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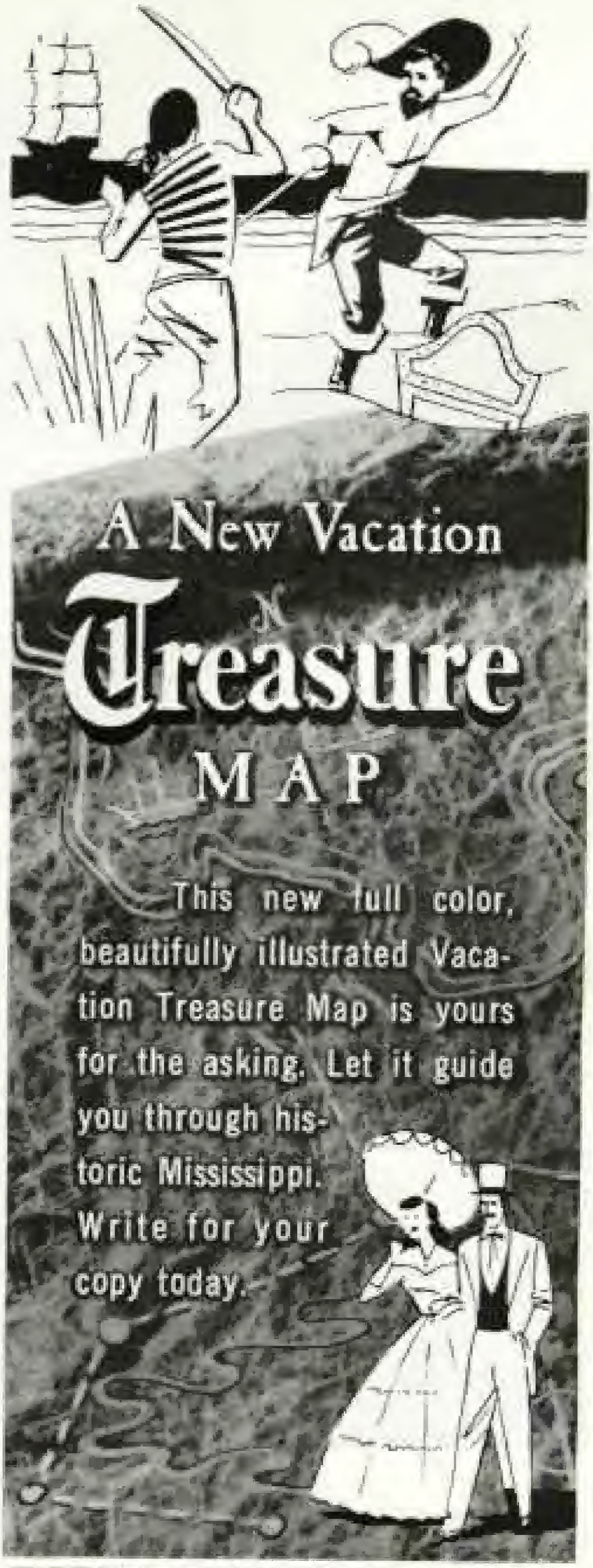

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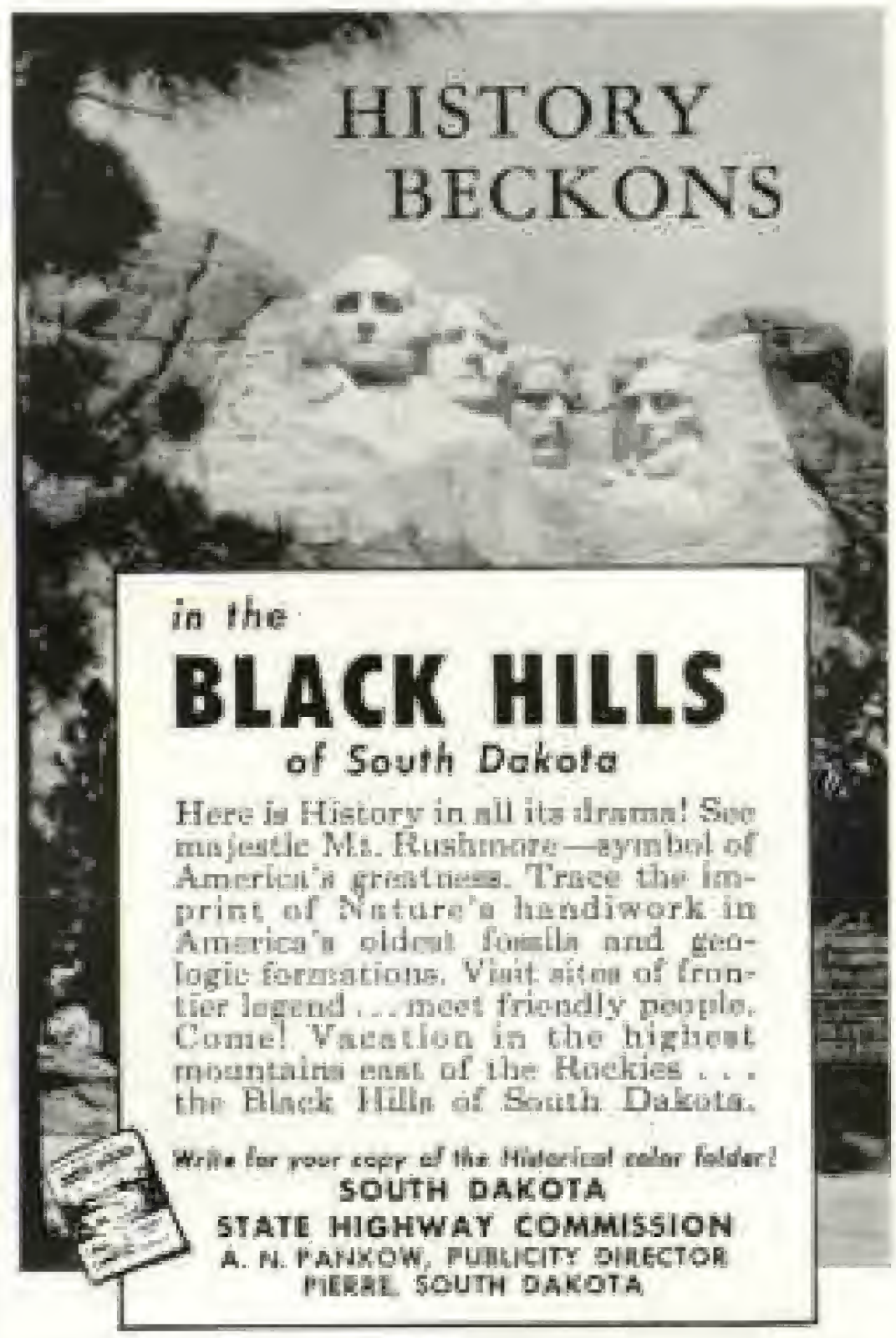

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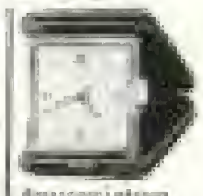

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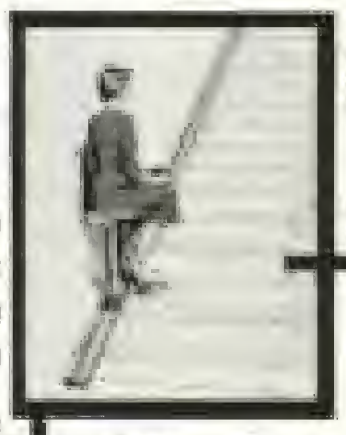

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Today, as in grandma's time, it is not wise to make too light of a cold. What seems to be only a slight cold may be the beginning of pneumonia and other respiratory ailments. So, even if you don't feel "really sick" with a cold, authorities urge you to do these things:

1. Rest more than usual . . . eat lightly . . . drink plenty of water and fruit juices. **2.** Be sure to check your temperature . . . and if you have even a degree or so of fever, go to bed. If fever persists, call your doctor.

Fever is important because it may indicate trouble of a more serious nature . . . sinusitis, ear infections, bronchitis and pneumonia . . . to mention a few. When these and other common ailments of the winter season are promptly treated, the chances for rapid recovery are good—thanks largely to the effectiveness of the antibiotic drugs.

Even though medical science can now bring about more and quicker recoveries from the major winter ailments, it is wise to take every precaution against catching a cold. Here are some measures which may help:

1. Guard against drafts and chilling . . . and always wear clothing suited to weather conditions.

2. Get enough sleep and eat well-balanced meals to help keep resistance built up during the cold months.

3. Whenever possible avoid exposure to those who have respiratory illnesses.

4. If you have frequent colds, or if you are generally "run down," ask your doctor about preventive measures against respiratory infections.

REMEMBER, too, what seems to be a cold in a child often turns out to be the beginning of measles, whooping cough or some other communicable disease. So, it is always wise to keep a child with a cold at home to protect others as well as himself. The communicable diseases are most contagious in this early stage.

Metropolitan's new booklet, *Respiratory Diseases*, gives additional information to help improve winter health. Clip and mail the coupon below for your free copy.

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VOL. CIX, No. 1 WASHINGTON JANUARY, 1956

THE NATIONAL GEOGRAPHIC MAGAZINE

Wildlife Adventuring in Jackson Hole

Naturalist Brothers, Cabin Dwellers in the Wyoming Rockies, Learn the Ways of Mammals and Birds in the Shadow of the Tetons

By Frank and John Craighead

With Illustrations from Photographs by the Authors

ONE October afternoon we were busy touching up our log cabins in the Jackson Hole valley of Wyoming. Running short of roofing nails, we hopped into Frank's car and drove south the 12 miles to the town of Jackson.

A scribbled notice was taped to the door of Simpson's Jackson Hole Hardware store.

"Closed," it announced. "Gone elk hunting. Back Thursday."

Where Elk and People Coexist

A stranger to this section of the Rocky Mountains probably would have been irritated at such apparent commercial laxness in midweek.

But we who had made Jackson Hole our off-and-on home for years knew the deep-rooted compulsions that draw its men and elk to annual rendezvous. So we grinned at each other and decided we'd go hunting, too.

Each fall a herd of elk estimated at 16,000 to 20,000 drifts down from high summer range in the Yellowstone-Teton National Forest area to winter in the lower Jackson Hole valley.* The Hole is renowned as the vale from which travelers look west to the jagged granite skyline of the Teton Range, its tallest summit clawing the sky at an elevation of nearly 14,000 feet (map, page 7).

Thousands of these migrant elk, or wapiti, each year end up as steaks and roasting cuts, wrapped in foil and put away in freezers up and down the valley.

In the early days settlers depended on game for meat. The custom is now ingrained. Come autumn, the local people sight in their rifles and take to the hills. The killing of one elk per licensed hunter admittedly has become a provisioning, far more than a sporting, occasion.

"Got your elk yet?" is a standard autumn greeting on Jackson streets.

Legal hunting is encouraged. Wildlife research shows that even now, despite this annual check, the herd has multiplied beyond the carrying capacity of its winter range, in-

* See "Deer of the World," by Victor H. Cahalane, National Geographic Magazine, October, 1956.

The Authors

One day in July, 1935, two teen-age Washington, D. C., youths came to the headquarters of the National Geographic Society with a bundle of photographs and a manuscript about their experiences in photographing hawks and training them for falconry. The result was "Adventures with Birds of Prey," by Frank and John Craighead, in the July, 1937, National Geographic Magazine.

On the other side of the earth, an Indian prince read their article and invited them to visit him. From this experience came another memorable Craighead article, "Life with an Indian Prince," in the February, 1942, Magazine.

In all, these naturalist twins have written and illustrated six National Geographic articles, including one on their survival training work for the United States Navy during World War II. Now full-fledged scientists, they tell here of their furred, feathered, and human neighbors in idyllic Jackson Hole.

Bare of Foothills, Wyoming's Tetons Tower from the Floor of Jackson Hole

into this sequestered vale came Indians to stalk elk and mountain men to trap beaver. Later, homesteaders and cattlemen arrived, guided by three snowy peaks on the horizon: South Teton, Middle Teton, and Grand Teton.

3

Early Snow Silvers Peaks Above a Valley Dappled with Autumn Gold

Congress established Grand Teton National Park in 1929 and enlarged it in 1950, including much of Jackson Hole. Snake River cuts the bank at far right. Margaret and Karen Craighead survey the scene.

creasing the demands on the winter feeding program (page 30).

It was not elk alone that first lured us to Jackson Hole, though the wildlife management problems they pose interested us. Our earliest glimpse of this game-rich valley, back in 1934, fired us with its promise as an outdoor laboratory for wildlife research.

We had fought our old Chevrolet up the dirt road from the east to Togwotee Pass. Our eyes swept the snow-flecked crests of the Teton Range. Between us and their summits shimmered broad Jackson Lake, through which flows the upper Snake River. Repeated visits to the Jackson Hole country won us completely to its sagebrush flats and timbered slopes.

In 1946, after war service in the South Pacific, both of us returned to buy a few acres and build homes in the Hole. At the same time we acquired doctors' degrees in wildlife biology. We were exercising the American privilege of living where we wished and doing satisfying and worth-while work of our own choice.

Now windows of the log cabins we built near the little town of Moose look up at one of the world's boldest and most majestic mountain fronts.

Because of our professional interest in wildlife, many of the sharpest memories of our life in Jackson Hole focus on adventures with its mammals and birds.

We always have had pets around our cabins: coyotes, ground squirrels, chipmunks, magpies, ravens, horned owls, sparrow hawks, prairie falcons, Canada geese, and even white-footed mice. These pets, free to come and go as they please, can leave us completely if they so desire.

Friendship Pays Off

Kali, a female coyote, we raised from a pup. She played with the children, chewed up shoes and clothing, came at our call, and acted almost like a dog. She even frolicked with visiting dogs, and like a good dog she assumed responsibilities.

One day John heard Kali barking excitedly. Between barks she was trying to pull something out of an irrigation ditch. Instantly John was running, for he saw that the something was his year-old son Derek.

The baby had crawled into the water-filled ditch. Kali's barking had given the alarm and probably saved Derek from drowning.

Kali later ate four of our laying hens; we merely reprimanded her.

But the wild creatures have not always reciprocated our friendship. For instance, there was the case of Frank and the cantankerous mother moose. As Frank recalls it:

"John and I set out one fall day to fish the Snake River. We separated, and I was pushing through the willows when I jumped a cow moose and her twin calves.

"A moose normally gives warning of intention to attack. Hair lifts along the back of its neck and spine. It sticks out its tongue and stamps nervously.

A Cow Moose Charges

"This old cow dispensed with the preliminaries. She rose at once from the bushes and charged me. I was carrying a fly rod, wearing hip boots, and had a pack on my back. I ran for a small spruce tree.

"After half a dozen steps I realized I wouldn't make it, so I turned and faced the moose. When the long-legged creature was nearly on top of me, I side-stepped her, a feat I would have thought impossible until that moment. If my wool shirt had been a little heavier, the snorting beast would have brushed it as she crashed by. Her eyes blazed with an intensity of purpose I have never seen in a wild animal before or since. That look rang a warning. Again I made for the tree.

"Parting low-sweeping branches, I had climbed only head-high off the ground when my attacker thundered up and reared back on her hind legs.

"I realized the moose was about to slash me with her sharp forefeet. I did the only thing left to do. Looking the moose straight in the face, I yelled. 'Shrieked' is a better word.

"I startled myself as well as the cow with the noise I made. The moose dropped without striking and went back to her calves.

"Back at the cabins, I started to ask John's wife, Margaret, whether John had returned. The words wouldn't come out. When I did manage to speak, it was in a hoarse whisper: the yell that had saved me had also temporarily wrecked my voice."

Looking into the history of our adopted home, we learned that the first white man had set foot in Jackson Hole just a little more than 125 years before us, in 1807. He was John Colter, trapper and mountain man.

♠ **Camping on the Snake, John Craighead Sets Up Bed and Kitchen Within Arm's Reach**

Like furniture in an efficiency apartment, nearly every feature of this wilderness home does double duty. The rubberized nylon tent, developed and patented by the authors, has a floor as well as walls and roof. Its white lining helps light the interior.

In winter the tent has proved comfortable in temperatures of 30 degrees below zero. Folded, it adds a three-pound load to the pack frame (propped against the pine).

Dr. Craighead's fire cooks his breakfast and reflects heat into the tent.

Snake River flows beneath the Tetons; Mount Teewinot appears on the right.

➔ Charlie Craighead rides papoose-style on the back of his father, Frank. A knapsack mounted on pack frame forms his "cradleboard."

Indians knew this wilderness before Colter's eyes lighted up at sight of it. And after Colter came John Hollack, Wilson Price Hunt, Jim Bridger, and others in a colorful procession of trappers, traders, and explorers.

French-Canadian trappers gave the Tetons their name. They dubbed three towering summits the "Trois Tetons," for their fancied resemblance to a woman's breasts. These now are named the Grand, Middle, and South Tetons.

Nathaniel P. Langford wrote in his *Diary of the Washburn Expedition to the Yellowstone and Firehole Rivers in the Year 1870:*

"He indeed must have been of a most susceptible nature and, I would fain believe, long a dweller amid these solitudes, who could trace in these cold and barren peaks any resemblance to the gentle bosom of a woman."

Valley Unspoiled by Change

Places in the valley still bear the simple names of the men and wild creatures that have shaped the pattern of its life: Moran, Kelly, and Wilson; Moose, Elk, and Blacktail Butte.

Jackson Hole got its designation early. In 1829 Capt. William Sublette named the valley for his trapper partner, David E. Jackson. One meaning of "hole" to the westerner is an enclosed mountain valley.

Since our first visits, Jackson Hole has been invaded by paved roads, motels, service stations, and a swelling tide of tourist traffic, but the glorious semiwilderness country happily remains intact.

After the trappers and hunters of last century took heavy toll of its animals, Jackson Hole relapsed into a kind of neglect. The westward trek of settlers washed around it to the Pacific, for the Hole was not farming or industrial country. Untapped by rails, the valley knew only limited lumbering.

Much of Jackson Hole, therefore, still holds elk, moose, deer, and bighorn sheep. Beaver boldly cut aspen and cottonwood for their dams. Game birds abound, and feeding trout ripple the lakes and streams.

Years before we found our way to Jackson Hole, the recreational value of the area and its potentialities as an "unfenced zoo" had been recognized.

In 1897 the Teton National Forest had been created. Then in 1912 Congress set aside land in the valley for a National Elk Refuge. In 1929 it established Grand Teton National Park. The Wyoming Game and Fish Commission has supported the Federal agencies in programs of conservation and land management. Thus have steps been taken to preserve the Jackson Hole country for the enjoyment of Americans forever.

Now and then we find it a relief to exchange the game-rich lowlands for the flower-spangled meadows and inspiring peaks of the Tetons.

These cliff-hung towers of naked rock have lured some of the world's most skillful climbers. The Grand, Middle, and South Tetons, Teewinot, Owen, Moran—each craggy summit offers its special challenge.

People fall into two groups in their attitude toward the Tetons. The first consists of those who somehow *must* get to the top.

The attitude of group number two (far the larger body) may be summarized by the typical reaction: "Climb one of those things? Uh-*uh*! Not for me. I've never lost anything up there. I'll just look, thanks."

For better or worse, we Craigheads fall into the first category.*

Magnificent but moody, tempting but treacherous, the Tetons are not to be tackled lightly. No one without mountain experience should start climbing them without a guide. "Climb safely" is a basic mountaineering rule. Years ago, as inexperienced climbers, four of us once defied this rule—and got into serious trouble.

Saved by an Unseen Crack

Close to the summit of the Grand Teton, John was leading three of us up a chimney sheathed with ice. We were tied at intervals to the same rope, he on the rock face above, we below on a narrow ledge. The mountain fell away below us in a drop of thousands of feet.

Trying to find a ledge from which he could belay us upward, John ran out of hand and foot holds. Too late he realized that he had climbed too high without driving a piton and securing his rope. He could neither ascend safely nor come down.

"I may fall!" he called out.

His words shocked us. In our precarious position, it would be almost impossible to check his plunge.

* See "Cloud Gardens in the Tetons," by Frank and John Craighead, National Geographic Magazine, June, 1948.

GRAND TETON NATIONAL PARK

0 5 10
STATUTE MILES

Trails ------ Highways ——

To Yellowstone National Park

Berry Creek
Fatellen Peak
Webb Canyon
Ranger Peak
Eagles Rest Peak
Rolling Thunder Mt.
Raynolds Peak
Bivouac Peak
Mt. Moran
Skillet Glacier
Thor Peak
Leigh Lake
Spalding Bay
String Lake
String Lake Campground
Mt. St. John
Jenny Lake Lodge
Cascade Canyon
Hidden Falls
Mt. Owen
Teewinot Mt.
Jenny Lake
Museum
Grand Teton
Middle Teton
South Teton
X-X Ranch
Buck Mt.
Park Headquarters
Chapel of the Transfiguration
Moose
Phelps Lake
Mt. Hunt
Blacktail Butte
Gros Ventre Ranger Station
Kelly
Airport
Gros Ventre River
Flat Creek
Snow King Mt.
Jackson
Wilson
Teton Pass
Fish Creek
Leeks Lodge
Cutter Bay
Pilgrim Creek
Twelvemile Lake
Fourmile Meadow Lake
Jackson Lake Lodge
Jackson Lake Ranger Station
Jackson Lake Dam
JACKSON HOLE WILDLIFE PARK
21 miles to Togwotee Pass
Moran Bay
Elk Island
Signal Mt. Lodge
Campground
Spalding Bay
Buffalo Fork
Elk
Spread Creek
Mt. Leidy
Sheep Mt.
Lower Falls
Yellowstone Lake
Heart Lake
Fort Henry Peak
Togwotee Pass
Idaho Falls
Alpine
Grand Canyon
Snake River
Pacific Creek
Blackrock Creek

GRAND TETON NATIONAL FOREST

TARGHEE NATIONAL FOREST

TETON NATIONAL FOREST

JACKSON HOLE

NATIONAL ELK REFUGE

TETON NATIONAL PARK

YELLOWSTONE NATIONAL PARK

GRAND TETON NATIONAL PARK

IDAHO

WYOMING

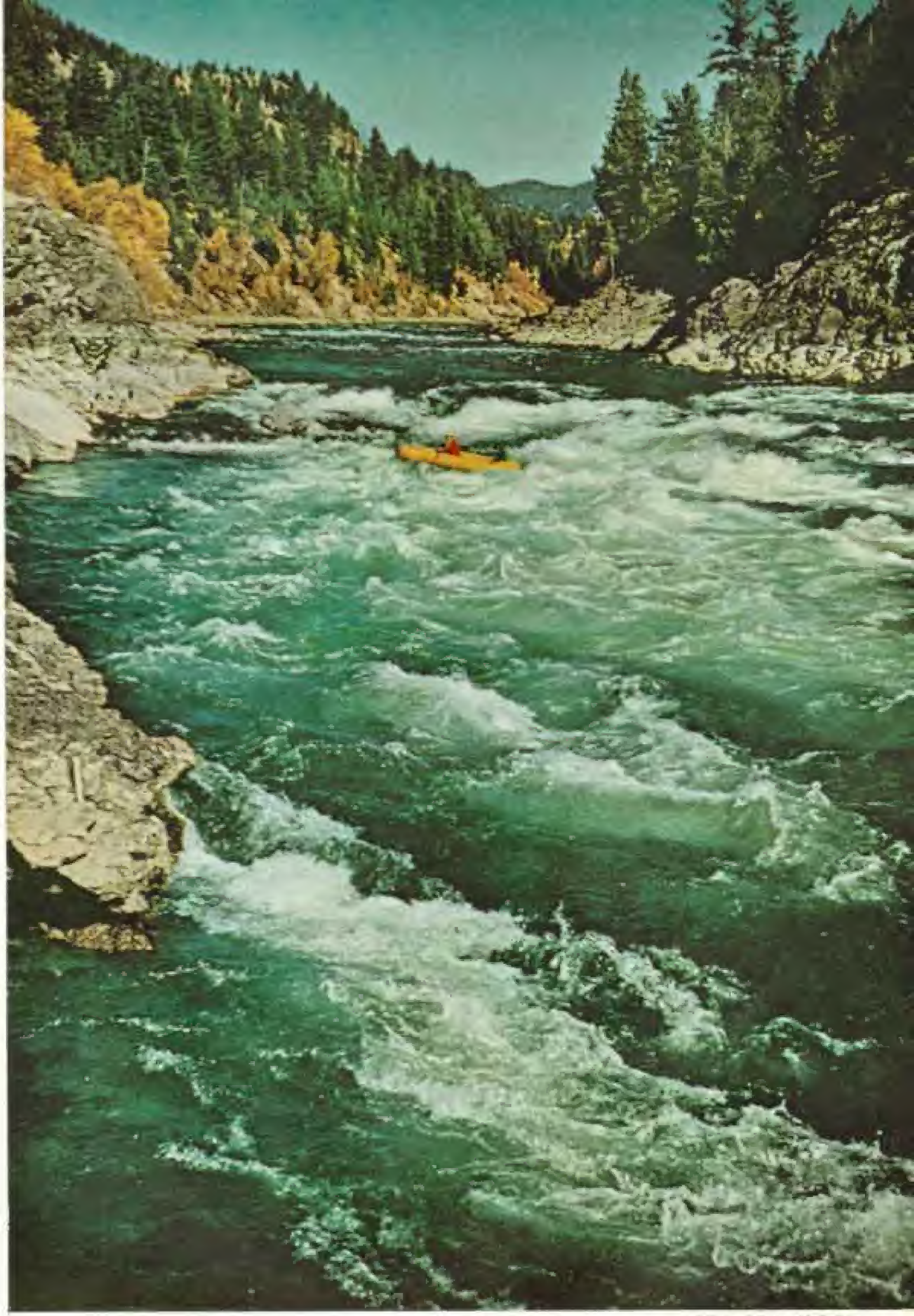
MONTANA

↑ **The Craigheads Unload a Rubber Raft for a Jaunt on the Snake**

Children of the two families went along when the authors visited the nests of Canada geese (below).

↓ **Day-old Goslings Wear Red Dye for Future Identification**

Derek and Karen Craighead cuddle chicks before restoring them to nest. Birds double weight in a week.



The Raging Snake Tosses a Raft. Old-time Trappers Called It the "Mad River"

Unable to see more than inches above him, John mustered one last, desperate effort. He lunged upward, reaching blindly over a curved rock surface. His fingers found a tiny crack. Straining, he pulled himself up to a relatively safe perch. After a rest he went on to a place from which he could belay the second man, and the rest of us climbed safely up.

The danger had been only moments long, but from exertion and fear we were left weak and trembling, with splitting headaches.

John's wife, Margaret, an accomplished mountaineer, has topped all the major Teton peaks, not once but many times.

When the subject of danger in the mountains comes up, Margaret can tell about some exciting moments playing tag with lightning.

"Once we were on a steep knife edge, trying for the summit of Teewinot, when a lightning storm struck," Margaret relates. "We could see balls of lightning roll down the ridges to the lakes far below. Static electricity set our hair to buzzing as if bees were swarming around us. Our ice axes started humming and sizzling. We got off that ridge in a hurry.

"Then there was the time Jack Durrance led a party up Moran," says Margaret. "Lightning struck near by and knocked out everyone momentarily. The party had huddled under an overhang for protection. After the bolt hit, Jack couldn't feel his legs, and looked down, half expecting to find them gone. The legs were there, all right, but completely devoid of sensation. It was some minutes before feeling returned to them."

Lightning, however, claims few casualties. Biggest killers in the Tetons (and very few deaths are on record, fortunately) probably are the precipitous snow and ice fields.

Avalanches Menace Climbers

Falling rock is another hazard. Loose boulders rolling down a steep couloir are hard to dodge. Spring snow avalanches are, of course, a deadly menace, but climbers rarely take to the trails so early in the year.

Maybe one reason we're so partial to our valley is that it periodically nudges us, often when we least expect it, saying, "Time to get your mind off your work."

One most persuasive diversion at such times is—cutthroats! The cutthroats here, be assured, are fish, not men.

The cutthroat trout is the fish of which white men first learned when Lewis and Clark described it on their trek to the Pacific. A slash of red on both sides of the lower jaw suggested the common name. The species abounds in the Snake River, the lakes of the valley, and the ponds that beaver have backed up in abandoned river-channel sloughs.

Cutthroats can be greedy. When Frank opened one big fellow, he found inside, newly swallowed, a full-grown field mouse. Another time, angling for whitefish, Frank was floating a five-inch length of dry willow down the rapids with an artificial nymph dangling from it. A big trout, ignoring the tiny lure, scooped in the entire float.

Frank Snags a Beaver

The biggest thing Frank ever hooked lurked in the depths of the Gros Ventre River, a fisherman's dream of long blue pools linked by white-water riffles. On a still evening, when trout were rising freely to a hatch of small gray flies, Frank was casting to the rise of a fine trout sucking in its insect supper far across the stream.

Almost at his feet, the pool erupted in a tremendous splash. A fat beaver surfaced, smacking the water repeatedly with his broad tail. The noisy activity quickly put down the fish.

When Frank nevertheless made another cast, the little hook snagged the beaver's thick coat. Action packed the next quarter-hour for both contestants.

Once Frank had landed a human swimmer on heavier tackle, but this was a new kind of challenge. He let the beaver tire himself by tugging against the persistent pull of the rod. Led close to shore, the animal sat on the bottom for a moment to rest.

Then he suddenly headed for his lodge. Frank put on all the pressure the tackle would bear. The furry quarry reached his doorway and dived. The fly pulled loose.

Beaver are valued conservationists in Jackson Hole. Their engineering works filter the mountain water, settle out silt, and help ensure pure, clean stream flow. Trout thrive in cool waters of their ponds.*

We each have two boys and a girl; their ages roughly match up at eight, six, and one.

The boys like to go with us when we run over to see old "Uncle Jim" Manges at his X Quarter-circle X Ranch. Uncle Jim has

* See "Arizona's Operation Beaver Lift," by Willis Peterson, National Geographic Magazine, May, 1955.

11

Bob Towers

Jackson, Wyoming, Drops Away as the Chair Lift Climbs Snow King Mountain

Operated for skiers in winter and sightseers in summer, the lift rises a thrilling 1,371 feet in 15 minutes. For a view of Jackson Hole and the Tetons, this visitor sails above treetops in Teton National Forest.

12

Giant Puffballs Balloon from the Wilderness Food Locker

To the knowledgeable mountain man, the Rockies offer a food supply ready for the plucking. One lost member of the Lewis and Clark Expedition lived on wild grapes for nine days.

Puffball mushrooms pop out of the meadows in spring. Peeled, sliced, and fried in butter, they lend a banquet touch to elk steak or trout. Karen and Lance Craighead display enough puffballs to feed a party of 20.

←Golden currants ripen in late summer and fall.

Lower left: Onionlike camass bulbs obtained from Indians helped save Lewis and Clark explorers on Idaho's Lolo Trail. Boiled or baked, they taste like potato. The death camass, another member of the lily family, poisons men and livestock.

↓Cones of the whitebark pine yield pine nuts, a relative of the tasty piñon nuts favored by Indians of the Southwest.

relinquished operation of his friendly weather-beaten dude ranch, swearing he'll fish every day as long as he lives.

Well, he may have missed a few, but we usually find him perched on his folding chair beside the Snake River or one of its tributaries, his bait in the water, boyish anticipation in his attitude.

Uncle Jim's appearance makes him a landmark. He wears a full beard, and his battered felt hat holds about five pounds of fishing spoons and spinners, plugs, flies, and plastic minnows.

"Got that one from Montgomery Ward in 1910," he says, touching a favorite lure. "Never had a better spinner."

Uncle Jim likes to tell about the time he crossed wits and matched hunting indiscretions with a game warden (now in the Happy Hunting Grounds) whom he calls just "Bill."

This, he takes pains to explain, was long ago, when he was young and thoughtless and wardens weren't all they might have been. Uncle Jim, it seems, had shot two elk (his permit allowed him one), and the officer caught him. Let Uncle Jim tell it himself:

The Widow's Elk

"'This second elk o' mine,' I tells the warden, 'is for a pore old widder woman with three hongry kids.'

"'Wal,' says Bill, 'that may be, but I foundja with two elk, and I'll hafta reportja.'

"I says, 'Before you git too busy reportin' me, answer me this: Where was you last August twenty-fifth?'

"Bill went a little saller, sorta butter-colored, and comes back. 'Eh? And where was you, Jim?'

"'Right acrost the crick from you.'

"'Doin' what?'

"'Skinnin' out a moose—just like you was. Out of season meat huntin', wasn't ya?'

"'Wal, Jim,' says Bill after considerable chin-rubbin', 'let's both fergit all about this, which some folks might not understand jest the way we do. Shake!'"

Another old-timer is Mrs. Evelyn M. ("Gran") Dorman.

The patio of Gran's home at Moose commands a superb view over the Snake River and Teton peaks. Sitting there, we often have watched white-footed mice flick in and out of the shadows.

"There goes tomorrow's dinner for your owls," Gran might say.

Though she is a keen naturalist and fond of birds and mammals, she has never been averse to trapping mice for us. She wraps them in foil and keeps them in the refrigerator. Gran's white-footed mice helped feed some of our experimental birds.

Mrs. Dorman left a comfortable life in Philadelphia to migrate to Jackson Hole and homestead nearly 40 years ago. Her spacious riverfront living room once was a blacksmith shop with a dirt floor. Here she graciously entertains visitors. She enjoys and makes good conversation and is an overbrimming reservoir of local history and information, having known hundreds of the cast in the drama of valley happenings.

Gran claims she's such a fund of information because she's a little hard of hearing in one ear. "Everything goes in one ear," she says, "and can't get out the other."

Park Triples in Size

Summer nights, through the picture windows of our cabins, we look across the sagebrush flats and the Snake River cottonwoods at a thousand-eyed dragon writhing along beneath the Teton ramparts—the procession of automobiles carrying visitors to this enchanted landscape.

Congress, in 1950, extended the boundaries of Grand Teton National Park to include some privately owned land and larger areas formerly in Jackson Hole National Monument. This more than tripled the size of the park, now over 310,000 acres. About one-sixth of the new acreage consists of former private holdings bought by John D. Rockefeller, Jr., and presented to the American people.

"Conservation today means far more than just preserving our natural resources," said his son Laurance S. Rockefeller, at the dedication of the new $6,000,000 Jackson Lake Lodge the Rockefellers built last summer for park visitors.

"It means their wise use and protection so that more and more people may enjoy and benefit by them."

The Lodge was sited to afford its guests a tremendous view across Jackson Lake to the Tetons (page 20). It offers excellent accommodations, but the rates are reasonable; Jackson Hole Preserve, Inc., in which the management is vested, is a nonprofit organization. When we visited the Lodge in mid-August, its 300 rooms had been filled almost every night since the June opening.

Teton Spires Soar to the Heavens Above the Little Chapel of the Transfiguration

Grand Teton (above), Mount Owen (center), and Mount Teewinot are called the Cathedral Group because of their lofty turrets and pinnacles. Stately spruce and fir assemble on the lower slopes like worshipers. The chapel was built by Wyoming Episcopalians. For inspiration, its altar window faces the mountains.

Kodachrome by National Geographic Photographer Willard R. Culver

"Solace Yourselves with the Good of These Delectable Mountains": *Pilgrim's Progress*

Titanic earth forces some 60 million years ago thrust up a block 7,000 feet. Stream and glacier, rain and frost sculptured this high ground until mountain forms emerged. Blunted at first, the peaks grew sharp as they wore down to their hard pre-Cambrian cores. Grand Teton, the highest, stands now at 13,766 feet above sea level.

Recently we drove over to the headquarters of Grand Teton National Park, five minutes from Moose, to talk with Thomas C. ("Cal") Miller, assistant superintendent.

"Use of the park is skyrocketing," Mr. Miller said. "We had more than a million visitors last year. That's a 600 percent increase over 1949. In 1954 we were sixth most visited national park."

People en masse can destroy the fragile balance of wild creatures and wild land. To make Grand Teton National Park available to future millions and yet retain the wilderness character poses a problem that will tax the ingenuity and professional skill of the National Park Service and the many other conservation agencies concerned.

Some old friends, their property purchased for the park, have left the valley. Many long-time settlers have not yet moved, although title to their land has reverted to Uncle Sam. Some still have not been persuaded to sell.

It may be that the human element—interesting characters, homesteaders, cowhands, the hand-hewn homes—will be retained as something of value.

Often we go to the town of Wilson, just south of the park, to see white-haired Mrs. Nan Budge in her white cottage beside swift-running Fish Creek. Mrs. Budge came into Jackson Hole as a bride in 1896. She and her husband shared with her parents one of four covered wagons that together clattered into the valley over Teton Pass.

Trout Come for Handouts

Mrs. Budge has made friends with a school of enormous cutthroat trout in the creek. She has so pampered them that they'll snatch their rations from her fingers.

Fetching a bowl of crumbled Spam, Mrs. Budge tossed in a couple of chunks. A streamlined spotted form about two feet long materialized out of the depths and gulped one piece. Two other big trout wrestled briefly for the remaining snack.

Mrs. Budge threw in a whole handful of morsels, and the water boiled with cutthroats up to six and seven pounds in weight. Our hostess beamed, pleased that her pets were behaving so well for visitors.

One valley resident, a tireless angler, constantly tries to wheedle Mrs. Budge into letting him fish for some of her monster trout. The answer is always no.

Once Mrs. Budge found one of her biggest trout washed ashore, very dead. The fish had a three-cornered gash, like a gaff wound, in its back. Mrs. Budge confronted a suspect with the evidence of his misdeed.

"Shame, isn't it?" he said, affecting innocence. "Looks like a blow struck by talons. Guess a fish hawk got it."

"That's right," snapped Mrs. Budge. "It's clear enough. A fish hawg got it!"

As we pursued our wildlife projects in Jackson Hole, we set out to discover how many hawks and owls nest on a given area of land, how far they range, and what effect they have on the species they eat.

We counted the eggs laid, the number of young that hatched, and the number that survived to the flying stage.

We banded young birds to learn where they migrated to, what travel routes they followed, and how long they lived (opposite and page 18).

Owl Dive-bombs the Authors

Climbing to the nests, we sometimes ran into trouble. Once a great horned owl sank her talons into John's arm. This same owl later ripped John's back and, on another stoop, knocked his hat off.

The great horned owl holds no monopoly on such attacks. Both of us have had our shirts ripped by goshawks when collecting food specimens and banding the young.

A quieter thrill was ours on finding our first great gray owl nest. We "borrowed" and raised one of the young ones. Turned loose during the day, it came at our whistle to be fed each evening.

We measured the quantity of food eaten by dozens of owls and hawks, and averaged the consumption per bird. These findings gave us the number of animals (such as mice, birds, and rabbits) they consumed.

One red-tailed hawk ate as many as 14 deer mice a day, and a great horned owl considered seven field mice a satisfactory single meal. All the hunting birds ate less in summer than in winter.

We figured that one raptor population we studied accounted in a six-month period for 90,455 prey individuals, of which 79,437 were meadow mice, 7,178 white-footed mice, and the rest pheasants, rabbits, quail, small birds, and squirrels.

Our findings in Jackson Hole revealed that

(Continued on page 25)

Bald Eaglet Backs into Space to Evade an Intruder in His Two-decked Penthouse

The parent birds built for the future, adding hundreds of pounds of twigs to the top of a 120-foot Douglas fir. Here each season their young grow, exercise muscles, and learn to fly. Fully fledged, this two-month-old will venture from home soon. Frank Craighead dropped in after dinner to check the menu. He found snakeskins, mouse skulls, and remains of fish. His brother John made the picture from a tree close by.

Clamped in Its Canyon, → Henrys Fork Leaps over Lower Falls

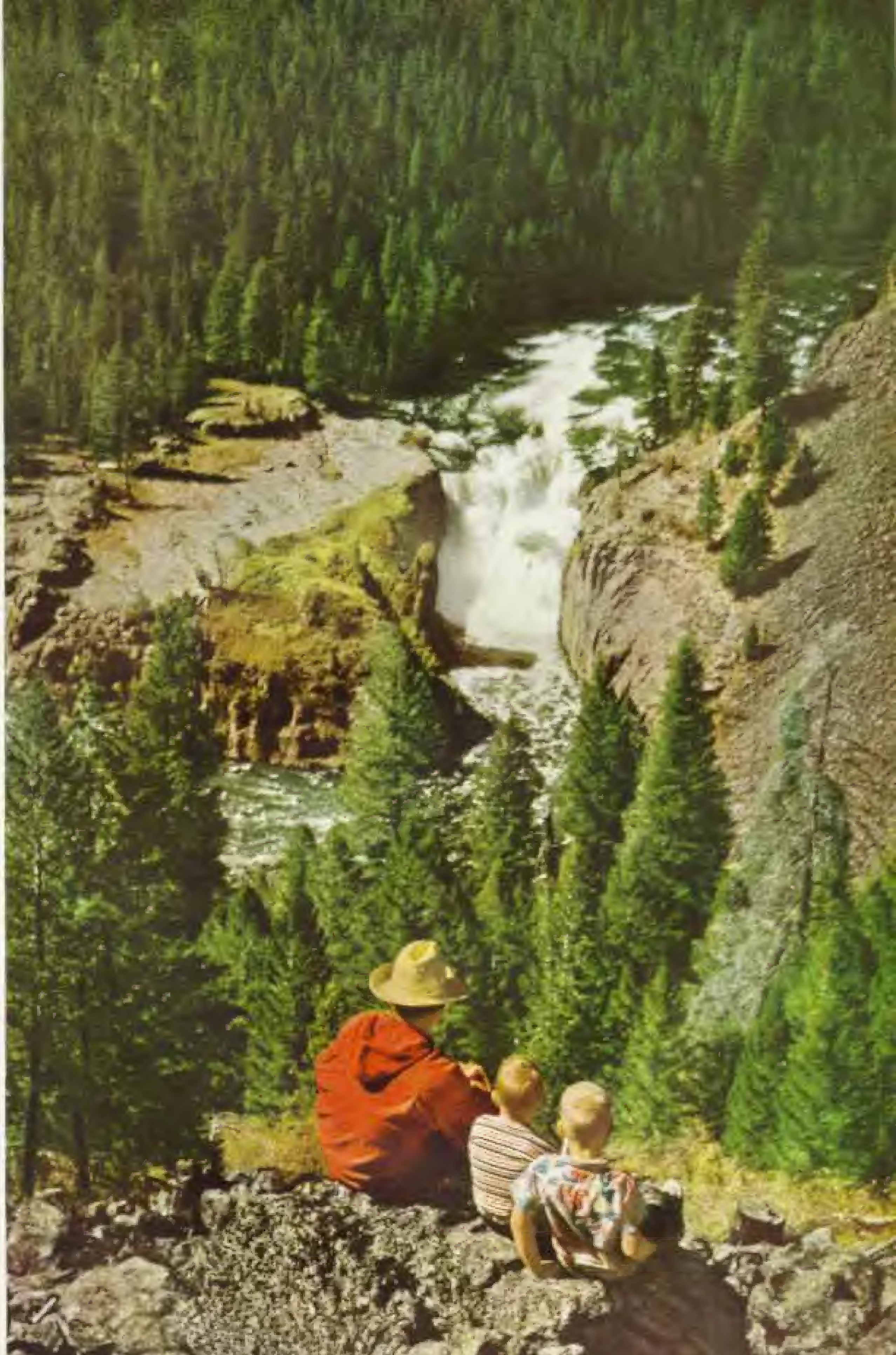
Page 19. To endure the winter of 1810-11, Idaho fur trappers built a few cabins on the riverbank and called their community Fort Henry. Theirs was the first American trading post west of the Continental Divide.

← Young Eagle Sits Grounded on His First Solo Flight

In the early months of his life the bald eaglet grows almost as heavy as his parents and wears a dark cap. White feathers appear at maturity. Such a youngster fooled even John James Audubon, who thought he had found a new species, the "Bird of Washington."

This fledgling assumes a defensive attitude at the feet of Lance and Charlie Craighead. With hops and short flights he reached a river bench, which gave him altitude for a successful take-off.

↓ Frank Craighead weighs a five-week-old chick of the great horned owl, one of the boldest American birds of prey. This baby male tips the scales at 55 ounces. Wide-eyed but composed, his nest mate awaits her turn. After measuring and banding, the author returned the pair to their nest in the cliff.



↑ **Jackson Lake Lodge Looks on Splendor**

Built by John D. Rockefeller, Jr., at a cost of $6,000,000, Jackson Lake Lodge can accommodate 1,100 guests. It operates on a nonprofit basis. Window in the main lounge measures 26 by 60 feet.

← **Water Skiers Play on Jackson Lake**

Ice Age glaciers flowing into Jackson Hole gave birth to Jackson Lake, the valley's largest and deepest body of water. Retreating, they left mounds of rubble above the lake, and dark evergreens grow on them today.

Skillet Glacier rides a pocket on the side of Mount Moran (right).

National Geographic Photographer
Willard R. Culver

Holiday Riders Roam the Sagebrush

Once Jackson Hole was characterized as "the most talked-of outlaw rendezvous in the world." Bad men have long since departed, but film companies still people the valley with cowboys, gunmen, and Indians.

Although the old-style cattle spreads are dwindling, dude ranches and lodges carry on the boot-and-saddle traditions of the West. Today's riders patrol the valley and pack into the mountains. Many are city dwellers; some riding for the first time.

This party moves past Mount Moran and Skillet Glacier (left).

National Geographic Photographer
Willard R. Culver

23

A Climber Learns the Use of Ropes

Few mountaineers tested the Tetons until 1930. The following summer some 60 made ascents to the major summits. In 1955 about 900 climbers scaled the pinnacles.

Those who would climb in the Tetons must register with national park officials. No one is permitted to approach the heights alone.

◀ Page 22. Ringed by his pupils, an instructor shows a girl how to rappel, or rope down. This technique, which appears to be dangerous, has proved the safest way to descend. It combines maximum safety with minimum effort.

This class looks down on Hidden Falls in Cascade Canyon.

▶ Rappelling down a cliff, the student sits on rope and air. Snubbing the line under one leg and over the opposite shoulder, she pays it out by hand

A Ride to Emma Matilda Lake Leaves Appetites as Strong as the Coffee

Cooks serve coffee, ham and eggs, and flapjacks to guests from Jackson Lake Lodge. Everyone eats on foot.

predation is a powerful, continually operating force. In controlling numbers of animals, predation tends to hold priority over the more drastic but less steadily functioning forces, such as starvation and disease.*

Geese Nest Along the Snake

Whispering in its gravelly bed, the Snake River always has fascinated us with its cool, clear beauty and driving power. Business and pleasure overlapped, therefore, on trips by five-man rubber raft to gather facts about the nesting habits of Canada geese (page 8).

Water from melting snows, stored behind Jackson Lake Dam, irrigates crops far downriver in Idaho. We had noticed that late spring release of this water flooded goose nests built on gravel bars and small islands.

This flooding should be controlled, we felt, but before making such a recommendation we had to learn how many geese nested along the river and how many young they raised. We sought out the causes of mortality both to eggs and to young.

Our goose survey floats, conducted on a 40-mile stretch of the Snake River, covered 12 to 15 miles a day, with frequent stops. We counted 88 pairs of geese either nesting or exhibiting nesting behavior, such as circling on short flights or showing resentment at our intrusion.

Nests averaged about two per mile, and 95 percent of them were on islands. Most sites were on elevated piles of drift or sod or on gravel bars.

We estimated that flooding had destroyed about a fourth of the nests. Our study, taken in conjunction with melt-water statistics based on snow surveys, led the Bureau of Reclamation to regulate water levels in the Snake River during the breeding season of the Canada geese.

Elk Bugles a Challenge

When summer yields to fall in our valley, visitors leave, more's the pity for them, for autumn is our most dramatic season.

On clear September days in the high country, when the aspens glitter golden on the hills, it gives a tingling thrill to hear a bull elk bugling. Frequently we have glimpsed him on a hilltop in proud pose, his many-pointed rack silhouetted against the sky. This is the season of the rut, and the bull elk is in his splendid prime.

The elk's bugle actually is a whistle that starts at a low pitch and rises to a high crescendo, followed by several grunts. It is generally interpreted as a call to the cow elk or a challenge to other bulls.

We often have called big bull elk to us by imitating their bugling, luring them to within a few hundred feet. Hunters and photographers both profit from the elk's failure to discriminate between the real call and the hoax.

The elk in summer move into the high country of the Teton National Forest and the timbered and grassy vales of the Yellowstone plateau. There they fatten up, raise their calves, and take life easy amid the cool alpine meadows splashed with wildflowers.

The rutting season over, the elk start down for the lower country with the first heavy snows in late October or early November. The bands follow well-defined migration routes. It is during these weeks that rifle fire echoes among the hills and on the sagebrush flats.

Like most local elk hunters, we try to single out animals that will provide the choicest meat. We usually look for a dry cow or a spike bull, a year-old bull with his first antlers.

Winter Brings Outdoor Fun

If spring in Jackson Hole is the season most anticipated, summer the busiest, and fall the most colorful, winter is the loveliest, loneliest, and most stimulating (pages 29-35).

Snow crunches underfoot, breath freezes, and ice crystals sift down out of the cloudless sky.

Despite the cold, everybody plays outdoors. Valley folk have a choice of skiing, hockey, cutter racing, ice fishing, snowplane trips, and winter camping and river rafting. Skiing, principally on Jackson's Snow King Mountain with its chair lift and network of trails, holds the widest appeal (page 11).

The fast-flowing Snake River stays open even through the coldest weather, and we have pioneered in winter rafting on it.

There is danger in this sport. A spill in icy water with air temperatures below zero could easily be fatal. Sitting on the cold rubber of an inflated raft, voyagers must be warmly dressed, with windproof clothing

* Results of the Craigheads' predation researches will appear in their forthcoming book, *Hawks, Owls and Wildlife*, to be published by the Wildlife Management Institute.

and insulated boots. Life jackets are prudent insurance.

To glide rapidly and silently, effortlessly propelled by the swift current, is a delightful experience. Early in the morning the river steams in the biting air. Frost crystals ghost the cottonwoods. Loose ice floating on the stream hisses as it brushes landfast ice.

The open channel is a glassy-dark pathway through a lonely, glittering land. One minute towering snowbanks slip past, and the next a wind-swept meadow discloses the backdrop of the snow-plastered Tetons.

Swinging around bends, we flush Canada geese, golden-eye ducks, and mallards. We catch sight of mink, porcupine, and other small mammals. Otters make dark blurs sliding into the water, and tracks show where they have been frolicking.

Moose drag through the six-foot-deep snow in the river bottoms, feeding on the tender tips of the willows. Not infrequently we have surprised moose bedded down in the willow thickets right along the riverbanks.

Once our raft nudged a bushy point from which, suddenly, two big bull moose reared up. Blocked landward by snowdrifts and high banks, the shaggy creatures jumped into the river, heading straight for us and making the water fly.

John rowed hard toward midstream. Still, we saw there was danger that one or both of the startled animals would run right over the raft. But just before a collision they turned abruptly downstream. It was a good long while before our pulses went back to normal.

On winter float trips a good campsite means all the difference between comfort and wretchedness.

Rafting downstream one March, bound for the Snake's Grand Canyon and Alpine, we stopped the first night at a spruce stand about six miles below Moose.

We went ashore early, for it takes time—and work—to get properly settled for a winter night. We chose a spot with plenty of dead branches for firewood and where spruce boughs were handy to lay under our sleeping bags for comfort and insulation.

We tied on our snowshoes and packed the

John Craighead, Lunching in Zero Cold, Upends His Raft as a Windbreak

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Snowshoes Anchor His Tent and Clothesline. Campfire Melts a Hole in the Snow

campsite until we could stand on it without the webs. We chopped enough firewood to last all night.

A storm threatened, so we turned the raft on edge for a windbreak, then ran up a tarpaulin between raft and ground, lean-to fashion. We built a platform of green logs as a "floater" to lay the fire on; otherwise it would drop into a pit of its own melting.

Then we cleaned the whitefish we had caught. This fish tastes best when skinned. With the temperature hovering around zero, it was a painful job to take off our gloves and use knife and pliers on frozen fish.

Like other minor hardships of winter camping (for instance, getting out of warm sleeping bags in the morning to start a fire), this one paid off. Camp pitched and darkness setting in, we relaxed completely, watching the whitefish slowly turning golden in the pan.

It was a winter float trip that showed us a rare woodland drama.

We had tied our raft to the bank and pushed up a side canyon looking for signs of porcupine and snowshoe rabbit. Snow, deep and fluffy, slowed our progress on webs. We halted for a breather in a clearing among the spruces.

High above us on an open slope we saw a small band of mule deer. They would lunge forward, belly-deep in snow, and after a few strenuous leaps stop to rest. Then they would plunge ahead a few more yards.

The deer were panting with exhaustion when they reached the hard-packed footing of a snow cornice that overhung a cliff. Snow like mist blew continuously over the lip.

Eagle, Deer in Air-Ground Combat

Hardly had the deer paused to recuperate when a golden eagle swooped down. Taking advantage of the band's weariness and precarious position, the powerful bird attacked, striking the animals with its wings and even raking their backs with its talons.

These were adult deer, and the eagle actually was no match for them. But the bird was smart enough to try to frighten its prey into a panicky lunge that would send one or more hurtling over the cliff to the rocks below.

The deer held together in a tight group, fending off attack by rising on their hind legs and flailing at the eagle with their forefeet.

The battle, a type of air-ground combat rare in the animal world, continued until the bird gave up and soared off to find an easier meal. Had the deer been weak from starvation, the eagle might have killed one or driven it over the edge to its doom.

Valley Lured Naturalist Brothers

Jackson Hole has always had the power to attract the two groups of living things that have most enriched our lives: interesting animals and interesting people.

The valley, of course, lured naturalists long before we came to the region. Wildlife studies of the highest value have been made by the Murie brothers, Drs. Olaus and Adolph, who have loved this country for decades.

They live across the Snake River from us in low-roofed cabins hidden among tall cottonwoods. Olaus Murie, president of the Wilderness Society, has surveyed problems of the Jackson Hole elk since he first came to the valley in 1927. His experience here laid the foundation for his book, *The Elk of North America*.

Adolph has made notable studies of the Yellowstone coyote and Alaskan mammals. He wrote "Wildlife of Mount McKinley National Park" for the National Geographic Magazine of August, 1953.

A wooden plaque at one corner of the fireplace in Olaus Murie's cabin home bears an inscription epitomizing the incentives that have inspired the Muries:

> The wonder of the world, the beauty and the power, the shapes of things, their colours, lights, and shades; these I saw. Look ye also while life lasts.

Only a stone's throw from us is the hand-some log home of Mr. and Mrs. Reginald Laubin, decorated with Indian artifacts. Reg and Gladys are authorities on American Indian songs and dances. Recognizing their sincere interest, the Crows have adopted them into their tribe.

At an outdoor theater with a view of the Tetons we have watched the Laubins and a group of Indians as they performed remarkable dances for summer visitors.

Another neighbor is "Hank" Crandall, a photographer who earned and holds the park concession. He built his own picturesque home studio on Ditch Creek, after homesteading first on beautiful Jenny Lake.

Dedicated to Wildlife and Recreation

Much of the Jackson Hole-Teton Range country is now under Federal guardianship of one kind or another—national park, national forest, and wildlife refuge. The region is primarily dedicated, therefore, to conservational and recreational use.

Ranching will continue on a limited scale to add a colorful way of life to valley attractions. But for as far ahead as the view can reach, this magnificent mountain world will serve pre-eminently the interests of protecting wildlife and of recreation.

Land and wildlife management and recreation are tightly bound up with each other. It takes the wise use of land to produce and maintain wild-animal populations. It takes even wiser management to integrate the human element that cannot be divorced.

We hope that our ecological work in the valley may contribute to the understanding of problems still to be resolved.

There is assurance that adjustments, such as the maintenance of animal populations at levels where their natural range can support them, will be achieved. If so, the region will endlessly fulfill its promise as a place where city-weary Americans may literally re-create body and spirit in a land of rare splendor and rich resources in living things, including man himself.

↑ String Lake, Frozen Fast, Yields Ice to Chill Food in Summer

Avalanches, crashing down lower slopes of the mountains, have cut gashes through the forest. Sharp winds have shaved most of the snow off the peaks. Shade and sawdust in an icehouse will preserve these cakes.

↓ Mule Deer Paw Through Snow for a Cold Dinner

Hard winters bring the threat of starvation to many animals in the Jackson Hole-Teton area. Mule deer survive on serviceberry and bitter brush. In hard times they crop low branches off evergreen trees.

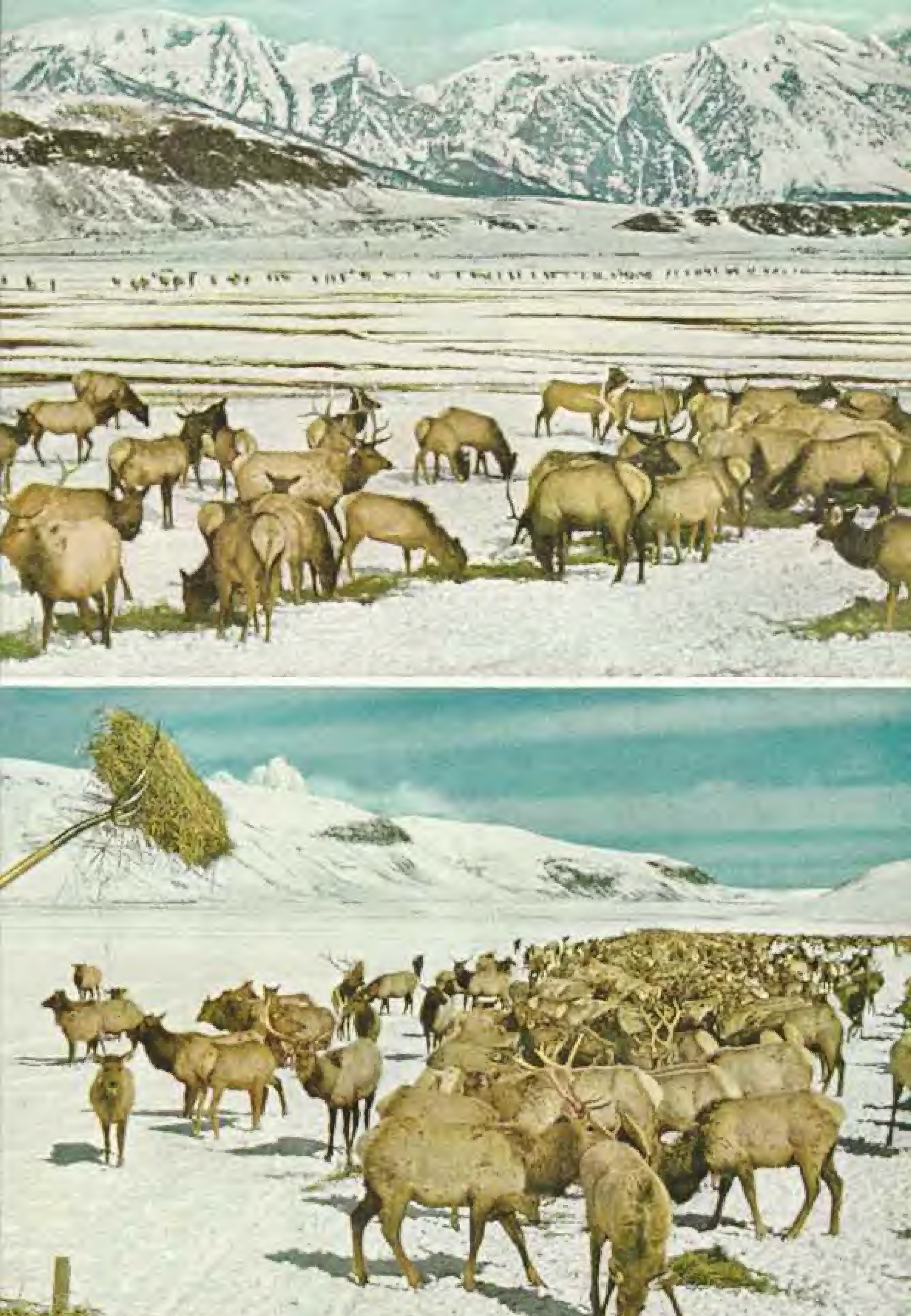
Elk Get a Handout When Jackson Hole Is Frozen Over

This native deer, second largest to the moose, used to range over much of the United States and Canada. Indians called it wapiti; English colonials named it elk after Europe's big deer. As settlers slaughtered for meat and skin, the elk retreated westward. Like the bison, or buffalo, it barely escaped extinction.

For centuries elk summered in Teton forests and the Yellowstone's high meadows and wintered in the lower valleys. When stockmen occupied their ancient wintering grounds, the elk were confined to an area in Jackson Hole, a range too small to support their numbers. In 1872 Yellowstone became the United States' first national park (page 361). Protected by the park and Forest Service in summer, the elk multiplied. Bottled up in Jackson Hole in winter, many starved during severe seasons.

Ranchers took pity on their wild neighbors and in 1907 obtained funds to buy hay for them. Congress five years later established the National Elk Refuge in Jackson Hole. Enlarged several times, the refuge now contains nearly 24,000 acres and helps support a herd of 16,000 to 20,000. Licensed hunting keeps the animals from multiplying out of bounds.

These antlered bulls and their cows feed on hay grown and distributed by the United States Fish and Wildlife Service. Standing as high as horses, the largest males may weigh 1,000 pounds. Powerful individuals can run an estimated 35 miles an hour. In autumn mating duels the bulls' antlers clash like rattling sabers.



An Angler on the Snake Lands a Whitefish on the Snow

The Rocky Mountain whitefish, a scrappy brother of docile Great Lakes whitefish, spawns in the fall. Thus from January into March, a time when trout may not be caught, the whitefish offers fair game. A few individuals attain four pounds.

Fishing from snowy banks in freezing waters is not a new sport, but it has become increasingly popular in Jackson Hole.

These men brave below-zero weather. Sometimes ice coats their lines and freezes reels, necessitating a halt for defrosting. But the Snake flows so swiftly that it never freezes over completely.

For lures the fishermen use artificial nymphs, which imitate the larval stone fly living in the gravelly river bed.

Bruce Wilson caught this two-pounder. Wilson, Wyoming, is named for his family.

← A Box of Good Eating Cured with Smoke

Fresh whitefish, sweet and delicate, often provides the main course at the authors' homes in winter. The excess catch is preserved.

Frank Craighead cleaned these fish, soaked them in brine, racked them on rods, and sealed them in the box. He fed alder-wood smoke into the case through a pipe.

When scales, skins, and heads are removed, the fish become tasty appetizers.

→ Page 53. Ten whitefish reward Clayton Kennedy for an afternoon's work on the Snake.

On warmer winter days whitefish can be caught on a dry fly. Any trout that takes the hook is released.

Like a Figurehead on a Ship, a Skier Glides Through Air at Jackson, Wyoming

A bugle call shattered the chilled air. Spectators fastened their eyes on the figure poised on the top of the snow-slick runway. Taking off downhill in a low crouch, he gathered speed. Suddenly he reached the take-off and sprang upward and outward into midair, arms spread-eagled, body thrust forward in perfect form.

Thus the camera catches Frank Brown of McCall, Idaho. When his skis finally touched ground, he had covered 111 feet, the longest official jump at the high-school event at Jackson in February, 1955.

Young Brown also won the downhill, a race against time over a prepared 1½-mile course, and the slalom, a test of technique, timing, rhythm, and ability through paired flags placed at intervals over a steep terrain.

More than 300 Jackson students in all grades take ski instruction weekly.

Hockey Players Etch Patterns on the Ice

Though its Canadian birthplace is disputed, ice hockey seems to have emerged complete with rules in the 1870's on the campus of McGill University, Montreal. Within 25 years it had become the national sport of Canada and had gained converts in the United States.

Today ice hockey is found across the northern world. Swedes, Swiss, Finns, Germans, Norwegians, Czechoslovaks, and others send teams to the Winter Olympic games.

Here the Idaho Falls team in dark jerseys and red trunks battles Jackson players in yellow and black.

Checking and blocking at high speed, skaters try to drive the rubber puck into the opponents' goal.

Idaho Falls goalie guards the cage at this end of the rink.

All rinks require a fence to keep the puck confined to the playing surface.

↑ **Frank Craighead's Horse Gets a Hot Foot Bath**

This hot spring, one of some 3,000 in Yellowstone National Park, bubbles up in the upper Snake River. Mineral deposits from the water formed the rocky island.

↓ **Howard Henrie Bails Trout in a Caldron near Heart Lake**

When trapper John Colter, who discovered Yellowstone in 1807, returned with tales of boiling pools, skeptics called the country "Colter's Hell."

Athens to Istanbul

A Journey Through the Heart of the Old Byzantine Empire Begins in a Royal Palace and Leads, Surprisingly, to Atlantic City, New Jersey

By Jean and Franc Shor

National Geographic Magazine Staff

With Illustrations from Photographs by the Authors

A TRIP to Greece is always an adventure, but the King and Queen of the Hellenes transformed this one into an exciting journey of discovery.

"We've read the National Geographic for years," said King Paul when he and Queen Frederika received me at their summer palace outside Athens. "We're always delighted when our Magazine publishes an article about Greece. But I hope you'll see more than Athens and the Peloponnesus."

"Everyone knows of the beauty here," broke in Queen Frederika, "but if you drive north from Athens you can live with history and mythology. Go to Vólos and stand on the shore where the Argonauts set sail. See the mosaics at Osios Loukas, and those fantastic monasteries on the cliffs of Metéora. Walk the Plain of Marathón and the streets of Thebes. You'll find a whole world most tourists never see."

A King Talks of Travel

The tall, bronzed King spoke enthusiastically of his own travels in the north.

"The scenery is magnificent," he said, "and Americans are welcomed with open arms. Our people have a lot in common."

"One can be one's self with both Greeks and Americans," smiled the Queen. "One doesn't have to pretend; one just *is*. And you'll find most of the roads quite good. We should know! There's hardly a village we haven't visited. I don't think any Greeks have traveled so much since Alexander!"

Servants in crimson tail coats with fawn-colored lapels opened the doors as we walked out to look at the oleander-covered valley and the hills of Pentelicus and Párnis. Here, at Tatói, the Spartans once set a mighty fort which dominated the whole of Attica.

The royal couple chatted informally as they posed for pictures. Finally, fearing I had abused their hospitality, I started to put away my cameras.

"Just a moment," laughed Queen Frederika. "It's my turn now. You two shake hands while *I* take *your* picture."

The broad-shouldered King towered over me as he took my hand in a firm grip. The Queen focused my camera carefully and took three exposures.

"If the Magazine uses one," she said, "I want a credit line like all photographers get. And beneath the picture write: 'A member of the National Geographic Society welcomes The Society's representative to Greece.'"

The King and Queen changed places. Then King Paul took a picture while his lovely wife shook my hand (pages 42 and 43).

More Reasons for a Journey North

As I drove back to Athens, it occurred to me that Queen Frederika was right about being one's self with Greeks. "One doesn't have to pretend; one just *is*." Even with the royal family.

The royal suggestion for a trip north brought numerous seconds from friends in Athens. George Galavaris, a young Greek archeologist, was enthusiastic.

"You could drive from Athens to Istanbul," he suggested, "and travel the heart of the Byzantine Empire. The glory that was Greece didn't die with the classic age. The Byzantine period was one of the great eras of history. I'd like to be your interpreter and point out things of archeological interest."

We accepted on the spot. And while we were getting ready for the trip, a high-ranking member of the American Military Mission to Greece introduced a new angle:

"Your route lies across some of the most strategic real estate in Europe," he said. "If the Russians attack across Turkey, that's the way they'll come. And in Thrace you'll get to the Bulgarian border, right up against the Iron Curtain."

So we set out on perhaps the only tour of Greece which ever began in the Royal Palace at Tatói and ended in Atlantic City, New Jersey. But first, in Athens, we visited

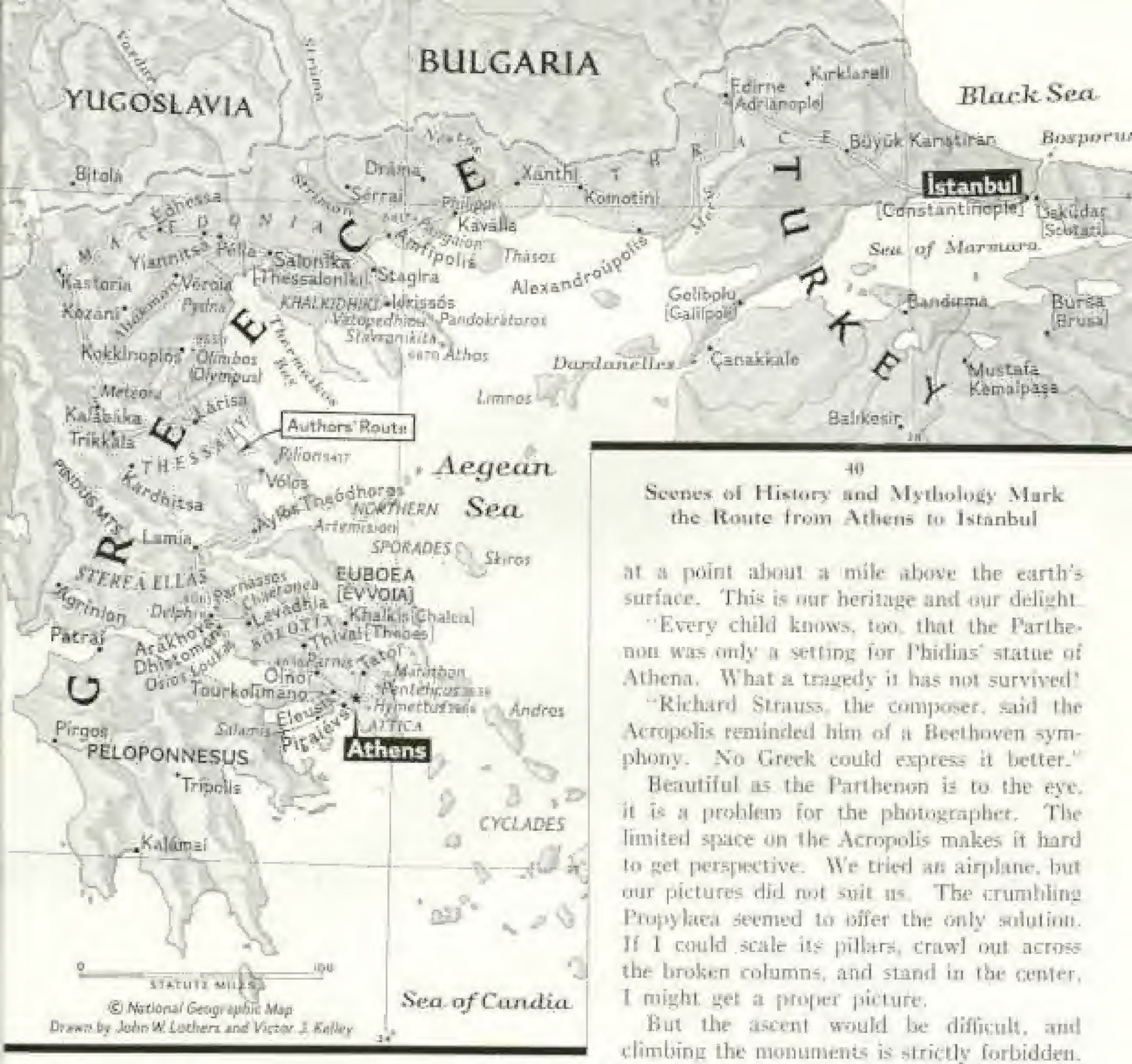
The Parthenon Gleams in Ageless Splendor Atop Athens' Acropolis

This sun-drenched setting nurtured a civilization so brilliant that it influences the art and thought and political philosophy of all the West 2,500 years later. Proud ruins on the "most famous hilltop in history" constantly remind the modern Athenian of his illustrious heritage (pages 44 and 48).

Jean Sloe (left), picnicking with an American business family on the Hill of Filopappos, enjoys a magnificent view of the Parthenon, with the Erechtheum, the Temple of Athena Niki, and the Propylaea at left and Mount Lycabettus at center.

←Seven Athenian girls, on a porch of the American School of Classical Studies, model provincial costumes from central Macedonia, Thrace, Sterea Ellas, Attica, Thessaly, west Macedonia, and Euboea.

→A happy Greek sailor coils the bow line of a fishing caïque, the *St. George*, at Tourkolimano.



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Scenes of History and Mythology Mark the Route from Athens to Istanbul

the still magnificent monuments of Greece's storied past.

We began, as all travelers must, with the Acropolis (page 39). We climbed the steep steps to stand upon the naked rock, marveling at the beauty of the Porch of the Maidens and the incredible grace and symmetry of the soaring Parthenon. The rocky summit was crowded, not with tourists but with Greeks, living and laughing and basking in the warm sun among the symbols of their glorious history.*

"We Greeks don't live *in* the past," said George Galvaris, "but we live with it. There isn't a school child in the country who doesn't know the wonders of the Parthenon—how it looks to be all straight lines and yet has almost no straight lines in it; subtle curves and tilts give the appearance of straightness. Its Doric columns, if extended, would meet at a point about a mile above the earth's surface. This is our heritage and our delight.

"Every child knows, too, that the Parthenon was only a setting for Phidias' statue of Athena. What a tragedy it has not survived!

"Richard Strauss, the composer, said the Acropolis reminded him of a Beethoven symphony. No Greek could express it better."

Beautiful as the Parthenon is to the eye, it is a problem for the photographer. The limited space on the Acropolis makes it hard to get perspective. We tried an airplane, but our pictures did not suit us. The crumbling Propylaea seemed to offer the only solution. If I could scale its pillars, crawl out across the broken columns, and stand in the center, I might get a proper picture.

But the ascent would be difficult, and climbing the monuments is strictly forbidden. Prof. Anastasios K. Orlandos, director of Greece's Division of Antiquities, came to our rescue.

"We will make an exception for the National Geographic Society," he said. "You may try the climb—at your own risk."

The Perfect Spot

Early on a Sunday morning I struggled up the marble columns to the arch. I strapped my cameras around my neck and inched on hands and knees to the highest point. Carefully I stood erect, balancing on a narrow block of cracked marble. I raised my camera. It was the perfect spot (page 44).

* See the National Geographic Society's 356-page book, *Everyday Life in Ancient Times*, $5 in United States and Possessions, $5.25 elsewhere. Postpaid. In the National Geographic Magazine for March, 1944, see "The Greek Way," by Edith Hamilton, and "Greece—the Birthplace of Science and Free Speech," by Richard Stillwell.

Rescued from the Sea, Little Bronze Jockey Rides as Furiously as He Did 22 Centuries Ago

Greeks of the golden age endowed everything with grace and beauty—temples, shrines, and public squares, cups, water jugs, and kitchenware, armor, jewelry, and toilet articles—everything except their boxlike houses.

Among sculptors, few have rivaled the Greeks in turning cold marble into warm flesh, wondrously animated and flawlessly proportioned.

Many Greek sculptures were bronze, but the barbarians who melted them for weapons left few examples.

These two fine statues by unknown artists were found off Cape Artemision on the floor of the sea, where they sank, possibly in a Roman argosy. They stand in the National Archeological Museum of Athens.

The jockey dates from the 3d century B. C. Body tense and face strained, he clutches a fragment of rein in one hand and a whip handle in the other.

➔The noble face is that of Zeus, "father of gods and men," or Poseidon, his brother.

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Photograph by H. M. King Paul of the Hellenes

Queen Frederika Graciously Greets Frane Shor—and the King Takes Their Picture

When the author was received by the King and Queen of the Hellenes at their summer palace, they obligingly posed for his camera and then suggested that they take *his* picture. These two royal photographs resulted.

I spent the entire day there, taking dozens of pictures. Every change of light revealed new beauty. I had brought no lunch, but no degree of hunger would have tempted me to make that climb again. As the light faded, Jean called for me to come down.

"Wait a few minutes," I said. "This is too beautiful to leave."

It *was* beautiful, but actually I was getting up nerve for the descent!

We visited the Temple of the Olympian Zeus, the Theseion, and the Agora, market place of ancient Athens. Excavations by the American School of Classical Studies have brought to light the center of the daily life of the ancient city.

The Shop of Socrates' Cobbler

"We've just uncovered the floor of a great court building," a young American archeologist told us as he led us to the spot. "You are standing where Socrates probably stood when he was sentenced to death 2,300 years ago. Here, too, Demosthenes made some of his great orations, and Aristotle held forth on the law."

He led us to a small structure, recently excavated.

"We found a lot of bobnails here," he said, "and a fragment of a pottery cup with 'Simon' scratched on it. Socrates spent a lot of time with a shoemaker named Simon who published their conversations in the form of literary dialogues. This may well be the shop of that very Simon. Brings the past very close, doesn't it?"

Statues Came from the Sea

We saw more of that past in the National Archeological Museum, admiring the red-and-black pottery of the classic period and the statues of Greece's greatest sculptors. Most interesting to us were several lovely bronzes, all found beneath the sea (page 41).

The best was the figure of a jockey. When he was created 22 centuries ago, he rode a bronze horse. Only parts of the horse survived the long immersion in salt water, and the jockey's mount today is a plain pedestal. So marvelously was he fashioned, however, that a single glance tells what he is doing, horse or no horse.

"Without the Greeks, the world would never have achieved the vital things," the late Robert P. Tristram Coffin, American poet, once told a Greek audience. "But it is as a maker of myths that Greece has made her deep mark upon the world. You have

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Photograph by H.M. Queen Frederika of the Hellenes

"A National Geographic Member Welcomes The Society's Representative to Greece"

After taking this photograph, Queen Frederika smilingly requested a credit line and suggested the caption above. King Paul's sailor tattoo shows beneath the sleeve of his summer uniform (page 37).

transformed your myths into art and civics and philosophy. You have improved upon the gods, and made them amenable to reason."

We set out to visit the sources of those myths and the homes of those gods.

The road from Athens to Marathon winds between Pentelicus and Hymettus and comes suddenly into the great plain where the victory of the Athenians over the Persians was won in 490 B.C.

Flowers for an Ancient Grave

No one can doubt where the battle was fought, for the Athenian dead were buried where they fell, and a great *Soros*, or mound, soars above their resting place. We walked through rhododendrons to the foot of the stairs which ascend the hallowed tomb.

A slender girl, perhaps 10 years old, stood at the stairway, a basket of carnations on her arm. She held out a small bouquet.

"For the memory of the glorious dead," George translated.

I had nothing smaller than a banknote equivalent to about $1.75.

"I am sorry," I said. "I have no change." We started up the steps.

She pressed the flowers into my hand.

"Then take them with my blessing," she said. "It is not fitting to visit the heroes without a tribute."

Touched by the child's sincerity, Jean tucked the banknote into her pocket. Indignantly she returned it.

"I *sell* my flowers, and they are worth only a tenth of that," she protested. "I do not beg. I *want* you to have the flowers for the Soros."

Jean took the blooms and kissed our young benefactress. At the top we laid the bouquet with a dozen others already on the mound.

To the west the mountains rose in a solid wall. To the east the blue Aegean washed the sandy shores.

The mountains look on Marathon—
And Marathon looks on the sea.

So wrote Byron, and it must have been here that he stood when those deathless lines were born.

Invitation to Lunch

At the bottom of the steps George asked our young friend if there was an inn near by.

"Not for miles," she said, "but my home is only a mile from here. Come and share our lunch. My father speaks beautiful English, and he'd like to meet your American friends."

Ravaged by Time and War, the Parthenon Remains Man's Supreme Architectural Triumph

This Doric masterpiece, unsurpassed for simplicity and harmonious proportion, has inspired poets and architects of every age, and its façade has influenced public buildings across the United States and Europe. Mortarless, it was built of marble from near-by Mount Pentelicus. The structure's lines tilt or curve delicately to correct optical illusions. Litter from shattered temples and monuments leaves the Parthenon's beauty unblemished.

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Franc Shor Scaled the Propylaea to Capture This Spectacular View of Athena's Temple

Pericles spent "a world of money," Plutarch wrote, to build this 5th-century B. C. shrine for Phidias' gold-and-ivory statue of Athens' patron goddess. A thousand years after, the temple became a Christian church, later a mosque, then a Turkish powder magazine that exploded disastrously under Venetian bombardment. Colonnade on the left has been restored. Museums in London, Paris, and Athens house sculptures from pediment and frieze.

"Let's go," said Jean. "We can pay well, and make up for the flowers."

Katina's home proved to be a snug white-washed cottage set in a tree-filled courtyard and surrounded by flowers. Her mother was preparing bunches of carnations for Katina to sell (page 51).

"I will call my husband," said Maria Pappas. "He speaks English."

Alexander Pappas was tall and lean, his muscled arms burned almost black by the summer sun. He shook our hands warmly.

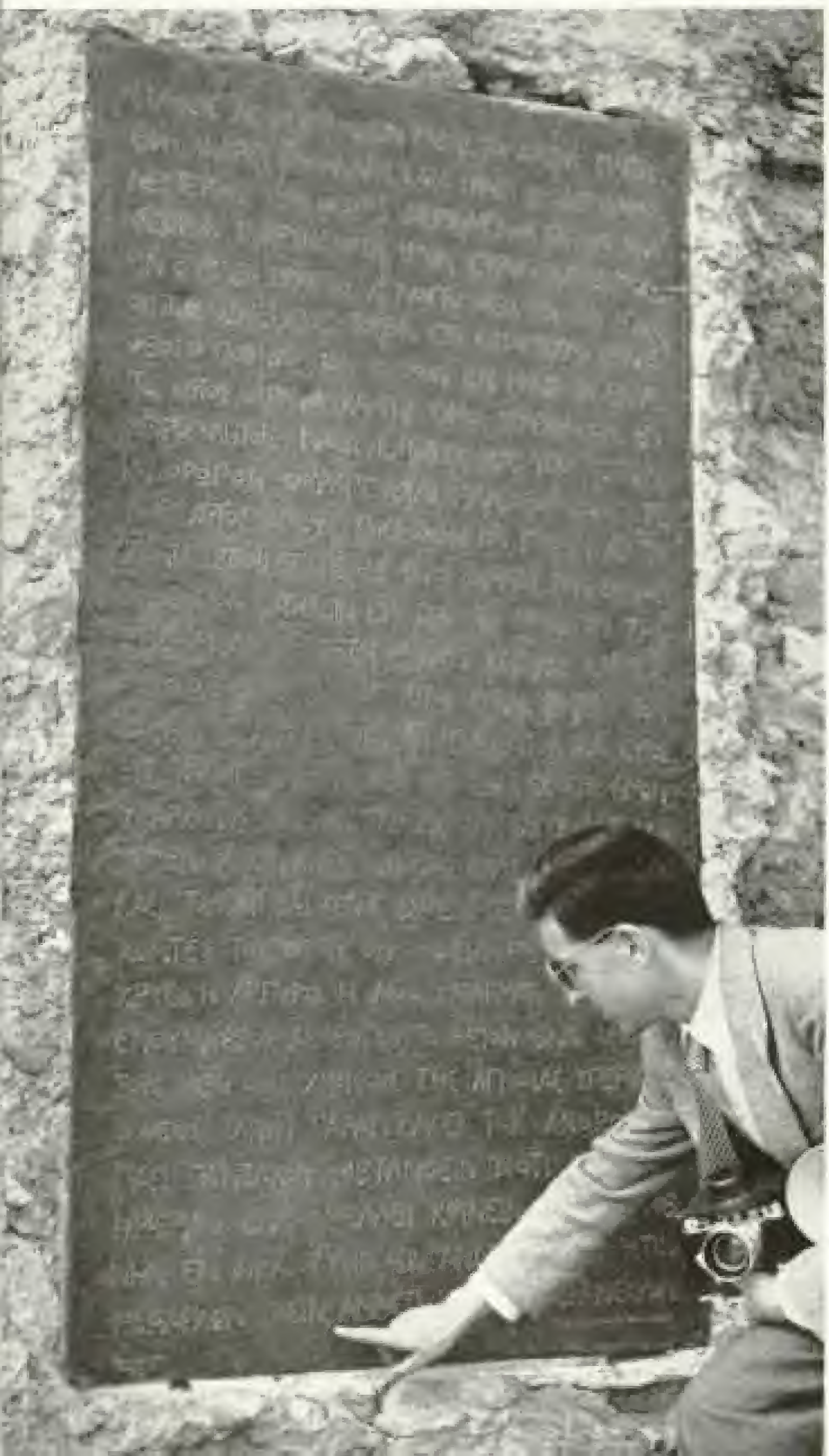
"How you do," he greeted us. "I am you welcome."

"We're delighted to meet you," I replied. "Katina said you might be able to give us lunch. We'd like that, if you'll let us pay for it."

A look familiar to travelers, that of a man who hasn't the slightest idea of what has just been said to him, spread across his handsome face.

"One wait little, please," he said, drawing George aside and speaking to him softly, out of earshot of his family. George hurried back to us.

"During the Greek civil war," he explained, "Alexander met American officers who were training our Army. He learned a few words of English. But his wife and daughter think he speaks it fluently and are very proud of his ability. He's most embarrassed, but he asks if you'll stay for lunch and speak English to him. Never mind what he answers, but please pretend to understand."



Alexander Tries His English

I winked at Alexander, and he smiled with relief. I remarked in English on the beauty of his house and farm.

"Attention right face left face about face column right to the rear march attention," he replied. We smiled and nodded.

"It certainly is," said Jean. "Exactly what I would have said."

"Range 300 mortars rifles grenades ammo roger dodger," answered Alexander, with considerable feeling, while Katina and Maria gaped proudly at their bilingual hero.

It was a slighily hysterical lunch.

Paul's Sermon to the Athenians Endures on Mars' Hill

"Then Paul stood in the midst of Mars' Hill and said, Ye men of Athens . . . God that made the world . . dwelleth not in temples made with hands . . For in him we live, and move, and have our being."

George Galavaris, Greek archeologist who accompanied the authors on their tour, reads the account, quoted from Acts 17:22-31.

Known also as the Areopagus, Mars' Hill was the meeting place of the ancient Council of Athens. It stands above the Agora, or market place.

but it was delicious. We ate beneath a fig tree, from plates worn and chipped, but on a spotless hand-spun linen cloth. There were strange and delicious canoe-shaped crusts of dough, filled with goat cheese and butter and baked with an egg floating in the middle.

"Wonderful lunch," I remarked to Alexander.

"On the double, kid," he replied, nodding.

We tried to pay for our food. Alexander looked at me, with the money in my hand, as if I had tried to hand him a rattlesnake, fangs first. He walked to the car with us.

"Now the play is over," he said in Greek. "How could I take your money? Perhaps I did not learn English from those Americans who helped my country, but I learned many things. And I am grateful."

Maria and Katina piled our car with fruits and vegetables and a loaf of crusty, fresh-baked bread. There was no stopping them and no paying them. Jean shook her head as we drove away.

"We came to lunch to try to get out of their debt for those flowers," she lamented. "Now it's worse than before."

George smiled.

"It is never a good idea," he said softly, "to try to get ahead of a Greek in a business deal—or in a matter of hospitality!"

To continue our journey north, we had to return to Athens. This time we left by a different route, along the ancient sacred way, where once the neophytes passed on their way to be initiated into the Eleusinian mysteries. The initiates were sworn to secrecy, and it is the best-kept secret of all time, for to this day no one knows exactly what the mysteries were.

Originally the ceremony was a nature festival, celebrating the phenomena of seed and harvest. But it became something much greater—a national freemasonry of the spirit. Initiates came from among slaves and freemen alike, without restrictions as to sex.

"Thrice happy," wrote Sophocles, "are they of mortals who have looked upon these rites ere they go to Hades' home. For over there

47 Anne Rooks Greenough

Royal Guard Wears the Kilt of Mountain Warriors

Some pleated skirts contain 30 yards of material. Tasseled cap, braided jacket, leggings, and red shoes with black pompons outfit this guard member of the Evzones, a select infantry unit. He stands outside the Royal Palace in Athens. Zoë Karavida tries in vain to coax a smile.

these alone have life; the rest have nought but ill."

We lunched at Levádhia on the site of the famed Oracle of Trophonius. Our table stood beside the storied spring from which flowed the Water of Forgetfulness. He who came to consult the oracle drank first from these waters of Lethe, which wiped the past from his memory. Then he drank from a second spring, that of Mnemosyne—the Water of Memory—thus assuring himself of remembering all that he saw and heard when he consulted the oracle.

A grumpy waiter took our order and disappeared in the direction of the kitchen. Loud crashes of crockery and angry shouts issued from the building, but nothing else.

Much later, just as we had decided our waiter had drunk from the wrong fountain, he reappeared with the news that the cook had had a fight with the manager, and no meals would be served that day.

"Why didn't you come tell us sooner?" I demanded.

"I was watching the fight," was the very reasonable answer. We lunched upon bread and cheese.

We came into Delphi that evening over the ancient pilgrim way down the valley from Arákhova. Clouds boiled over towering Parnassós, lightning flashed, and gusts of wind swept the silver leaves of olive groves in the valley below. Rain poured down on the home of Greece's most famous oracle, and we took shelter near by in a little hotel.

Next morning was crystal clear, and as we walked through the ruins once sacred to Apollo it was easy to understand why the Greeks believed the god spoke here.

To a people whose ancestors worshiped nature, this site of superb beauty, nestled below sheer stone cliffs, with gushing springs, olive-covered valleys, and magnificent vistas, must have seemed a fitting dwelling place for a sacred being (pages 54, 55).

Thunder over Delphi

The drifting mists and sudden mountain thunderstorms, when a single lightning flash sets the rocky glens rumbling for a full minute, doubtless had an overpowering effect on a people who saw significance in the simplest natural phenomenon. Even as we stood in the ruined amphitheater two great eagles, sacred birds of Zeus, soared overhead.

Consulting the Delphic Oracle in classic days required a strict ritual. You were purified in Castalia spring, which still sends forth its crystal flow not far from the ruins of the temple. Then you sacrificed an animal to Apollo and waited your turn to enter the hallowed precinct.

"Any man who observed the ritual could ask his question," said George, "but women had to employ a man as a go-between."

The query was put to a Pythia, a priestess of Apollo. There were three priestesses on duty, at first young girls, later old and uneducated women, usually very ugly. To prepare herself for the questions, the Pythia would chew laurel, or bay, leaves; then she frequently went into convulsions and raved violently. The priest on duty wrote down what she said and put the answer into verse.

Oracle Predicted a Debacle

For centuries few Greeks embarked on any major enterprise without consulting a priestess of Apollo. Some answers were amazingly accurate. More frequently the verse had a double meaning. The case of King Croesus, who asked the oracle about the wisdom of attacking Persia, is perhaps the most famous.

"If you cross the River Halys," was the answer, "you will destroy a great empire." Croesus took this as an augury of success and crossed the River Halys, now the Kizil. He did destroy a great empire—but it was his own!

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← Eight-foot Maidens of the Erechtheum Tirelessly Balance Tons of Marble

Just north of the Parthenon stands the Erechtheum, an Ionic temple built four centuries before Christ to honour Athena and her foster son, the half-god Erechtheus. On this sacred spot of the Acropolis, says legend, Athena and Poseidon fought for control of the capital of Attica, and a cleft in the rock marks the spot where Poseidon hurled his trident.

In later years the Erechtheum became a church. A 15th-century Turkish governor used the shrine for his harem.

The Porch of the Maidens is supported by six strapping figures known as the Caryatides.

In the early 19th century Lord Elgin, a wealthy Englishman, procured many of the finest sculptures from the Acropolis for the British Museum. His collection, known as the Elgin Marbles, includes one of the Caryatides from the Erechtheum. The missing maiden was replaced by a cast stone figure (third from right), whose face reflects her fewer years.

These Greek school children hear a lecture on the glories of their national past.

↑Oinói Women Harvest Wheat in the Time-honored Manner of Their Forebears

Life for the Greek countryman is severe. His land, nearly as mountainous as Switzerland's, is often barren and waterless: no more than one acre in four can be farmed. Primitive ways prevail in most places.

These women, less than an hour's drive from Athens, still harvest wheat with the sickle and bind it by hand. They beat the grain with flails and winnow it in the wind.

Yet modern methods are beginning to make a difference on the face of Greece. In the lowlands especially the traveler now sees tractors and threshing machines. As a result of American technical assistance and financial aid ($1.7 billion in 10 years), agricultural production is 50 percent better than in prewar years.

Wheat output has stepped up so fast that imports of the grain have declined radically.

Alkali and salt flats have been reclaimed for the growing of rice, an increasingly important crop.

←Limited water is a problem in most Greek villages. This girl draws water from the village well at Ayios Theodhoros and carries it home in a vessel of classic design. Only the metal bucket strikes a modern note.

Marathon's Heroic Dead, Victors over the Persians, Lie Near This Silent Guard

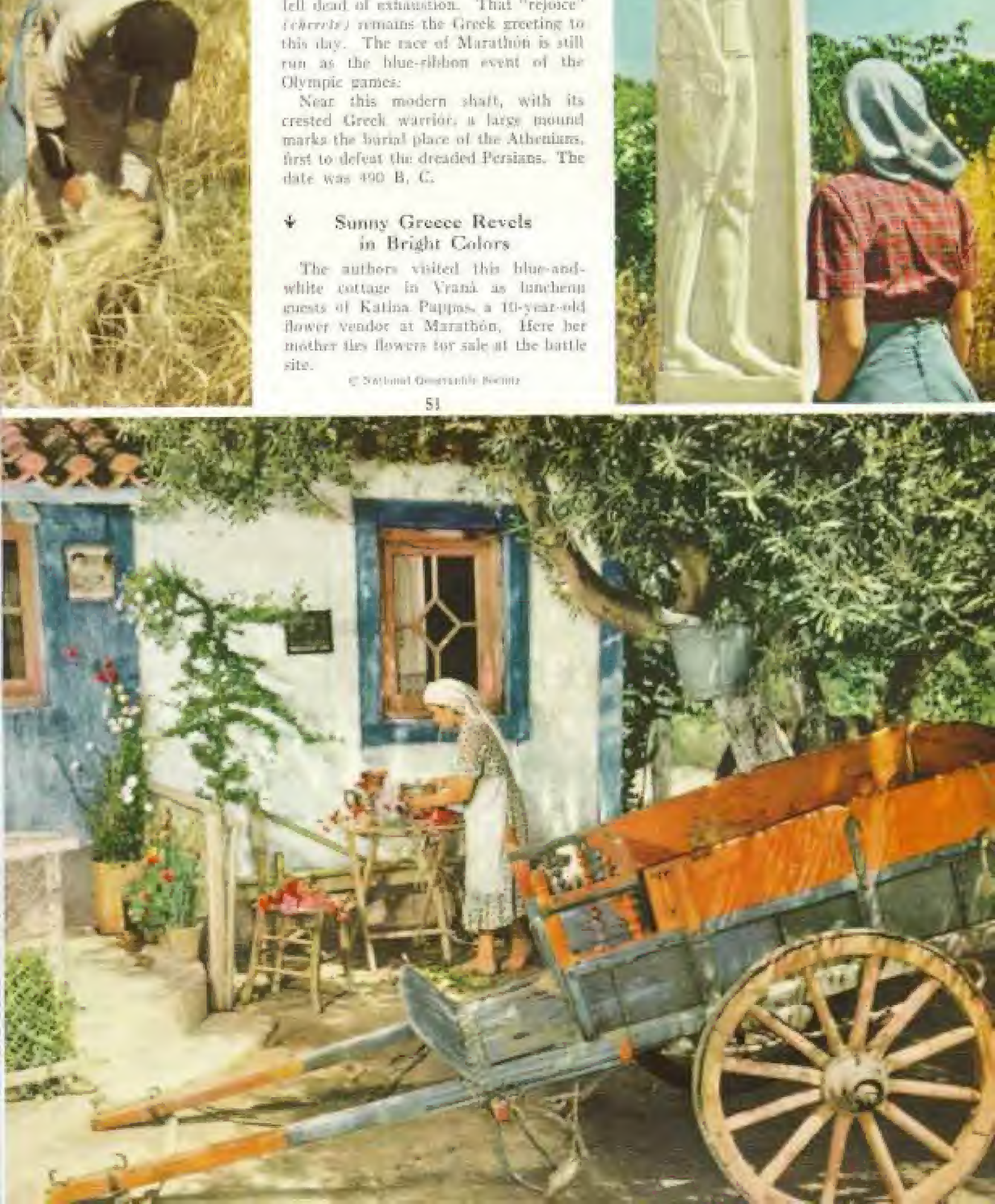
Every schoolboy and track fan knows the distance from Marathon to Athens. Pheidippides, who raced those 26 miles over marsh and hill, carried to an anxious Athens the news of victory over superior Persian forces.

"Rejoice, we conquer!" he cried, and fell dead of exhaustion. That "rejoice" (*chairete*) remains the Greek greeting to this day. The race of Marathon is still run as the blue-ribbon event of the Olympic games.

Near this modern shaft, with its crested Greek warrior, a large mound marks the burial place of the Athenians, first to defeat the dreaded Persians. The date was 490 B. C.

Sunny Greece Revels in Bright Colors

The authors visited this blue-and-white cottage in Vrana as luncheon guests of Katina Pappas, a 10-year-old flower vendor at Marathon. Here her mother ties flowers for sale at the battle site.



It seemed a shame to leave the slopes of fabled Parnassós without asking a question or two ourselves. And as we drove back toward Arákhova the next morning we passed a tribe of gypsies. Perhaps one of them would be a fortuneteller. What better place to practice such an art?

We stopped and asked the gypsy chief if any of his band were clairvoyant.

A Gypsy Prophesies

"But of course," he said. "You have but to cross my wife's palm with silver, and she can reveal both past and future."

We haggled briefly over the amount of silver necessary to inspire the lady, and she led me to a stone on the side of Parnassós, seated me, crouched before me, and studied my palm.

"Do you see much travel in my life?" I asked, solemn-faced. (Ahead of us lay the long drive to Istanbul, then two trips to countries in Western Europe.)

"You will return soon to Athens," she replied, carefully studying my palm. "From there you will fly home. This is your first journey abroad, and you do not care much for travel."

Jean stood beside George, laughing. Apparently the gypsy thought they were together, for she volunteered an added bit of information.

"The one you love waits faithfully for you at home," she confided to me. "She misses you, and waits only for your return. You will have a loving letter from her within a week. It will bring you great happiness."

A Charm to Make a Rival Vanish

Jean hastily explained that we were husband and wife. The gypsy looked confused.

"What I have seen must be true," she protested. "The gypsy never lies. But don't worry, my dear. For a few drachmas I will sell you a marvelous charm. It contains mare's milk. When you return home, you need only sprinkle a few drops on this other woman, and she will disappear."

Jean didn't buy the charm, but I did notice that for a week she kept a careful eye on my mail.

We stopped in Arákhova for a cup of coffee and a plate of the famed cheese made in the village. Aged in caves high on Parnassós, the same caves where the Muses once dwelt, it is delicious.

An hour beyond Arákhova we turned onto a mule track which climbs to the Byzantine monastery of Osios Loukas. Our overloaded car labored heavily up the steep flower-covered hillside. But the view from the monastery was worth the effort.

The 11th-century church, a weathered orange in color, stands on a tree-studded terrace, flanked by the dormitories of the monks. From the walled terrace there is a breath-taking vista of miles of ripening fields of grain, olive groves, and vineyards. Oleander, poppies, and daisies blanket the hillsides. The surrounding hills are topped with narrow strips of dark pines, like the haircut of an Indian warrior.

Archdeacon Ioasaph greeted us, explaining that the abbot had gone to a near-by village on business. We were shown to tiny white-washed cells containing only a bed and a chair, and shared the monks' supper of bread, cheese, garlic, and tomatoes.

Car Comes to Grief

We were up early the next morning to see the 11th-century mosaics, but George was before us. He had been studying them by the dim glow of a flashlight since 5 o'clock.

The mosaics are still fresh in color and bright with gold. Many have been badly damaged, for the church is falling down and wind and rain can reach them. But restoration is carried out with the scanty funds available.

Archdeacon Ioasaph blessed our car as we prepared to leave.

"Come back when you are tired of travel," he said. "Here you will always find peace."

The twisting track was busy with farmers driving donkeys, laden with huge sheaves of wheat, to the community threshing floor. Suddenly a donkey stepped in front of the car. I swerved, and there was a sharp crack as we struck a rock. Jean saw the oil-pressure gauge drop to zero and shouted for me to stop.

Fearfully I looked under the car. Ruin stared me in the face. The rock had torn a two-inch hole in the crankcase, and the last drops of oil were trickling into the warm earth.

The nearest village was Distomo (the Greeks spell it Dhistomon), five miles away, and I doubted that they could even shoe a mule in such a hamlet. We decided that George should hail a passing mule, ride to Distomo, and take the bus to Levádhia.

(Continued on page 61)

↑ A Sarcophagus at Eleusis Portrays the Legendary Calydonian Boar Hunt

Artemis, angered by the King of Calydon, sent a boar to devastate the land. Here Meleager, the king's son, surrounded by heroes of Greece, kills the beast. Salamis Island (background) overlooks the waters where Athens' fleet defeated Persia's in 480 B. C.

↓ This Rock-hewn Hall Witnessed Ancient Greece's Most Sacred Rites

The Mysteries of Eleusis—highly secret initiation rites and dramatic spectacles in honor of Demeter, goddess of cereals—were performed here in the Telesterion. Seats carved partly from the living rock and balconies above them accommodated 4,000 initiates.

"O Zeus, What Hast Thou Willed to Do with Me!" Oedipus Laments His Fate

Katina Paxinou and her husband, Alexis Minotis, most famed of Greek actors, portray a dramatic scene from Sophocles' tragedy, *Oedipus Rex*. Here Oedipus, King of Thebes, begins to suspect that he has unwittingly slain his father and married his mother, Jocasta, just as the oracle had prophesied years before.

Americans saw Miss Paxinou as Pilar in the film *For Whom the Bell Tolls*, a role for which she won an Academy award. With her husband she has presented ancient Greek tragedies in Theater of Delphi (below).

Treasury of Athens → at Delphi Enshrined Relics of Marathón

French archeologists excavating Delphi found a veritable museum of ancient history. This sacred town played host to major religious and political gatherings. City-states erected many monuments here and built treasuries to house trophies and valuable objects used in ceremonies.

Scholars rebuilt this templelike house from pieces scattered by earthquake and man. The frieze depicts exploits of Hercules and Theseus and battles with the Amazons.

←Delphic Oracle Spoke Its Auguries High on Parnassós' Slope

At Delphi, navel of the world, the ancients built a famous shrine to Apollo, god of prophecy. Here spoke the most venerated oracle in the Greek world. Pilgrims, following the Sacred Way, came by the thousands with rich offerings to consult the Delphic Oracle about affairs of the heart, of commerce, and of state.

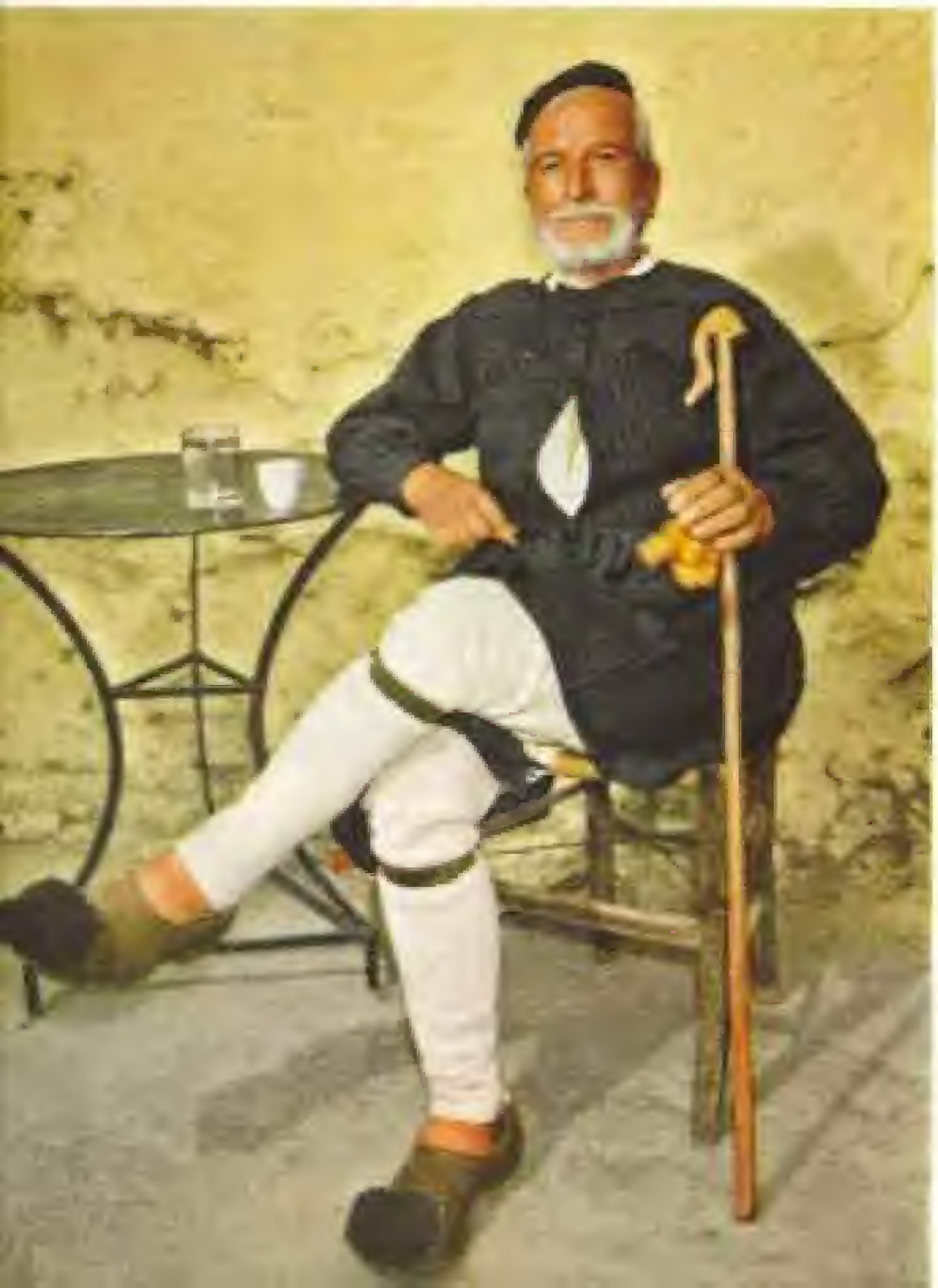
Columns of the temple still stand on the left. Paving of the theater echoed the greatest dramas of the age. The Treasury of Athens (lower right and close-up above) surveys olive-wooded slopes running down to the Pleistus Gorge and the Phaedriades Cliffs.

♠ **Nomad Shepherd Women Pitch Goat-hair Tents on a Trek to Mount Olympus**

The bony land of Greece, so inhospitable to the farmer, lends itself to the ever-present herdsmen with their flocks of sheep and goats. They winter in the lowlands, where fall rains have greened the vegetation, and in summer migrate to mountain pastures. From their flocks the country gets most of its milk and cheese as well as its favorite meat.

Proud and independent, the Greek nomads cling stoutly to tradition. Dress and custom show little change from centuries past.

These shepherds from Kozáni paused on their annual 7-day trip to Mount Olympus. They carried their chickens donkey-back.



♦ **Kilted Herdsman Fondles His "Worry Beads"**

At Arákhova, on the shoulder of Parnassós, the Shors met Alexander Alexakis, a village elder.

Over a cup of coffee he told of the troubles his village had suffered from Nazis and Communists. The latter warned of punishment if he did not join their cause, but he refused.

"After all," he said, "they could not harm me. I am as pure as the foam on milk!"

Villagers often carry strings of beads, the best ones made of amber, and run them through their fingers while thinking or talking.

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Like a Dream City, Kastoria Shimmers in Misty Enchantment

Kastor is the Greek word for beaver, and legend says that Lake Kastorias was once a trapper's paradise. The lake now offers neither trapping nor beaver, but a fur industry still flourishes in the city. Workers piece together fine garments from thumbnail-size scraps discarded by fur houses in Paris and New York. An average three miles of thread goes into each coat. Six thousand Kastorians or descendants work in the New York fur trade.

Rebuilt After Fire, Salonika's Waterfront Wears a Modern Face

Older sections retain an Oriental air from five centuries of Turkish rule. Seen from the Hotel Mediterranean, the distant White Tower was a Byzantine fort and Turkish prison; now it is a Boy Scout headquarters.

59

Storm Clouds Skirmish with Sunshine. Greek Caïques Calmly Ride the Harbor

Salonika, often written Thessaloniki, is Greece's second city. A key point on the old Rome-Byzantium highway, it is the Aegean Sea's gateway to the Balkans. St. Paul wrote two epistles to the ancient Thessalonians.

© National Geographic Society

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Salome Awaits the Head of John the Baptist: a 16th-century Mural at Meteora

Wind and rain are ruining many priceless wall paintings which the rock-perched monasteries of Meteora commissioned in more prosperous days. This mural adorns the Varlaam Monastery.

There he could telephone Athens for a mechanic and a new crankcase.

George bargained with a passing farmer and took his place aboard a mule. Jean and I had our bedrolls and ample supplies of tinned food. The car was loaded with so much valuable equipment we didn't dare leave it. We prepared for a four-day camp while George, who isn't used to riding, bounced out of sight over the next hill.

Farmer to the Rescue

Three hours later, while I typed notes under an olive tree and Jean cleaned cameras, the farmer whose mule George had rented came galloping over the hill like the U. S. Cavalry riding to the rescue. He leaped from the wooden saddle and fished a note from his homespun trousers. I'm sure the message from Marathón was no more welcome than George's note:

"Dear Franc:

I am at the first village. They can do everything we want. There are all the means. Wait till I come with a car to pull you to here. It won't take long.

Yours,
George."

We didn't really believe it, of course. George, we speculated, had found someone with an old car, a soldering iron, and unbounded optimism. But we doubted that the car could tow us over that rugged track, and we were sure no village blacksmith could weld that great tear in the crankcase. Still, it broke the monotony. We waited.

Huge Truck Arrives

An hour later the biggest truck I had seen in Greece roared up over the hill. Brand-new, it looked powerful enough to tow the battleship *Missouri* over the Rocky Mountains on a muddy day.

While we stared, openmouthed, two Greek mechanics jumped out, shook our hands, looked at the damage, smiled as if it were nothing, and started to hook their towing cable to our car.

A small crisis developed. The hook was too large for the axle. They needed a rope. We had none. Everyone looked puzzled.

Zeus looked down and smiled. The white-bearded abbot of Osios Loukas rode up on his mule, en route home. Across his saddle was a coil of stout new rope. George explained our problem. The abbot insisted on giving us the rope. It took much persuasion to get him to accept what the line had cost him (page 66).

The hookup was completed and off we went, over hills and through streams, into the village of Distomo.

"Distomo is a famous village in Greece," George told us as we rolled along. "It's primitive and off the beaten track, but it is noted for the independence of its citizens. The Germans found that out when they occupied this territory during the last war."

The mortality rate among their officers was very high. The climax came in June, 1944, when guerrillas shot some Nazis just outside the village. In retaliation, Germans massacred 218 villagers. The names of the victims are engraved today on two marble plaques set into the front of the church which dominates the village square.

Greetings from the Mayor

The mayor of Distomo was waiting to greet us when we were towed into that square. A crowd pressed forward to shake our hands. Puzzled by the reception, we were escorted to a coffee shop. There the mayor explained.

"As soon as the Germans were driven out," he said, "your country sent money to rebuild our homes. Greeks who had gone to America sent their own funds, which kept widows and orphans from starving. And in 1946 twenty children, orphaned in the massacre, were taken to America for adoption. They are there now, growing up as American citizens.

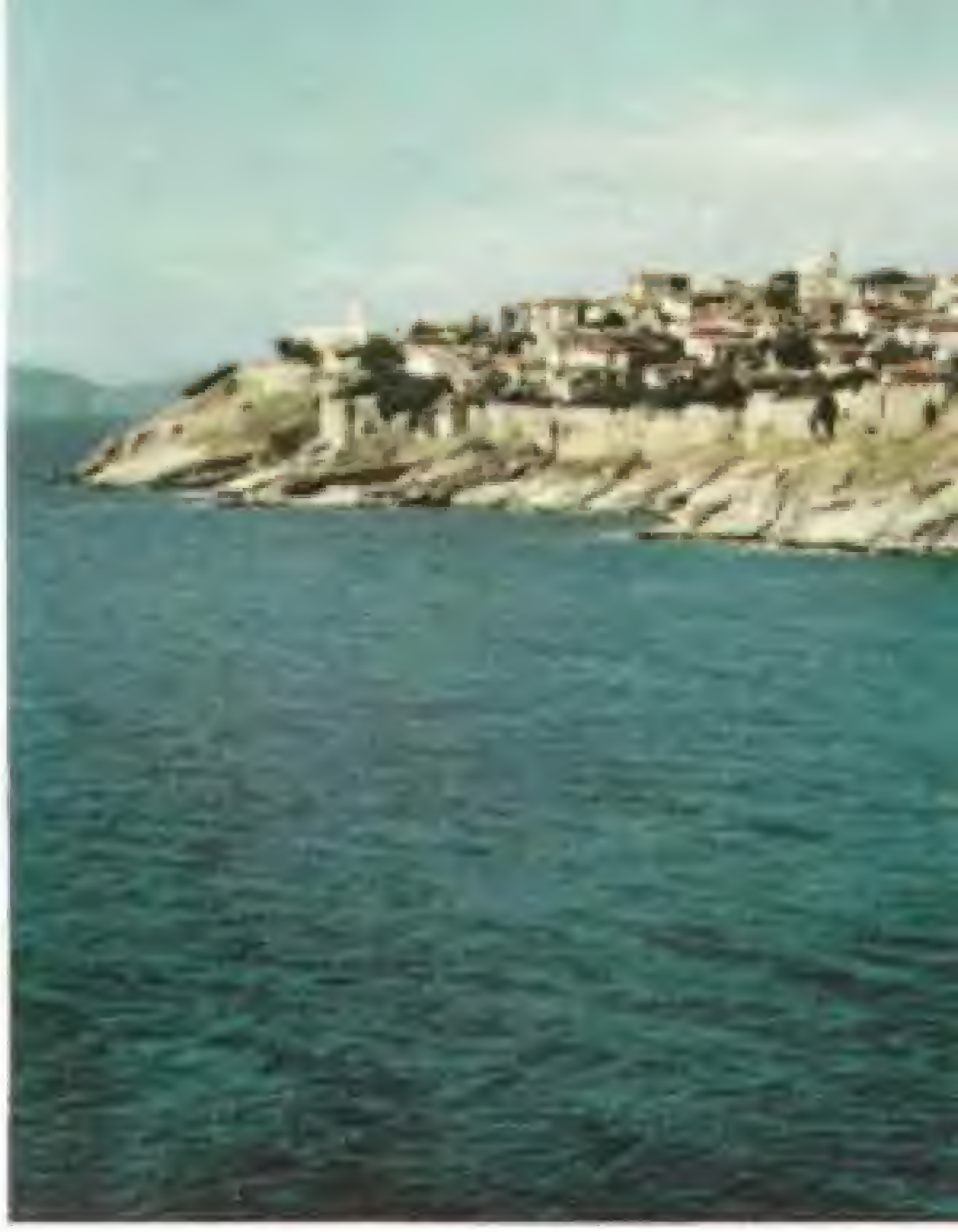
"People in America thought Distomo had been wiped out. So a housing project in New Jersey took the Americanized name Distomo, so it might live.

"All these years we've wanted a chance to show our gratitude. Now you have come. So we say 'Thank you' to you for all America."

Villagers brought us sweets and flowers. We were invited into every home. A housewife tried to present Jean with a young eagle. The words *eharisto parapoly*—thank you very much—were said to us a thousand times. A wedding had been planned for the next day, and the bride-to-be brought us a huge tray of cookies baked for the event.

In the midst of all this hospitality I worried aloud about our car. The mayor's brother laughed away my fears.

"I own a large bauxite mine near here,"



↑ Kavalla on Its Promontory Rides the Blue Aegean Like a Battleship

Kavalla, center of a thriving tobacco industry, ships large quantities of the spicy, aromatic Greek leaf known as Turkish tobacco. A battlemented fortress surmounts the acropolis (high city); crenelated walls of the old city follow the cliff. A Byzantine aqueduct spans the valley at extreme right.

Little more than 1,900 years ago the Apostle Paul landed here on his first missionary venture into Europe. In his day the town was called Neapolis.

←Tobacco Fields and Ruins Mark the Site of Vanished Philippi

Page 62. Philip of Macedon founded his namesake city about 365 B. C. Here St. Paul made his first European convert, the seller of purple named Lydia (Acts 16:14, 15).

In a famous battle at Philippi the Romans Mark Antony and Octavian defeated Brutus and Cassius.

Ruined arches belonged to a 6th-century church.

Upper, left: Girl with coins on the brow wears the Thracian costume.

→A farm woman in Thrace tests sunflower seeds for ripeness. Whole fields of sunflowers bloom in Thrace. The seeds yield oil and when roasted make a tasty appetizer.

he said. "We have a fleet of trucks like the one that towed you in, and to maintain them I have one of the most modern machine shops in Greece. Four mechanics are working on your car. It will be ready in an hour."

At 8 o'clock the car was brought to the public square. The villagers crowded around to say goodbye. The mayor made a touching speech and presented Jean with a beautiful Byzantine coin.

Girls Throw Flowers in Farewell

George translated my answer, which concluded with the expressed hope that the mayor would visit the United States, and that *his* car would hit a rock near Washington so that we might repay his hospitality.

Nobody would accept any money for the towing or the repair job. Everyone waved and cheered as we drove out of town, and little girls threw flowers into the car. Jean and I were both misty-eyed as we drove away.

We spent the night in Levádhia. The next morning, as we started north, we passed a stone statue of a lion, nearly 20 feet tall.

"It's the Lion of Chaeronea," George explained. "It was here, in 338 B.C., that Philip of Macedon and Alexander, who was then only 18, defeated the combined forces of Athens and Thebes, and won control of all Greece."

The Theban dead lie buried near the huge lion, surrounded by a grove of poplars. Here, as in so much of Greece, the past seems to surround the traveler. For in Greece you find not signs telling what occurred in some bygone time but the physical evidence of history.

We asked a passing farmer to pose beside the statue, to show the great size of the lion. He asked for a print of the picture.

"It's in color," I explained, "and I'll have to send it to the United States to be developed."

"Wonderful!" he exclaimed. "I've always wanted to travel. I can't afford it, but at least my picture will."

As we drove across the fertile plain of Boeotia, the harvest was in full swing. At Lamía we swung east, then ran along the azure Aegean, across the rolling hills and through the fruit orchards of Thessaly. Ahead reared Mount Pilion, home of the centaurs.

At sunset we came down into Vólos, devastated by earthquakes last year. The harbor from which the fabled Argonauts set sail in their quest for the Golden Fleece was crowded with colorful caïques, their reflections red and blue and yellow in the still water. The strand is still called Argonauts Row, and bronzed fishermen lounging on moored caïques looked as if they would have been at home in Jason's ship, the *Argo*.

On the wharf men were fishing with tinfoil and lemon peel as well as shellfish for bait. The fish of the Aegean, we decided, must have very peculiar tastes.

In the morning we climbed the abrupt slope of Mount Pilion, walking through groves of fruit trees to a rocky vantage point. A neat little cottage stood near by. George laughed as he saw a grain sieve, with wooden sides and a perforated hare-skin bottom, leaning against the door.

"Since it's harvest time, they're probably using that for its proper purpose," he said. "But not so long ago you would have found such a sieve outside every farmhouse on Pilion each winter's night.

"The centaurs, half horse and half man, lived in these mountains. At night, the peasants believed, one of these monsters would pound on a farmer's door, demanding his daughter for a wife. If the farmer refused, the centaur would destroy the family.

How to Confuse a Centaur

"But the centaur was a simple beast, with enormous curiosity. If a sieve was left outside the door, he would be overcome with curiosity as to how many holes it had.

"He would start counting. But he could only count to two, so he would spend the night patiently counting one-two; one-two, over and over again, until dawn. And everyone knows that centaurs disappear at dawn!"

The farm wife came out of the cottage, picked up the sieve, and walked briskly toward the threshing floor. She was a sturdy woman whose countenance indicated she would stand for no nonsense, and I am sure no thought of a centaur ever entered her head.

North and west we went across Thessaly, through villages where every chimney was topped with a stork nest full of fledglings, waving their wings up and down in solemn cadence under mother's stern tutelage. Storks, it was obvious, bring baby storks, too.

North of Lárisa the barren peak of Mount Olympus reared above the waving grain. We bounced over a country lane to Kokkinoplós and looked about for an inn. We wanted to

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A Bride's Dowry Goes on Display Aboard a Bus

The bus, chartered by the bride's parents, carries both dowry and wedding guests slowly through the dusty streets of Ierissós. Linens, pillows, blankets, and dresses hang from the windows. Feather beds and a shiny new sewing machine ride the top.

At the couple's new home friends carried the bride's treasures inside amid cheers and merriment. Liqueurs, cakes, and cheese were served. At dusk the entire village dragged bride and groom from their homes and marched them, laughing, to the church.

Topheavy Donkey Hauls → a Dry-goods Store

New houses on Salonika's ruined acropolis stand amid marble fallen from ancient structures.

Enterprising vendors, crying their wares from dawn until dark, spare housewives the arduous trip to the city below. They bring every necessity—milk, fruit, vegetables, pots and pans, shoes, and cloth.

leave at 4 in the morning to climb Olympus.

The coffee-shop proprietor whom George asked about a hotel was enormously fat, and he undulated with laughter at the question.

"Why should there be an inn at Kokkinoplós?" he roared. "Everyone who lives here has his own house, and no one who doesn't live here would want to spend the night in Kokkinoplós."

We asked if we could spread our sleeping bags in a near-by field.

"You certainly cannot," said the proprietor. "You will stay at my house. My mother-in-law snores like an earthquake and my children will drive you mad with questions, but my wife is the best cook in Greece and our feather beds are soft as clouds. Finish your coffee and come with me."

He had not exaggerated his wife's culinary talent. She served a great dish of *moussáka* —eggs, flour, meat, and eggplant—which was delicious. The beds were all he had promised, too. So, unfortunately, was his mother-in-law's snoring. It rolled through the little house like a 21-gun salute, and when I did sleep I dreamed that Zeus was furious at our plan to climb Olympus and was hurling his famous thunderbolts across our bed.

At dawn we walked briskly across the dewy stubble of the newly cut fields, returning the cheerful *kalimera sas* (good morning) of the farmers hard at work with flails and sieves.

Far from a Garage, Stranded Motorists Get Help from Truckers and a Monk

A rock through the crankcase stopped the Shors near the monastery of Osios Loukas. This big truck roared to the rescue, but its heavy tow hook did not fit. The abbot, riding up on a mule, contributed the needed rope. A machine shop in Distomo quickly repaired the damage (page 51).

As we climbed, so did the sun, and it got very hot.

"Maybe we could rent donkeys," Jean suggested. George and I welcomed the idea.

Half a mile ahead we came upon a cluster of black goat-hair tents. Gaily clad women were milking goats, holding the animals' hindquarters between their legs and working from the stern. Donkeys were tethered near by, and George began negotiations with the men. A gray-haired shepherd, standing 50 yards away, looked toward us and shouted:

"Whatsamatter keed? You got troubles? You want something from the boys?"

The Nomad from Buffalo

It was an odd place to hear English. The speaker walked over and introduced himself.

"George Demetropoulos from Buffalo," he said. "I live ina States for 20 years. Work ona railroad gang. Now I gotta the Social Security. So I'ma come home."

His small pension, our friend explained, enabled him to live in comfort in his village of Yiannitsá, 50 miles north.

"Ina summertime gets too hot in Yiannitsá," he went on. "Every year we bringa sheep up here. Good pasture. Live ina tents. October, we go back Yiannitsá."

I explained our needs.

"Sure," he laughed. "Gotta plenty donkeys. Take one for your wife, one for little fellow." He eyed me for a moment. "You pretty big guy—better take two!"

Thus it was that, mounted on donkeys owned by a nomad from Buffalo, we approached the dwelling place of the gods. We hobbled the animals 1,500 feet from the summit and trudged slowly to the top.

The Gods Liked Honey

We ate our bread and goat cheese on the cloud-swept peak. The gods were fond of the honey of Mount Hymettus, so we had brought a jar. We spread it on bread and felt as if we were tasting nectar as we surveyed the panorama beneath us.

South spread the plain of Thessaly, golden beneath its stubble fields. North lay Macedonia, hilly and green. And to the east, across Thermaikós Bay, we could see the three long fingers of the Khalkidhiki peninsula.

The vagrant clouds began to gather, as if under a guiding hand. A sudden torrent of rain poured upon us, and lightning flashes rent the boiling clouds. That was no place to be when the gods were tossing their weapons.

Drenched to the skin, we raced down to our donkeys and rode to the tents of our nomadic friends. They fed us hot soup, and we made it back to Kokkinoplós, tired and thoroughly soaked, just at dusk.

Back we drove to Lárisa, then westward across Thessaly to Kalabáka and the spectacular monasteries which balance atop the rocky cliffs of Metéora. As we panted up the steep path to the Monastery of Varlaam, George told us of the tragic decline of these great relics of the Byzantine era.

"At one time Metéora had 20-odd monasteries resounding to prayer. Now only five are occupied. The thousands of monks have dwindled to a handful. The tragic thing is that these chapels contain splendid murals of the Byzantine style, and they are being ruined by wind and rain. The monks are too poor even to replace broken windows. It is a great loss to the world."

At the top of the stone stairs Abbot Artemas greeted us and showed us about, leaving us to study at leisure the colorful murals of Biblical scenes (page 60).

Fine Paintings Fade

Great paintings which have withstood 600 years of time are fading and peeling. When we returned to chat with Abbot Artemas, I asked him if the Government could not furnish funds to protect the treasures.

"Not while I am alive," he flared. "The Government wants to take over these monasteries. They belong not to the State, not even to the people, but to God. Better that they rot and decay in sanctity than be preserved by earthly interference."

The drive north from Metéora to Kastoria is perhaps the loveliest in Greece. The Pindus Mountains tower to the left as you go across Macedonia, through heavy forests where the Alládhhon River winds beside the excellent highway. From the high points we had a clear view into Albania, rugged and mountain-laced. And Kastoria is a fitting climax to the beautiful approach.

The city sits white and gleaming on the shore of the beautiful lake in which once lived the beavers that helped found Kastoria's principal occupation (page 57).

"There are nearly 2,000 fur workers in Kastoria today," Argyrios Paliouris, secretary of the Furriers League, told us as we sat in his busy little shop. "We export coats and

Tractors Are Winning Trials Against Oxen on Turkish Farms

In 1948 Turkey had no more than 2,000 tractors. Today, partly as a result of $500,000,000 in United States aid, 20 times that many are rolling.

The result is one of the most spectacular farm booms any nation has ever experienced. A land that 10 years ago raised barely enough wheat for its own needs, Turkey has become an important world exporter.

Cotton output has doubled, and sugar-beet production has increased 60 percent.

Sometimes old and new methods continue side by side, as on this farm between Edirne and Istanbul. The village minaret of Büyük Karaştıran peeps over the horizon.

The Donkey Is King on Greek Roads

Jean and Franc Shor met these farm folk near Serrai, in southern Greece. The youngster shares a wooden packsaddle with a load of produce his mother hopes to sell at market.

Writes Mr. Shor:

"After we finished taking this picture and started back to the car, the mother ran after us explaining that she had just remembered she was not wearing her shoes, which were safely tucked under the blanket on the load. She offered to put them on for another picture, but we assured her no one would object to the omission."

Thracian Farm Family Harvests Beans

In the valley of the Strimón River, near Amfipolis, youngsters pick beans from the pods while the mother winnows the crop by sifting it through her fingers.

Greek harvesters often drive ponies and donkeys back and forth to tramp out seeds. Muscles and sticks do the job here.

Pangaión Mountain in the background contained gold mines in the time of Philip of Macedon, but is now worked out.

scarves everywhere, but 90 percent of our goods goes to the United States."

"Where do you get your raw furs?" I asked.

"Some come from America," said Mr. Paliouris. "We buy scraps, many less than half an inch wide, and piece them together so you can't tell they aren't whole skins."

In the workshops men stitched on pieces of fur no larger than postage stamps. Argyrios showed us a Persian lamb coat that might have graced a Fifth Avenue shopwindow. He removed the lining. The inside of the coat was like a mosaic.

"There are hundreds of pieces of fur in that coat," he said, "but only an expert would know it wasn't made from full pelts."

George asked if we could get along without him the rest of the day.

"There are 72 Byzantine churches in Kastoria, and I have visited only 48," he said, checking his notebook. "If you'll lend me your flashlight, I can study the murals this afternoon and tonight, too. I'll get another 15 or 20 off my list."

Where King Philip Was Murdered

The next day's drive took us through the wild and rugged heart of Macedonia, where every village has a story of Philip and Alexander. We lunched at Edhessa, on the site of ancient Aegae, where Philip was murdered in 336 B.C. An early seat of Macedonian kings, the town today bears no trace of its former glory.

Salonika (Thessaloníki) has fared better. Built in 315 B.C. by King Cassander, a brother-in-law of Alexander, and named for Alexander's sister, it is Greece's second largest city, a bustling seaport and trading center. Its waterfront, dominated by the 15th-century White Tower, is of rare beauty (page 58).

We sat at dusk on a balcony of the Hotel Mediterranean and watched a full moon rise over the busy promenade, lined with caïques on one side and dozens of cafes on the other. The smell of roasting lamb drifted up from the street, and we went down to investigate.

Menus have changed little in Salonika since Alexander's day. We chose a restaurant where four whole lambs were roasting to a crusty golden brown on hand-turned spits over charcoal. The carver sliced generous pieces of dripping meat from the whole carcass, weighed it, and charged by the ounce. Food cooked before your eyes has a special flavor.

George and I went by bus to Ierissós, across the Khalkidhiki peninsula, the next morning. Jean was left behind, for we were going to the monasteries of Mount Áthos where nothing female—human or animal—is allowed to set foot. The bus stopped in the mountain village of Stagira, birthplace of Aristotle, and George asked the local policeman if there was a monument to the event.

Too Many Aristotles

"There's Aristotle Theophanus, the barber, and Aristotle Pirlaus, the grocer," said the officer, "but this Aristotle the Philosopher I never heard of. When did he move away?"

We reached Ierissós in time for a village wedding. To start things off, a big bus was driven slowly through the dusty streets, laden with the girl's dowry (page 65).

At dusk the wedding guests—the entire population of the village—assembled in front of the groom's home, calling for him to come out. In accordance with tradition, he refused. The guests dragged him summarily forth and marched him to the home of the bride. She wouldn't come out either, so the process was repeated. Then the couple, laughing as they protested, were marched to the church for the ceremony.

Our boat left for Athos at 5 the next morning, but we had no difficulty waking up. The celebration had gone on all night.

An American traveler needs no visa to enter Greece, but he must have a permit to visit Mount Áthos. This amazing complex of 20 monasteries, 16 of them set on the soaring cliffs of a narrow peninsula, is a medieval world where men devote their lives to worship and contemplation.

Monks Work in Silence

We visited Vatopedhiou and Pándokrátoros and Stavronikíta. We toiled up the cliffs of Athos and spent the night on a bed of planks in a whitewashed cell. We ate the simple fare of the monks and watched them going silently about their tasks. We saw golden miters and crucifixes and altar vessels collected over hundreds of years.

When we returned to Salonika from that silent and peaceful world, the hustle and noise of the modern city struck me like a bucket of freezing water hurled on a man emerging from a pleasant dream.

From Salonika we visited Pélla, birthplace of Alexander, and Pydna, where defeat by the

Never Idle: A Nomad Spins Wool Thread Even as She Hauls Water

Romans in 168 B.C. brought final collapse of his empire. Then we drove to Kaválla, where St. Paul landed, and turned inland to Philippi, where he first preached Christianity on European soil (pages 62, 63).

We walked amid broken blocks of marble, bearing Greek and Roman inscriptions, through the market place to the stream where Paul first brought his immortal message (Acts, Chapter 16).

There is no monument here, no sign to tell the story. The green tobacco fields stretch on every side, and the warm patina of the ancient marble glows in the golden Greek sunlight. The names of Caesar and Augustus, with effusive tributes to their greatness, are graven in the shattered stone. Those monuments are mute today. But the message brought by the man from Tarsus went on to circle the world and change its history.

North of Philippi, beyond the market city of Dráma, lies the Bulgarian border. We drove to within a hundred yards of the boundary to visit a tribe of Sarakatzani, a race of nomads who dress in a style hundreds of years old and shun modern ways. A Bulgarian soldier watched suspiciously while we photographed two Sarakatzanai women (above).

The women found Jean quite as curious as we found them.

"Are all American women so long and narrow?" asked a plump matron. "Now I know why the clothes in those packages from the United States never fit."

Thrace lay before us. Over excellent roads we rolled through Xánthi, Komotini and Alexandroúpolis. The fertile plain was solidly planted with tobacco, and whole families were in the fields, bent low over short-handled hoes.

Then we came into rolling hills and olive groves. Many Turks live in this part of Greece; we passed women with veiled faces and men wearing fezzes.

On the way to the border we blew out a tire and broke a spring. We must have looked exhausted. The Turkish customs official peered at us and our laden car, stamped our passports, and waved us on without opening a single bag.

"Drive along," he said. "You've had enough trouble."

We stopped at Edirne (Adrianople), the Turkish border town. At 6 o'clock there was a knock on our door. A tall young Turk and a pretty girl introduced themselves as Mr. and Mrs. Mustafa Gezgin.

"The hotel manager told us there were Americans staying here," Mr. Gezgin explained. "The Turkish-American Friendship and Cultural Society meets tonight, and we thought you might like to come."

We found more than 200 people crowded into the little clubroom. It was lined with books in English, the gift of the United States Information Service. One of the members gave a speech, in Turkish, on the United States Constitution. Another read from the poems of Walt Whitman. Then everyone joined in a half-hour English lesson.

Turkish Veterans Like GI's

"We founded the society," Mr. Gezgin told us, "because America has done so much for us we wanted to know more about you."

Half a dozen Turkish veterans of the fighting in Korea were members of the group.

"Tell your GI's we still love them," was the farewell of one.

Four hours over paved roads, through rolling grainfields where ox teams and tractors moved side by side, brought us to Istanbul, once called Constantinople and before that Byzantium. From our balcony we watched the sun set in purple glory over the Golden Horn, heard the muezzin call the faithful to prayer, and saw the great mosques silhouetted against the darkening sky.

We walked the winding, hilly streets of the beautiful old city, wandered along the teeming waterfront, and sailed on the Bosporus (page 74). We visited the Blue Mosque of Sultan Ahmet and the Mosque of Suleiman the Magnificent, and we stood inside soaring St. Sophia and marveled at one of man's greatest architectural triumphs (opposite).

Medieval Art Recalls Strange Story

Early one morning we had a phone call from His Excellency Avra M. Warren, American Ambassador to Turkey, an old friend.

"Paul Underwood, of the Byzantine Institute of America, has invited me to visit a church they're restoring," he said. "Would you and Jean like to come?"

The church was Karieh Djami; at one time it was a mosque. And from the moment Professor Underwood pushed open its ancient doors we were enchanted. Once known as the Church of the Monastery of the Chora, it was decorated in the early 14th century under the patronage of Theodore Metochita, high official of the Imperial Treasury. The murals and mosaics, wonderfully preserved, are of surpassing beauty.

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←"Solomon, I Have Surpassed Thee!" Cried Justinian When He Built St. Sophia

In constant use as a place of worship for 14 centuries, withstanding earthquakes and the fall of empires, the magnificent Byzantine Church of the Holy Wisdom in Istanbul has lived longer than almost any other of Christianity's great buildings. Here presided the patriarchs of the Greek Orthodox Church, and here the Byzantine emperors accepted their crowns amid lavish pageantry.

After the Ottoman Turks captured Constantinople, the church became a mosque, complete with minarets. Moslems plastered and painted over its priceless mosaics, regarding representations of the human form as sacrilegious.

Kemal Atatürk in 1934 turned the building into a museum displaying the finest glories of Byzantine art. Much of the treasured mosaic work has been uncovered and reinforced.

Architecturally, the building is significant as the first in which builders solved, on a large scale, the problem of supporting a dome on a square structure.

Here the Bosporus lies at right and Asia beyond. A minaret of the Blue Mosque of Sultan Ahmet pierces the foreground.

"To get the best view of St. Sophia," Mr. Shor writes, "I tested all the minarets of the Sultan Ahmet Mosque. On my way up to the muezzins' balconies, I climbed spiral staircases less than 24 inches wide, and for this narrow space within the minarets I had to compete with pigeons."

← Turkish Boatman Flies a Water Taxi on the Golden Horn

This four-mile-long inlet of the Bosporus forms the harbor of Istanbul. It separates the older section from Galata, the mercantile area, and Beyoglu, the newer quarter. The sickle-shaped Horn took its name from its shape. A watery cornucopia, it yielded golden harvests of fish.

"This beret-clad gentleman," writes Mr. Shor, "carried whatever cargo was offered: sheep carcasses, tourists, bolts of cloth, fertilizer, fish, the Shors—all with the same ready smile. He didn't bother to sluice out the boat between trips, but nobody seemed to mind."

Mosque of Suleiman Dominates the Skyline of Old Istanbul

Ancient Byzantium, called Constantinople by the Romans and Istanbul by the moderns, sits astride two continents, a bridge between East and West. It never forgets that for centuries it was the center of the Roman Empire in the East; from A. D. 330, when Emperor Constantine made the city his capital, until 1453, when the Turks seized control.

The old section, a medley of domes and minarets, sultans' palaces, bazaars, and narrow streets, lies on the very tip of Europe.

The incredibly busy Galata Bridge, from the foot of which this picture was taken, is filled with trolleys, automobiles, buses, horse-drawn carts, and pedestrians competing for space on the narrow, floating roadway.

Water-taxi wharves are almost as busy. Boatmen and fares bargain vigorously over tolls, which average about five cents.

✦A liberty party from the U. S. Sixth Fleet docks just below Istanbul's Dolma Bahçe Palace.

The palace contains souvenirs of Turkey's recent sultans, as well as the room and bed in which Mustafa Kemal Atatürk, father of modern Turkey, died in 1938.

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New Jersey Honors Greek Victims of a Massacre

To perpetuate the name of a village whose citizens were slain by the Germans in World War II, a veterans' housing unit in Atlantic City called itself Distomo. The plaque, based on early reports, exaggerates the number of dead. The authors found the original community restored, largely through U. S. aid. Jean Shor here completes a Distomo-to-Distomo pilgrimage.

frescoes, but within a year or two, Professor Underwood hopes, the work will be completed and the entire building opened to the public.

George could have stayed in Istanbul forever, among the relics of his beloved Byzantium, but Jean and I had more traveling to do in Europe. It was months before we returned to the United States. There we kept a promise we had made to ourselves: we visited the American Distomo.

It is not really a town, but a veterans' housing project within the city limits of Atlantic City, New Jersey. The gardens are full of flowers and the yards are full of children. A simple bronze plate on a slab of rough-hewn granite tells the story of the original Distomo—exaggerates it more than a little, it is true.

While we were reading the inscription, we were approached by a tall young man who told us he had lived in the project since it was given its name in 1946.

"It was really a mistake, naming this place Distomo," he said. "The first newspaper stories said the Greek village had been destroyed. We didn't want the name to die, so we adopted it. But the other village still exists. So now there are two Distomos."

We told him of our experience. We described the friendly, generous, and grateful people of Distomo, Greece. The resident of Distomo, New Jersey, smiled when we finished.

"I guess it wasn't a mistake after all," he said. "If something of the spirit of those people has taken root here, we're better off for it. The world can't have too many places like that one."

We agreed.

Professor Underwood told us the strange story of the misfortunes which befell the man responsible for so much beauty.

"Metochita was a humanist, a scholar, a poet and a businessman, as well as a public official. He was also very pious. He rebuilt this church shortly after 1300 and hired the greatest artists of the time to decorate it.

"In the civil war between Andronicus II and Andronicus III, he remained loyal to Andronicus II. Andronicus III won and exiled Metochita.

"Soon afterward, broken in health and penniless, he was allowed to return to Constantinople. He came straight here and entered the monastery as a simple monk. And here, amid the beauty for which he was responsible, he died."

Workmen are still cleaning the mosaics and

Mauritius, Island of the Dodo

Great Britain's Small, Sugar-rich Colony Far Out in the Indian Ocean Mixes Peoples and Customs from Europe, Asia, and Africa

By Quentin Keynes

With Illustrations from Photographs by the Author

"WHY," said the Dodo to Alice in Wonderland, "the best way to explain it is to do it."

It was the dodo, in the end, that talked me into traveling 12,000 miles from New York to the island of Mauritius in the Indian Ocean.

The dodo was an ungainly bird of gloomy countenance with a few scraggly tail feathers "like a Chinaman's beard," according to one early traveler (page 91). Its wings were too small for flying. Within 100 years of the first Dutch landing on Mauritius in 1598, the odd creature disappeared and was almost forgotten.

Then in 1865 Charles Dodgson, better known as Lewis Carroll, published *Alice's Adventures in Wonderland*. His pompous old Dodo talks with Alice beside the Pool of Tears. Like many readers, when I first met the bird in *Alice's* pages I assumed it was as imaginary as the March Hare and the Mad Hatter.

That same year of 1865, however, a compatriot of Dodgson's far away on Mauritius, an obscure English schoolmaster named George Clark, was excitedly digging up a deposit of bones buried in a marsh. His find was to prove beyond doubt that the dodo once had really existed.

A Lonely Isle, Little Known

In the sweep of ocean that stretches some 4,000 miles from Madagascar to Australia stand only a few dots of land. Out along the 20th parallel of south latitude rise the Mascarene Islands (map, page 80).

Central among them is the British Crown Colony of Mauritius, so little known that letters have been received on the island addressed to "Mauritius, British West Indies," and "Mauritius, South Africa."

The island bears the name of a Dutch prince, its laws are mainly based on the French codes, and its people speak more French than English. A majority of them are Indian Hindus and Moslems—which accounts for the odd fact that 100 cents in Mauritius add up to one rupee.

Collectors of stamps know Mauritius as the source of some of the most valuable ones in existence. The colony issued two stamps in 1847, thus becoming the first British possession to adopt that means of paying postage. The jeweler who made the plates engraved the words "Post Office" instead of "Post Paid."

Only 1,000 of these stamps were printed in all. Most were used and thrown away; today fewer than 55 "Post Office Mauritius" are known to exist, but all together they are worth over $400,000.

Like many a boy, I used to pore over stamp catalogues and dream of visiting such faraway isles as Mauritius. The dream stayed with me. But following the Dodo's advice to "do it" proved not so simple. I wanted to go by sea, and not many ships offer passage to Mauritius. At last I found a British freighter from London.

Clouds Blanket Mountainsides

I was fast asleep one July morning when the ship's engines slowed in the roadstead of Port Louis and port authorities came aboard.

"Wake up, please, Monsieur Keynes," said a voice in my ear. I opened one eye to see a smiling little man with a big straw hat. He was brimming over with enthusiasm.

"Welcome to Mauritius!" he said in a strong French accent. "I am representing our Mauritius travel and tourist bureau. You will come ashore?"

Sleepily I dressed. On deck I paused involuntarily to gaze at a breath-catching sight. Rising from the close-crowded harbor and the town at its edge stood a backdrop of blue-green mountains, not particularly high, but capped by summits and ridges as jagged and sharply hewn as an alpine range. Clouds clung to their slopes like white antimacassars.

"Trademarks of Mauritius, those mountains," said my tourist bureau friend. "That one over there is Le Pouce—The Thumb. That steeple, off to the left, is Pieter Both."

Small boats bobbed about the foot of

Port Louis, Capital of Mauritius, Sprawls Around Its Racecourse

On race days the island spills sari-clad Indians, beribboned Creoles, and Paris-frocked French Mauritians onto the wide Champ de Mars (pages 81, 94). Capped by steep hills (lower right), the course occupies the crater of a long-dead volcano. Mauritians have erected an obelisk (left) to a French governor, the Comte de Malartic (1792-1800), and a statue (center) to Britain's King Edward VII (1901-1910).

the ship's ladder, awaiting passengers going ashore—nine of us all told. Cargo lighters already were off-loading mountains of goods.

Mauritius, 1,760 miles from Durban, South Africa, 570 miles from French Madagascar, must import manufactured necessities as well as most of its food. More than half a million people crowd the island's 716 square miles.

Not that this rugged volcanic outcrop, 40 miles long by 27 miles wide at its broadest, is not fertile. But its sprawling fields and great plantations grow one main crop—sugar—in rich lava soil (page 88).

Half a million tons of sugar, squeezed from thick stalks of cane in Mauritian mills, are shipped out each year. On the price it brings depends the island's prosperity. Most of it goes to the United Kingdom.

Sugar Tolerates Hurricanes

This all-eggs-in-one-basket situation prevails simply because no other major crop will yield so bountiful a return as sugar cane and also recover so quickly from damage done by the dreaded Indian Ocean cyclones.

The smell of sugar met my boat halfway to the landing. Big flat-roofed warehouses lined the waterfront. Quays were piled with fat bags of sugar.

My first impression of Port Louis was that it had seen better days. Once-elaborate old mansions now sagged behind peeling paint and rusting iron grillwork; other buildings were sheathed with flattened gasoline cans.

In the commercial section, shops and office entrances crowded together. People hurrying to work filled the narrow streets. Taxi horns brayed. Hucksters hawked bargains. Sugar brokers' clerks carried twisted paper cones holding samples.

In the Place d'Armes facing the harbor stands a bronze statue of Mahé de Labourdonnais, "Founder of Mauritius," one of the most remarkable colonizers France has ever produced. He holds an unfolded chart of the "Ile de France," the name the French gave to Mauritius in 1715, five years after Dutch settlers abandoned the island.

The French East India Company in 1722 sent colonists from near-by Bourbon (La Réunion). In 1735, when fewer than 1,000 people lived on Ile de France, Labourdonnais arrived as governor. Port Louis was only a hut encampment, and in the hills roamed wild "maroons," runaway slaves of the Dutch.

Labourdonnais built a capital at Port Louis, constructed roads and fortifications, also ships and a harbor. He subdued the maroons, encouraged sugar cane cultivation, and founded the island's future.

"We could use a bit of the old boy today," said Harry Ardill, government education official who joined my party. "The population keeps growing, but the output of the plantations has a top limit. It would take Mahé there to find the solution!"

About two out of every three Mauritians today, Harry told me, are of Indian blood. Their ancestors were indentured field hands, brought from India by the sugar planters when slavery was abolished in the 1830's.

Some 11,000 islanders are of straight European descent. About 1,000 of these are British, the rest of French ancestry.

Governor's Mansion Built in 1749

From Port Louis we drove to Le Réduit, the Governor's residence in the Moka highlands. Set on a high wedge of land between deep ravines, the rambling house stands in a park of trees, flower beds, and ponds. Beyond a sloping lawn and a narrow river the view reaches for miles toward the sea.

Inside, long galleries, high-ceilinged drawing rooms, and rich furnishings bespeak a glittering past. Gov. Sir Hilary Blood was in London on leave. I was introduced to his deputy, James D. Harford, who later became Governor of St. Helena.*

"Gov. Barthélemy David, who succeeded Labourdonnais, built this official mansion in 1749," Mr. Harford explained when he noticed me looking about in awe.

"To justify spending so much money, he reported to Paris that, should invasion come, a haven would be needed for the ladies!"

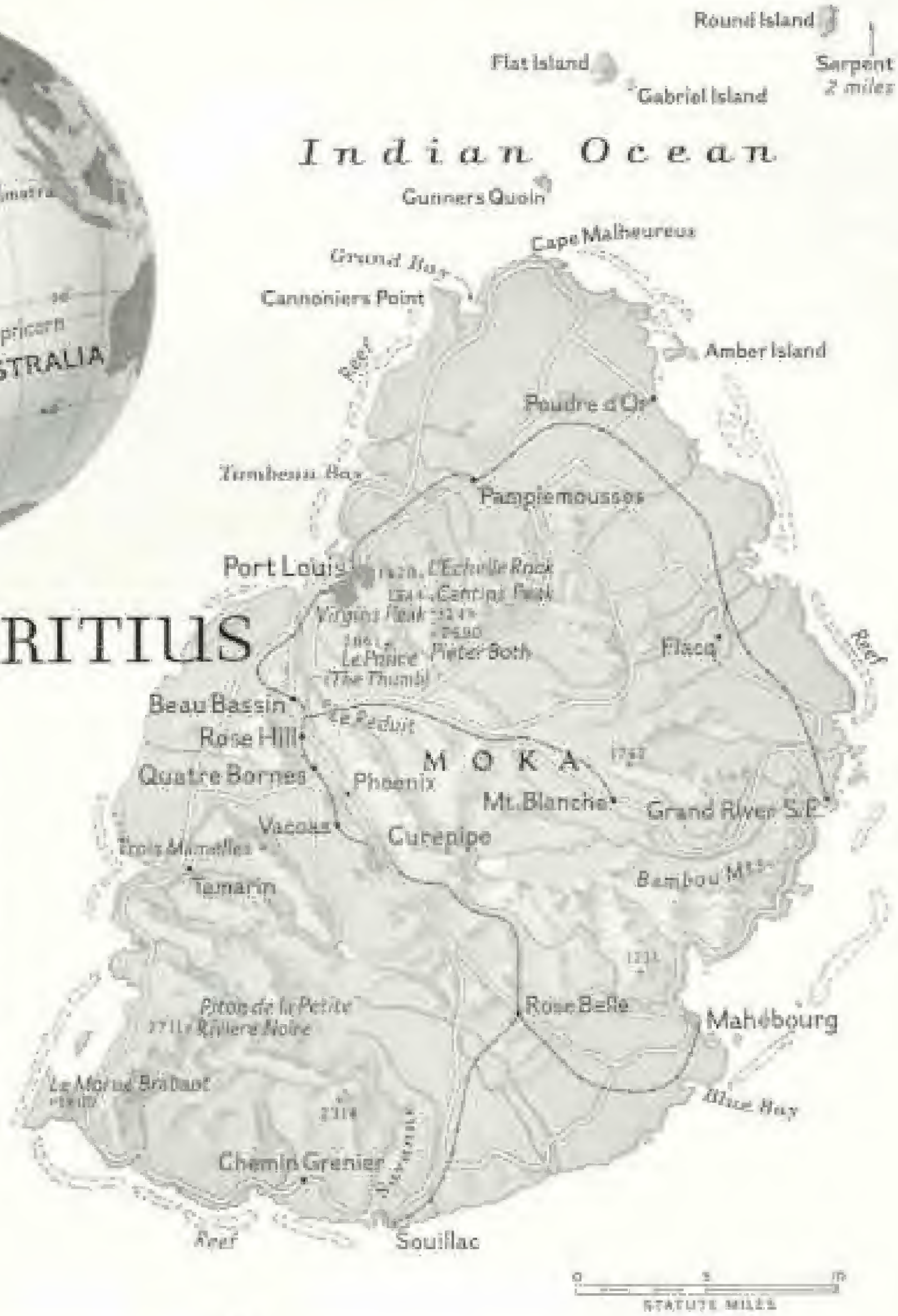
As we drove on through the rolling highlands from Le Réduit toward the village of Phoenix and the Residential Club, I noticed

* See "St. Helena: the Forgotten Island," by Quentin Keynes, National Geographic Magazine, August, 1950.

MAURITIUS

Mauritius: a Speck in the Indian Ocean

Island's profile shows a hook-nosed old seafarer in stocking cap and goatee. Half-blind, he wears Port Louis as an eye patch. Globe locates Mauritius and other islands of the Mascarene group. Before Suez Canal diverted traffic, the colony grew rich on the Europe-Asia trade.



© National Geographic Map

houses of substance and good taste, barely visible behind walls or screens of trees.

"Most Europeans live up here in the hills," Harry said. "Only place to be in our summer."

From these hill settlements the island's business and professional men drive or take commuter trains to their offices in Port Louis. Morning and evening along the high-crowned road, cars sweep down the slope between 9 and 10 and up again between 4 and 5.

The original reason for commuting was malaria. Until a very few years ago the disease menaced the health of all who lived along the coasts. In 1867 it killed nearly one-fourth of the population of Port Louis.

In 1948 an all-out battle against this scourge began on Mauritius. Within three years one species of dangerous *Anopheles* mosquitoes was wiped out, and new cases of malaria have virtually ceased.

Sugar grows on more than 80 percent of available land on Mauritius. Cane sprouts amid crumbled lava boulders and between black walls running haphazardly through the fields.

These rock windrows, piled up as fields are cleared of stones, hold water on the land and prevent precious topsoil from washing away (page 89).

One night I was taken through a busy sugar mill, one of 26 on Mauritius. It was the height of the harvest season, and freshly cut cane was being squeezed of its juices and the syrup boiled down into crystals of raw sugar.

In August and September the mills work around the clock. In the glare of floodlights,

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Rochester Falls' Black Basalt Palisades Break the Savanne River into Spray

Columns took shape as lava crystallized eons ago. Falling water has turned many blocks into stairsteps.

trucks and bullock carts give up their loads of cane to swinging cranes. The great bundles rise, move through the air, and drop to a conveyor leading into the factory.

Rolled dry, flattened, and shredded, the cane residue, or bagasse, fires the factory furnaces, along with firewood from the island's carefully preserved forests (page 82).

Narrow-gauge railways with miniature locomotives lace the largest Mauritian sugar estates. Beside the tracks trudge Indian women balancing on their heads masses of foliage lopped from the cane tops. These greens are fed to livestock.

Time Out for the Maiden Plate

Annually on a late August Monday, plantation work stops, and seemingly the entire population of Mauritius streams toward Port Louis, bent on seeing a horse race.

Cupped in a natural amphitheater by the mountains behind the city lies the meadow known as the Champ de Mars, famous racecourse of the island and scene of its most fashionable public gatherings (pages 75, 94).

Racing has been one of the social highlights of Mauritius since 1812, two years after the British took Ile de France during the Napoleonic Wars.

The Maiden Plate, the year's big race, is open only to horses that have never won an important race in the colony. Island-wide sweepstakes are based upon its outcome. A planter would hardly dare refuse his employees the day off to attend.

Above the modern Mauritius Turf Club grandstand fly the flags of England, France, and, since the days of World War I, the United States.

Visitors from the United States are rare on Mauritius, despite airline connections from Paris twice weekly and service across the

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Indian Ocean Surf Laps the Lonely Shores of Mauritius

Named by the Dutch and populated largely by Indians, Mauritius speaks French, language of its planters, who lost the island in the Napoleonic Wars. Politically, Mauritius is a British Crown Colony.

Seen from Le Morne Brabant, the island's southwest tip points toward Madagascar, 570 miles to the west. To the east, only little Rodrigues (page 102) breaks the waves. Reunion lies 106 miles to the southwest.

Mauritius, Reunion, and Rodrigues make up the Mascarenes, an island group that lacked inhabitants until the Dutch started a colony early in the 17th century.

Forests are scarce on Mauritius. Trees that once covered the island now are farmed with care. Filao trees (*Casuarina equisetifolia*) on this point of land have been cut in a jigsaw pattern.

Page 83, above: An ornamental aloe writhes against a backdrop of bougainvillea.

→Chattering Creole women, with skirts rolled up, soak the shredded fibers of other aloes in soapy water to clean away the pulp. Wrung out by hand, the creamy skeins dry in the sun. This fiber yields more than a million sacks a year for the island's sugar crop. *Furcraea gigantea*, the Mauritian commercial aloe, is a relative of the New World's sisal-yielding agave, or maguey. It grows mostly wild on dry, brush-choked lowlands unsuited to sugar cane (shown in background).

Indian Ocean between Africa and Australia.

It was not always so. When French privateers of Napoleonic times brought British Indiamen as prizes to Port Louis, they were met by tall-masted square-riggers from the young United States of America. As neutrals eager to buy prize cargoes, U. S. shipmasters were welcomed by the French.

This early American commerce with the island helped found fortunes in Salem, Massachusetts, and later in Boston, Baltimore, and Philadelphia.

Curiously, the only American I have ever met who has been to Mauritius was a New York antique dealer. "I went out there a few years ago," he said to my surprise. "I had heard that a lot of early American furniture was left by the old sailing ships. I tried to buy some of it, but few Mauritian families wanted to sell."

As the last race ended, the police band struck up first the "Marseillaise" and then "God Save the Queen." I was told about a new conductor who one race day forgot to play the French national anthem. He nearly lost his job.

In the throngs leaving the track were many Chinese. Mauritius has some 18,000 of them, about three percent of the total population. Seemingly at every crossroads on the island stands a cluttered general store and grocery run by a Chinese family with many smiling sons.

From the Chinese one can buy a penny's worth of butter, rice, or salt, a tot of strong native rum, or a single cigarette. Incomparable small merchants, these people stick together as a national group in Mauritian life.

Towers of Tinsel on Parade

"You really mustn't miss the Moslem festival of the *ghoons*," English friends said more than once during my stay.

"Ghoon" was a word that meant nothing to me.

"What is it all about?" I asked.

"Couldn't begin to describe it," was the usual reply. "You'll have to see for yourself."

On an afternoon late in September, from a rickety rooftop above a jammed street, I heard syncopated drumming in the distance, then a swelling roar from the crowds. Suddenly far down the street, caught by the slanting late-afternoon sun, the first towering, tinseled ghoon came into view (page 87).

It looked like a multistoried wedding cake topped by a huge tinfoil onion, the top of some fantastic Arabian Nights minaret, carried on a pagoda that walked. It advanced slowly, wobbling slightly, amid a throng of attendants, and I saw that it rested upon a camouflaged cart.

Another and then another of these strange, fragile towers, red, blue, and silver, came into sight. Ahead and behind marched pipers tooting on oboelike instruments. Cymbals clashed; voices chanted.

Youthful Mauritians Play in a Seaside Winter Camp →

Page 85: Many peoples make up the population of Mauritius. Hindus and Moslems from India; Malagasy from Madagascar; Africans, Chinese, French, a few Britons, and various mixtures. Indo-Mauritians, totaling some two-thirds, came originally as indentured laborers from India, the Africans even earlier as slaves of Dutch and French.

To train outstanding boys for leadership under increasing self-government, the colony organizes youth activities such as this camp. Competitive teams wear arm bands of different colors. Boys toss balls on Cannoniers Point, near which a British expeditionary force landed in 1810 to take Mauritius from Napoleon. While under French rule, Mauritius was known as Ile de France (page 78).

Below: Children at a seaside school line up for a picture.

Death Dancers and Human Pincushions

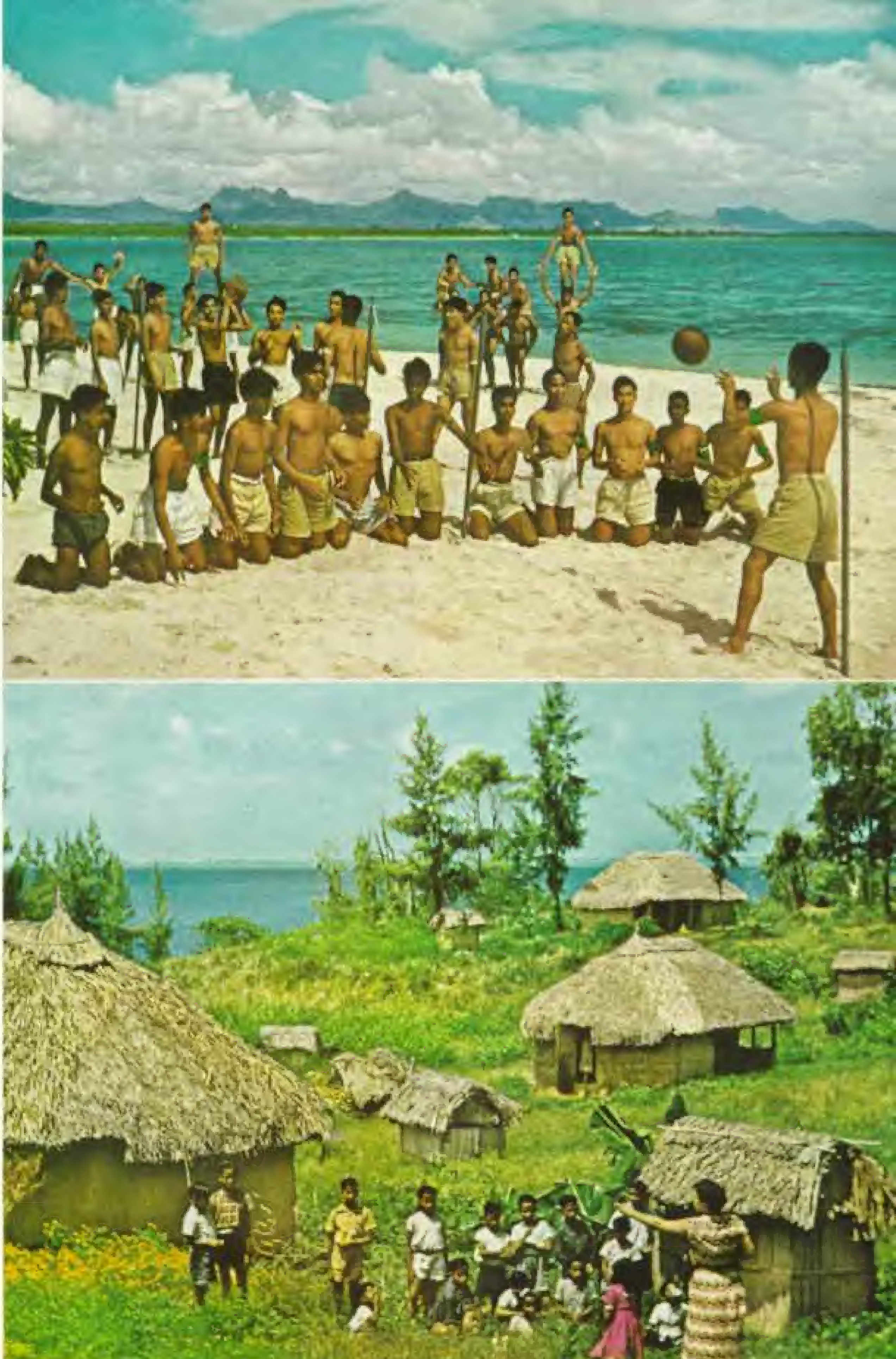
Dancers flourished wicked knives and daggers. They seemed bent on showing how close they could come to suicide by pretending to drive the menacing blades into midriff or throat. Others swung outstretched arms down upon the edge of a sword held by assistants; blunt the weapon must have been!

These "death dancers" were followed by the most hair-raising sight of all—men with long, slim skewers imbedded in chests and arms, piercing ears, noses, and going through their cheeks from one side of their mouths to the other.

The human pincushions would pause in their grisly march while other men drove in still more pointed shafts, each with the Islamic crescent at the outer end. The victims barely winced. For four hours they would remain thus, bristling with blades.

Few Moslems were clear as to what the ghoon festival signified. It seemed to be chiefly a chance for a holiday celebration. About all that I could discover were the names Hasan and Husain.

These led me back through Moslem history



to the two grandsons of Mohammed the Prophet, sons of Ali, who tried unsuccessfully to dethrone a corrupt caliph in the struggles for succession almost 1,300 years ago.

Husain was finally killed in pitched battle in the year 680 at Karbala in what is now Iraq. His death became a symbol of martyrdom to the Shiites of Persia (Iran) and India, who believe in the family of Ali as the only rightful successors to the Prophet.

Ghoon festivals on the tenth day of Moharram, first month of the Moslem year, survive as rites of mourning; the knife dancers and human pincushions do penance for the slaying of Husain, and the ghoons themselves represent the tombs of the two brothers.

Ségas Have Roots in Africa

Far older are wild dances originally brought to Mauritius by African and Malagasy slaves. These bacchanalian celebrations, called *ségas*, persist among the rural Creoles even though frowned upon by church and polite society. On Mauritius, incidentally, the term "Creole" generally applies to persons of predominantly African extraction.

I hinted that I would like to see a séga. One day an invitation came to visit one of the loneliest sections of Mauritius, near the headland mountain known as Le Morne Brabant in the southwestern corner of the island.

We drove along a winding coral road in bright moonlight to a crossroads store run by the inevitable Chinese merchant. There my host's son vanished for several minutes.

"I think we're in luck," he said when he reappeared.

Seemingly from nowhere Creoles materialized, laughing and jesting in the soft night air. A bonfire flared among the filao trees.

The first tentative finger slapped on the taut deerskin head of a tom-tom. Other drummers picked up the beat. Someone began a rambling tune.

Ragged Women Dance

In the fire's flickering light raggedly dressed women began to dance. Their stamping feet raised puffs of dust. Men broke from the waiting circle to join them.

Skirts flew as the girls whirled, first one way, then the other, feet and hips weaving in sharply defined patterns. The men moved with gyrations wilder and freer, facing their partners, yet never touching them.

The tempo gradually became faster. Couples would spin until exhausted, then drop out. Other dancers came into the firelight.

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A Paper Minaret Rolls Through Port Louis

Shiite Moslems from India took the *ghoon* festival to Mauritius more than a century ago

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Drummers, Holy Men, and Penitents Escort the Tinsel Tower Through a Holiday Crowd

The author saw dancers swing bare arms against swords; others pierced flesh with skewers. Few realized they were performing ritual mourning for the slaying of Mohammed's grandson almost 13 centuries ago (page 84).

Sugar: Daily Bread of the Island

Leading cane grower among the British colonies, Mauritius averages half a million tons a year, or about one ton for each man, woman, and child.

➔ Old volcanoes have left much of the soil strewn with lava boulders. Workers clear trash from this new field after harvesting cane.

Page 89, lower: Bulldozers and men have piled stones on this plantation into walls. A fresh ratoon crop from old roots grows amid trash stacked in rows as mulch. The regenerative power of ratover roots can yield five or six additional crops. Finally the worn-out plants have to be uprooted.

⬇ An Indian family harvests cane that has matured for 18 months. Peaks known as Trois Mamelles bulge beyond the plantation.

90 National Geographic Photographer Bates Littlehales

The Hapless Dodo: History Nearly Forgot It

A sailor's journal written in 1638 described birds "as bigge bodied as great Turkeyes" roaming the ebony forests on Mauritius. The last survivor was reported in 1681. Later the dodo's very existence was seriously doubted until skeletal proof came to light in 1865. Dr. Herbert Friedmann, Curator of Birds, studies the remains of a dodo in the U. S. National Museum, Smithsonian Institution, Washington, D. C. Horizontal bones seen across the ribs form the scant wing frame, "altogether unuseful to fly withall."

As the spirit of the séga grew wilder, the Creoles seemed to forget that any outsiders were there. Their excitement mounted and became irresistible. Centuries fell away.

The moon sank from sight. In the distance the Morne loomed black. In another direction the highest point of Mauritius, the Piton de la Petite Rivière Noire (Little Black River Peak), was just visible, 2,711 feet above the sea.

Little Black River Peak may have been the first land sighted by Dutch sailors in 1598, when five ships struggled from the main fleet of Admiral Jacob van Neck and came upon land approximately where Portuguese charts showed an island named Ilha do Cerne.

The Dutch, under Vice Admiral Wijbrandt van Waerwijck, promptly took possession and renamed it Mauritius for Prince Maurice of Nassau.

On the island they found forests rich in ebony trees and birds "twice as bigge as swans, which they called Walghstocks or Wallowbirdes . . . that is to say, loathsome and fulsome birdes." Thus was the dodo first described.

Their distaste for the "hard and greasie" flesh of the great fowl did not preclude their killing, cooking, and eating dodoes whenever food ran scarce.

One of the first English visitors to describe the dodo, Sir Thomas Herbert, wrote in 1634: "Her visage darts forth melancholy, as sensible of Nature's injurie in framing so great a body to be guided with complementall wings, so small and impotent, that they serve only to prove her *Bird*."

What with the rats and pigs of the Dutch settlers and the dodo's own helplessness, its melancholy epitaph was soon written. Half a century after Sir Thomas described it, the dodo was extinct.

In addition to a 1599 translation of the log of the first Dutch voyage to Mauritius and a copy of Sir Thomas Herbert's diary, I have in my library of "Dodoana" a rare little book, John Tradescant's catalogue of *A Collection of Rarities Preserved at South-Lambeth neer London*, published in 1656. Listed under "Whole Birds" is a "Dodar from the Island of Mauritius . . . it is not able to flie being so big."

Earlier, a dodo may have been exhibited alive in London, for Sir Hamon Lestrange testifies in his contemporary journal: "About 1638, as I walked London streets, I saw the picture of a strange fowle hong out upon a

cloth, and myselfe with one or two more then in company went in to see it. It was kept in a chamber, and was a great fowle somewhat bigger than the largest Turky Cock ... The keeper called it a Dodo."

Tradescant's stuffed bird eventually landed in the Ashmolean Museum at Oxford University. There in 1755 university officials ordered the bedraggled specimen burned. Only the head and right foot were saved.

While I was on Mauritius, Jean Vinson, curator of the Mauritius Institute in Port Louis, gave me one of my most treasured souvenirs: the tibiotarsus, or thigh bone, of a dodo, found in the marsh where George Clark dug in 1865.

Islet Harbors Living Fossils

In a glass case at the Institute, Mr. Vinson and Dr. R. E. Vaughan, the director, showed me two other "aboriginal Mauritians": the skeleton of an *Aphanapteryx*, or "poule rouge," the extinct red hen of Mauritius; and a stuffed Dutch pigeon, *Alectroenas nitidissima*. Only that one skeleton of a red hen and two other stuffed Dutch pigeons exist.

The *Aphanapteryx*, from contemporary paintings, had a long curved beak and rust-red feathers. Its most obvious feature—or lack of one—was the total absence of wings.

Mauritius, for all its queer birds, has never had snakes. This was undoubtedly a blessing to the flightless dodo and *Aphanapteryx*.

Strangely, however, Round Island, a rocky uninhabited islet 13 miles off the northern tip of Mauritius, does have two species of snakes, as well as unusual native palm trees. Some herpetologists believe the snakes, *Bolyeria multicarinata* and *Casarea dussumieri*, may be the only extant representatives of an ancient family of reptiles—"living fossils" of the snake world.

When Jean told me of the oddities of Round Island, I persuaded him we should pay it a visit forthwith.

Round Island covers less than a square mile, but rises steeply for 1,355 feet to a boulder-capped summit. Scattered over its eroded flanks grow three kinds of palms, pandanus trees, and sparse bushes. The only sounds are the crashing of waves on rocky shores and the cries of sea birds (page 100).

We landed on the only ledge of rock that can be reached by small boat and scrambled about for most of a day, searching unsuccessfully for one of the rare snakes. Jean even looked in the tops of the palms.

Among crevices in the rocks we did find geckos—small lizards. We found also both the white-tailed and red-tailed *paille-en-queue*, the "tropic bird," whose pointed stem feathers flick like rapiers in the sun (page 101).

Another bird that Jean discovered on Round Island a few years ago was identified as *Pterodroma arminjoniana*, a species of petrel known previously only on the small volcanic Brazilian island of Trindade.

Trindade lies below the shoulder of South America on virtually the same latitude as Round Island but a quarter of the world away in longitude. The two rugged, lonely islands, Trindade and Round, are the only places where this particular species has ever been found.

Fat, Flightless, Dumb—and Dead as a Dodo

This reconstructed specimen in the Mauritius Institute is made lifelike by blue-gray feathers, straggly tail, and ludicrous mien

Not long thereafter, I had a chance to visit the dependency of Rodrigues, an island 360 miles to the east and the last speck of land short of Australia.

The small freighter *Floréal* supplied Rodrigues and its more than 14,000 inhabitants regularly. It normally was booked chockfull long in advance for its average of half a dozen trips each year. I was given a guest's berth in the captain's cabin.

For 60 choppy hours at sea the *Floréal* wallowed eastward, my tortured stomach protesting every lurch and roll of the way. At last the low rounded hills of Rodrigues appeared above the horizon. The *Floréal* made for her anchorage off the main settlement of Port Mathurin.

The life of Rodrigues, an island only 12 miles long by 5 miles across, revolves about this town of corrugated-iron buildings, built on a tidal flat between two valleys that come down to the sea. On a hill not far away stand the whitewashed buildings of the Cable and Wireless Limited station (page 102).

Sailor Mistaken for Satan

Coming thus to that particular dot of land, I recalled an amusing account of Capt. Joshua Slocum's arrival at Rodrigues in 1897, during his solitary voyage around the world in the *Spray*.

A few days before the little boat's arrival, the abbé on the island had warned his flock that their errant ways would bring down the Devil's wrath.

When *Spray* was sighted, the islanders assumed that Satan had turned lone sailor. They locked themselves in, and some refused to come out for the eight days that their visitor spent on Rodrigues!

Two centuries earlier, in 1691, a party of eight men that included François Leguat, a refugee French Huguenot, came to Rodrigues as its first settlers.

Leguat described and drew from life another now extinct flightless bird, *Pezophaps solitarius*, allied to the dodo, which he found on the island. He said it "goes by the Name of the *Solitary* because 'tis very seldom seen in Company . . .

"'Tis very hard to catch it in the Woods, but easie in open Places," his account continues, "because we run faster than they . . . As soon as they are caught they shed Tears without Crying, and refuse all manner of Sustenance till they die."

On muleback with the agricultural officer, Paul Regnard, I went inland across Rodrigues, following narrow brush-walled trails between farms and pastures. Each family tends about an acre. Where the hillsides are too steep or dry for vegetables to grow, animals graze. By proper contouring and irrigating, the amount of usable land is being increased.

At Port Mathurin the arrival of the *Floréal* signals an event I can describe only as a "Rodriguan rodeo." Organized bedlam rules as cattle and pigs, chickens and goats to be shipped to Mauritius are brought into town.

Each pig has its own private "garage"—a round, tunnel-like basket with a hole in one end for a portly snout to protrude indignantly.

"Cowboys" Load Cattle into Boats

One by one the bullocks, herded in a crude corral on the beach, are lassoed by dusky Rodriguan "cowboys," led onto the quay, and hoisted by crane into flat-bottomed boats for transfer to the ship offshore. Their feet are tied so they cannot struggle, but their bellowing shakes the boats (page 104).

Every male inhabitant of the island, it seems, comes to the jetty and shouts encouragement to the men actually loading the steers. Occasionally an obdurate animal breaks free and charges the crowd, scattering straw-hatted spectators in all directions.

If my trip out to Rodrigues was uncomfortable, the return voyage was to have an entirely different atmosphere. Aboard the *Floréal* were 91 head of cattle, 800 goats and sheep, 350 pigs, about 3,000 chickens and turkeys, and 700 bags of dried octopus. The odor must have been healthy; I was not seasick for a minute!

In 1836 my great-grandfather, Charles Darwin, came to Mauritius from the east as I was now approaching it. It was near

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← French Mauritians Enjoy the Afternoon on Their Broad Veranda

Some 10,000 descendants of old French families live in a world apart. A few of them have 19th-century mansions surrounded by spacious grounds. Some own fine examples of early American furniture hauled in square-rigged ships from Boston or Salem to Port Louis (page 84).

Here in Quatre Bornes, the home of Paul Hein, Jr., looks out over manicured lawn and beds of tropical flowers.

La Saison Hippique Offers All Mauritians a Day at the Races

Les courses (horse racing) and *la chasse* (stag hunting) are the islanders' favorite sports.

Shops in Port Louis close early during the season when the races take place on the bowl-shaped Champ de Mars beneath the Moka hills. Special trains and buses bring spectators in their finest.

Thoroughbreds are imported from England and apportioned by lot to the two race clubs. Unlike horses at an American track, these run clockwise, but their backers are no less enthusiastic with wagers and cheers.

High point of the season is the Maiden Plate, an event reserved for entries without previous victory. This crowd jams the field for its running.

Riders in Pink Coats Soar on Jumpers

←The French community's Club Hippique follows its riding master over a series of whitewashed fences. The instructor was hired in France for training sessions such as this.

→Showing flawless style, a rider takes a solid-rail jump.

the end of his five-year voyage around the world on the famous scientific cruise of H.M.S. *Beagle*.

His journal notes the brilliant green colors and the wooded mountains rising to jagged points. "The whole island . . . was adorned with an air of perfect elegance . . . the scenery, if I may use such an expression, appeared . . . harmonious," he wrote.

Breakers thundering into distant foam on the coral reefs that nearly encircle Mauritius were reminders of another ship that still lives in the island's memory. In 1744 the sailing ship *St. Géran* came to grief on the slashing shoals.

Shipwreck Inspired Novel

This shipwreck gave the 18th-century French author Bernardin de St. Pierre inspiration for his famous romantic novel *Paul et Virginie*, the sad story of an idyllic love, enforced separation, and tragic ending when the lovely heroine drowns.

The legendary sweethearts Paul and Virginia long since assumed the status of real people in the island's history.

During Darwin's stay on Mauritius he was the guest of the chief military surveyor and engineer, Capt. John Lloyd, who sent an elephant for the naturalist to ride. In 1830, with three lieutenants and 25 porters carrying an elaborate equipage of ladders and ropes, Lloyd scaled Pieter Both, the island's most distinctive peak, so that the Union Jack might fly triumphant from its summit.

Forty years earlier, however, a Frenchman named Claude Peuthé had climbed Pieter Both all alone. His ascent was attested by a reliable eyewitness who watched by telescope from a rooftop in Port Louis.

Peuthé's main pieces of equipment were a bow and arrow. Reaching the neck below the overhanging summit rock, he leaned back and shot a cord up and over the top. Pulling a heavier rope and finally himself to the pinnacle proved comparatively simple.

Every time I saw the striking mountain in the distance, with a puffy little cloud hanging over its capstone like an airship at its mooring, I itched to stand on the summit. But too often clouds entirely cloaked the peak.

Finally, one morning near the end of my stay, I got a call from my friend Guy Rouillard, a young sugar chemist and ardent climber of Mauritian peaks.

"This may be your last chance," he said. "It looks as if it may stay clear up there." He drove to my door in his Citroën moments later.

With two companions we inched our way up the sharp shoulder ridge of the mountain. At the last flat ledge beneath the protruding summit boulder we rested.

Then Guy swung himself out into space, grasping for handholds on the smooth rock face. At crucial points steel pitons had been driven into crevices 50 years before, but Guy distrusted their strength.

Eventually he disappeared beyond the overhanging bulge of stone, and a few minutes later his cheery shout signaled that he had reached the top.

With a rope made fast there, the rest of us were half pulled up that last ticklish 35 feet. Guy slid back down to the ledge to carry up the cameras. For speed in climbing back he used the old pitons.

Narrow Escape on Pieter Both

As he swung out and up a second time, a rusted piton came away in his hand with a sickening sound. For one terrible moment he swung by the rope, with a thousand-foot drop yawning below. Then his feet found a purchase, and he continued his ascent.

From our stone grandstand seat atop old Pieter Both, Mauritius lay below us in all its beauty, its peaked hills and cultivated green fields of sugar cane stretching as far as the eye could see.

My great-grandfather on his visit to Mauritius was so impressed by the "exceedingly picturesque" vistas that he wrote: "How pleasant it would be to pass one's life in such quiet abodes."

I could see what he meant. Yet had he stayed, I would not have been there three generations later, resisting the same impulse.

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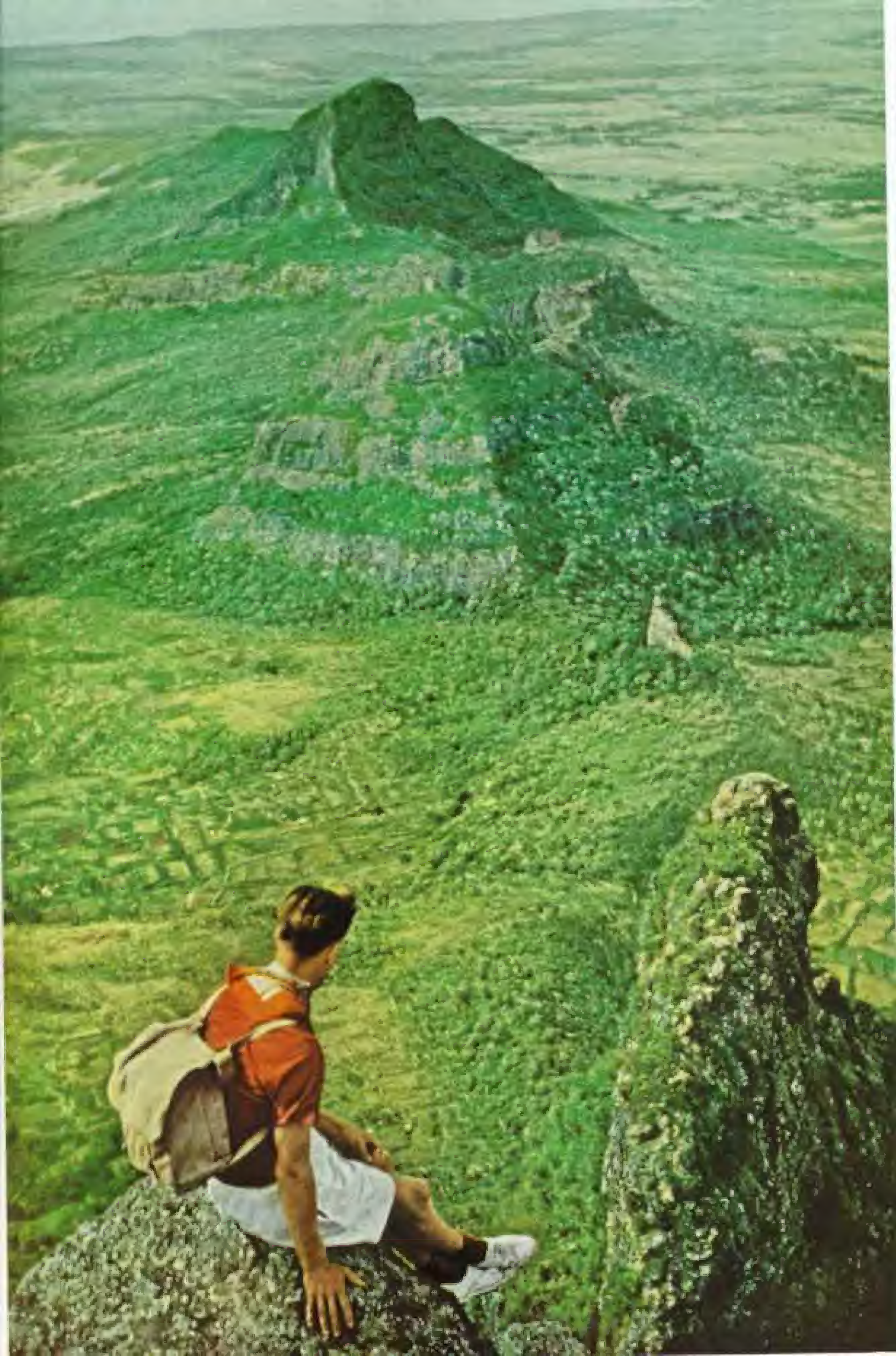
Climber Guy Rouillard Achieves the Spired Summit of Pieter Both

Named for a Dutch administrator drowned in a shipwreck off Mauritius in 1615, Pieter Both Mountain rises almost perpendicularly from the hills behind Port Louis. Overlooking nearly all the island's 716 square miles, the 2,690-foot peak serves mariners as a familiar landmark.

Pieter Both wears a 35-foot-high knob that stands like a balancing rock about to fall.

In this view, white-tipped Virgins Peak, Cantine Peak, and L'Echelle Rock march seaward. Charles Darwin noted these upthrust hills in 1836.



↑ Fishermen Stretch Nets in Blue Bay to Catch Flying Mullet

To excite their quarry, Creoles slap bamboo poles against boats and water.

↓ Trying to escape, the mullet leap the top of a net hung vertically, only to land helpless on this surface net, buoyed by poles.

Tasty Young Octopuses Dry in the Sun → on Rodrigues Island

Page 99: Shore waters of the Mascarenes abound in fish, octopus, and squid. Islanders wade the shallows for baby octopus and hang their catch on poles like Monday's wash. A smelly cargo of dried octopus accompanied the author from Rodrigues to Mauritius.

← These Strange Bottle Palms Grow Only on Round Island

Muscarena reynoghanii bulges bottle fashion at the base. Leafy fronds belong to a latanier, another palm native to the Mascarenes. Here Jean Vinson, curator of the Mauritius Institute, examines a black-webbed petrel, a species found elsewhere only on the Brazilian island of Trindade in the South Atlantic.

Above: A white-tailed tropic bird, called *Paille-en-queue à brins blancs* by Mauritians, cocks a long tail feather. Serpent Island (beyond) wears a white mantle of guano.

↓ Petrel and hatchling nest in a crevice.

A Ship in the Roadstead! Rodrigues Has a Banner Day

Few Mauritians ever visit their dependency, Rodrigues, 40 square miles of green hills rising from blue ocean 360 miles to the east. Supplies normally arrive half a dozen times a year. In return the island sends beans, dried octopus (page 99), and livestock (page 104).

Some 14,000 Rodriguans, most of them descendants of one-time slaves, grow vegetables, tend animals, or catch fish. The author found not a motor vehicle on the island.

These four girls walk down the only highway. It was built during World War II to move a big coastal gun to a hilltop. Dismantled later, the gun fell on its side, where it still lies. *Floréal*, the vessel that took the author to Rodrigues, anchors beyond the tower of the cable and wireless station.

In 1810 the British Indian fleet, 67 ships strong, gathered here with 10,000 men for the invasion of Mauritius.

Page 103, lower: In La Ferme, girls in tartans and tam-o'-shanters do a Scottish reel to a phonograph tune at a Roman Catholic mission school.

Everyone Turns Out for Mail Call

These women have waited a month or more for letters from husbands, sons, or sweethearts serving a three-year tour of duty overseas in the Royal Pioneer Corps. Now a ship has delivered mail, and residents, hoping to hear their names called, have gathered in the town square of Port Mathurin. Rodriguez fashion dictates wide straw hats.

Rodrigues Folk, Shouting Advice, Watch Cowboys Truss Up Steers for a Sea Voyage

Corralled just before the *Floréal* sails, cattle are tied up, lowered upside down into flat-bottomed lighters, and poled out to deeper water. There they ride to the deck, still feet uppermost, bellowing their displeasure.

Portraits of My Monkey Friends

By Ernest P. Walker

Assistant Director, National Zoological Park, Smithsonian Institution

With Illustrations from Photographs by the Author

AS WE look into the faces of monkeys and observe their manlike traits, some of us fancy we can see resemblances to our own friends.

In eagerness, vivacity, and inquisitiveness the monkey is man's equal, if not his superior. In the matter of choosing his habitat, I think the monkey definitely showed more horse sense than man.

Monkeys Like It Warm

With one exception, monkeys are to be found only in regions where furnaces and fur coats—other than monkey fur, of course—are unnecessary. The exception is a large Langur, called the "Monkey of the Snows," that lives in the cold evergreen forests of the Himalayan foothills.

The Old World monkeys, with few exceptions, abide in the warm latitudes of Africa, southern Asia, and near-by islands. Monkeys of the New World range from Mexico to Argentina and Paraguay.

One striking difference between monkey and man is the monkey's complete lack of inhibitions. But in this respect he suggests the young child.

Taking note of certain structural likenesses, zoologists have lumped the lemurs, marmosets, monkeys, apes, and man into a group and called them primates. This classification certainly ought to please us, because the word "primate" means "first in rank." As I use it here, the term "monkey" includes all the primates except man.

Who Threw That Monkey Wrench?

Monkeys' minds are so active that they must investigate every new thing they can reach or see. Is it dangerous? Is it good to eat? Can it be moved? Is it good to swing upon? What is it made of? Can it be taken apart? Will it make noise?

I took this curiosity into account when I started out to make the pictures in this series. All my models but one were guests of the National Zoological Park, Smithsonian Institution, Washington, D. C. They ranged from the smallest of American primates, a South American Pygmy Marmoset weighing a mere quarter-pound, to two young Borneo Orangutans destined to be stalwart 165-pound acrobats (pages 112-114).

One problem was to arrange photographic devices so as to avoid any harm to monkeys or equipment. In theory, many a scheme appeared perfect. In actual practice, somebody usually threw a monkey wrench into the machinery.

Monkeys may sit quietly if there is no interesting activity. But when I moved the photographic equipment up to their cages, they became excited and acted as if they wanted to help.

My subjects sought to examine everything carefully, preferably with hands and teeth. If they could reach the electric cables, they pulled them into the cage and bit into the rubber insulation. They tried to grab my fingers, ears, and nose or seize the camera and taste the lens.

Ripping Cloth Makes Delightful Sound

When I covered walls or floor with cloth for a background, my friends lifted it to inspect the under side. They rarely bothered to replace it.

Some decided it would be more fun to pose behind the background than in front.

Where the cloth was painted, my models licked off the water color and rubbed it on their fur.

One monkey had a grand time at my expense by tearing a 6-foot background in half. What started as an accident made such an intriguing sound that he finished the job.

To bring monkeys into the field of the

The Author

A zoologist interested in all forms of animals, the author has worked with them virtually all his life, trying to improve their condition both in the wild and in captivity.

Working with Federal wildlife agencies, he spent 13 years in Alaska protecting seals, salmon, and other game. Now he is in his 26th year as Assistant Director of the National Zoological Park, Smithsonian Institution, Washington, D. C.

Mr. Walker is the author of *The Monkey Book*, a Macmillan publication (1954), and *Care of Captive Animals*, a bulletin of the Smithsonian Institution. For the National Geographic Magazine he contributed "'Flying' Squirrels, Nature's Gliders," May, 1947.

Author and Black-masked Outlaw Struggle over a Flash Lamp →

About 15 monkeys belonging to six species, Old World and New World, make this roomy cage a miniature community of nations. When in session at the National Zoological Park, Washington, D. C., the delegates pace tree limbs, their aerial highways. So far, relations have been harmonious.

Mr. Walker was working behind his camera shield when this agile named **Agile Mangabey** grabbed the lamp. Given a few seconds more, the monkey might have wrecked it; or he could have bitten into the 1,500-volt cord.

His dark face suggests a mask. Behind him, a **Cherry-crowned Mangabey** walks on all fours. African Guenons on the left feast on sunflower seeds. A gray Spider Monkey in the distance hangs by its tail. Beyond the camera shield a Woolly Monkey waits a chance to catch a lamp stand with his prehensile tail (pages 108, 116, 118).

Mangabeys hail from Africa, the Woolly and Spider Monkeys from the Americas.

↓Camera Hog Dominates the Monkey Cage

Always clowning, the Agile Mangabey loves to be the focus of attention. Once he took the spotlight for 2½ hours, elbowing his docile companions out of range.

Says the author: "Monkeys, like birds, quickly establish a 'peck order.' Each recognizes his superior and gives way.

"One sees so many ridiculous poses and expressions that it appears easy to photograph caged monkeys. But the right pose, the right expression, and the right position seldom coincide."

This fellow clutches one of the four steel rods that extend from the camera shield (opposite). Monkeys move so fast that it is difficult to get them in focus. When a subject appears at the tips of the rods, the photographer is ready to shoot.

camera, I strewed raisins, sunflower seeds, and other delicacies in their cages.

Mother and baby Mustache Monkey from French Equatorial Africa required several sessions before I got their portrait (page 109). Determined to protect them, Father Mustache stood at bay on the floor of the cage, scolded me, and made threatening gestures.

As the guardian of their health, he made sure that they did not overeat. This thought-

ful act he accomplished by grabbing raisins and seeds off the floor and eating them all himself. "Get back on your shelf!" I could all but hear him chatter whenever mother and baby approached the food.

Certain Old World monkeys have an anatomical detail that defeats the food-baited trap most of the time. Gathering tidbits off the floor, they store them in cheek pouches for eating at leisure out of camera range.

Jaws become so swollen with hoarded food that visitors ask, "What's the matter? Mumps?"

Lacking such a handy cheek pouch, the New World monkeys must spend more time in the field of the camera to pick up the food.

Many American monkeys have a compensating advantage: the prehensile tail, which serves as a fifth limb. None of their relatives

from across the seas can grasp an object with the tail.*

Before setting up the electronic flash lamps, I encouraged our Humboldt's Woolly Monkeys (page 116) to demonstrate their reach through the bars. These long-armed characters come from Brazil, Peru, and Colombia. My object was to place the lamps close to the bars, yet out of the monkeys' grasp.

Pardon My Tail, Says the Woolly

"Outwitted them that time, I hope," I said to myself.

Answering a call to the telephone, I asked an attendant working near by to keep an eye on the equipment. Upon return I found the lamps moved back a foot.

Successfully kept at arm's length, the woolly monkeys had backed up to the bars, looked over their shoulders, thrust out prehensile tails longer than their bodies, and dragged a lamp up to the cage. The watchful keeper had snatched the lamps just in time to prevent a wreck.

In the next bout, I was determined not to let the woollies defeat me again. Using man's superior reasoning, I devised a scheme to lure a woolly directly in front of the camera for a full-face portrait. My bait was a bright-yellow can meant to dangle on a string at just the right distance and height.

When everything was in readiness, can and string were attached to a bamboo fishing pole and suspended at the proper location, with the hope that the monkey would come for the bait with his face to the camera.

Instead, he ran past the can, climbed the bars of the cage, and turned his back to the lens as he reached for the bright toy!

Monkeys Don't Like Scolding

It was enough to make a man lose his temper. But I have learned not to do so. The slightest sign of annoyance in expression or voice offends most monkeys. If scolded, they generally become antagonistic and really work to frustrate one. Fortunately, I take pleasure in seeing a monkey exercising the wit to defeat me.

Nothing I could devise ever succeeded in drawing a certain female Red-faced Macaque, Japanese relative of the familiar Rhesus Monkey, into the desired spot. As if to spite me, she refused to face the camera. Watching out of the corners of her eyes, she appeared to read my mind.

To make a setting for a Black-crested Mangabey, I cut an 8-by-10-inch hole in a wooden panel, trimmed it with a picture frame, and hoped she would look through it. Instead, this Congo beauty with the upswept hairdo regarded it as a new kind of toy that made a very satisfying noise as she sat on top and wobbled it. Finally she wrecked panel and frame.

A cageful of monkeys presents multiple problems (page 107). It is especially hard to take a closeup of a shy individual in an enclosure dominated by one aggressive personality.

Mangabey Hogs a Picture

Many a newspaper photographer can tell you about the "picture hog" who crowds the center of every group portrait. A zoo parallel was an Agile Mangabey.

Not so much from vanity as from sheer exuberance, he monopolized the camera to the exclusion of the others. It took hours of play on his part and hours of patience on mine before he became bored and allowed his companions to get into range.

To protect a camera thrust up to the bars

* See "Monkey Folk," by William M. Mann, NATIONAL GEOGRAPHIC MAGAZINE, May, 1938.

(Continued on page 117)

Page 109

Mother Mustache Monkey Guards → Her Mustachioed Child

The blue-faced **Mustache Monkey** ranges French Equatorial Africa from the Gabon to the Congo. As one of the Guenons, the old-time organ-grinder's monkey in Europe, this animal is closely allied to the Grivet, Vervet, De Brazza, Diana, and the Roloway (page 115).

The De Brazzas have white beards shaped like the keels of small sailing vessels. Another relative is the Putty-nosed Guenon, so-called for a large white spot on the end of the nose suggesting an investigation into a coat of fresh white paint.

"Recently," says the author, "I saw this baby monkey perched above his father and obviously tempted to jump on his back. But, remembering the old man's terrible temper, he leaped instead on long-suffering Mother. Withholding the blow he deserved, she took him in her arms and served his lunch."

Refusing to sit for the family portrait, gruff old Father stood on the floor of the cage and scolded the photographer. Here Mother seconds the motion with voice and gesture.

Pictures in this series were taken in Washington, D. C., all but one at the National Zoological Park, Smithsonian Institution, home of some 3,000 animals, including 150 monkeys and apes. The one exception shows privately owned Duku (page 114).

← **Big, Shiny Eyes Guide Slow Loris at Night**

This cat-size creature of the Malayan jungles moves with such slothlike pace that the adjective "slow" has become part of his popular name. But let a tasty insect drop in; then his hand moves like lightning! Sleeping all day, the nocturnal **Slow Loris** is not an animated spectacle in the zoo. Dense fur makes him a cuddly pet (page 114).

→ Nature composed this face so that **Geoffroy's Marmoset** never seems to smile. His coiled tail, twice as long as the body, makes a good counterweight in leaping, but cannot grasp objects. Home to him is Panama or Costa Rica.

↓ **Red-faced Ouakari** looks like a bad case of smallpox. Zoo visitors ask, "What's the matter with him?" Says the author: "If he did not have that complexion, *something would* be wrong." A brick-red coat heightens the effect. Ouakari's dejected look befits his nature in captivity. He seems not to want to live outside his native Amazonia.

Borneo Orangutans Are Born Clowns

Roger (right) and Jeannette, gifts of the Sarawak Government in Borneo, were escorted to Washington by a U. S. Army officer. They were promptly named for his son and daughter. Later, red-faced zoo officials confessed a mistake, both orangs were females.

Each of these 50-pound, 3-foot 3-year-olds has the strength of a man. Maturing at 8 years, they may weigh 165 pounds, second among the apes only to the 600-pound gorilla.

The **Orangutans** play with daffodils. "I do not doubt that they appreciate fragrance," says the author. "I have known monkeys to demonstrate delight at odors."

Upside-down Roger Models Millinery

Page 113

Like the children of man, Roger and Jeannette love to show off their talents, especially if the audience is large and appreciative. Usually it is; only the zoo's baby gorilla gets more attention.

Anything colorful delights the orangs. If lacking a hat, they adorn the head with a cabbage leaf. Calisthenics and acrobatics never grow wearisome.

In Borneo the word *orangutan* means "man of the forest." There he builds a nest of boughs and seldom descends to the ground. Others of his kind live in Sumatra.

Grown males develop big callosities on the side of the head, so that the face appears to be wider than it is long. Adults lack the vivacity of the chimpanzee. In intelligence, both apes rank very high among mammals.

National Geographic Photographers
Robert F. Sisson and
Donald McBain

✝ Duku, a Cuddly Slow Loris, Lives in a Big-city Apartment

When in a playful mood, Duku enjoys chewing on his owner's fingers. Indignant after being shut up alone once in the author's bathroom, he inflicted a bone-deep bite and held on like a pair of pliers. This 4-pound loris was born in Washington, D. C., his parents now reside in the San Diego zoo.

Roloway Monkey, the Bearded Lady, ✝ Wears White Shirt and Brow Band

Page 115: A native of Africa's Gold Coast, **Roloway** keeps her coat well groomed.

✝ A halo of fur magnifies **Pygmy Marmoset's** head. In her native Amazonia she scampers through trees like a squirrel. Weighing three to five ounces, the Pygmy is the smallest American primate.

I'll Do My Best, Mr. Jones
Douroucouli comes from tropic America.

He's Forgotten Our Anniversary
Golden Marmoset, born in the Washington zoo.

If the Market Drops, I'm Finished
Humboldt's Woolly Monkey, another American.

Gee, I'd Like to Be a Jet Pilot!
Hamadryas Baboon from Africa and Arabia.

On My Oath, I Set an Altitude Record!
This **Philippine Macaque** rode a rocket up 36 miles.

Repeat the Question, Please
Rhesus monkeys from India help fight polio.

of a cage. I used a large flat shield with a hole in the middle for the lens. Incidentally, this protected my fingers, face, and glasses, always in danger when I work in monkey cages.

Pressed paperboard proved a satisfactory guard until I decided to insert four slender steel rods. Projecting 20 inches beyond the board, these rods defined the plane of focus and the photographic field at their tips.

I should have anticipated it! The rods were just what the monkeys had wanted for gymnastic equipment (page 106).

One rod, put into use as a springboard, was quickly bent down into the field of vision. Another was broken out of the board and carried aloft as a toy. I could vision it—a simian sword of Damocles—being dropped through the bars onto my head.

Several times the bar fell within the cage, only to be retrieved by my friends. Finally it struck the concrete a few inches behind me with a startling *clang*. This time I recaptured it. For the next venture, I substituted stouter rods and a stronger shield.

To entice the monkeys into the field outlined by the new rods, I used a bamboo stick to apply chocolate syrup to the steel tips. This stratagem worked once. Thereafter the monkeys tackled the dip stick before I could sweeten the rods.

Somehow my subjects seemed to divine the purpose of the photoflash and contrived to thwart it. Though it could not hurt them, it did appear to disturb them. Once exposed, they tried to avoid the flash thereafter. Just when I got them exactly in focus, they turned their backs or sides to the camera.

I made speaking sounds to attract attention; the monkeys ignored me completely. Obviously, they were aware of my every move.

On one occasion I left a six-foot folding ruler leaning against a mesh fabric used to shield the corner bars of adjacent cages so that the monkeys could not reach from cage to cage and hurt one another. Presently I looked for the ruler; it was gone. I sought everywhere that I might have mislaid it before I searched the monkeys' quarters. There

Night-prowling Douroucouli Wakes Up in Daytime to Caress a Friend

Smokey was a pet in a Washington, D. C., home, but his feminine owner tearfully gave him up on developing an allergy to his fur. Still affectionate, he demands human attention. To show his happiness, he chewed Mr. Walker's ear. Most of Smokey is fur; he weighs little more than two pounds. Two other **Douroucoulis** share his cage. When they sit up side by side, their big eyes shine all in a row.

National Geographic Photographer Bates Littlehales

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Spider Monkey, in White Goggles, Swings on Her "Fifth Hand"

From finger tip to tail end, this 18-pound primate spans five feet. The naked underside of her sensitive tail tip feels and looks like a kid glove. Her wild relatives range from Mexico to southern Brazil.

on the floor it lay, broken to pieces. Prying arms—longer than I thought—had reached around the meshed bars and appropriated the plaything.

Some of the subjects in the color series, I must confess, were fairly easy game.

Red-faced Ouakari was so melancholy that he seemed not to care what I did. Disregarding the photographic activities, he sat in his old man's slouch, scarcely stirring (page 111).

Unlike the true monkeys, so difficult to keep in focus, the lethargic Slow Loris moved with great deliberation. Even his expression remained unchanged; only the pupils of the eyes varied, expanding or contracting with the amount of light (pages 110, 114).

Roger and Jeannette, the baby orangutans, did not show the aggressiveness that marks the behavior of adult apes.*

But having a large cage to roam, the orangs never stayed in focus long. They might be likened to restless, squirming boys and girls who, dressed up for a photographic session, await the first opportunity to get mussed up.

Robert F. Sisson and Donald McBain, the National Geographic photographers, found the orangs easy to tempt with food, bright objects, or fragrant flowers (pages 112 and 115).

After several sittings Roger developed a sensitivity to the photoflash.

* See "Man's Closest Counterparts (the Apes)," by William M. Mann, National Geographic Magazine, August, 1940.

National Geographic Photographers Bates Littlehales and Donald McBain

"I Can Make a Funnier Face Than You." Author and Pig-tailed Macaque Shake Hands

Pig-tailed Macaque is named for his curled appendage, which looks like a handle. Southern Asia is his natural domain. Some of his kinfolk there hold jobs picking coconuts, which they drop to men on the ground. "Brace yourself for a handshake," counsels Mr. Walker, "otherwise this powerful 35-pound joker will pull you against the bars. Give him an audience, he makes faces, his way of saying 'Greetings!'"

"As soon as one of us picked up the camera," says Mr. McBain, "Roger knew that the flash was coming. She immediately retreated to the farthest corner, turned her back, and peeped over her shoulder. She refused to change position until we put down the camera.

"Faced with this determined attitude, we could only resign. Fortunately, we already had pictures enough."

Personalities Vary Widely

My photographic venture gave me a choice opportunity to study personality and character differences not only between species but between members of the same family.

Here and there, for example, I find an individual who pretends to be quiet and gentle until his visitor relaxes. In that careless moment he may spring the trap, grab, and bite with incredible speed.

Some monkeys rush up to the bars of their cages and try to grab anyone within reach. Quick and strong, they brace themselves and pull. A man off balance may be dragged up to the cage, be robbed of hat or glasses, and be badly bitten.

Neither malice nor anger but the desire for attention prompts most of these attacks, in my opinion.

Punishment, therefore, is not a remedy; it succeeds only in arousing antagonism and defeating one's purpose.

I teach and practice the slogan, "The animal is always right." To myself I constantly repeat, "Don't be careless for an instant."

Notwithstanding the risks, photography offers a welcome change from administrative routine. I forget my troubles when working with the monkeys.

What I have to worry about is my wife. When I tell her about some close call, she is wont to say, "Ernest, have you lost all your common sense?"

"If I had any," I tell her, "I wouldn't be photographing monkeys."

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Jean-Jacques Languepin

French Explorers Bail Out a Weasel Trapped in Rotten Pack Ice Off Greenland

Once when ice blocked the expedition's ship, leader Paul-Emile Victor (right) tried to drive ashore, only to see his tractorlike vehicle crash through. Planks used as levers set this party free.

Wringing Secrets from Greenland's Icecap

In Six Years of Exploration, Daring and Resourceful Frenchmen Map a Lost World Buried Under Thousands of Feet of Ice

By Paul-Emile Victor

Director and Leader, Expéditions Polaires Françaises

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With Illustrations by Expéditions Polaires Françaises Photographers

MANY thousands of years ago, when the great ice desert that covered much of northern Europe, Asia, and America receded, it left behind it a huge witness of what that part of the earth looked like: the Icecap of Greenland.

Four-fifths of this island, largest in the world, is covered by ice, which gradually—so gradually that it is not even noticeable—slopes up to a maximum known altitude of nearly two miles.

The amount of ice in this enormous dome is almost inconceivable—2.7 million cubic kilometers, or 647,800 *cubic miles*. Cut up into jumbo-size ice cubes, it would provide a two-ton chunk for every person on earth every minute for a year. If it were spread evenly around the globe, it would envelop the entire world in an ice sheath 17 feet thick.

Icecap Affects North Atlantic Weather

In 1947, when I started the preparation of my expeditions to study this supermountain of ice—expeditions that were to last until 1953 and be reactivated in 1957—all too little was known of its characteristics and its influence on the Northern Hemisphere. The German geophysicist Alfred Wegener had tried, in 1930-31, to solve some of its mysteries. He died there, leaving behind him three scientists in the middle of the icecap.

For six months they worked in the worst conditions possible, living in a hole in the snow; one man stayed alone for nearly three more months. They brought back observations that gave the scientific world a faint idea of what the icecap is: a huge reservoir of cold which affects the weather of the whole North Atlantic, and a tremendous recording machine of times and climates past.

As our French scientific party landed in Greenland on a June day in 1948, many questions cried out for answers.

With our seismic sounding equipment (pages 130 and 137), we wanted to discover and explore totally unknown plains, plateaus, valleys, and mountain chains buried under a mile or two of ice.

We hoped to find out how such an enormous refrigerator—600 miles wide and 1,600 miles long—influenced the North Atlantic and the lands around it: populous Europe, Canada, and the United States.

Vast Arsenal of Instruments

To do these and many other things, we carried a vast scientific arsenal for our studies.

Our program included geodetic survey to "profile" the surface of the icecap; seismic reflection and refraction soundings to do the same for the substratum; measurements of gravity and terrestrial tides; mechanical and thermic borings; atmospheric electricity and atmospheric optics; meteorology, geology, and a dozen other -etries and -ologies.

All this, we knew, would take years. We aimed to cover as much of the icecap as we could, and to build a scientific research station right in the middle to be manned for as many years as possible (map, page 130).

Greenland ice struck the first blow. It came as we were unloading our supplies at the head of Atá Sound, a fjord in Disko Bay.

Suddenly a wave 30 feet high was running like a hurricane along the shore. When

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The Author

Years of prewar exploration in Greenland made Paul-Emile Victor an expert on Arctic survival. After the fall of France he came to the United States and enlisted in the U. S. Army Air Corps as a private; he soon won a commission and trained squadrons in special techniques of parachute rescue in the Arctic. After commanding a pararescue unit in Alaska, he served in Europe with the Ninth Air Force and Air Transport Command.

Discharged as a captain after the war, this dynamic Frenchman immediately began organizing the French Polar Expeditions to Greenland—so vividly described in this article—and also to Antarctica.

Rear Adm. Richard E. Byrd has called Victor "the only man in history to have organized and successfully led two expeditions at the same time at the top and at the bottom of the world." Vilhjalmur Stefansson has referred to him as the "outstanding living active Arctic explorer of the Occidental World."

it hit a rock, it exploded in sparkling foam. Then it formed again and continued its roaring run toward us.

Now it was on us; we could do nothing because it all happened too fast. The wave lifted the motorboat and turned it over, throwing four men and twenty boxes of rations into the freezing water. It reached for a 2½-ton steel cable roll dangling 15 feet above sea level and swallowed it in a gulp.

Then it was gone, leaving our anchored ship dancing as if on a stormy sea.

A glacier, Eqip Sermia, had calved. Three miles away and 90 seconds before, a mass of ice had broken off and sent this towering wave that welcomed us with a mighty slap.

"A pretty good start," Robert Guillard, chief of transport, observed with a wry grin.

But now the supplies came ashore quickly —90 tons of dehydrated food and surgical instruments, typewriter ribbons and snow vehicles, glue and seismographs, mustard and sextants, a few bottles of champagne for birthdays, spare lenses for spectacles, and almost anything else you can name.

Beachhead on a Forbidding Shore

The crates were painted in bright colors, each color representing a particular branch of the expedition's program. In addition, the cases bore red, green, or blue stripes indicating their importance: red for essential, blue for useful, green for desirable.

We set up Camp I at Port Victor—as my comrades called our landing place—on a rock platform some 140 feet above sea level. To carry our tons of equipment up the slope, we strung a cable with a winch for power.

In 10 days, with explosives, percussion drill, pickaxes, crowbars, and shovels, we constructed a six-mile-long road across the rugged hills that led to the edge of the icecap. This was a real mountain road, with bridges, hair-raising cliff-edge curves, hairpin bends, and one 200-foot slope that slanted upward at an angle of 45°.

We set up Camp II at the end of that road and at the base of a 600-foot cliff. Then the weasel snow vehicles began the tedious task of hauling up the supplies, 1,500 pounds to a load (page 124).

Temperatures soon rose above freezing. Mud grew deeper every day—mud four to five feet deep, in which the weasels jumped their caterpillar treads and had to be repaired by men wallowing in ooze up to their knees, and sometimes higher.

Yet I loved these weasels, like children I had nursed. I had used them in Alaska for rescue operations when I was working with the U. S. Army Air Forces. Then, after the war, for five long months, I looked in vain all over Europe for them.

I had almost abandoned my projected expedition when within 40 miles of Paris, in a surplus camp in the Fontainebleau forest, I found 800 of them; no one seemed to know they were there.

Cableway Scales 600-foot Cliff

We bought 10 (more later), and now here they were, as I had dreamed and planned they would be—in Greenland, painted a bright vermilion for visibility on snow. Summer after summer a shuttle system of more than a hundred weasel trains covered this six-mile trek where every foot was treacherous, each stone a trap.

But the worst problem of all awaited us at Camp II—the 600-foot cliff beyond it. We could have bypassed it by building five more miles of road around the mountain. But this would have taken us the rest of the first summer and put a terrific strain on the men and the vehicles. Instead we decided to tackle the cliff by building a *téléphérique*, a cableway like those that carry tourists to lofty lookout points in the Alps (page 125).

The necessity for such a lift had been foreseen in France. We brought the cable, but none of us was a specialist in such a tricklish job. So, as the construction progressed, I would send all the elements for calculation by radiotelephone to my office in Paris. In turn my associates there telephoned them to some friends, *téléphérique* engineers at Chamonix in the French Alps. Within a few hours we would have the answer.

Five days later the cableway faced its first

Men, Machinery, and Supplies Spill Ashore from the Polar Vessel *Force*

Landing operations were proceeding smoothly at Port Victor on iceberg-dotted Ata Sound in Etah Bay, west Greenland. Expedition members were unloading equipment and ferrying it ashore.

Suddenly a 30-foot wave swept down. *Force* pitched wildly. A motorboat capsized, ditching crew and cargo. Three miles distant, a tremendous iceberg had calved from Eqip Sermia, the glacier seen across the bay, and spawned a tidal wave. Within 90 seconds the wall of water struck the inlet.

Thereafter the men kept alert for the thunderous sound generated by each iceberg's birth. Forewarned, the party scrambled to safe ground.

Jacques Mayou

trial triumphantly. It has been working ever since. Along its half-mile of cables all our materiel was lifted in loads of 1,500 pounds for six successive summers. Even the heavy, bulky trailer laboratories followed this unusual route, looking like red, fat pigs dangling in the air. The weasels, twice a year—at the start and at the end of each summer's work—used a rough trail around the mountain.

Weather Raises Obstacles

Beyond the cliff lay a lake dotted with huge stones like a smallpoxed face, then snow patches, and finally the abrupt moraine challenging final access to the icecap. This moraine is an awesome mixture of loose stones and boulders caught in deep shifting mud like dark-brown glue. Roaring torrents of melted snow cut deep canyons in it when the weather starts to warm up.

And it warmed up, indeed. As a matter of fact, it deteriorated completely, and we had to work in a sort of pea soup made of fog, sleet, rain, and billions of mosquitoes.

After our first try at constructing some kind of rough trail through the moraine, cameraman Samivel came to me with a face as though he had just lost his own mother.

"We'll never make it," he said gloomily.

"Why?" I asked.

"Didn't you see? It *moves*!"

The moraine moved, all right; it crept forward like cooling lava, and the trail called for endless repairs. But we made it and established Camp III on the snow at the edge of the icecap, approximately 2,000 feet above the sea.

The first day's rest came to us 46 long days after our first landing. It was well deserved. During every one of these 46 days we had worked some 14 uninterrupted hours a day and slept when we could, an average of less than four hours in each 24-hour period.

During that first day of rest we could have learned that a shipload of pretty girls was coming to visit us, and it wouldn't have made any difference. All we wanted was to sleep and eat and sleep again and eat again.

When we woke up, the warm foehn wind had fallen down on us. And with it came the thaw. But our first year's work was just about finished.

← Weasels Grind Up Mountain from Sea to Icecap

In 10 days the expedition constructed a 6-mile road to the icecap's edge. The highway bridged marshes five feet deep in mud, and it twisted in hairpin curves across rocky cliffs (page 123). Roadside cairns at 15-foot intervals marked the trail for foghound drivers.

Linked by cable, these vehicles pull a trailer laboratory —a new technique in polar exploration. Caterpillar tracks propel them across rock or snow with equal ease. White-crossed flags show that Greenland is Danish.

↓ Freight Goes Aloft on a *Téléphérique*

An insuperable 600-foot cliff marked the road's end. Any detour would have required another five miles of highway. This half-mile-long aerial cable —first in the polar regions— offered a simpler solution.

Lacking specialists to calculate the job, Mr. Victor radioed to France for instructions. Five days later the lift carried its first cargo (page 123).

Twelve months later, the very day we reopened Camp III, the foehn was with us again, faithful as an alarm clock. With it all our hopes of regular rest and work vanished in the awful battle with the water running under our feet, the terrible deterioration of the surface. In a matter of a few hours it changed from a hard, flat, shining, miles-wide highway into a treacherous, bumpy gray ocean of slush. We fought our way forward. But what a fight!

A problem vital to the future of the expedition faced me; we had no time to lose. All our materiel had to be transported to the limit of the thaw zone, an ideal line so high— approximately 4,500 feet

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Snow Cliffs Melting Under Summer's Sun Block Explorers at the Icecap's Edge

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"Most Chaotic and Dangerous Ground I Have Ever Encountered," Says the Author

at our latitude of 70° N.—that no melting of the surface occurs even in summer.

But what supplies to choose first? Should we take all that was needed for building our Central Icecap Station some 300 trail miles inland? Or should we take the equipment necessary for the scientists to work with? The group to come second might well get stuck for weeks in the marginal zone in the midst of thawing lakes and roaring glacial torrents before it could move forward again when the 6 to 10 feet of snow accumulated during the winter would have melted away.

I had to make a decision, and fast. I could well imagine the uproar of the scientists back home if I seemed to sacrifice science to operations. How should I ever be able to show that without operations there could be no science?

The choice was difficult. As I was pondering in my tent, listening to the drip-drip around and under me, thinking of the terrific

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Men Fight Blizzard to Save Equipment; Gusts Reached 120 Miles an Hour

One storm halted the expedition for three days. Though it was midsummer, the temperature dropped to 40 below zero. Powder snow piled six feet deep around tents and vessels (page 136).

✦Aluminum sleds were used for the first time in polar history. They proved so satisfactory that British, American, and Australian explorers now use similar carriers in Arctic and Antarctic travel.

This overturned sled was pulled upright by a weasel attached to the cable.

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Jean Jacques Languepin

obstacles we had found in front of us the year before. Gaston Rouillon, one of my assistants, passed his head through the entrance of my tent and inquired, raising his eyebrows, "*Alors!*"

I had to give an answer.

"All that's needed for building the Central Icecap Station first, and nothing else."

The whole future of the expedition and my reputation for the rest of my life rested on this one sentence.

Nonessentials Left Behind

"Unnecessary personal belongings will follow later," said I.

"If they ever follow," answered someone.

"Traveling light is vital." I reiterated.

"Indeed it is. I leave here my necktie. It's a shame; I wanted to dress up the day we arrive at our destination in the middle of the icecap," said cameraman Jean-Jacques Languepin.

"OK," said another. "I leave here my wife's slippers. She wanted me to take them as a souvenir."

And then, without warning, as we pressed forward, I found the feeling I had felt only once before in my life: in 1936, when, with three friends, I made my first crossing of the Greenland Icecap on foot with dogs and sleds. It's an extraordinary, amazing, appalling feeling to be thrown into another world, into an element unknown, where nothing is at the scale of man, an inhuman world of white chaos and sparkling serenity where man has no part, into lifeless, eternal, immovable space.

This stage was a backbreaking struggle with snow and ice, slush, hummocks, and crevasses —miles of the most chaotic and dangerous terrain I had ever crossed (page 126).

Each weasel train took 24 hours or more to cover the 30 miles to our next base, Camp IV. The last convoy in our advance party,

✦ Scientific Surveys Traced These Trails on the Icecap

Seismologists made more than 600 dynamite soundings to chart mountains and valleys buried under central Greenland's blanket of ice (map, opposite). Testing at intervals along a network of routes, they estimated the average thickness of ice at 5,000 feet and the maximum at some 11,000 feet.

➔ Explosives were laid on the surface and detonated by electric impulses from a shot box. Instruments recorded the time required by the sound to travel through ice to bedrock and bounce back again.

Here seismologist Jean-Jacques Holtzscherer fires a blast.

Mr. Victor hopes to fill in northern Greenland's blank with further explorations in 1957-59 (page 147).

Pierre Oler

in which I rode, took 63 hours, without one single minute of rest.

During many of those hours we were bumping inside our weasels as they jumped from hummock to hummock, plunged into rushing rivers, or got stuck on a crumbling crevasse snow bridge.

But most of the time we were running in front of the weasel train like hunting dogs or hunted rabbits, poking with 6-foot metal poles for crevasses that might open up under our vehicles and swallow them in a gulp. Sometimes we had slush up to our thighs, and water filled our boots.

"Very practical, those *sacrées* boots," said Michel Pérez, chief glaciologist, "especially when one bores holes in the soles to let the water out."

Rest Comes at Last

At Camp IV, altitude 5,600 feet, photographer Marcel Ichac and a comrade had been preparing for our arrival. In this world of white, water for drinking and cooking can be obtained only by melting snow on a Primus stove, a tediously long process. With water, food can be immediately prepared. Without it, hours can pass before anything is ready to be eaten.

North Pole

Arctic Ocean

FRANZ JOSEF LAND

SVALBARD
(Spitsbergen)

Greenland Sea

Cape Morris Jesup

Peary Land

Thule Pensacola Fjord

Danmarks Fjord

Lincoln Sea

Ellesmere Island

Hall Basin

Kane Basin

Hayes Peninsula

THULE AIR BASE

Melville Bay

GREENLAND ICECAP

Greatest known thickness is about 11,000 feet; its highest altitude, 10,325 feet.

Upernavik

Baffin Bay

Ella Island

Kong Oscars Fjord

Scoresby Sound

Umanak Fjord

Uperna

Nugssuaq

Qutdligssat

Ritenbenk

Disko

Godhavn

Disko Bay

Jakobshavn

Egedesminde

Christianshaab

Below Sea level

Gunnbjorns Mt.

Kangerdlugssuaq

Mt. Forel

Angmagssalik

Ikeradlen

Baffin Island

Davis Strait

Nord. Str. Stromfjord

Holsteinsborg

Sondrestrom

Arctic Circle

Sukkertoppen

Godthaab

Jensens Nunatak

Frederikshaab

Igaliko

Narssarssuaq

Julianehaab

Cape Farewell (Kap Farvel)

For clarity, mountains and icecaps are exaggerated vertically.

Greenland's Icecap Cut Away to Show Land Mapped Beneath It

Seismic soundings made by the Victor expeditions revealed that Greenland resembles an ice-filled bowl rimmed by coastal ranges. Much of the bowl's floor lies at sea level or lower. At one spot the enormous overburden has depressed the bedrock to more than 1,200 feet below sea level. The icecap lays an alabaster shroud over four-fifths of the island. From it, glaciers creep down to the sea through gaps in the mountains. *Nunataks*—ice-surrounded peaks—stud the edges. Inland, the ice mounts gradually to a thickness of more than two miles.

132

Skimming Above the Icecap, a Plane Showers Supplies on the Central Station

Fifty-four flights from Iceland dropped 250 tons with less than 2 percent loss. Scientific instruments were parachuted, other goods free-dropped. This plane flies 50 feet above ground. Crates of food splash in the snow.

133

Jens Jacques Langsdorf

Dug In Below This Snowfield, Eight Men Spent the Months-long Polar Night

Working out of the Station for three summers, the explorers blazed 10,000 miles of trail across Greenland. Snow walls the mess tent and mobile kitchen. Permanent quarters lie out of sight to the right.

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Jacques Ruxton

Cabin Made in Paris Takes Shape Nine Feet Deep in the Icecap

When assembled, the shack contained dining room, kitchen, bunks, and laboratories. Insulated walls about two inches thick held heat like three feet of brick. Snow quickly buried the completed cabin (opposite).

When we arrived, Ichac greeted me with, "Come in, Pev, the hot water is ready." That meant volumes—a good hot meal, rest, and blessed warmth.

We had been on the trail for days and days, fleeing the thaw without an hour's rest. And now, at long last, we could rest awhile, we thought, the snow around us being hard as concrete, the weather fine, and the forecast good. We slept.

But someone woke me; I did not know whether it was 3 or 30 hours later.

"Victor," he said, "come on out and see for yourself. The foehn has caught up with us."

Then the whole thing started all over again, but, in a way, worse this time. The caterpillar treads began to break, and some of the sleds had to be left behind for the second group to pick up when they eventually came through.

We established Camp V and finally Camp VI, at an altitude of about 5,200 feet, some 55 miles from Camp III at the edge of the icecap. Now at last we were safe from the thaw.

From here on, toward the east, stretched a white flat desert of snow without the smallest landmark, the slightest wrinkle, to give us even the faintest sign that we were still on earth. About 200 miles ahead, and some 4,600 feet higher, lay the site of our Central Icecap Station, as nearly as possible the same spot where three men of the Wegener expedition—Dr. Johannes Georgi, Dr. Fritz Loewe, and Dr. Ernst Sorge—had spent six months in their snow hole in 1930-31.

Trapped in a Glacial Lake

But once again we had no time to lose. We knew that what we called "summer" on the icecap would be over around August 15—a month and a half from now.

Meanwhile, far behind us, the second group, under chief geodesist Jean Nevière, was bringing the rest of our equipment. A huge glacial lake formed around them and stopped them for a week, the water getting as high as the upper part of the tracks; they passed from one weasel to another on planks, like people in a flood.

Bucking far worse conditions than we, they did not pass the marginal zone until

three weeks after us. But they finally succeeded in starting their scientific research program and also picked up the sleds we had had to abandon.

All told, the expedition numbered 35 men, including a group of 8 who were to winter on the icecap. On July 1, 1949, the 22 men of my advance party, with five worn-out weasels, seven overloaded and battered aluminum sleds, and two trailer labs, left Camp VI for the unknown inland desert of snow and ice.

Morale was good. Men joked and sang as they started off.

Every 10 miles we built a snow cairn. On top we set a black flag and wrote on the staff the number of miles from our departure point, our "mile zero," Camp VI. Every mile was marked by an empty gasoline can. In this way we hoped to be able to find our way back.

"At long last we are on the go," said Pérez as we were building our third cairn, having covered 30 miles in approximately 12 hours.

Like Prisoners in a Cell, Men Endured the Polar Winter in This Crowded Cabin

Volunteers daily ventured into the darkness outside to make weather readings. Sometimes winds of 100 miles an hour knocked them down. Three men in this group spent the winter of 1950-51 in the shack.

Jean-Jacques Languepin

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Marcel Ichac

Buckets Replace Brooms at Spring Housecleaning

Ten feet of snow falling on top of the Station's corridors depressed their height from six feet to four, compelling the men to crouch (opposite). By spring the tunnels required redigging. When outside temperatures fell to 55° below zero, the unheated tunnels remained at 40° below. Here Abel Havard, like a miner at pithead, hauls snow.

The heat of the motors inside of our weasels, the glare of the sun outside, the hope that all was well and that there would be no problems any more, gave us a feeling of comfort and dreaminess.

Suddenly the train stopped. I jumped out. Several men were standing around one of the weasels, their hands on their hips, looking down as does a crowd around a man hurt by a car.

I joined them. One of the tracks of the vehicle lay on the snow, at full length, like a corpse. It took 16 hours to repair. Some of the work had to be done barehanded in the zero cold, so we had to heat the metal to prevent fingers from freezing to it.

Three Days of Blizzard

We hit the trail again. Another track snapped. Then several. And each took from 12 to 18 hours to repair. On the nose of each weasel mechanic Camille Marinier painted caterpillars, as many as the weasel had had broken tracks, like bombs on the nose of a plane for each bombing mission.

Then we were stuck for three days in a howling blizzard. When we came out from our sleds and tents, the snow lay in wavelike ridges five to six feet high (page 128).

More and more tracks gave out under the terrible pounding they took. Some had been repaired three times and would simply have to be replaced.

We had been on the go for 12 days and had covered only half the distance to the site of our Central Icecap Station. We needed good tracks badly. We had plenty, but they were many miles behind us—left with the rest of the expedition because we could take only the absolute minimum.

They could not reach us for weeks. But we had many more in Iceland, where we had unloaded 70 tons of materiel on our way to Greenland—materiel to be brought by plane and parachuted or free-dropped to the Central Icecap Station. By air the tracks could be delivered in only a few hours if we were lucky.

Headlines Amuse Explorers

I radioed to our office in Paris and asked for a plane to come to Iceland, pick up what we needed, and drop it to us. Paris newspapers promptly printed big headlines saying that we were in a state of emergency and that I was obliged to "distribute famine rations." Our people at home got jittery, and the next day they asked us for news with sobs in their voices.

We were having such an excellent radiotelephone contact that they could hear us roar with laughter when they told us about the scare headlines. Far from facing famine, we were stuffing ourselves with delicious hot chocolate and plum pudding with butter as we crowded around the phone in our radio trailer lab.

Our friend Roger Loubry was in Brazzaville, Africa, with the plane, a cargo version of the Liberator bomber. He stopped in Paris to refuel, loaded the supplies in Iceland, and took off again immediately for the icecap.

At 8 in the morning of July 13 the craft arrived over us in the middle of nowhere. Our friends in the air had left warm, sunny Paris the preceding afternoon at 2.

At 10:30 the drop was ended, and the plane had disappeared again to the east. There had been no thought of landing the heavy plane on the treacherous surface.

All July 14—Bastille Day—we worked hard at changing our tracks, reloading the sleds, and making scientific observations. The next morning, at 3:30, we started again; from then on we really rolled. We stopped only every 10 miles to build snow cairns, play soccer with an empty tin can or fight with snowballs, and record our scientific data.

At each stop we detonated dynamite to make a seismic sounding. The recorded "bounce" time of the explosion down through the ice to the rock floor below and back to the surface enabled us to measure the elevation of the bedrock and the thickness of the icecap (page 130). As we moved inland, successive soundings revealed that though we were gaining altitude on the ice the bedrock slanted gradually downward like the side of a giant bowl.

Only one irregular stop had to be called—when geodesist-navigator Paul Perroud signaled to me that one of the weasels had left

Hoarfrost Rimes the Ceiling of Nature's Deepfreeze

A tunnel system 450 feet long connected living quarters, storerooms, and laboratories. Jean Dumont stows food in a niche carved out of snow.

the trail and was heading for nowhere. I followed it and finally caught it after almost a mile, wondering what had happened to the driver.

As I came abreast, I saw him sound asleep, his nose squashed on the windshield, his head swinging gently from side to side with his nose as the pivot. It took me quite a while to wake him up. When I finally succeeded, he opened his eyes and asked, "What the so and so is going on here?" When I told him, he got mad and exclaimed, "I was not asleep! I was reading a book!"

We rolled on and on, and finally—at 11:45 p.m., July 17—we arrived at an altitude of about 10,000 feet at 70° 55′ N. and 40° 38′ W., exactly where I had decided that our station would be.

Expedition Digs In

On the morning of July 18, when I woke up in my tent right in the center of the Greenland Icecap, I had, at long last, the feeling that the expedition was to be successful, that the dream I had cherished for 15 years was indeed coming true.

We started building the station (page 134). It was to be entirely buried in the snow, or, more precisely, the névé—partly compacted granular snow. Thus the entire installation, including a prefabricated cabin, would be totally protected against the wind and somewhat protected against the cold.

This reasoning proved, as the years passed, to be perfectly correct. Even when the worst blizzards blew, the only signs of them down below were the needle of the anemometer and the howling of the wind in the vents. The lowest outside temperature recorded was minus 89° F.

But even when it was that cold outside, the temperature in the corridors dug out of the névé never went lower than minus 40° F. Living quarters, of course, were generally kept at normal room temperatures (page 135).

As bamboo sticks were being planted to mark the places where we would dig in, the men who were to spend the winter here contemplated their life in this deepfreeze home with mixed emotions. Wrote Michel Bouché of the wintering group, chief meteorologist and second in command to Robert Guillard:

"Just like a dream, the life we thought of so often is being drawn on the snow by a few markings clumsily joined together in a line dug with a heavy sole. . . . I already wintered here when I was studying the blueprint in Paris, but now I am suddenly possessed by the

certainty that it is going to be quite different!"

This cabin had been prefabricated in Paris and test-erected there by these very men. It would have eight bunks, a kitchen, a dining room, a living room with radio and record player, a photo lab and a meteorology lab—all this in 36 by 16 feet.

The walls of special insulating material were approximately two inches thick, but equivalent to a three-foot-thick brick wall in keeping the warmth of the specially constructed kerosene stove inside the cabin. Some 450 feet of under-snow passages led to the trailer labs, storerooms, fuel caches, and a pit for launching weather balloons.

The gasoline was running short, and once again we felt that an airdrop was needed.

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Valleys Lie Buried Beneath an Ocean of Ice. Lonely Mountaintops Protrude Like Islands

Just as the plane left France for Iceland on July 24, I got the news that our second group under Jean Nevière had succeeded in the devilish task of bringing all the rest of the materiel up through the crevassed zone to Camp VI. As soon as we got more gasoline, our weasel trains could meet them there. Then—and then only—I knew that the drastic decision I had taken more than three weeks before, to put the emphasis on "all that's needed for building the Central Icecap Station first, and nothing else," had been the right one.

Loubry flew 12 missions in 11 days, totaling 124 hours of flight. Five tons per flight came down to us from the sky.

I had planned to parachute everything, including gasoline in jerricans. But this was too slow and the losses too high; so, on one of the first flights, I asked the pilot to come down as low as possible and try dropping the supplies free.

Supplies Survive Free Drops

"OK," said Loubry. "I am coming in as low as possible, about 30 feet and maybe lower."

The first jerricans to come down in this manner, filled to the brim, arrived in good shape—such good shape that I ordered everything except the delicate instruments to be free-dropped.

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Wessels Rolling Under the Midnight Sun Cast Long Shadows on a Desert of Snow

This even included the hydrogen bottles for filling the weather balloons. These bottles were supposed to be highly explosive, but not one blew up.

The technique was improved as the years passed. The free-drop runs, directed by me by radio from the ground, were made at less than 20 feet, and thus the losses dropped under 2 percent, all told.

His last airdrop mission completed, Loubry headed back for France. As we were picking up the last pounds, we found a jerrican painted red and labeled "Pinard." *Pinard* is a French slang word for red table wine. It was a gift from our comrades of our Antarctic expedition, which I had organized over the radio from Greenland, with André-Frank Liotard as field leader.

As these missions were being flown, the work continued at the Central Icecap Station. The living quarters, laboratories, bunkers, and under-snow corridors were being completed. The expedition's scientific program was being amplified every day. The supplies left behind had come up in three weasel trains, and a good part of the second group had come to join us.

In late July came our first report of below-sea-level bedrock beneath the ice. This electrifying news reached the Central Station by radio from a survey party led by Alain Joset.

Deep Fjord Found under Ice

Joset had passed a slight wrinkle on the surface of the icecap. He had never before seen such a wrinkle. He backtracked quickly and made a sounding on the spot. The bedrock under two miles of ice registered 980 feet *below sea level*. Beneath his feet lay a deep fjord, which I believe to be one of the outflows of the ice toward the coast.

Our reaction to this first of many far-below-sea-level readings may be summed up in one word—"Wow!"

Summer neared its end, and the eight wintering men were soon ready to be left

Snug in His Sled, Paul Perroud Fries Beans Over a Primus Stove

Traveling day and night, the icecap explorers took turns driving the weasels; they ate and rested in the sleds. Canvas tops gave the sleds a covered-wagon look. Melting of snow for water kept men and stoves busy.

alone. By the end of August the rest of us had gone and the eight were all by themselves, surrounded by nothing but snow and sky. The weather was soon to deteriorate, and the polar night—the dreadful polar night—was to fall and bury them alive for months.

Party Left on Icecap

"They left," Bouché wrote in his journal, "on August 24. The parting was brief: it had so frequently been in our thoughts. The weather was not any better and snow flakes whipped our faces. We formed groups, exchanged a few words on weather conditions on the trail, shook hands, and the vehicles drove away in the whiteout. The eight of us remained for some time, winking in the wind, soon tired of not seeing anything more. Good luck to those who are going back. And now: to work!"

Months passed, with every day the same incessant routine. Wrote Bouché, in that hole in the snow:

"A strong wind groans in the vents. It must be awful outside in the night . . . A glance at the anemometer: 60 miles an hour . . . OK. Having dressed and with the lamp under my arm, I give a punch to the door, frozen fast as usual, and I enter the corridor. Direction: south exit. The north one had to be abandoned long ago, as it was continually getting blocked.

"I pick up today's diagram prepared on the cylinder by René Garcia and out I go. Night, wind, snow, cold, storm . . . The cylinder of the thermograph changed, I turn back. I stumble along the ropeway . . . The wind pushes me, the snow flies and burns, the lamp rays do not reach farther than two steps.

"I arrive at the door leading to our quarters and slip down toward it on my back . . . No time to search for the steps in the bitter cold; 10 seconds saved. These steps have become so slippery now that minutes are lost whenever we have to climb such a toboggan. But on coming back we glide down just as

Physicist Pierre Stahl Measures Electricity in the Atmosphere

Even when perfect weather prevailed at the Central Station, violent but unseen disturbances raged in the upper atmosphere. Parallel tubes of this apparatus contain oppositely charged electrodes that permit simultaneous measurement of the positive and negative conductivity of the air.

fast as possible. I rush into the corridor, puffing, elbows spread out to touch the sides; no need for light in that way."

The vents got clogged by the snow, and once the carbon monoxide alarm rang. Marcel Carles, the doctor, checking on the air, observed that the special chemical paper he was using became black in four minutes. Then he read the instructions; they said that if the paper turned black in 15 minutes or less, it meant danger of death! But the vents were quickly cleared, no one came to harm, and at last the months-long night was over.

Ship Loses Her Propeller

I left France in April, 1950, again with the summer group and the relief party for those who had spent so many months in such difficult conditions. Our ship lost the blades of her propeller in some jammed pack ice, and we were weeks late in reaching Camp 1.

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Ladder of Thermometers Proves the Lowest Air Is Coldest

Thermometers spaced at 20-inch intervals up a 55-foot mast revealed a marked inversion of temperatures. Air at the top of the mast was some 10 degrees warmer than that at snow level (page 147).

Remembering what had happened the year before, I decided to get out of the marginal zone of the icecap as fast as possible, leaving others to finish unloading the ship. This year, in contrast to last, I could put the emphasis on "everything to carry the scientists up on the icecap first, and nothing else."

On the way, we stopped every 10 miles for scientific observations and at times received air support, flown this time by an Icelandic airline with Skymasters. Down to us came fresh vegetables and fruit. Once we got tomatoes, but they had frozen in the plane and the landing shock changed them into an unappetizing red powder.

At the Central Icecap Station the men were betting on the time of our arrival. When we finally arrived on June 30 at 11 p.m., the Station seemed deserted. I tooted the horn and jumped out of my weasel.

Nothing budged for a while. Then a head appeared, flush with the snow surface. We did not move. It disappeared. And then a man jumped up and came running and stumbling. He was Lucien Bertrand, the radioman. He could not say a word. He fell into my arms, and we kissed each other as brothers.

Reunion after Long Winter

Other men came to us, running, puffing, shouting, arms raised. Their faces were pale and dirty. They had all thinned out during the wintering. They were overwhelmed by our arrival and also by the realization that their ordeal was over. Their home amid so many struggles was all of a sudden meaning-

less—and one does not ever abandon one's home lightheartedly.

"The Central Icecap Station," wrote Bouché a little later, "very much looks like a trodden anthill. Arrivals, departures of geodetic, gravimetric, and seismic groups working west, east, and south . . . This huge camp never sleeps. The cabin is always full, poor cabin—tumultuous evenings, prolonged dinners, the table taken by storm, the soup repeatedly thinned down, the snow which unceasingly sizzles on the stove, for there is never enough water . . . We come out as in a dream, leaving the old familiar surroundings which have now become as strangers to us . . ."

Camp Atop Two Miles of Ice

By the 12th of July the whole expedition was reunited at the Central Icecap Station, 47 men in all. Never had the central icecap seen so many living creatures in its hundreds of thousands of years.

Of most importance, we had already completed the program of research as planned:

The geodetic group had drawn a line of markers across Greenland, the position and height of each known with precision. The gravimetric and seismic groups had made gravity and ice-thickness readings every 10 miles, and we now knew that the Icecap Station was on top of some 10,400 feet of snow, névé, and ice.

The glaciology group had made observations all along the route and stopped at many places for detailed work. Thermic borers—electrically heated projectile-shaped irons attached to cables—had reached a depth of 164 feet at two points, 148 at a third. The mechanical borer finally got down to 496 feet. (The deepest hole ever made on the icecap before was 52 feet, by Wegener in 1931.) Thus we could lower thermometers and make temperature readings deep in the icecap.

Down 100 Feet in an Ice Well

We had even brought all the way up from the coast a queer contraption weighing almost a ton, with which we were able to dig a pit about three feet in diameter and 100 feet deep. Into this a man could be lowered to study the stratigraphy (opposite).

Several of us in turn descended into the dark shaft. What were my impressions? That the hole was very deep and very small! It was like being inside a factory chimney. To make me think the walls were falling in on me, some of my playful friends on the surface dropped bits of snow and ice.

In the light of my electric torch, yearly layers of compact snow glittered like diamonds. As a tree's rings tell its history, so layers of snow and ice reveal the icecap's past. Here before my eyes was the record of much more than a century of its history.

Meanwhile, many more observations of all kinds—atmospheric electricity (page 142) and halos, earth magnetism, and aurora borealis—had been made. And this was only July 12. I could plan on an extension of our program.

During the summer I had been in radio contact with my old friend, the Danish explorer Dr. Lauge Koch, who was on Ella Island in east Greenland. He agreed to send a motorboat to wait for us in the head of a fjord if I decided to attempt a 700-mile crossing of the icecap, for the first time with totally mechanized means, going all the way from the Station to the east coast, some 400 miles away. This I decided to do.

As our group of six weasels left the Station for Cecilia Nunatak, our final destination before getting down to the fjord through mountains marked *unbekannt* (unknown) on our map, there was still quite a crowd at the Station. It included Paul Voguet and seven other men who were going to winter there. The previous wintering group came with us to be evacuated to France.

Blind Journey Through the Whiteout

There is not enough space here to tell about the monotonous hours of driving the vehicles during days and days of whiteout—a phenomenon in which snow and sky merge, leaving no visible horizon and no visible landmark. With just one stop every 10 miles for seismic soundings, gravimetric observations, and marking the trail, we traveled 205 miles by dead reckoning before we were able to make a fix. Then we found that we had been off our theoretical course by less than five miles.

Nor can I tell in detail about crossing the marginal zone on the other side, with mile-long crevasses covered with bridges of snow, or of the grand reception aboard the boat sent by Lauge Koch. Those of our party who returned with the weasels became the first men to make the round trip across Greenland at that latitude.

The next summer—1951—the expedition was back on the icecap under Gaston Rouillon. The plans were to close the Station, since funds for the purpose were running out, but first to make as many observations as feasible there and to add many miles to our lines of seismic soundings to make possible a map of the bedrock under the ice.

This was to be our last great summer of activity on the icecap. In 1952 and 1953 small groups of five went back for more work in the marginal zones, while others and myself, in cooperation with Georgetown University in Washington, D. C., and Stanford Research Institute in California, went to Thule and the northernmost part of the icecap for research of scientific and U. S. Army Transportation Corps interest. In the process, another round-trip crossing of the icecap was made.

Tragedy Strikes

As the summer of 1951 was running to an end, I could contemplate the past four years with satisfaction. The Expéditions Polaires Françaises had had four major summer expeditions and two winterings on the icecap of Greenland. Simultaneously we had had three (later four) summer expeditions to the Antarctic and two (later three) consecutive major winterings there, on Adélie Coast, without an accident.

I was thinking of my good star in this matter while I was in Iceland that summer, arranging for air support, when word came that a weasel with two men

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Jacques Marcel

Snow Drillers Probe the Icecap with a One-ton Plunger

To study layers of ice and take samples, expedition members descended into a pit three feet wide and 100 feet deep. Dropped like a clamshell bucket, this digger scoops up ice and snow. Here its articulated blades fly open, depositing the load in a shed atop the hole.

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Through a Gap in the Mountains, the Icecap Overflows into a West Greenland Fjord

in it had fallen into a 150-foot-deep crevasse on the eastern part of the icecap.

A few hours later I was in a B-17 of the U. S. Air Rescue Service taking off from Keflavik. We dropped ropes, timber, and block and tackle to the remaining four men to enable them to descend into the crevasse. Over the air-to-ground radio I heard their tragic story.

Crevasse Swallows Weasel

The three-weasel seismic group under Alain Joset had covered 1,000 miles and everything was going fine. Joset was riding in the lead vehicle with our friend Jens J. Jarl, representative of the Danish Government with the expedition. Suddenly they stopped to investigate what seemed to be a crevasse covered with snow and finally decided to detour around it.

The first weasel turned around and within 30 feet—at a place it had already passed—it disappeared through an invisible snow-bridged crevasse. The weasel was found, tracks up, some 75 feet below; the bodies of the men, who had been killed by the fall, were another 75 feet down.

When the expedition was reunited in Paris some three months later—with two empty seats—I found that we all had but one

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thought: The death of our two friends was not to be useless: we would continue with our work and, in one way or another, sooner or later, find out exactly what the Greenland icecap was like.

In our six seasons of work, much has been learned about this mighty geographical feature. We covered approximately 10,000 miles of new trails crisscrossing the icecap south of 74° N., driving our weasels a grand total of more than 60,000 miles. We shot more than 600 seismic soundings, which enabled us to make a map of the bedrock under much of the icecap (map, page 131).

Newspapers have reported that we had discovered that Greenland was not one island, but at least three islands, and possibly an archipelago. We are hardly able to say that.

What we found is that the center part of the icecap, as compared with the northern and southern parts, drains its ice into the Disko Bay region through glaciers, the beds of which extend far east under the ice. Some of these glaciers have carved out canyons 20 to 30 miles wide and 300 to 1,200 feet below the level of the sea.

For the first time we have an accurate estimate of the amount of ice piled up here, approximately 2.7 million cubic kilometers, as I observed earlier. If this volume of ice were to melt away, the mean level of all the oceans of the world would rise by 24 feet. Furthermore, the land of Greenland and its coastal shelf would rise (because no weight would press it down any more), so that the total increase in ocean depth would be still greater.

Ice Lives on Borrowed Cold

We found another important thing: One might think that as the climate grew warmer the icecap should have melted away long ago, at least most of it. But it is not so. The reason is that it has accumulated the cold of the past millenniums and kept it inside, as an icebox would do. The icecap lives today on the cold of past ages.

Another important point is that the climatic fluctuations of the past are inscribed, year after year, in the layers of the névé. The deeper the layer, the further it goes back into history. Ice brought up from more than 450 feet at the Central Icecap Station by the mechanical borer fell as snow at the time of the American Revolution or earlier.

In meteorology we found that an anticyclone, or high-pressure area, exists in the middle of the icecap but is very thin from top to bottom, a few hundred feet at most. This phenomenon is now known as "the pellicular (skin-thin) anticyclone of the Greenland Icecap."

We found also that there exists a marked inversion of temperatures of the atmosphere in the low layers in contact with the snow surface: the air is up to 10° warmer some 50 feet above the surface (page 143).

We left quite a blank spot on Greenland, between 74° N. and 77° N. We expect that this white spot will be wiped out soon. An international expedition, organized by us, is now being planned by the International Commission on Snow and Ice for 1957-59 as part of the world-wide scientific activities of the International Geophysical Year.

Gold Medal Awarded to Mrs. Robert E. Peary

A SPECIAL Gold Medal was awarded to Mrs. Robert E. Peary at ceremonies marking the presentation of Admiral Peary's famous flag of Arctic discovery to the National Geographic Society on May 6, 1955, the 99th anniversary of his birth.*

Because Mrs. Peary, 92 years of age, was unable to make the journey from her home in Portland, Maine, her daughter, Mrs. Marie Peary Stafford, presented the flag and accepted The Society's medal on behalf of the courageous wife of the immortal explorer who, on April 6, 1909, discovered the North Pole.

Sharing many of her husband's hardships, Mrs. Peary constantly inspired and encouraged him. In 1898 she made for him the taffeta banner which he carried wrapped about his body in 11 subsequent years of Arctic exploration. At five memorable points he left pieces cut from his flag; the last was a long diagonal slash deposited at the Pole itself.

Dr. Gilbert Grosvenor, Chairman of the National Geographic Society's Board of Trustees, and Dr. John Oliver La Gorce, President, accepted the historic flag before a distinguished audience of members and friends of The Society, including Government officials, diplomats, and scientists.

Eloquently Mrs. Stafford recalled great moments in the epic career of her explorer father, illustrating her recollections with motion pictures and slides. Born in Greenland closer to the North Pole than any other white child, Mrs. Stafford returned to the Arctic three times with her mother, in the Peary expedition years of 1897, 1900, and 1902, and in 1932 she led a special expedition to erect a memorial to her father on Kap York, Greenland.

"I always have felt that my father would never have discovered the North Pole if it hadn't been for Mother," Mrs. Stafford said in accepting the medal presented by Dr. Grosvenor. "She could have said, 'We are only young once; why should we be separated?'

"Instead of that, Mother sent him off with colors flying, with pride and belief in him showing in her face for everyone to see and saying, 'Of course you'll do it.' And when you send a man off like that, he just can't fail!"

As she gave the flag to The Society, Mrs. Stafford described it as her mother's greatest treasure. "But there has never been any doubt as to its ultimate destination," she said. "The bond between the Peary family and the National Geographic Society is a close one and one of long duration."

Dr. Grosvenor asked Mrs. Stafford to convey to Mrs. Peary The Society's thanks for "this revered symbol of the bond between you and your famous husband, the symbol, too, of your mutual determination that an American should be the first to stand at the top of the world."

Wearing the honorable patches that replaced the fragments, the stained emblem of a man's patriotism and a wife's love has now been prepared for permanent exhibition in Explorers Hall at The Society's Washington, D. C., headquarters.

* See "The Peary Flag Comes to Rest," by Marie Peary Stafford, NATIONAL GEOGRAPHIC MAGAZINE, October, 1954.

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Both Faces of Mrs. Peary's Gold Medal, Shown in Exact Size

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Outside, it's just a big building on New York's West 79th Street. But step inside the American Museum of Natural History and the whole world is within walking distance. Here is the blazing sunlight of Africa with massive gorillas, lions, antelopes and eight magnificent elephants. In the Hall of North American Mammals, you can tour the National Parks and see among others, the mountain lion at Grand Canyon, the coyote at Yosemite and the grizzly at Yellowstone.

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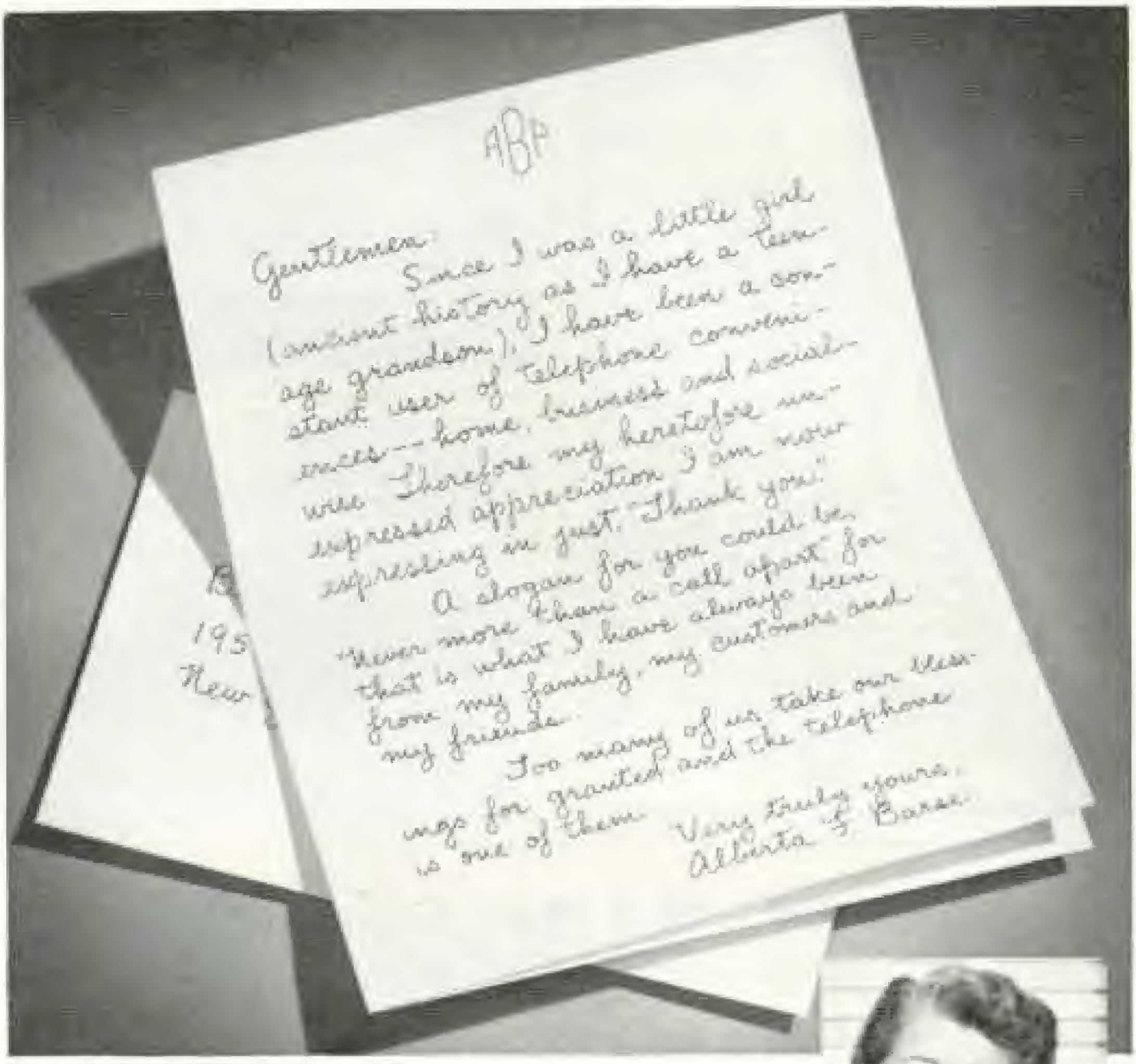

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MRS. ALBERTA F. BARSE

We received a very nice letter from a woman on Long Island, N. Y., the other day and we thought you might like to share it with us.

Mrs. Barse's letter is typical of the many we receive from people who are kind enough to write about the value of their service and the friendliness and help of telephone people.

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