only a patch of meadow on a mountainside, marked by three stone benches, old trees with gnarled roots. It was here, tradition says, that in 1291 assembled men from the nearby valleys, troubled by attempts of outsiders to control this area. Their agreement still exists on an old parchment: It declares that the men of Schwyz, Uri, and Unterwalden, "in order to preserve themselves and their possessions. . . . have with one voice sworn . . . that in the above-named valleys we shall accept no judge . . . if he is not one of our own."

This was, by tradition, the birth of Switzerland. Those early Swiss were successful in repelling invaders: They rolled stones down onto them, clubbed them, bashed them off their saddles with halberds. Growing proud, they went out of their mountains, defeated French, German, Austrian armies. They conquered Milan, fought to control northern Italy. But at Marignano in Italy in 1515 they were crushingly defeated by the French; the mountaineers had no artillery, they lacked the money.

They returned to their mountains, began to talk of neutrality. They would send their sons off to fight as mercenaries, they would fight among themselves, but they would never again leave their mountains.

Those days of glory are recalled at Rütli with shooting contests and fests, with troops of schoolchildren, columns of tourists. They find, by the sacred spot, a house and tavern offering simple food, drink.

I went there. A sign advertised for summer help: "A servant who is just beginning and will be taught. . . . A daughter for the kitchen." Hans Baumann brought two coffees. He was a wiry man, in his 30s, with a quick face, arms corded by hard work. He and his family had lived here four years.

"I am from Uri," he said, "and you must be from Uri to hold this job. I was a farmer, a chimney sweep, a truck driver, and then I saw the advertisement to become the tenant here. I applied and was chosen.

"It's not easy," he said, "because in winter we are completely alone. I take care of the animals that give us meat, milk, cream; and I cut for firewood the trees that the wind has knocked down."

A path led up the mountain to the village above and its school; in summer a 45-minute walk. "In winter," Hans said, "a motorboat comes at seven with the mail. The children take the boat to the next stop, then take a funicular up the mountain. Usually they walk down, but if there is a lot of snow, I go to fetch them with a pony."

He smiled: "As long as this brings us joy and we are healthy and we can do it, then we would like to stay." I thought that Rütli was in good hands, the spirit of William Tell, however mythical, still resident. I thought too that a key to the Swiss lay in such a fastness, a place where, as an old song says, "The land is well enclosed therein, for God himself has walled it in."

ON THE LAST SUNDAY in April, in the village of Stans, a column—a young man sounding a cow horn, officials with badges of office, a band, soldiers with rifles and bayonets, men in dark suits—moved past the statue of a skeleton grasping a naked girl who peers into a mirror (a medieval caution against female vanity) and set out for the place where the citizens of the tiny canton of Nidwalden vote by hand under the sky each year. Such

Ready to bargain? *Representatives of the United States, far side of table, and the Soviet Union begin another round of nuclear arms talks in Geneva, a favored neutral site for diplomatic negotiations. Geneva is the European headquarters for the United Nations and home of the International Committee of the Red Cross and nearly 200 other international organizations.*

an assembly, designed long ago to ensure direct democracy, is called a *Landsgemeinde*.

It was fine marching: past farms and orchards, snow falling, time to think, to look at people as communities rather than individuals. The canton has 22,000 eligible voters, all men and women above 18 years of age. Perhaps 20 percent of those squeezed into the walled enclosure. "Why this place?" I asked a man. "Since 1360 it has been here, so you would not privilege another place."

Umbrellas were raised against the snow. At each vote they were closed, so hands could be counted. Those present elected cantonal officials (this year as last the president and vice president simply exchanged places); they voted to increase the tourist tax. And they rejected a proposal to allow schoolgirls to study wood- and metalworking. These were appropriate for boys, they reasoned; knitting and crocheting for girls.

Later I talked with a leader of the defeated proposal, a teacher with dark hair, a quiet voice. She had become interested in women's issues when she graduated from seminary and began to teach. Male teachers, she had found, earned more, even unmarried ones. "I had a feeling about what is right, what is wrong. I said the same occupation needs the same salary. And now it is so."

I asked what she had learned from the defeat in the Landsgemeinde. "That we do not overwhelm a people with ideas that they have not been able to accept. Not to be too precocious. That a lot of patience is needed. But I think it was a positive thing, that we could discuss it. And I have made myself thoughts about how I would go further."

IN TIME, whenever I entered the Federal Palace in Bern, a building as stone-heavy as a small alp, I would recall a Swiss watchmaker's description of his

Going for the gold, *boats crowd Lake Geneva for the yearly Bol d'Or (Gold Cup) yacht race. The two-day event, open to craft of all types, is Geneva's most popular sailing competition. Called Lac Léman by area residents, this largest lake in*

Switzerland sprawls over 225 square miles and lies partly in France. With numerous rivers and an abundance of lakes, many created by the gouging action of glaciers during the Ice Age, no part of Switzerland lies far from the water.

product: "The movement . . . depends on a highly delicate balance which is perpetually being challenged. An intricate assembly of springs, pivots, pinions is moved by the perfect interaction of the spiral, the pallets, and the balance wheel." To an outsider it seemed a complex government system, so finely balanced one wondered how it could move at all.

Tax revenues are divided three ways: among federal government, canton, and commune; those powers not specifically given to the confederation go to the cantons; any controversial questions are subject to referendum; citizens are free to try to amend the constitution through popular initiative; the government is led by a council of seven, and its presidency rotates each year.

I sat in the small council chamber with President Kurt Furgler, a small man of great energy. He had been president twice before, and each time had stepped down after a year. "If you ask me if in this system I need patience, I would say 'Yes!' But I would say it has provided the Swiss government with its proverbial stability and continuity. It works. It works!"

Indeed it does, if slowly. Women won the

A Latin flavor *accents life in Morcote, situated on Lake Lugano across from Italy. From the shoreline, 402 steps lead up the hill to the Church of Santa Maria del Sasso, first built in the 13th century. Switzerland's Italian-speaking population, 10 percent of the total, is concentrated in this southern canton of Ticino, where palm trees are as common as are ice fields in the Alps.*

right to vote in federal elections only in 1971 (two cantons still refuse to let them vote in cantonal elections). And a woman now sits in the council of seven, Mrs. Elisabeth Kopp, 49, attractive, quick minded. She has an agenda to advance women's equality but introduces proposals only one at a time, so as not to upset people.

The Swiss seem amazed that their system works, and so well. They realize their nation is an accretion, composed of three cultures, three official languages, one unofficial language, dozens of dialects; two major religions, scores of specialized interests; a rock-hard sense of autonomy among cantons and communes.

They remember too that their equilibrium came only in this century. Often before, as one Austrian diplomat complained, Switzerland was "the most perfect image of a state in the process of social disintegration. . . . [It] staggers from evils into upheavals and represents . . . an inexhaustible spring of unrest and disturbance." The Swiss don't want to disturb a mechanism that now works; the change of a pinion just might throw it all out of balance.

"You know we are a very small country," a socialist deputy told me, "and if we polarize too much, we fall apart. You can't do that; you have always to compromise."

SCHAFFHAUSEN is an old city with a fortress on a hill, where a resident caretaker tolls each evening and where citizens refer to their next-door neighbors, West Germans, by their old name, Schwaben. It is also a center of the metal industry, Switzerland's most important. I went there on May Day, the day of workers' manifestations, in search of fervor. Before the parade I sat in the Cardinal Tavern with union leaders.

One said that at his plant the last wage increase was 2 percent: "We would have liked 3, but it wasn't possible. The reaction of the workers was a mixture of resignation and at the same time insight into the difficulties in the steel industry worldwide." (With its tiny home market Switzerland must export 75 percent of its products.)

The leader of another plant said his members got 5 percent. "The market was better for our products, wrapping machines and small arms."

Both were worried about unemployment and the threat posed by new technology.

"You have to tell the workers, 'You have to go to school again, you have to learn this new technology; if you do not, you are out.' " The Swiss apprentice system, long a national pride, worked against them. "The apprenticeships are very narrow, 40 different ones in metalworking alone. We have to make the apprenticeships broader, more flexible, allow local adaptations."

The parade was quiet, many union members not showing up to march. We ended up in the trolley barn, ample for the crowd. There were wooden tables, beer, red ribbons, flowers, and speeches. One speaker was Yugoslav, another Italian; 24 percent of Switzerland's workers are foreign.

The president of the local confederation of unions, a railroad conductor, in uniform with cap in hand, walked among the tables, shaking hands, inquiring about families, exchanging greetings, as if in the familiar corridors of his trains. I remembered a union leader in Bern telling me, "The Swiss workers' standard of living is high. They have a comfortable place to live, their car, their holidays; they don't want to risk them."

THERE WAS a certain coziness to the underground bank vault. Behind the 4.5-ton door and the thick steel-reinforced concrete walls, you could concentrate on wealth, what constitutes it.

The 24 workers went quietly about their tasks. Some tended the shelves laden with

Downhill daredevil *portraying the Red Baron takes off in the third Classic Ski Race at St. Moritz, in which skis may be placed anywhere except on feet. Back in town, this group puts their skis to a more conventional use* ***(bottom)****. At day's end the chic resort glows with lively après-ski nightlife* ***(below)****.*

Bound for high country, *men in traditional embroidered costumes lead their cows up the slopes of the Appenzell during the Alpaufzug, the yearly ascent to mountain pastures for summer grazing. For the ceremonial trek, the cows are often adorned with oversize bells, here carried by the herders.*

clients' gold: little boxes holding bars of many sizes, like so many foil-covered chocolates; small brown cloth bags, sealed and coded, with precious coins—double eagles, Krugerrands. Some clipped coupons, by hand or with a machine. Others wheeled in dollies laden with old and new bond issues, all wrapped in plastic. There were murmured, connoisseur-like comments: "Ah, a nice purple paper. . . . An interesting one, 12 percent. . . . Lovely! Imperial Japanese government, 1910; the last coupon."

It seems that people trust the Swiss to hold their money: This trust helps explain the growth of the Swiss banking system to the third rank in the world, after New York and London. Although banking is an old tradition in Switzerland, the takeoff came after World War II.

While Europe lay in ashes, Switzerland was little disturbed; it had law and order, a stable government, a sound currency, and that currency was free to move anywhere in the world. No other country in Europe had a freely convertible currency.

People with wealth sought to put it in Switzerland, whence it could move freely; they did not want it caught in a controlled system. This stability and freedom of movement, along with a bank secrecy law, continue to attract wealth.

"I imagine," said Dr. Fritz Leutwiler, for many years president of the Swiss central bank, "that there are many people living in countries with severe foreign exchange regulations who one way or the other were able to bring their money out against the regulations and place it here. Often they can give no instruction to the bank: They don't telephone, they do not even use the mail. All is too dangerous. They leave their portfolios here. Very wealthy people among them. Latin American, Asian. All kinds.

"And the banks can manage these portfolios. They can buy and sell for them, and they profit on the turnover both ways, through commissions."

While Switzerland's nearly 600 banks make money in ways like other banks, Dr. Leutwiler believed "portfolio management and all transactions connected with it—that's probably number one." A matter of trust, you might say.

There was a philosophy that went along with that trust. "A deeply rooted idea," another banker told me, "that we should be strong for the next crisis; we should have something behind us so that we are able, in the case of emergency, to live for

a certain while, just based on our assets."

And so Swiss banks, as do Swiss industries, keep a portion of their assets as "hidden reserves," off the books, concealed from all but a handful of tax authorities. You might compare these hidden reserves to the army's secret ammunition caches.

I WAS CURIOUS about the private lives of those bankers, "the gnomes of Zurich." I met one in the private bank of Rahn & Bodmer: "Third floor, ring bell please." The gnome in this case, Frank Bodmer, was neither wizened nor deformed, but tall, quiet-spoken, exuding an almost palpable steadiness. His family had been in Zurich for some five centuries, as had the families of his two partners. He had among his progeny one son who wanted to continue in his father's footsteps; so too did his partners. Continuity was assured.

I asked about social life, for to many outsiders Zurich seems a city of closed doors, where lives proceed as firmly tracked as the city's little trolleys. "Oh, the bankers get together often," Frank said. "Usually in their houses. Dinner parties for 12 or 14." He belonged to one of the city's old guilds and to

the Schneggen, the "snail," a club dating back to the 14th century. "We lunch once a week, every year have a ball or a concert for the ladies and a field day when we make a trip together."

After a day of juggling figures, Frank likes to relax with his hobbies: "Above all collecting old nautical instruments: sextants, quadrants, octants. I dream about seas and navigation. Also I collect old Patek Philippe watches; they have a numbered record of almost every watch. The navigation instruments work, they're absolutely simple to use. And my watches, yes, they have to work too."

On starry nights in Switzerland, I would think of Frank, standing before his parlor window, in a landlocked country in the middle of Europe, eye to sextant, finding the horizon, finding a star, his watches ticking in perfect time. It was, I thought, the perfect hobby for a man who guides clients and their fortunes through perilous financial seas.

Time passes beautifully *within the exquisite workings of this $12,000 "skeleton" watch made by Audemars Piguet. A crystal of clear synthetic sapphire covers an 18-karat yellow-gold case, hand cut to display the 20-jewel movement. The hours are shown by 12 rubies interspersed with 48 diamonds.*

IN THE ENTRANCE to the school house at Guarda, a small village in the lower Engadine Valley in eastern Switzerland, there stood only seven pairs of little boots, and this was a problem. I had come to Guarda to look into the decline of farm villages, and because the people there spoke Romansh, an old language based on ancient Latin. I had been told too that it was a beautiful village.

It was an early spring day, so that the mountainside where Guarda lay was still white with snow. The village's streets were deserted, icy; they twisted this way and that, ascended, descended, converged on pretty little squares with fountains. But it was the houses that riveted one's eyes: great stone stuccoed things, big as warehouses, with shutters and balconies, their outsides decorated with sgraffiti, folkloric designs; flowers, mythical beasts, ribbons of sheer whimsy. I stood before one, watched only by a cat and a dog, when a man approached. *"Allegra!"* he said. It was the Romansh greeting, "Rejoice!"

And so I began to meet the villagers. Giacomin Bickel-Barth, a farmer, age 51, invited me to his home. Once inside I could see that the great stone walls were like a shell, within which had been constructed, like fine cabinetwork, snug wooden rooms. The *stüva*, or parlor, held a wood-burning stove, *pigna*. A tiny staircase led over the stove to the bedroom above; the stove would warm that too.

We climbed to the attic, where hung 28 cowbells, hunting rifles, an army rifle, and where the air was flavored with the sweet smell of hay from another part of the house. We visited the stable, with its 23 Brown Swiss cows and calves, also within those great walls.

"Every year I give the calves names that start with a different letter," Giacomin said. "There is Lisa and Livia, Olandia and Omega, Romi and Rosi, and so on. They stay here all winter. On the 20th of June, if the

Home is an art gallery *for Oscar Ghez, a Tunisian-born retired rubber magnate who bought Geneva's 123-year-old Petit Palais to display his private collection. Picasso's "L'Aubade" dominates the far wall of a room whose copper ceiling was designed as an abstract work by sculptor Alvaro Vallazza.*

weather is nice, they go up into the Alps. Everybody goes on the same day. The cows stay between 90 and 100 days." The milk average, he said, was very high. "But it is not possible to live by farming alone. Every winter I work as a carpenter or plasterer.

"There used to be 30 farmers here, now only 18. Only one is young." He hoped his son, now studying in a nearby town, would take over the farm, but he was not sure.

The departure of the farm families and others had left many of the fine old houses vacant. Some had been sold to buyers from Zurich who wanted to use them as holiday homes. Others simply decayed.

The future of the village was uncertain. A lively summer tourist trade bolstered the economy, and some now wanted to build less expensive houses to meet the growing demand for holiday homes. Others felt that this would destroy the village's ambience, ruin the tourist trade, ruin everything.

And then there was the problem at the school. I went there to talk with Clot Pult, 33, schoolmaster and mayor. The classroom was decorated with drawings of Pinocchio and the Snow King; the seven students—Roland, Maia, Lucrezia, Reto, Nadia, Marcus, Niculin—sat demurely, hiding smiles. Clot said that when he had come to the village seven years before, there were 18 students. Now, if the number declined by one more, the school would have to close, the children go elsewhere to study.

It seemed like such a great set of problems for such a small village, but Clot wasn't about to give up. "We hope to find a family with children to come here; we will make a notice in the newspapers. We would like a baker perhaps, or a metalworker, or a weaver." He smiled: "We're only a hundred or so, a small social life, but a good life."

Natural fortress *formed by a loop in the Aare River encircles the old section of Bern, one of Europe's best-preserved medieval cities. Founded as a military post in 1191 by Duke Berthold V of Zähringen, Bern joined the Swiss confederation in 1353, replacing Zurich as capital in 1848. The Swiss, fearing too much centralized power, maintain their Federal Supreme Court at Lausanne.*

I WAS NOT surprised that it was in the Ticino, the Italian-speaking part of Switzerland, that I met a young man who seemed to have the most free spirit in Switzerland. The canton, only 1,100 square miles, with a population of 272,000, lies on the Alps' south side. It was ultimately conquered by German-speaking Swiss in the early 1500s so they could control both approaches to St. Gotthard Pass, and thus the pass. For centuries it was impoverished, its sons emigrated. Now it was booming.

Every second building in Lugano, its

largest city, seemed to house a bank; there was in the Ticino one branch for every 1,000 people, more than anywhere else in Switzerland. Italians had triggered the boom: Fearful of government changes and tax collectors, they had long crossed the border with suitcases of money for deposit in safe Swiss banks. The Ticino sprouted more and more banks to accommodate them. In time the banks grew, entered the international banking system. Then New York, British, Japanese banks rented offices next door.

There had been an invasion of tourists too, German speakers from across the Alps in Switzerland and from West Germany. They relished the beauty of the mountains and lakes, the air, the melody of the language, the red-tiled roofs; the roses, palm trees, oleander. Condominiums had been built to accommodate them, retirees too.

It was high on a remote mountainside, littered with abandoned stone farmhouses, that I encountered Francesco Mara, goatherd. He was 25, slender, had dark hair, a quick grin. He had 60 goats, made cheese from the milk, sold it in the valley.

He invited me into one of those old farmhouses, pausing to milk a goat. He placed the still warm milk, clear tasting, on the table, along with his own cheese, olive oil, pepper, and bread.

"It's not so easy to stay up here five months," he said. "I usually come up at the beginning of April and stay until the end of August. I work from a quarter to five in the morning until nine in the evening. It's a long day." But he was *contento*—made enough money to live, without being rich.

As for a *madonna:* "I had once a woman. I came up with her, and after some weeks she left, desperate. She said to me, 'You are crazy to stay here.' And so I lost her. But from time to time some girls come up here in the summer. They are attracted by the simple way of life, but they never stay for long."

What a free man, I mused, what a free life. But then he described a problem. "From time to time I have military service to do, and now they have called me for June. But I cannot leave in June; I must stay here with my goats. I can do my military service only in winter." His brow knitted: "I must write the authorities, explain."

The long arm of the Swiss Army, the Swiss defense system, reached into the most remote valleys; and also, I was about to learn, deep under even the nicest of towns.

STEFFISBURG has a population of 13,000, is close by Lake Thun, has a fine view of the Stockhorn peak to the south. At noon it seemed a city of children: streams of schoolchildren heading noisily home for lunch, preschoolers on swings and seesaws, perambulators with their precious cargoes. But I was whisked quickly underground by my host, Fritz

Baumgartner, the police chief and commander of civil defense.

I had already learned that Switzerland was building 200,000 underground shelter spaces a year; that it had already 5.7 million; that by the year 2000 it was planned that the entire population would be NBC protected. I knew too that civil defense could mobilize 520,000 people; that in peacetime men who refused to serve, like those who refuse to serve in the army, go to jail for a bit. But I wanted to find out how it worked out in one small town.

Mr. Baumgartner and I now sat in a three-bar shelter under a school. "This is a command post for a quarter; a quarter is 5,000 people. It has accommodations for a rescue and fire brigade of 70 men." I had noticed the triple-decker bunks, the men in another area cleaning equipment after an exercise: axes, wedges, crowbars. He opened one of several big books: "There is for each house one sheet: It lists the address, the number of occupants, the type of shelter. Right now we have shelters for 92 percent of our people. We are building more. Every new building must have them."

Back on the surface, Mr. Baumgartner took me for a drive. "Under that shopping center, 200 places . . . that underground garage, 950 places . . . that bank, places for all employees plus 150 additional . . . that kindergarten, 100 extra places added for neighbors without shelters. . . ."

Now and then we would nip down into a shelter: under a church (in its steeple not only a bell, but also a siren), a medical station with 140 beds, an operating room, the doctors' green costumes and instruments already in place; under a machine-tool factory, space for 400, fire-fighting equipment all ready, yellow helmets, belts, buckles, and ropes for scaling walls.

In one very new shelter, beneath a home for older people, I noticed the walls were painted in bright colors—yellow, green, blue—and with designs. One depicted a sunrise. "This picture should symbolize that after a stay here," Mr. Baumgartner said, "it will be like another day, that after a time the sun will rise again. This scheme is now used in some of the newest constructions. I think the reason is that it was felt that the people would feel less bad, more motivated."

Day's work done, *Johann Inauen enjoys his pipe and the affection of his son, Reto, on a small Appenzell dairy farm. With its pastoral simplicities and industrial complexes, a heritage of contrasting cultures, an army so highly trained as to discourage a fight, and a government in league with no other nation, Switzerland sits as Europe's tranquil hub—unique in all the world.*

I thought of all those children up on the surface; I tried to imagine them down here, amid the bright colors, trying to hold onto the promise of another sunrise.

AND SO, after all the journeys, I had gone to Ouchy, to think about all I had seen and heard. One day I rented a pedal boat, a fat little vessel that trailed a wake so that from a distance it resembled a large duck, and pedaled out into the lake, then just drifted, thinking.

One had to admire what the Swiss had achieved with so few people, so little land. I knew all the criticisms, those of the Swiss themselves. In a nuclear age the army was "damned expensive folklore." "This trying to be safe alone, to be preserved no matter what happens to others, is a kind of blindness." "We try to stack our lives as neatly as we stack our stovewood." "There is always among us the necessity to go to Paris, to Munich, to Milan, and then the necessity to come back; the desire to be universal, but also particular."

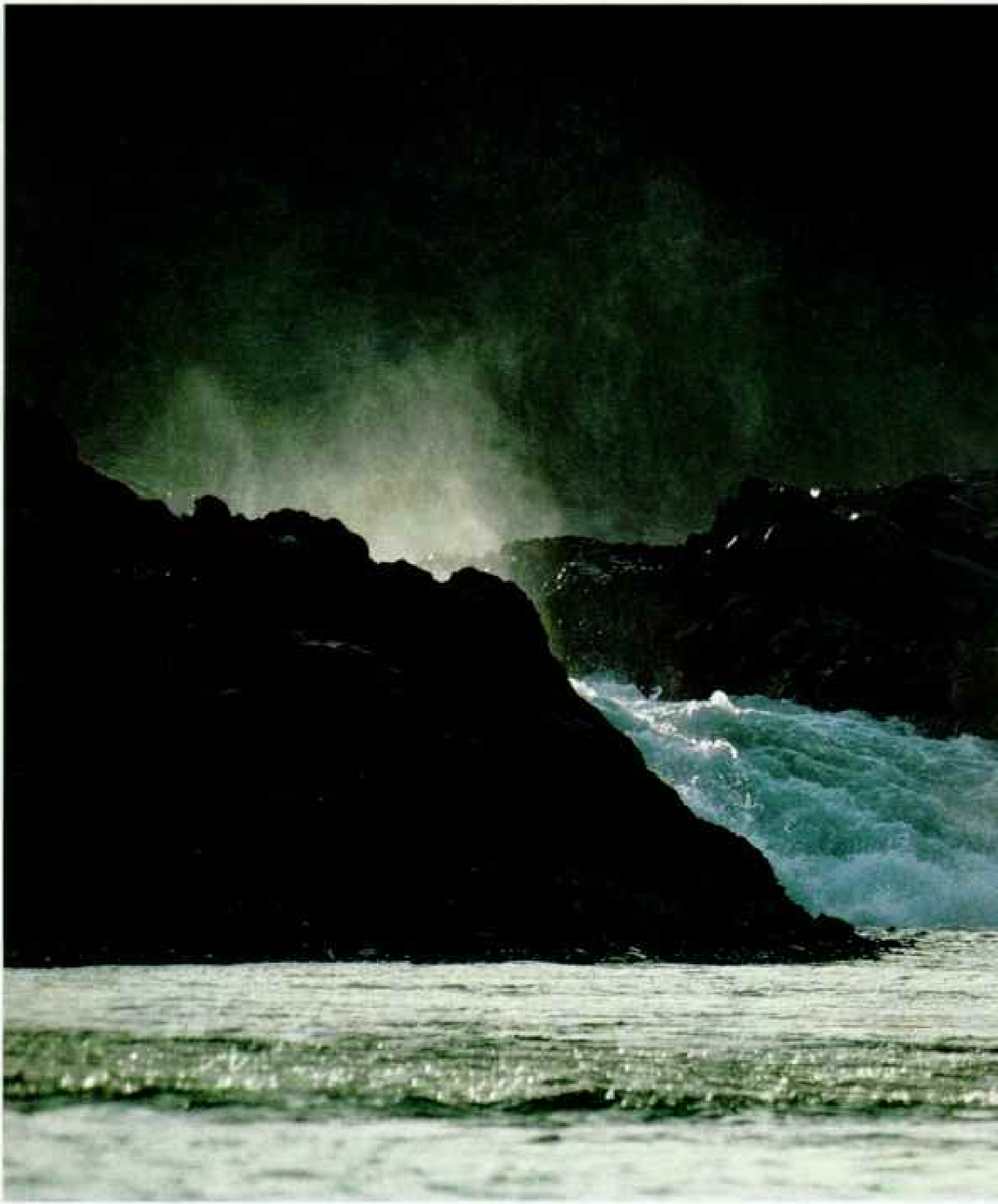
It seemed that there was about the Swiss an insistence on viewing life as rational, as subject to laws as well known and as immutable as those of mechanics or physics. Construct a watch correctly, and it will give good time; should it stop, take off the back and fix it, by the same well-known laws. Simple.

This philosophy may be an illusion, it may be correct; surely it is a pity that so many others have lost that simple confidence. I began to pedal again, the boat pointed back to Ouchy. Just then one of the old steamers passed close by: gleaming white, low-slung, the paddle wheels churning, but quietly so; a group on the afterdeck, some laughing, a steward moving among them, filling their glasses with wine. □

CLUES TO A TRAGIC TREK

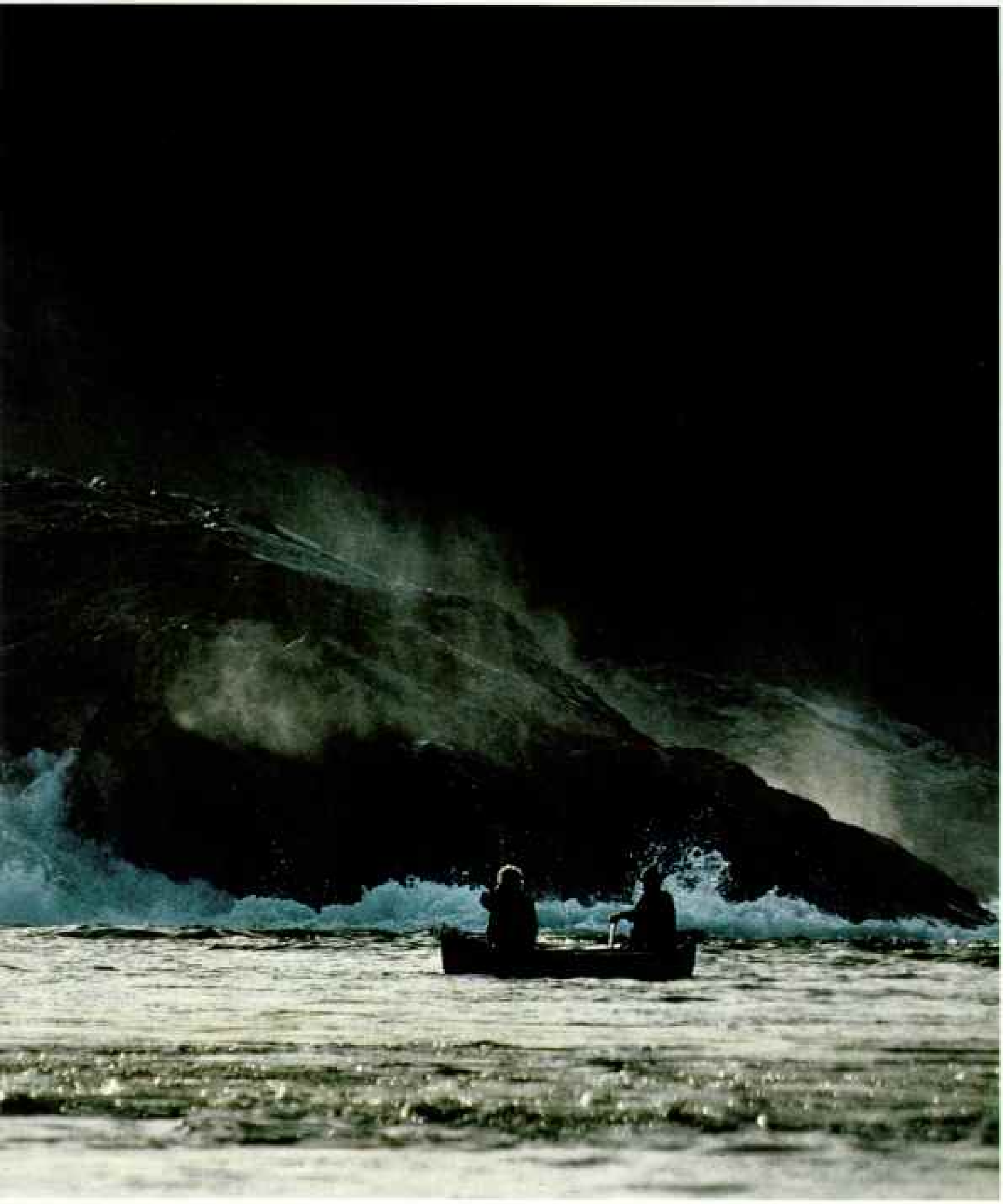
On Canada's Hood River

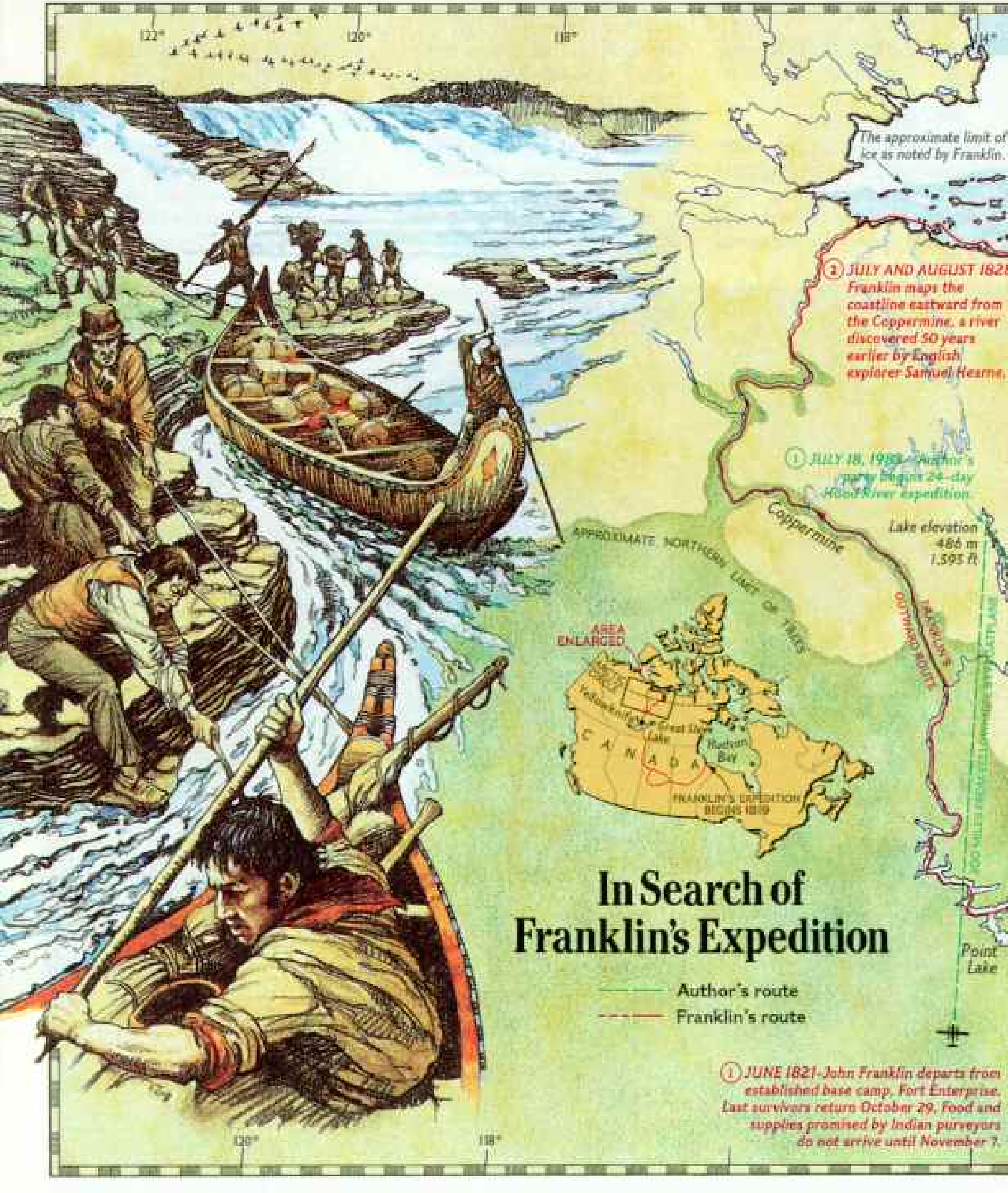
By JOHN W. LENTZ Photographs by TODD BUCHANAN



"THE WEATHER was remarkably fine, and the temperature so mild, that the musquitoes again made their appearance," arctic explorer John Franklin wrote on August 26, 1821, as he and his crew canoed up an uncharted river. It was the first of three expeditions the British naval officer made in quest of the Northwest Passage. With the last his name became a byword for heroic tragedy when all on the voyage perished.

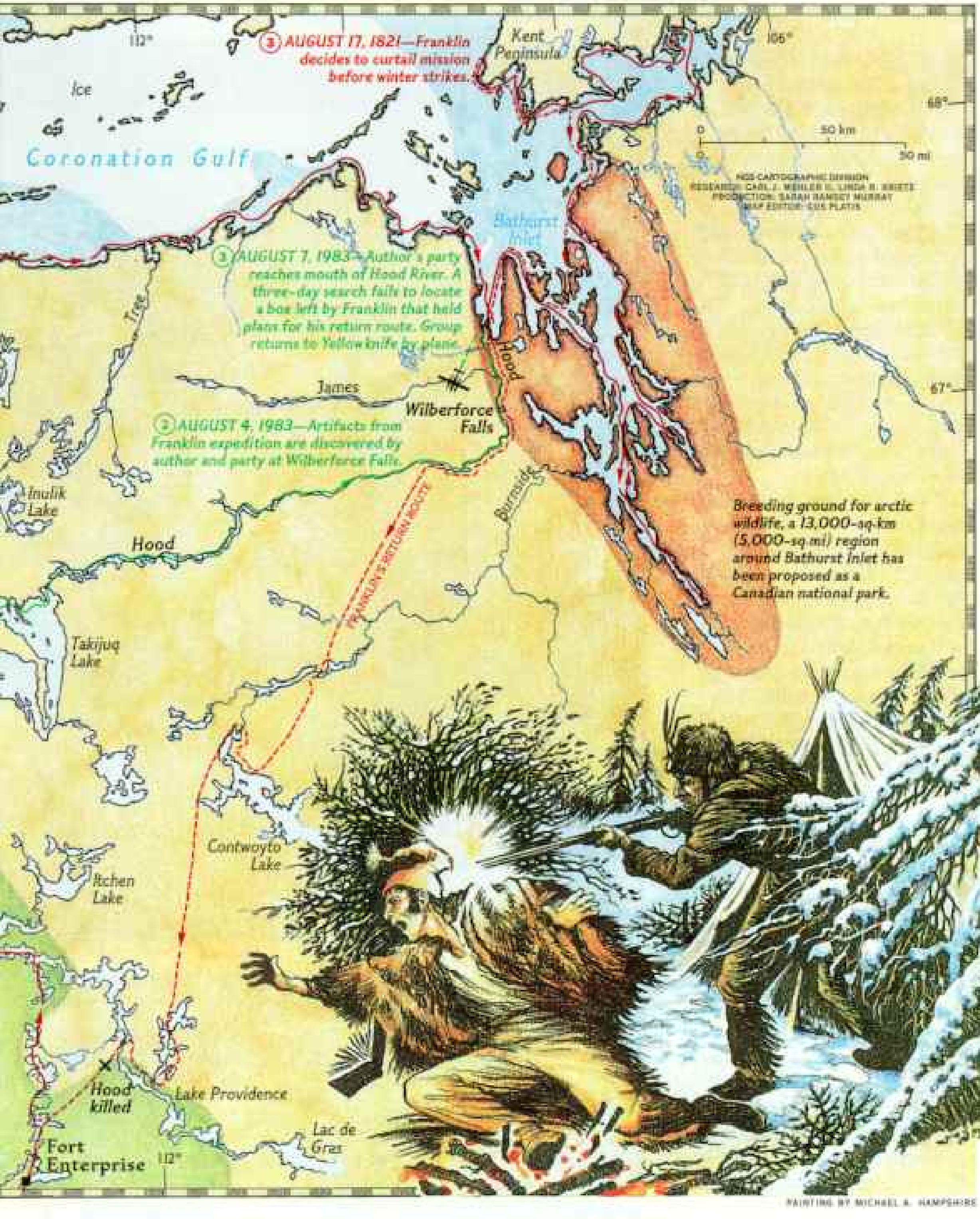
Horror also stalked the first trip. Racing winter and starvation, 11 of 20 men died, including Robert Hood, for whom Franklin named this river. Mindful of these ghosts and guided by their journals, five canoeing enthusiasts and I crossed their path 162 years later. Here one of our canoes nears a Franklin campsite.





SAILING, paddling, and dragging two birchbark canoes loaded with tons of equipment (***above***), the Franklin party had traveled a thousand miles from Fort Enterprise when they first camped on the Hood River.

The British Admiralty had commanded Franklin to map the arctic coastline east of the Coppermine River, and he had intended to return via that waterway. But faced with



PAINTING BY MICHAEL A. HAMPSHIRE

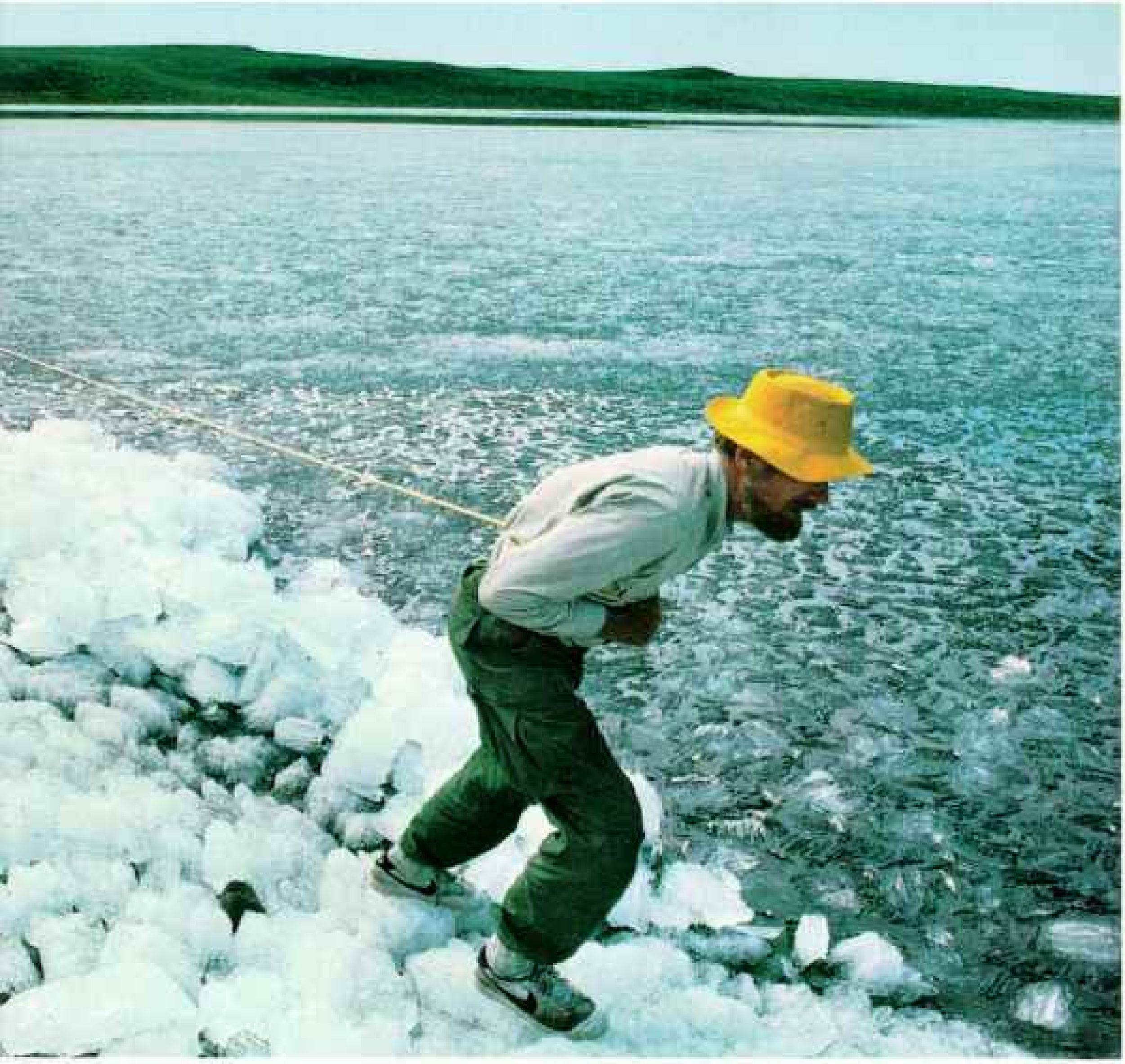
fierce storms and short provisions, he chose to follow the Hood "as far as it was navigable," then make an overland retreat. Snow fell ominously on September 1, and the 250-mile return trek to Fort Enterprise soon became a death march as the men tried to survive on shoe leather, lichens, and carrion.

Already "reduced to a perfect shadow" by diarrhea, Robert Hood was shot and killed on October 20 by his tentmate Michel Terohaute, an Iroquois Indian (**above**). Hood's copy of Bickersteth's *Scripture Help* was found lying at his side. Terohaute was executed a few days later.

WE BEGAN our 24-day expedition when a floatplane dropped us at a lake called 1595 for its elevation in feet above sea level. Twenty miles of paddling brought us to Takijuq Lake, where ice still gripped the shore in mid-July (***right***). For a while it was easier for me to haul as Charles Bond maneuvered the boat in shallow, ice-clogged water. Crossing the lake in ten hours, we faced a day of uphill portaging with 78-pound canoes and 80-pound packs to reach the Hood.

Our 170-mile downstream trip through a succession of rapids was a white-water paddler's ideal. The riverbed flashed beneath us as we plowed through standing waves and dodged rocks. But for Franklin his 60-mile trip upriver was a struggle. His journal records nights when rain and wind so lashed their tents that "we were almost beaten out of our comfortless abodes." The gales that can scour the tundra never came for us. Finding a dry, level spot was the only difficulty Bob Sands (***bottom right,*** at left) and John Schultz had pitching their tent.

Today's gear can almost foil the summer scourge of the Arctic—mosquitoes and blackflies. Netted in an insect-repellent-soaked jacket, Joe Lederle (***right***) repairs equipment while bugs whine around him. Midshipman Hood's account is chilling: "They swarmed under our blankets, goring us with their envenomed trunks, and steeping our clothes in blood. . . . an evil of such magnitude, that cold, famine, and every other concomitant of an inhospitable climate, must yield the pre-eminence to it."



CHANCING upon a primordial spectacle of the Arctic, we observed a large herd of barren-ground caribou on an island in Takijuq Lake as we paddled into that great blue expanse. The hillside was alive with deer. Awed by their presence, we watched for hours as they grazed—often seeming to move as one organism. Then the whole herd, following the

lead of a cow and calf, entered the lake en masse and struck out for the mainland across open water.

Based on swimming speed and a tally of those passing near us, we arrived at an estimate of 10,000 caribou. But these are merely a fraction of the Bathurst herd, perhaps 400,000 strong, the largest of Canada's six major barren-ground caribou assemblies. After their calves are born east of Bathurst Inlet in late spring, the herd splinters and wanders randomly until fall, when it congregates again and migrates south to winter in the taiga between Great Slave Lake and Great Bear Lake.

AMID A STAMPEDE but unalarmed, John Schultz appeared to be no more threatening than a rock to caribou momentarily startled by our arrival on their grazing island in Takijuq Lake (***below***). Their dense movement made it easy to understand why the French Canadian voyageurs in Franklin's time called these herds *la foule*—the throng.

Indignant at our approach, a male musk-ox arouses from napping in a swale beside the Hood River (***facing page***). On another occasion five of us climbed a hillside to get a closer look at a massive bull. When we closed to within 20 yards, he gave a snort and galloped toward the river. Heading back to the canoes, we found John near where the bull had passed, his tan turned a pasty gray. "That big guy almost bowled me over," he stammered.

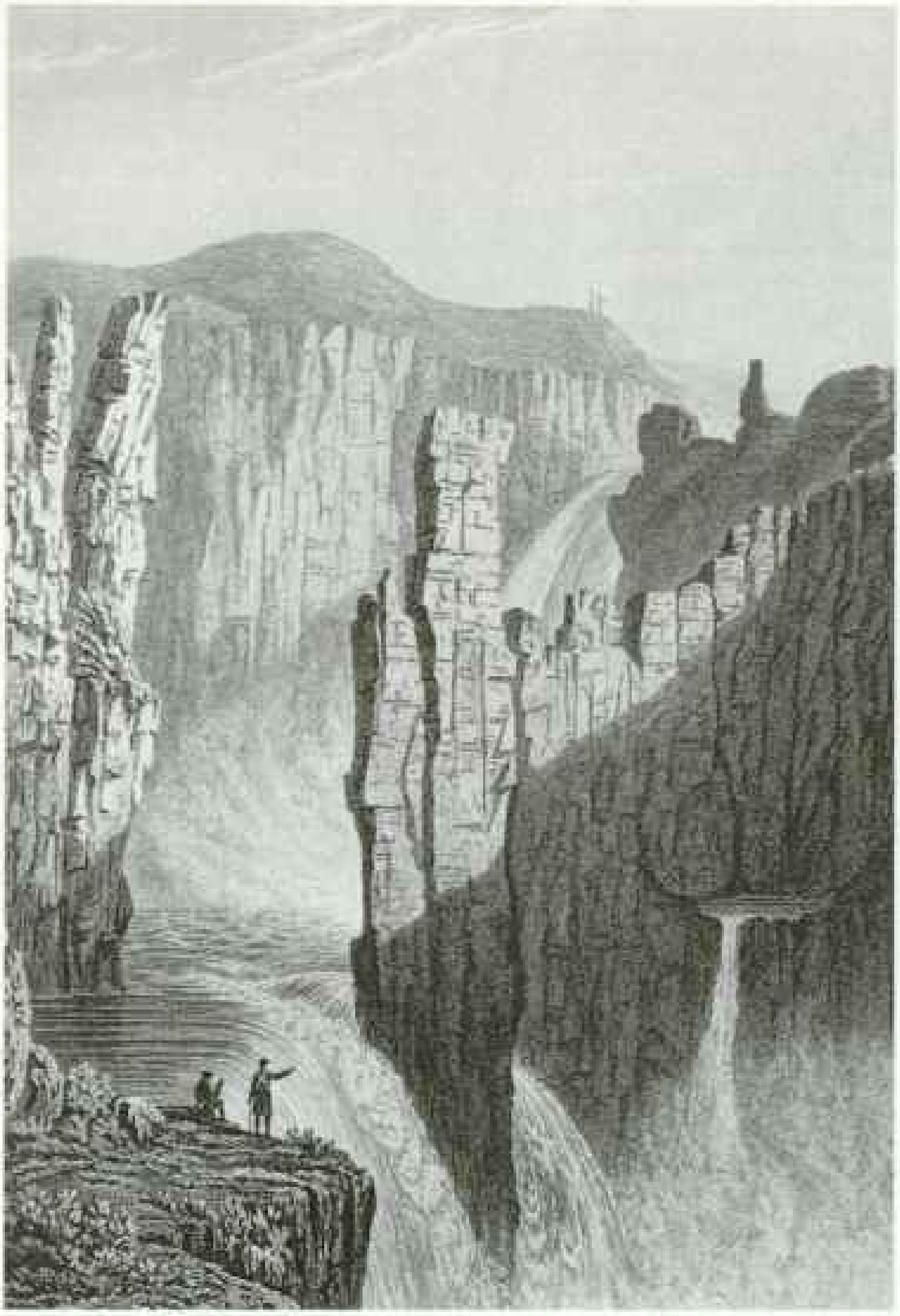
Once hunted to near extinction for its hide, *Ovibos moschatus* has been protected in Canada since 1926. Hundreds breed in the late summer and early fall around Bathurst Inlet, an area identified by Parks Canada as a potential national park. The area is also thought to hold one of the world's largest concentrations of the endangered peregrine falcon.

These wildlife encounters were exciting diversions on our trip, but they meant sheer salvation for Franklin's party. He and his crew often had to eat musk-ox, although they were not fond of it. "The flesh has a musky disagreeable flavour," he noted.

Considered fine eating, caribou were a vital and welcome staple throughout Franklin's expedition. But by October the men no longer had the strength to steady their guns; some took to searching the heavy snow for caribou remains. Shortly before Mathew Pelonquin became the first in the party to die from exposure and starvation, he returned from a day's hunt with only the "antlers and back bone of a deer which had been killed in the summer. The wolves and birds of prey had picked them clean, but there still remained a quantity of the spinal marrow. This, although putrid, was esteemed a valuable prize," Franklin reported.

The disaster of 1821 appalled and instructed Franklin. On his second expedition, begun in 1825, after which he was knighted, Franklin surveyed without major mishap 1,237 miles of coastline now belonging to Canada and Alaska.

On his final search for the Northwest Passage, Franklin with 129 men on two ships became icebound in 1846 near King William Island, and all eventually perished. The numerous rescue missions that searched in vain for them nearly completed the mapping of the Canadian Arctic.



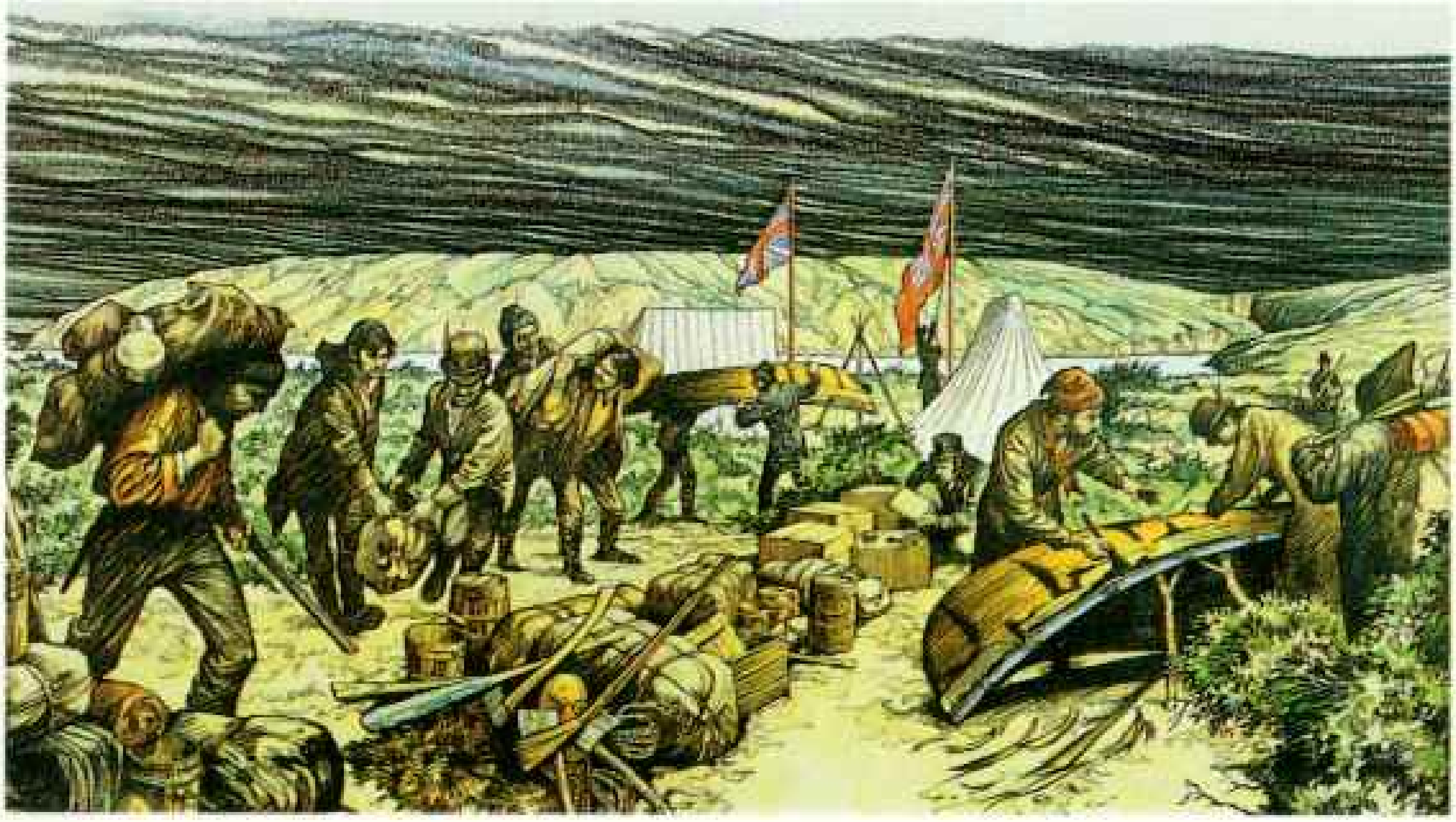
A BREATHTAKING obstacle, Wilberforce Falls convinced Franklin on his second day upriver that it was "useless to attempt proceeding any farther in the large canoes."

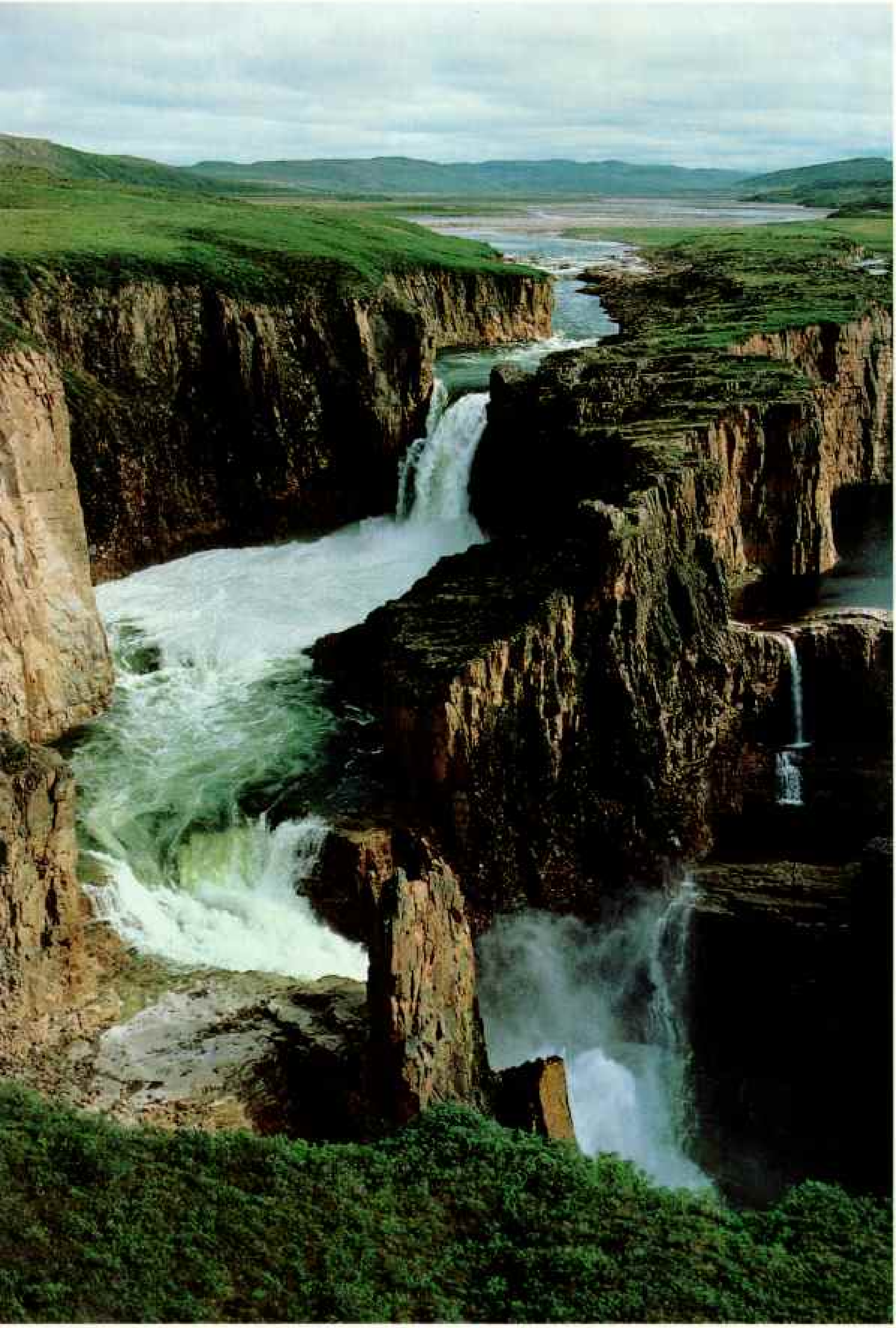
Named by Franklin for a British philanthropist, these falls, thought to be the highest above the Arctic Circle, drop 160 feet. The relentless cataract (***right***) has eroded the towering quartzite pillars shown in an engraving (***left***) from drawings by Franklin's artists, Robert Hood and George Back.

For four days the men camped here, building two small canoes from the unwieldy freighters (***below***). To further lighten the men's burdens, the "stores, books, &c., which were not absolutely necessary to be carried, were then put up in boxes to be left *en cache* here."

Could anything remain of that cache? Guided by Franklin's journal, others had unsuccessfully searched this area before us. But armed with a sophisticated metal detector, we began diligently to scan the ground.

PAINTING BY MICHAEL A. HAMPSHIRE (BELOW)





PAYDIRT came after four futile days of searching for the cache. Ready to give up, Charles Bond made one last pass with the detector. A mere ten feet from our tents, covered by about eight inches of earth, lay three ax heads, a broken file, a scattering of handwrought nails, and a small copper piece, possibly a reinforcement from one of the cached boxes.

The staff at the Prince of Wales Northern Heritage Centre in Yellowknife had cautioned: "Identify, then let us go in for the excavation." After completing our run to the mouth of the Hood, we returned to the site to watch center director Robert Janes (***right***, at right) and senior archaeologist Charles Arnold dig with precision.

In all, eight ax heads were recovered (***below***). The handles might have been removed for firewood before the canoe builders apparently dropped this excess equipment in a pile.

Since Franklin carried no shovels, the boxes of goods were probably hidden in nearby alder and willow brush and long ago discovered by Inuit hunters. Sediment would have quickly hidden the ax heads from view. Along with a similar ax head and a number of small artifacts found at Fort Enterprise, these tools are our only archaeological evidence of Sir John Franklin's first Canadian expedition. □

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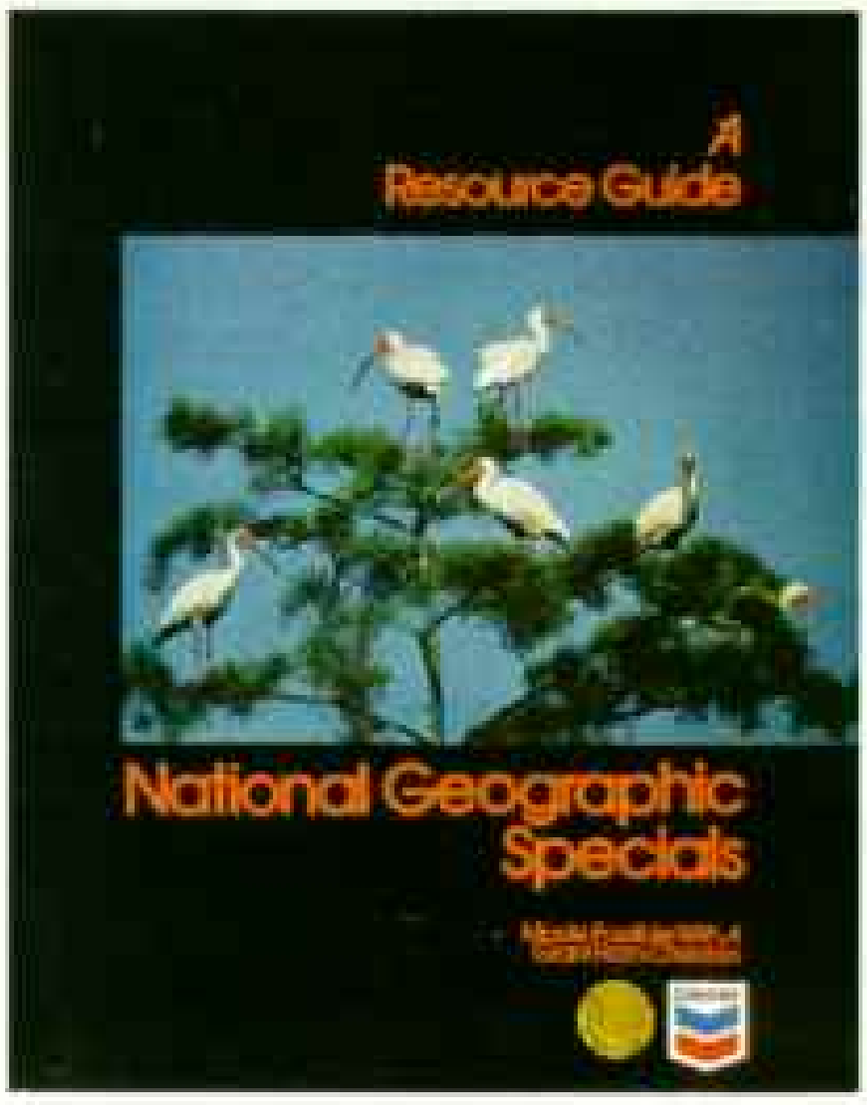
OUR 21ST SEASON of National Geographic Television Specials, our 11th on Public Television, opens this month with something indeed special for teachers and students.

As in the past, our four new Specials will be coproduced with WQED/Pittsburgh and aired through the generous financial support of the Chevron Corporation. The first, "Chesapeake Borne," an intimate portrait of the United States' largest estuary, its people, and its problems, will be shown on Wednesday evening, January 15. Following in February, March, and April will be TV Specials entitled "Creatures of the Mangrove," "Jerusalem: Within These Walls," and "Realm of the Alligator," the Okefenokee Swamp.



A particular concern of mine has been how the Society can best offer our Specials to schools for use in the regular curriculum or for various kinds of enrichment programs to extend geographic education. This year the Society in cooperation with Chevron will permit, without charge, any school or other nonprofit educational institution to videotape these Specials off the air for use in classrooms.

We are also mailing to educators, again without charge, a *Resource Guide* to the subject matter of this season's TV Specials. The guide, made possible by a grant from Chevron, is a 16-page, full-color, illustrated booklet that supplements the Specials' content. Included is a statement of off-air taping privileges and an "On Assignment" feature that describes how the Specials were filmed. The heart of the *Resource Guide* is a series of four illustrated essays on Chesapeake Bay, a mangrove tidal forest, Jerusalem, and the Okefenokee. Following is a discussion of the Specials by educators with their suggestions on how to use them effectively in class or other learning situations.

The *Resource Guide* includes a poster and a bibliography of additional sources to help direct teachers and students in their search for more comprehensive understanding. I especially hope that the Specials and the *Resource Guide* will illuminate the embracing nature of geography, the many connections among history, natural history, and social science.

This year's Society Specials are not "geared for" or "targeted at" schools in any condescending way. We have always believed that education is the active engagement of the mind and the senses. When truly done, it must be entertaining. So for teachers, for students in school, and for students of the world—all the rest of us—welcome to our global semester.

Gilbert M. Grosvenor

PRESIDENT, NATIONAL GEOGRAPHIC SOCIETY

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Members Forum

Kansas

My years in Washington have convinced me that my beautiful home state is often misunderstood and stereotyped. The article in September 1985 highlights the diversity of Kansas and lets people know the good life and opportunities our state has to offer. Once again, NATIONAL GEOGRAPHIC has done itself proud.

Dan Glickman
Member of Congress
Fourth District, Kansas

Henry and Marion Bloch, "collectors of French Impressionists," are shown standing between a painting by van Gogh and one by Gauguin. Since both are considered Postimpressionists, and van Gogh, of course, was not French, wouldn't it have been more appropriate to frame the Blochs with works by Monet and Sisley, or Renoir?

Fritz VonderHeiden
Camp Hill, Pennsylvania

The only "fun" fact author Tarpy left out is that the favorite American tune "Home on the Range" just happens to be our state song!

Jennifer Johnson
Westwood, Kansas

In the article on Kansas, I note the claim that Argonia had the first woman mayor in the United States. Out here in Utah, Mary Woolley Chamberlain, mayor of Kanab, Utah, in 1910, is believed to be the first woman mayor in the U. S.

Bill Skidmore
Brigham City, Utah

Susanna Salter became Argonia's mayor in 1887.

I enjoyed Cliff Tarpy's article but was surprised he made no mention of one of Kansas' unique features: "post rock"—the limestone used in mile upon mile of fenceposts, still standing. Artisans with European know-how came to build them.

Mrs. Claude Gaines
Kansas City, Missouri

As you have heard, I am sure, our wheat farmers are having a rough time. Many are looking for new crops. So what better crop could be chosen for the Sunflower State than giant sunflowers for their oil and seeds.

Marj Brown
Colby, Kansas

Good idea, but sunflowers, like wheat, are overproduced, largely in North Dakota.

Central Plains Map

Your map supplement to the September 1985 GEOGRAPHIC shows the locale of *Little House on the Prairie* as being in Kansas. The setting for that wonderful book by Laura Ingalls Wilder was Indian Territory, south of what is now the Kansas-Oklahoma state line. Remember Mary was afraid that "even if it snowed, Santa Claus could not find them, so far away in Indian territory."

Ardyth Bradley
Libertyville, Illinois

The map locates a reconstruction of the Ingalls log cabin, open to the public 13 miles southwest of Independence, Kansas. Laura was three years old in 1870, when the census of Montgomery County shows the family lived here. But they had mistakenly settled on an Osage Indian reserve and shortly returned to Wisconsin. Mrs. Wilder based her novels on her various childhood experiences but took liberties.

Sichuan

Your September cover photo was warm and humorous. Sichuan Gothic?

Phil Echandi
Omaha, Nebraska

While I would view the distinction between China's past "totalitarianism" and present "authoritarianism" with some reservations, I still found "Sichuan: Where China Changes Course" in the September 1985 issue inspiring.

How ironic it would be if it were China that taught the West a lesson they once knew but forgot—that freedom works!

Andrew E. Barniskis
Philadelphia, Pennsylvania

On page 283 a large picture of Lenin and another of Engels dominate a dance-floor scene. The happy dancers were "too busy to take them down." The Red Guards never seemed too busy to take things down.

As for the new capitalism, the Chinese are following a course charted by Lenin in 1921. He called it the NEP (New Economic Policy). It worked surprisingly well and was widely hailed, but it didn't last. Nobody got to vote to keep it.

Robert J. Keevers
Tinton Falls, New Jersey

The tragedy of China's changes in course is that it is importing the worst of Western competitiveness along with the best. Wealth for some now means envy and resentment of others. Whereas the Chinese warmly applauded both sides at the time of the famous Ping-Pong exchange in 1973 and did not even keep team scores, China's loss to Hong Kong in a soccer match in 1985 resulted in a full-scale riot.

James R. Madison
San Francisco, California

What a wondrous turnabout! In American colleges in the 1960s and '70s one constantly heard capitalism disparaged by those hailing Maoism as a liberating and humanistic philosophy. Now it is scarcely believable the degree of invigorating ferment that incipient capitalism is bringing to the land of Mao. Our aged and much criticized economic system is bright and shiny and new for the Chinese, while Communism seems headed for the dust heap of history. Is Russia next?

Richard L. Voss
Elkhorn, Wisconsin

Jason's Voyage

Once again, a well-written and brilliantly illustrated article (September 1985). But why did Mr. Severin fly the Turkish flag that came into being thousands of years after the expedition of the Argonauts, who were inhabitants of what is now known as Hellas?

Michael Christopher Manessi
Halifax, Nova Scotia

A ship customarily displays the flags of its home nation and the nation in whose waters it sails. Since the Argo *has no home port, it flew only the flag of visited countries, Greece, Turkey, and the Soviet Union.*

Your fascinating article on the modern-day Argonauts captivated me. I recently participated in the Great Heritage Canoe Pageant, a canoe trip along the North Saskatchewan River. The canoes are from an early voyageur design used by the fur traders. The pageant took six weeks, and we covered around 900 miles. Congratulations to those Argonauts who completed their epic adventure. We voyageurs of Canada certainly won't forget our adventure either.

Ian Hunter
Stony Plain, Alberta

Humboldt

Your article (September 1985) gives the wrong impression about Humboldt's companion Aimé Bonpland enduring nine years of captivity "by the paranoid dictator of Paraguay for no crime whatsoever."

In 1821, the French explorer set out to study the cultivation of *yerba maté*, the famous "Paraguay tea," in the Candelaria region, then hotly disputed between Argentina and Paraguay; [he went] without permission and in the company of a notorious bandit chief, Nicolas Aripi, an associate of the gaucho leader Francisco Ramírez, who had threatened to invade Paraguay via Candelaria. When the Paraguay troops destroyed Bonpland's base camp and arrested the hapless botanist, they were acting to defend the territorial integrity of Paraguay.

Bonpland was well treated. The dictator ceded him a large tract, where the Frenchman constructed a hospital, botanical laboratories, distillery, and ranch. Years after his release in 1831, he was said to be still pining for the peace of his "prison."

Thomas L. Whigham
University of California, Riverside

Eritrea

It seems as though there is nothing more important in my life these days than qualifying for a mortgage on a four-bedroom, three-bath, two-car-garage home. Arguments run anywhere from what type of furniture to the type of palms for landscaping. It's always helpful to sit down and read GEOGRAPHIC articles and put your life back into perspective. Your article in September 1985 on the people of Eritrea should make anyone in the U. S., rich or poor, realize how our everyday life should be treasured.

Joann Moore Silva
Fort Lauderdale, Florida

I'm distressed by the dying family photo on page 401. This hard-core photography is intolerable. I'll preview each issue, henceforth, to protect my young children from another direct assault.

Catherine Whitney
Bridgetown, Nova Scotia

We talk of political, religious, economic, and other disciplines, but what it still amounts to is the human race allowing the quiet starvation of another human being. I never realized it was as simple as that. Your articles do bring change.

Adrien deVries
Calgary, Alberta

Please let us know some of the aid groups that can get needed goods into Eritrea, since there is the problem with the war.

Mike Fallon
Grasonville, Maryland

There are numerous European and American organizations working to assist the people of Eritrea. The principal ones include: Lutheran World Relief, Catholic Relief Services, and the Eritrean Relief Committee, all based in New York City. The International Committee of the Red Cross, headquartered in Geneva, Switzerland, is also much involved. Contributions can be made through any American Red Cross office.

Letters should be addressed to **Members Forum**, *National Geographic Magazine, Box 37448, Washington, D. C. 20013, and should include sender's address and telephone number. Not all letters can be used. Those that are will often be edited and excerpted.*

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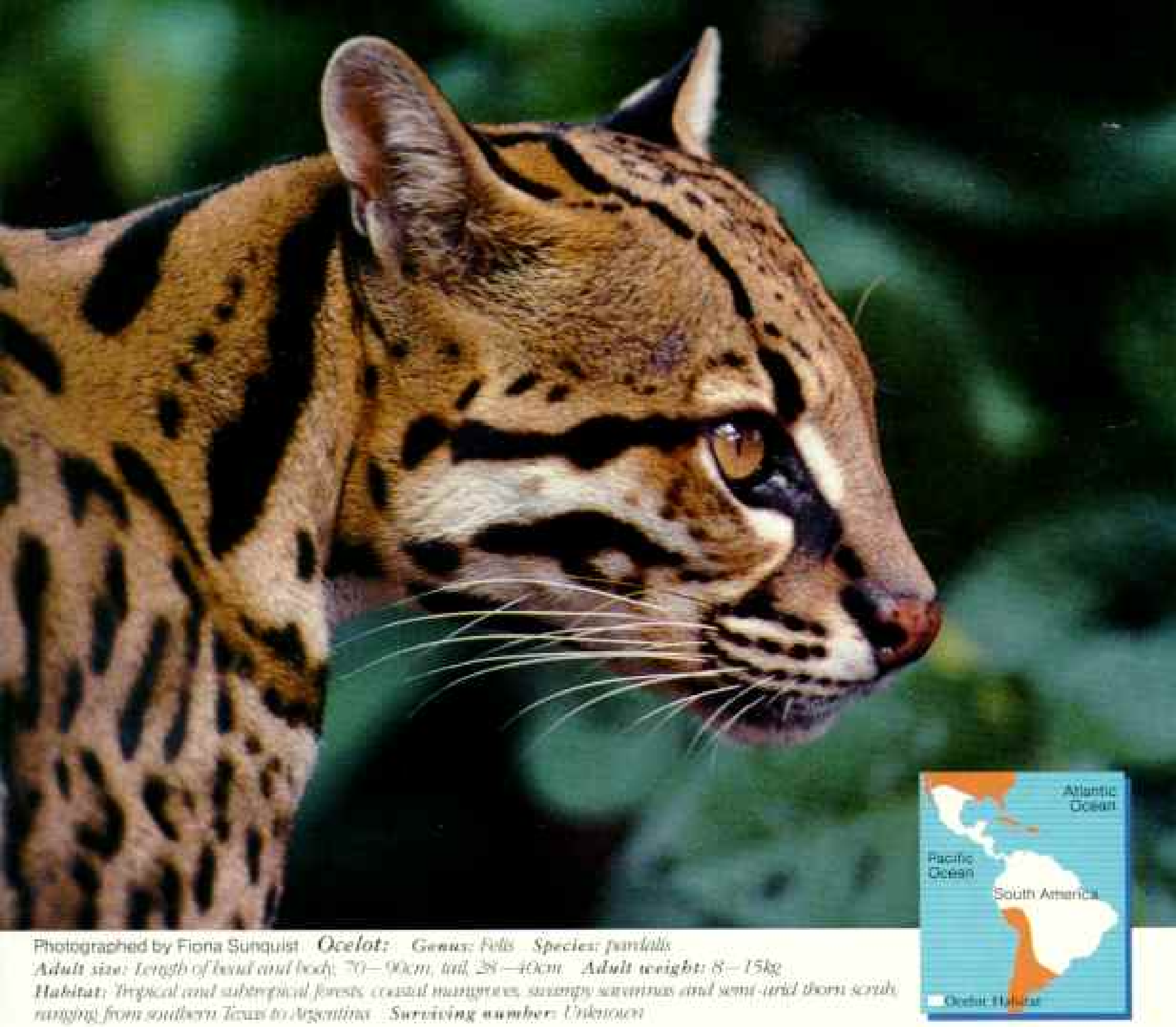


Photographed by Fiona Sunquist *Ocelot: Genus: Felis Species: pardalis*
Adult size: Length of head and body, 70—90cm, tail, 28—40cm Adult weight: 8—15kg
Habitat: Tropical and subtropical forests, coastal mangroves, savanna scrublands and semi-arid thorn scrub, ranging from southern Texas to Argentina Surviving number: Unknown

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

Resting by day, its spotted coat camouflaged among sun-dappled trees, the secretive ocelot becomes active at dusk, stalking birds, lizards and small mammals. The ocelot once roamed a vast area, but now only fragmented populations remain. Today, the ocelot is the most widely hunted cat in Latin America, and is fast disappearing from many areas due to continued demand for its fur and a diminishing habitat.

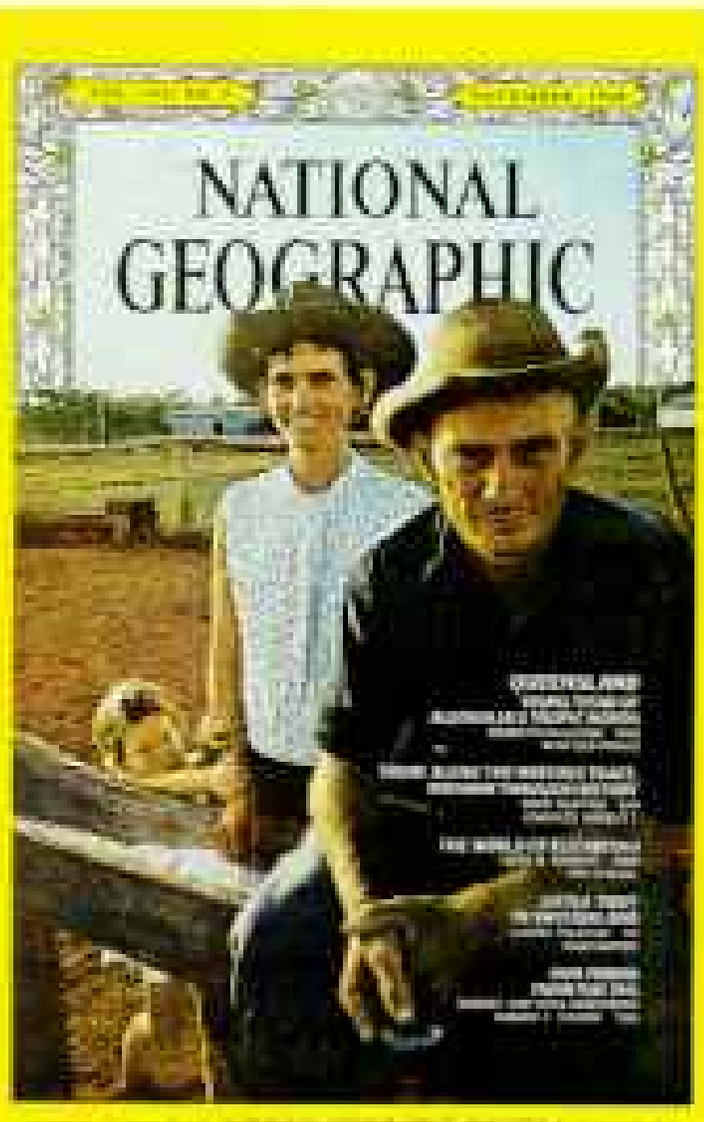
Nothing could bring the ocelot back should it vanish completely. And while photography can record it for posterity, more importantly photography can help save it and the rest of wildlife.

Until recently, little was known about the behavior or ecology of smaller cats like the ocelot. But through field studies, researchers are finding the conservation methods needed to ensure the survival of these animals. An invaluable research tool, photography has been instrumental in nurturing a better understanding of the plight of the ocelot in its remaining habitat.

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

Canon
Images for all time

On Assignment



COVER BY NGS PHOTOGRAPHER WINFIELD PARKS

BY DAVID ROBERT AUSTEN (ABOVE) AND VICTORIA AUSTEN (BELOW)

LOOKING UP some old friends of NATIONAL GEOGRAPHIC while shooting a story on Queensland, contract photographer ***David Robert Austen*** and his wife and assistant, Victoria, learned of a tragedy. On their cattle station of King Junction, 60 miles by road from their nearest neighbors, Raymond and Jill Piggott and their three-year-old daughter, Linda, had appeared on our November 1968 cover (***above***). Ten years later, Linda died in an accident. Soon after, the family moved to Mountain View (***above right***), their new station near Tolga on the east coast, partly to give sons Jimmy, 15, far left, and Alan, 23, the benefits of a less isolated life. But the bedrock of their life is still the same. "You get only what you work for," says Raymond.

After working for 11 years in Australia, American-born, Sydney-based Austen (***right***) has learned to improvise; at Kamaran Station he borrows the owner's pet steer for a tripod. For his fourth GEOGRAPHIC article, he spent two months in Queensland, spanning formidable reaches in the outback, as did staff writer ***William S. Ellis.*** "There's a real sense of adventure, as if you're the first person ever to be in some of these places," says Ellis, a 19-year GEOGRAPHIC veteran.