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MAYNARD OWEN WILLIAMS

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Land of the Painted Ox carts

BY LUIS MARDEN

With Illustrations from Photographs by the Author

TO HEAR Costa Ricans talk, you would think they lived in Lilliput. Everything they make small. The telephone operator asks you for a "little coin," the taxi driver offers to take you for a "little drive," and the waiter wants you to wait a "little moment" while he has the "little cook" prepare a "little meal."

From this habit of tacking the diminutive ending *ico* or *tico* on nearly everything, neighboring countries have nicknamed Costa Ricans *Ticos*.

Small in area and population—less than three-quarters of a million people live in the whole country—Ticoland is big in its ideals, its working democracy (men must vote or pay a fine), its concept of live and let live.

Smallness and equality apply even to the national territory. Distributed widely among small farmers, the land has produced a self-reliant yeomanry with a motto of "a few acres and independence."

Typical Central Plateau farmers own their land and home and raise coffee, corn, and vegetables. These, together with a yoke of oxen and the famed "singing" oxcart of the country, make up the countryman's riches.

Colonists, Not Conquerors

Colonists, not conquerors, settled Costa Rica. Spain soon learned that the name "Rich Coast" was misleading so far as abundance of gold was concerned. Get-rich-quick characters moved on to yellower pastures. Hard-working settlers, who found their gold in the fertile soil and benign climate of the land, remained. From these descended the homogeneous, light-skinned population of today.

Ticos venerate education and learning. Commonly you will hear them say, "We have more teachers than soldiers"—and they have. Standards for teachers are high, and the *profesor* holds a position of respect in the community.

High literacy has helped create a numerous white-collar class, where women compete with men. Ticos like to say, "We have no extremely rich or extremely poor. Here no one starves."

Where Coffee Is King

Three-quarters of all Costa Ricans live in the year-round spring of the Central Plateau, a 50-mile-long valley that averages 3,000 feet above sea level.

Here, as in most of highland Central America, coffee is king (Plates II, XV, XVIII). Hot coast lands produce bananas, cacao, abacá, hardwoods, and rubber.

Costa Rica even has a miniature Texas of beef cattle and plains in the northwest corner of the Republic, along the Nicaraguan frontier (Plate XIV).

Situated where North America narrows to form the Panamanian isthmus before plunging into South America, the country straddles a botanical dividing line. Plant life of both continents meets here (map, page 412).

Botanists find the number and variety of plants fantastic. In *Flora of Costa Rica*, Paul C. Standley says: "No other area of equal size anywhere in America possesses so rich and varied a flora . . . It is improbable that in any part of the earth there can be found an equal area of greater botanical interest."



It's True What They Say about Costa Rican Girls!

Percentage of good looks among Tico women is high. Many have gray or blue eyes; some have red hair. Here the Coffee Queen (right) and one of her court attend an outing on an Heredia coffee plantation.

Costa Rica's variety of climate—in some places temperature changes a degree a minute when climbing or descending—and its extraordinarily productive soil helped agriculturists to choose Turrialba as the site of the Inter-American Institute of Agricultural Sciences.

Here plant scientists from various American republics gather to study and teach. New techniques in agriculture and animal husbandry are developed and given to the world.

Orchid the National Flower

I was struck by the abundance of orchids. Not even in the classic orchid countries of South America had I seen so many orchids for sale, and so cheap. So far, about a thousand species and varieties from Costa Rica have been identified. The national flower is an orchid (Plates I, XI, XXII).

In the capital, San José, I talked one day with a friend. He spoke of the high regard of the Spanish-speaking peoples for friendship.

"Yes," he said, "we will do anything for

a person whom we find *simpático* (likable).

"We're individualists, with, I think, a more subjective outlook than you northerners. For example, our politics are usually politics of personalities, rather than abstract issues. With us a man's personal opinion and ideas command respect."

Nearly every front page of San José newspapers featured photographs of prominent men, run with interviews in which they expressed their opinions on topics of the day.

Costa Ricans love newspaper polemics. Two men will have long arguments printed in the dailies, sometimes for weeks. These debates take precedence over strictly news items. In other places such controversies have led to challenges and duels, but not in Costa Rica. Antagonists often are seen convivially drinking together in sidewalk cafés.

San José has one sidewalk café on Central Park where everyone sits to watch the world go by. Ticos sit at the round tables and sip coffee, beer, or soft drinks while vendors sell



To the National Theater Come Concert Artists from North and South America

This theater is the home of an opera company and a symphony orchestra. It is also the scene of art exhibits, plays, and formal balls. Residents of San José take pride in the murals and ceiling paintings, marble statues, and rich ornamentation of the edifice.



Drawn by Herbert K. Eastwood and Irvin E. Allman

Plant and Animal Life of North and South America Merge in Costa Rica

An amazing variety of flowers and animals attracts collectors in the mountainous Republic. The Cerro de la Muerte and surrounding heights are the only examples of very high, cold plateaus, known as *paramos*, outside South America. Highland Costa Rica raises coffee and dairy herds; low coast plains produce bananas, cacao, precious woods, and rubber. Beef cattle roam the plains of Guanacaste, in the northwest. Volcanoes of the Central American cordillera end with the Volcán de Chiriquí, near the Costa Rica-Panama frontier.

lottery tickets and shoeshine boys, pointing to immaculate shoes, brassily offer to "shine 'em up."

From here you get a good view of the *retreta*, the triweekly promenade of men and women around the plaza. This old Spanish custom, which has disappeared from most of urban Latin America, still flowers in Costa Rica.

Sunday Is "Hat Day"

While the band plays in the bandstand, women walk in one direction—counterclockwise—and men in the other.

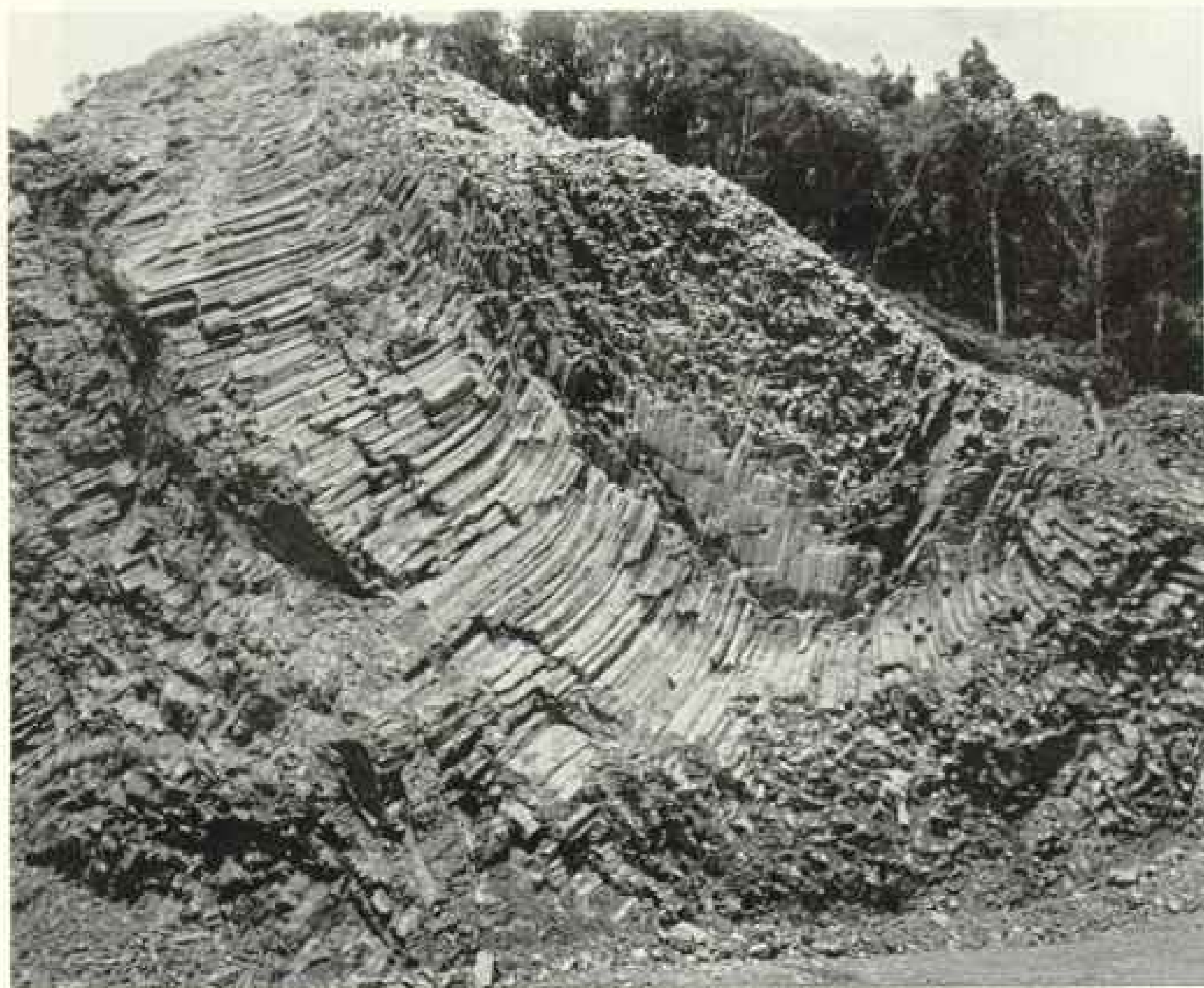
I have read several learned explanations of why the sexes walk in opposite directions; some theories even bring the rotation of the earth into it. However, the real reason seems obvious: they want to look at one another (page 415).

Costa Rican girls, noted for their good looks, turn out in mass for this promenade. So many stroll in the procession that the column stretches two abreast completely around the park.

In the cool night air of the capital most women wear short fur jackets. Despite silver-fox furs, smart dresses, and high heels, few women wear hats except on Sunday, which they call "Hat Day."

When I was in San José, the U. S. Army was flying its Tropics-weary GIs into San José twice a week to give them a few days of cool climate and rest. One night I stood beside a goggle-eyed soldier watching the beauty parade and heard him ask an acquaintance in an awed whisper, "Say, does this happen *every* night?"

Young men line the sidewalks along the park's edge to ogle the girls, and the girls ogle



Earth Stresses Compressed and Bent an Ancient Lava Flow Like Leaves of a Well-worn Book

Lava cooled to form this stratum of hexagonal basaltic columns. Similar to the Giant's Causeway in Ireland, but newer and softer, this formation is on the Inter-American Highway, not far from the Cerro de la Muerte (418). From a point near here, both the Caribbean and the Pacific can be seen in clear weather.

right back, turning their heads and fluttering their eyelashes.

Once I heard an ardent type say to two good-looking girls in black, "I wonder who died in heaven, that angels should wear mourning!"

Much Shaking of Hands

Costa Ricans, like most Latins, are gregarious, sociable people.

They like to visit with friends in clubs, in homes, and on the streets. They shake hands a lot; even intimate friends shake hands on seeing each other. Men shake hands when being presented to or taking leave of a woman, though two women never do. They pat the upper arm or shoulder in a typically feminine gesture.

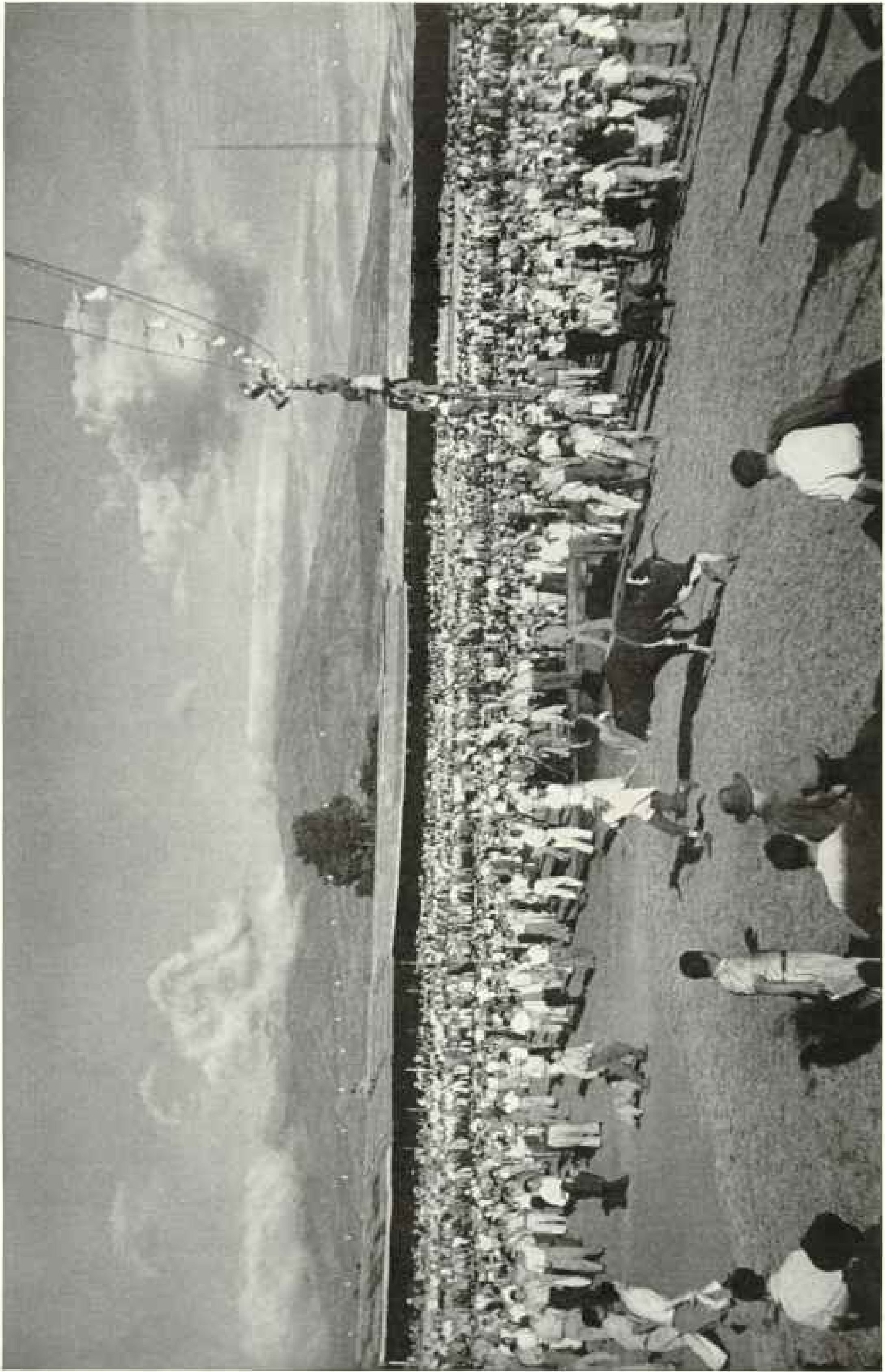
Costa Rican girls have several gestures peculiar to themselves. A favorite one points out something or shows direction by pursing

the lips and tilting the chin. I had a little difficulty until I found out the meaning of that one.

Ticos, like their ox carts, sing when they speak. The lilting cadence of Costa Rican Spanish can even be expressed musically. The musical intonation and liberal use of diminutives make Tico Spanish particularly effective for expressing sentiment and affection.

Much of the social life of San José centers around the movies. The two Sunday night performances are the fashionable ones, and when the shows change at nine, crowds spill off the sidewalk and automobiles pass with difficulty.

A few minutes before the 9-o'clock show begins, a siren blows, cockcrow for the promenade, and the crowd thins out at once. Not all go to the movies; they hasten to leave because no one wants to be last, to "be the broom," as they say.



To One Thousand Bullfighters Add One Bull: You Have a Tico Bullfight

Amateur contests are held in San José during the Christmas holidays. Anyone may enter the ring and try a few passes, with his coat or a tablecloth serving as the traditional cape. In keeping with the peaceful Costa Rican character, bulls are not injured or killed; to protect the amateurs, horn points are sawed off.



Visitors to Costa Rica Are Captivated by San José's Triweekly Parade of Youth and Beauty

On Wednesdays, Fridays, and Sundays, promenades around Central Park are heavily attended. Women stroll in counterclockwise direction; men go the other way—the better to see each other. Men who escort girls circulate in the women's (outer) column. Fur jackets are fashionable for the women walkers (page 412).



"I saw Juan today"

"He's grown fat"

"Used to be this thin"



"His child looks exactly like him"

"When the boy was this tall"

"They got him a dog this high"

Costa Ricans, Like All Latins, Aid Language with Expressive Gestures

Strollers who do not go to the movies usually cross the street to a combination tearoom, restaurant, and cabaret to dine and dance amid decorations taken from motifs of Spain and Costa Rica. Among the latter are oxcart wheels and oxen yokes, flanking painted stanzas from Julián Marchena's poem, "The Romance of the Ox carts."

Gay Ox carts Must "Sing"

In the painted oxcart of Costa Rica the legends, folklore, and national pride of the country come together. The gay vehicles symbolize the sentiment and love of beauty of the Ticos (Plates XVII, XIX).

Each part of the country has its favorite design and color, but all carts must "sing"—that is, they must rattle in a certain way as they roll. Cartmakers select carefully seasoned wood and painstakingly adjust end play of wheels on the axles so that the resonant rattling and clapping may suit the driver.

Friends urged me to go to the town of Sarchi, where they said I could see the best examples of oxcart in the making. There I talked with Joaquín Chaverri, from whose shop have come prizewinners in recent oxcart competitions.

"Years ago," he told me, "people were satisfied if their carts were merely loud; now they insist on a clear, ringing sound. My father, a long time ago, used to make wheels only of solid mahogany. They had no fame for sound, but they were eternal."

Since mahogany and other large-diameter trees, such as guanacaste, are now relatively scarce, makers build up their apparently solid wheels of 16 wedges, usually of white or yellow alligator wood, present-day favorites (page 446). When struck, wheels made of these woods ring sharply, like the key of a marimba.

Country people boast that they can tell who is approaching at night, and at a distance, by the sound of his cart. To them every cart has a voice as individual as that of its owner.

Not always do Ticos find the sound of their beloved ox carts musical, however. Though Costa Ricans are early risers, carts coming into the city with produce every morning would make a terrific din; so city ordinances prohibit the entry of ox carts before 5 a. m.

Railroads connect both coasts of Costa Rica with the capital, and the Central Plateau has a network of good roads; but as yet no highway completely traverses the country.

"Let's have a *drink*""But first *pay* what you owe me"

"It's too long ago; forget it!"

"Look at those *beauties*""But how they can *eat*!""Tony ran. Too *stingy* to feed you"

Highly Standardized Latin-American Signs Vary Slightly in Each Country

The route of the Inter-American Highway (Mexico to Panama) passes through Costa Rica, and the National Government and the Public Roads Administration of the United States have opened several stretches of the Costa Rican sector. Of most importance economically to the Republic is the part that runs from the capital over the Cerro de la Muerte to the valley of San Isidro del General.

Early one morning I flew over the highway route. Taking off from San José, we first detoured over the volcanoes Poás and Irazú, both within a few minutes' flying time of the capital.

Poás rises 9,055 feet above sea level and presents a tremendous coffee-colored crater lake to the sky. When the pilot cocked the airplane over in a steep bank, the enormous disk of the crater wheeled slowly beneath us.

Poás erupts in a great geyser that bursts through the placid crater lake, spurting a thousand feet into the air. Sometimes it erupts every few minutes and then may remain dormant for months, as when I was there.

Southeast along the ridge of the cordillera from Poás, Irazú Volcano thrusts its amorphous bulk to 11,326 feet. Its crater stares upward like a great death's-head; from the

nose and eyeholes steam clouds rise (Plates III, XVI). Wind and rain have eroded the slopes of the main crater into a million seams and furrows.

Dairy Farms on Central Plateau

Past Irazú we flew, over Cartago, Costa Rica's second city. Dairy farms and coffee plantations surround the city, and the neat rectangles of the tree-bordered pastures slant up the mountainsides. Dark patches of closely knit trees and shrubs mark the coffee plantations, which need protection from the direct sun.

But of all this you see nothing if you fly over the Republic just before the rains begin in May. Then farmers burn off scrub and weeds in their fields, and the smoke of the burnings blankets the land in an impenetrable pall.

Your airplane will fly on instruments as you climb, until all at once you come out on top and emerge into clear blue sky as suddenly as if you had passed through a door. Below lies the smoke, solid and dirty gray, its top cut off as smoothly as if sliced by a machete.

On this flight I first heard of Butch, the Flying Airedale. This big dog belonged to a



A Dense Forest of Oaks Flanks the Inter-American Highway

Upper parts of these big trees growing near the Cerro de la Muerte bear numerous types of air plants. The Highway runs through the forest on its way from Cartago to San Isidro del General. Plans call for preservation of a strip of uncut trees along each side of the road. Dominating tree here is the Copey oak, only recently classified as a separate species (page 421).

highway engineer who flew twice a week to San Isidro del General before the road was cut through.

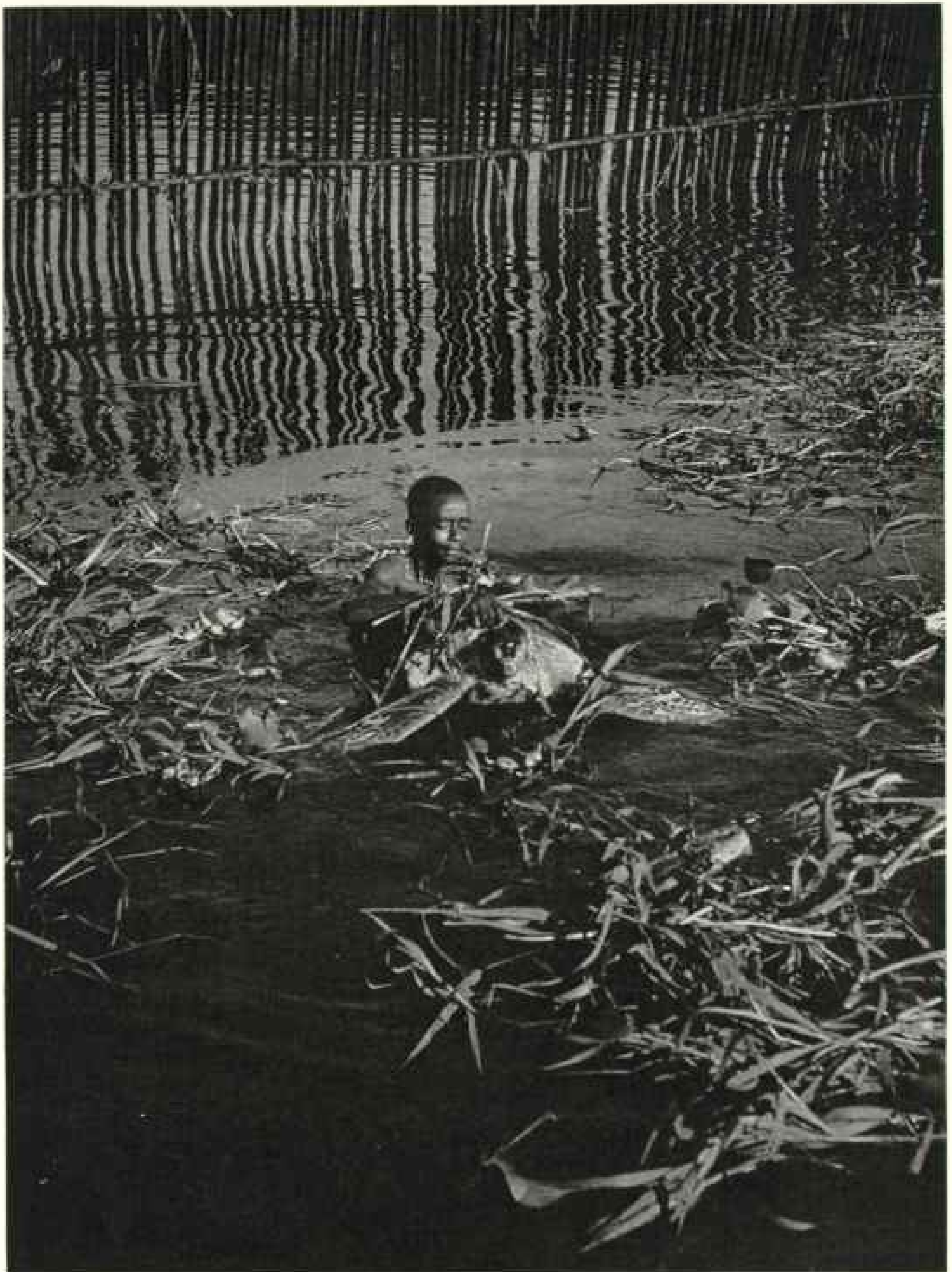
"Butch always went along," the pilot said. "In the course of time, a new species of dog began to appear on the streets of San Isidro (Butch was a sociable dog). The townspeople, never having seen such dogs before, were quick to note the resemblance, and now all dogs of the new breed are known as *butchitos*—little Butches."

Beyond Cartago the Inter-American Highway, still so new that it looked like a raw red scar on the green flanks of the hills, labored

upward toward the Cerro de la Muerte, the dread Hill of Death, 11,615 feet above sea level. Highest point on the Highway, the hill presented some knotty engineering problems.

During the rainy season (May to October) torrential downpours loosen the earth, and the whole side of a hill may slough off and carry the work of weeks with it. This, and the fact that neither men nor machines perform at full efficiency at high altitudes, made this part of the construction the most difficult of the whole route.

Once over the hill, past the highest road point of 10,932 feet, the highway drops



Like Lobsters in a Pen, Turtles Await a Second Capture When Needed for Soup or Steak

Boys dive into water pens at Limón, catch hold of a swimming turtle, then tie a line around a foreflipper. Two men on the pier haul the heavy chelonian up an inclined runway. Captive turtles feed on floating grass and weeds. They are taken from the sea in floating nets, and by harpooning.



Porous Balsa, Lightest of Commercial Woods, Is More than Half Water

Kiln drying reduces its weight by 50 percent (page 441). This 10-foot plank, a light load for the little girl, weighs only eight and a half pounds. Such a board of some oaks would scale over 100 pounds. The child stands beside a young balsa tree. In the background stretches Limón's main pier.

quickly to the lush, hot valley and town of San Isidro.

Before the all-weather road was opened, a trip from Cartago to San Isidro del General took four painful days on horseback or on foot. Lowland dwellers crossing the wind-swept Hill of Death often froze to death.

Now wheeled traffic makes the run from San José to San Isidro in four hours.

This not only means that a vital link in the Inter-American Highway has been finished; it also opens up a whole fertile section of Costa Rica to trade and commercial development.

Lands of the warm valley country produce several crops a year, as compared with the Central Plateau's one, and San Isidro has boomed since the opening of the road.

Some weeks later, when the road was opened

between San Isidro and Cartago and the capital, I rode back over it in a jeep.

As the road winds up toward the hill, the thick vegetation slowly loses its tropical character.

Among the tangle of greenery, slender palms like walking sticks shoot up. From the hearts of several species comes the delicious *palmito*, or heart of palm, similar to the "swamp cabbage" of the Florida cracker. Unfortunately, to make your salad you have to cut down the whole tree (page 423).

Oak Forest Like Botanical Museum

Farther on we came to the mountain construction camp, where I spent the coldest night I experienced in Costa Rica.

Beyond, as the highway slopes slowly down



At Guanacaste's Cattle Fair, Last Man Up Is a Donkey Jockey

On the final day of the Cattle and Agricultural Exposition in Liberia, men found afoot must pay a forfeit (a bottle of whisky) or ride this she-donkey in "disgrace." Unashamed, this rider blows a bugle and hangs on by one ear. Guanacastecans insist the horse is here to stay (Plates VII, VIII, XIV, and page 447).

toward Cartago, one passes through an imposing forest of great oak trees, dominated by the Copey oak (*Quercus copeyensis* Muller), a white oak unknown to science as a species until four years ago (page 418).

Its massive trunk rises clear to a height of 80 feet up to the first limb, then on to 125 feet or more. Lianas, bromeliads, lichens, mosses, and orchids make a herbarium of each tree.

Near here giant tree ferns, with their diamond-patterned trunks, look like trees rising from some steamy swamp of the Coal Age.

I remarked to my companions, "This looks like quetzal country."

"You won't see any here," they said, "but back in San José we can take you to a friend who can show you all you want."

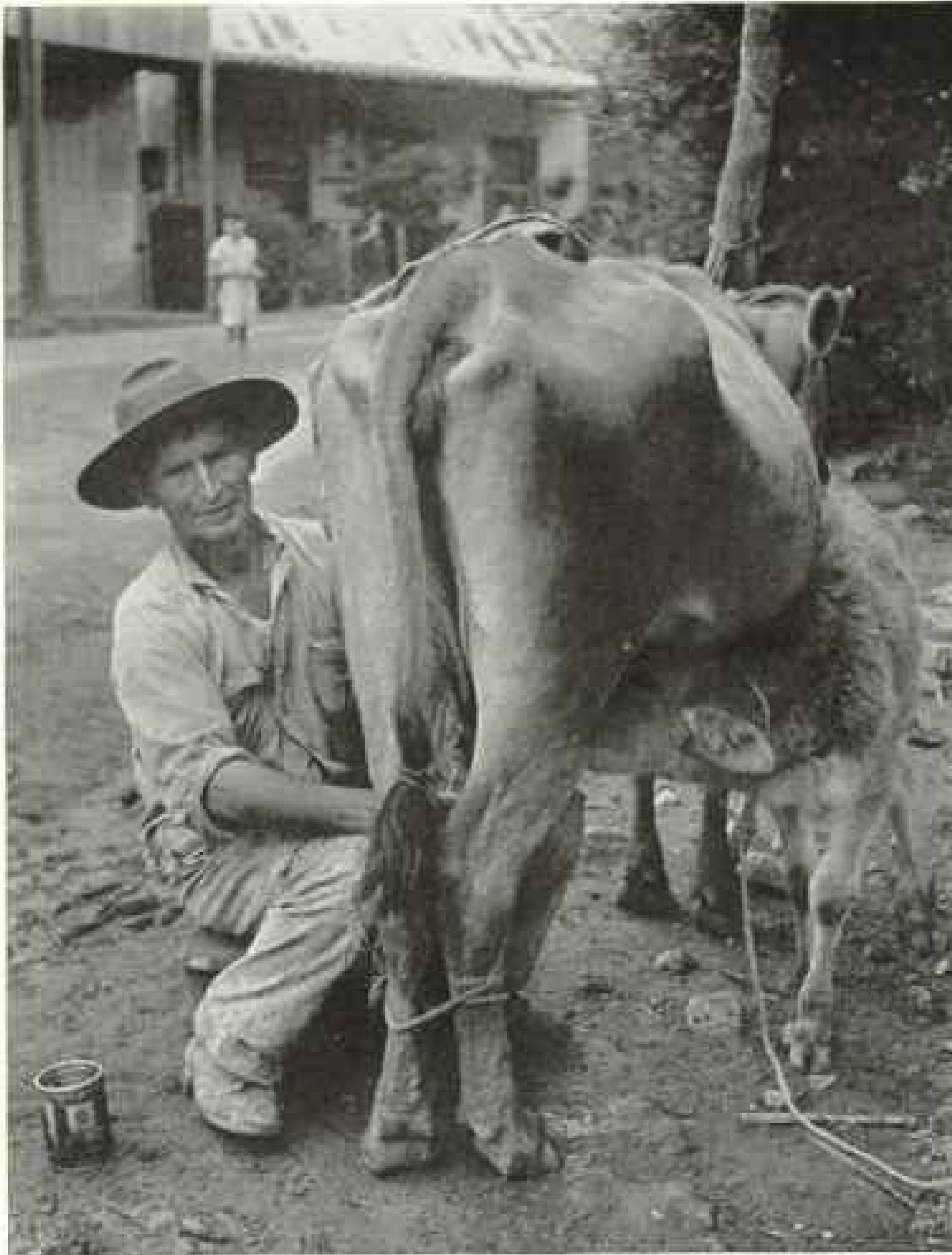
In Guatemala some years before I had heard much of the quetzal (*Pharomacrus mocino*), the long-tailed green and red bird that is the national emblem of that Republic. I had never seen one there alive. In fact, Guatemala prohibits the capture or killing of a quetzal.

Everyone told me the bird would die in captivity and for this reason it was the national symbol of liberty.*

Catching Quetzals While They Sleep

Now, in San José, I met Lt. Col. Alberto Montes de Oca. "There are plenty of quetzals

* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Guatemala Interlude," by E. John Long, October, 1936, and "Guatemala: Land of Volcanoes and Progress," by Thomas F. Lee, November, 1926.



In Costa Rica, Calf and Milker Share Alike

John Toad operates a one-man dairy on the outskirts of Turrialba. Taking no chances, he ties legs and tail together. Throughout Central America it is customary to let the calf suckle a while at milking time. Large Costa Rican dairies, noted for the quality of their products, are modern and clean.

here in Costa Rica," he said. "At my dairy farm up on Irazú I have a dozen in a flying cage. . . . How do I catch them? With a butterfly net I pick them out of trees at night while they sleep."

"This I must see," I said. So Don Alberto invited me to go quetzal hunting with him.

"I used to have 76 hummingbirds in a cage," he added. "Fed them on Mellin's Food."

Alberto's Hacienda Santa Marta clings to the side of Irazú, in a cloud-hung clearing 7,500 feet above sea level. Above it rise the rich pastures that help produce the famous milk of the region.

Along the zigzag course of mountain

brooks and in steep-sided hollows clumps of woods remain, principally moss-hung oaks, monotonously dripping the moisture of the cloud forest. In their damp gloom the quetzal loves to live.

In a big flying cage before the glass-verandaed house, more than a dozen quetzals flashed from perch to perch.

"Most of these are females," said Don Alberto, "and lack the bright-red breast and long tail-covert feathers of the male."

One nearly adult male, however, preened his metallic green-gold feathers among his duller mates (Plate XXIII).

That night we ate a country supper of black beans, eggs and tortillas, and clabbered milk, the beloved *natilla* of Costa Rica. Alberto briefed me. "In order to catch a quetzal, you have to know where he sleeps. About 4 in the afternoon the birds begin to look for a resting place. Once you see them settle down in a tree, mark it in your mind so that you can find it after dark."

Several years ago, when Alberto first became interested in studying quetzals, he had tried to call them by whistling as they did at roosting time. No luck.

Responds to Call of a Doll

One day he heard in his house a sound like a quetzal calling. His little girl had passed with a doll clutched to her breast. Alberto took the doll from her and squeezed it. An imprisoned quetzal seemed to be calling from inside.

Despite the child's wails, and with the light of holy zeal in his eyes, Alberto disemboweled the doll and took out the little paper and wood bellows that made it cry. With this he had

been able to call a quetzal into any tree he chose. But the bellows had worn out, he said sadly, and though he eviscerated two other dolls, their voice boxes were not so effective.

I asked Alberto how he could keep quetzals alive and well, when everyone said it could not be done. "Simple," he said. "Just give them the right food."

What to Feed a Quetzal

Reaching into a box, he brought out a handful of what looked like rough-skinned green olives. "If you can feed them these, and keep them at the altitude they like, they'll thrive in a cage."

The fruit, called in Costa Rica *quizarrá* (genus *Ocotea*), grows in most of Costa Rica's highlands. On close inspection it looks like a miniature avocado, with its yellowish pulp and big pip. The taste is hot and peppery.

"They swallow these whole," Alberto said.

"But how can they—"

"Never mind," said Alberto, tossing the fruit back, "you'll get a chance to see for yourself tomorrow."

We slept under heavy blankets while rain drummed loudly on the roof. It was still raining next morning when we saddled horses and started up the mountain.

"Bad light for photography," said Alberto, "but first-rate quetzal weather." The wind blew the rain in horizontal gusts and the lichen-covered trees jerked and creaked.

"Excellent, excellent," Alberto kept muttering.

"What's excellent?" I asked sourly.

"The weather, man! The quetzals won't hear us with the wind howling like this; we can get much closer to them."

After we had dismounted and stood for



Palmito Salad Comes from the Heart of a Tree

Palmito, or heart of palm, furnishes a favorite salad vegetable. Housewives peel outer husks from trunk sections before boiling the palmito. Centers, usually served cold with dressing, taste like artichoke hearts. Similar palm hearts are eaten in Florida and Brazil. Pendent flowers (right) are called "tears of St. Peter."

nearly an hour under a big orchid-studded oak, with runnels of water trickling down our necks, Alberto gripped my arm and pointed silently. There, though I had not seen it arrive, was my first Costa Rican wild quetzal, a female, sitting on a swaying branch, alternately obscured by the flapping leaves and swinging into view.

"They never sit in the quizarrá tree to feed. Watch," Alberto whispered. As he spoke, the quetzal flew across the clearing in a series of dips to a fruit-laden branch, where, hovering like a hummingbird, she plucked a whole fruit, then flew back to her original perch.

Now I began to see why some discarded fruits we had picked off the ground had been

crisscrossed with cuts. Jerking her head, the quetzal began to turn the fruit end for end, trying to get the small end pointing inward. She worried with it for about a minute, then with an upward jerk she got it down, the fruit making a lump that moved slowly down her throat.

We watched for about twenty minutes while the bird sat, feathers fluffed out, digesting the tidbit. Suddenly she opened her beak and up came the shiny red pip, clean as a china nest egg, and fell to the ground.

All day we watched and made motion pictures of quetzals, using a telephoto lens, while two men held a poncho over the camera.

Late in the day the birds began returning with increasing frequency to certain trees and to whistle a single clear melancholy note. "They're choosing their sleeping places," Alberto whispered.

At last the quetzals ceased flying about, and only the liquid whistles, sounding like something out of *Green Mansions*, issued from the sodden trees.

It grows dark with a leap in Central America, and I stumbled as I followed Alberto and his man up the hill. Underfoot, writhing luminous fireworms wrote a blue-green shorthand in the darkness.

Tree a Quetzal Dormitory

When we felt our way to a tree we had spotted as a quetzal dormitory, Alberto cautiously switched on his flashlight, throwing the beam upward. In the circle of light shone the red breast of a quetzal that slept with its head turned back on its shoulder, not ten feet off the ground.

Alberto passed me the flashlight; I held the bird focused in the beam while he fitted together the jointed pole that carried two black nets fastened to hoops. Slowly raising the V-shaped net until it was only a few inches below the bird, Alberto suddenly gave it an upward thrust and the bird tumbled into one of the nets (page 443).

That night we captured three; one Alberto caught with his bare hands.

Alberto's quetzals eat the actual quizarrá fruit for the first week or two or a similar kind called *iva*. Several farm hands keep busy gathering fruits from trees all over the mountainside. Then Alberto weans the birds. Making a paste of sweet potato, plantain, egg shells, Pabulum, and other ingredients, he rolls the mixture into little balls and, removing the seed from the split fruit, stuffs the paste into the cavity.

The birds cheerfully eat the stuffed quizarrá for some time, until finally they are given

little balls of the paste alone. Occasional bits of meat replace the insects in their natural diet. In this way Alberto has kept quetzals thriving for more than two years.

Some of the birds Alberto bands and releases; others he sends to zoos.

Large-scale Banana Growing

After coffee, bananas have always been Costa Rica's big export. The United Fruit Company first started its large-scale banana-growing operations in Costa Rica. For years Limón, on the east coast, tapped a vast area of level banana farms, a world of railway spurs, rail cars, and heavy rains.*

About a decade ago sigatoka, or cercospora leaf spot, began to make inroads on the orderly plantations, but Panama disease, the big problem, was already there. So heavy was damage from both that today banana growing on a big scale has virtually died out on the Caribbean side. The industry has moved to the Pacific.

To see the original area, familiarly known to Ticos as "the Line," I rode down to the port with chief engineer Charles Averre in a Chevrolet mounted on the rails.

The railroad to Limón clings to the side of the deep ravine made by the Reventazón River. Largest river entirely within the country, it brawls, white-foamed and shallow, over a rocky bed which precludes navigation. Cormorants fish from its boulders and moss-festooned trees hang over the noisy depths.

This is the country of the big rains. "Land here continually moves and shifts," Mr. Averre said, "and when it rains heavily, which is most of the time, we get landslides."

As we clicked around a curve he pointed out a yellow scar far above the line, where a slide had torn away the rock-and-earth face of a hill.

A temporary trestle carried the rails out and around the slide. Tinkling pieces of falling shale and showers of rattling gravel warned repair workers that the mountain was not yet restored to equilibrium. While a steam shovel was working to clear away the debris, a second slide had engulfed it, killing two men.

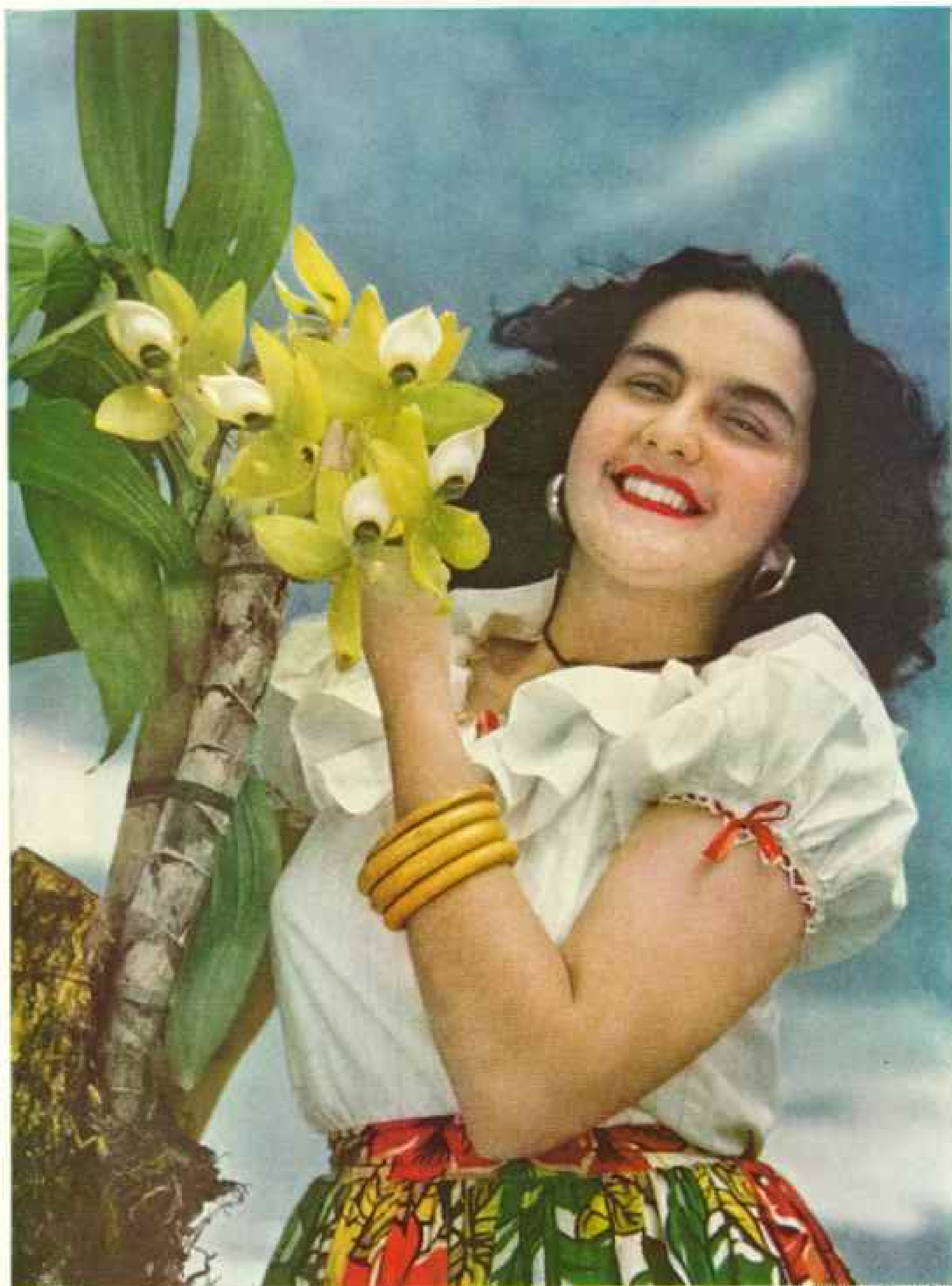
"Railroading along here is anything but dull," remarked Averre. "Recently we had a rainfall of 60 inches in 14 days—better than 4 inches a day."

Heavy rainfall is good for the banana plant, which averages 85 percent water.

As the line descended it grew hotter and

* See "Costa Rica, Land of the Banana," by Paul B. Popenoe, NATIONAL GEOGRAPHIC MAGAZINE, February, 1922.

Land of the Painted Ox carts

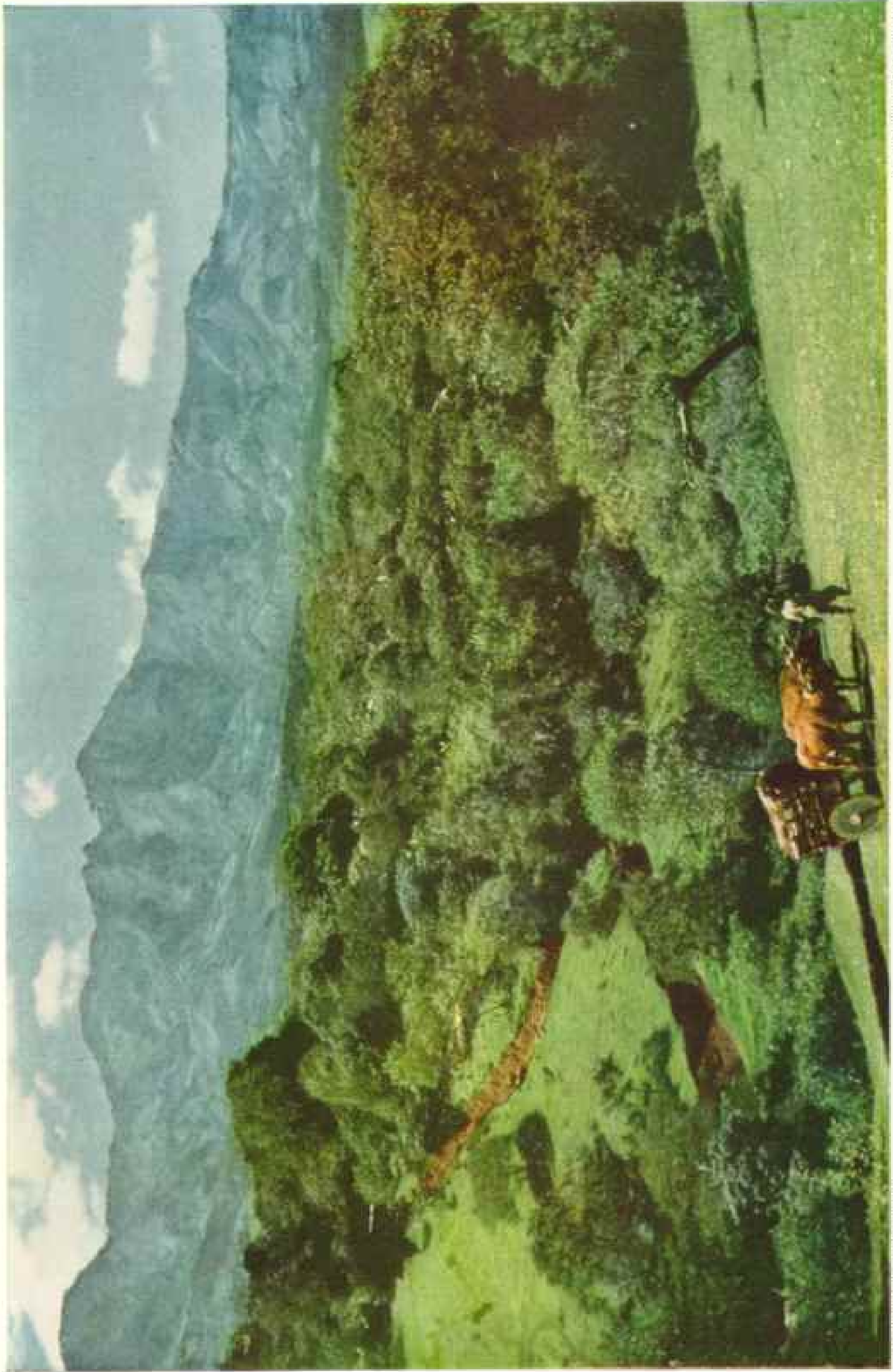


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Reproduction by Luis Marín

Even in Costa Rica, Perfumed Swanneck Orchids Are Rare

The Central American republic has about a thousand known varieties of "the queen of flowers" (Plates XI and XXII). Vendors sell wild orchid plants the year round in the streets of San José, the capital. The swanneck (genus *Cyclopogon*) is remarkable for its thick, waxy flowers.



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Central America's Mountainous Spine Forms a Backdrop for Costa Rica's Coffee-growing Plateau

Most of the country's three-quarters of a million people live on the cool, healthful central tableland, where coffee growing and dairy farming are the chief occupations. Here a painted oxcart hauls wood cut from overage coffee trees (Plate XVII). Fine-grained coffee wood burns with intense heat and little ash.

Reproduction by Luis Marten



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A Gap in the Clouds Reveals a Staring Death's-head in the Maw of Irazú Volcano

Periodically the 11,326-foot mountain spews gases and dust thousands of feet into the air. Slopes and crater are popular with week-end visitors from San José and near-by Cartago (Plate XVI). A motor road (lower left) runs to the rim of the crater.

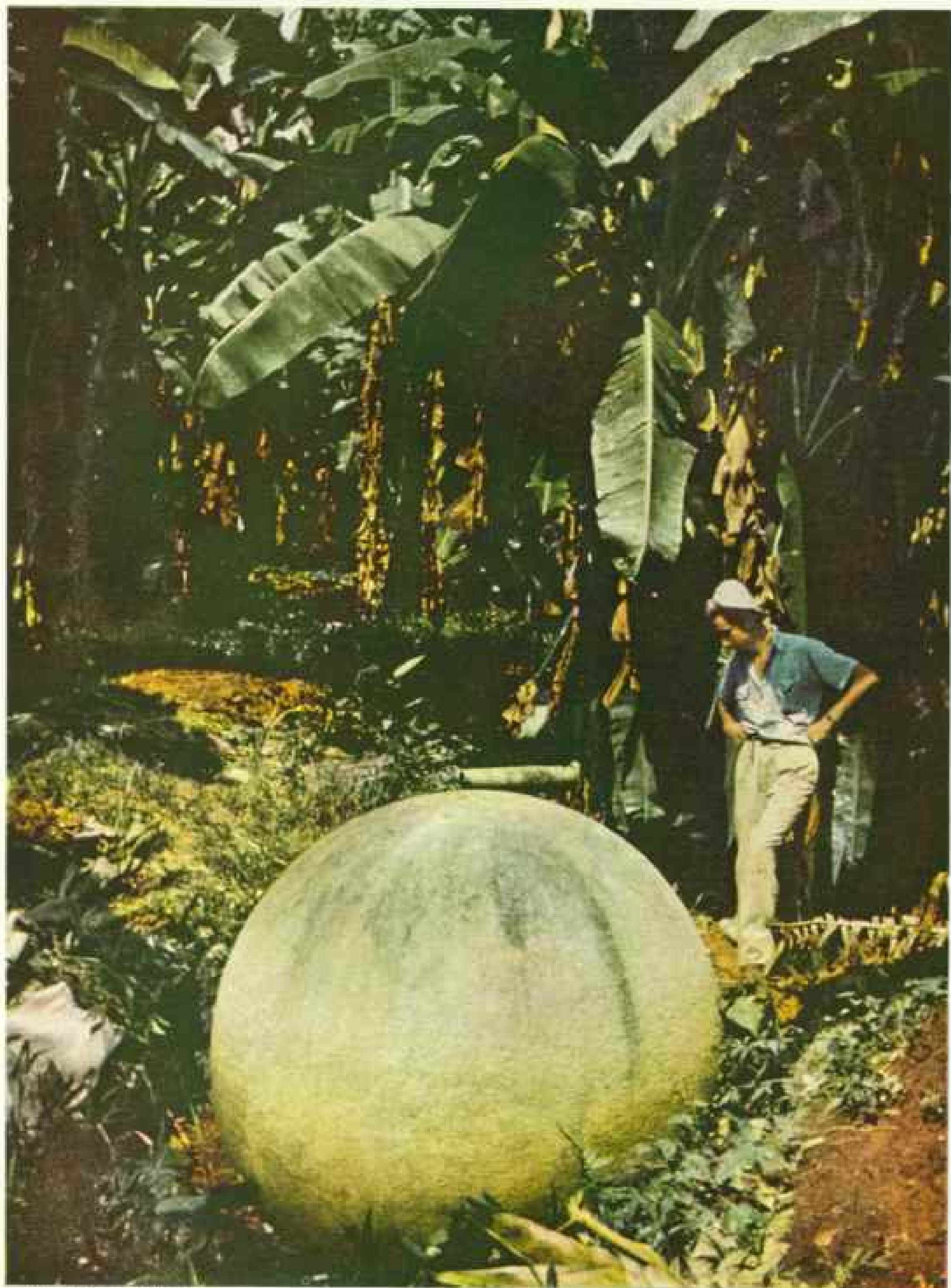


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Kolachansee by Lilli Marden

Man-made Rain Sprinkles Banana Plants on Costa Rica's Pacific Coast

When plant diseases ruined large plantations along the Caribbean, banana growers migrated to the west coast. Rainfall there was not distributed evenly enough, so overhead spray systems were improvised. Each nozzle, swinging through a circle, irrigates more than three acres.



© National Geographic Society

Reproduction by Loris Mazillon

Giant Stone Balls, Mementos of a Forgotten Race, Puzzle Archeologists

In west-coast banana lands these spheres seem scattered haphazardly. Some are six feet in diameter; others are no larger than billiard balls. No one knows who carved them, where, when, or why. This area near Palmar is rich in Indian graves. Some contain ceremonial objects of pure gold.



© National Geographic Society

Illustration by Louis Mayhew

Two Airlines Link San José's Modern Airport with North and South America

Pan American World Airways and TACA (Transportes Aéreos Centro Americanos) stop at the capital. A national line operates within the country. Central America's mountain-girt cities are connected by air (Plate XXXI).



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A Cowboy Needs a Girl as Well as a Horse to Be in Style at the Cattle Fair

From Guanacaste Province, a beef-cattle center, come most of Costa Rica's songs and legends (Plate XIV). These gentlemen cowboys attend a rodeo in Liberia, provincial capital. If they are caught without a horse on the last day of the fair, they must pay a fine or ride a shaggy donkey.

Illustration by Lily Stauden



Skirts Swish Gaily in the *Punto*, Costa Rica's National Dance

Best performed in its home province of Guanacaste, the lively *punto guanacasteco* sets feet tapping and evokes cowboy yells wherever it is played. Male dancers traditionally wear machetes and fringed leather chaps.

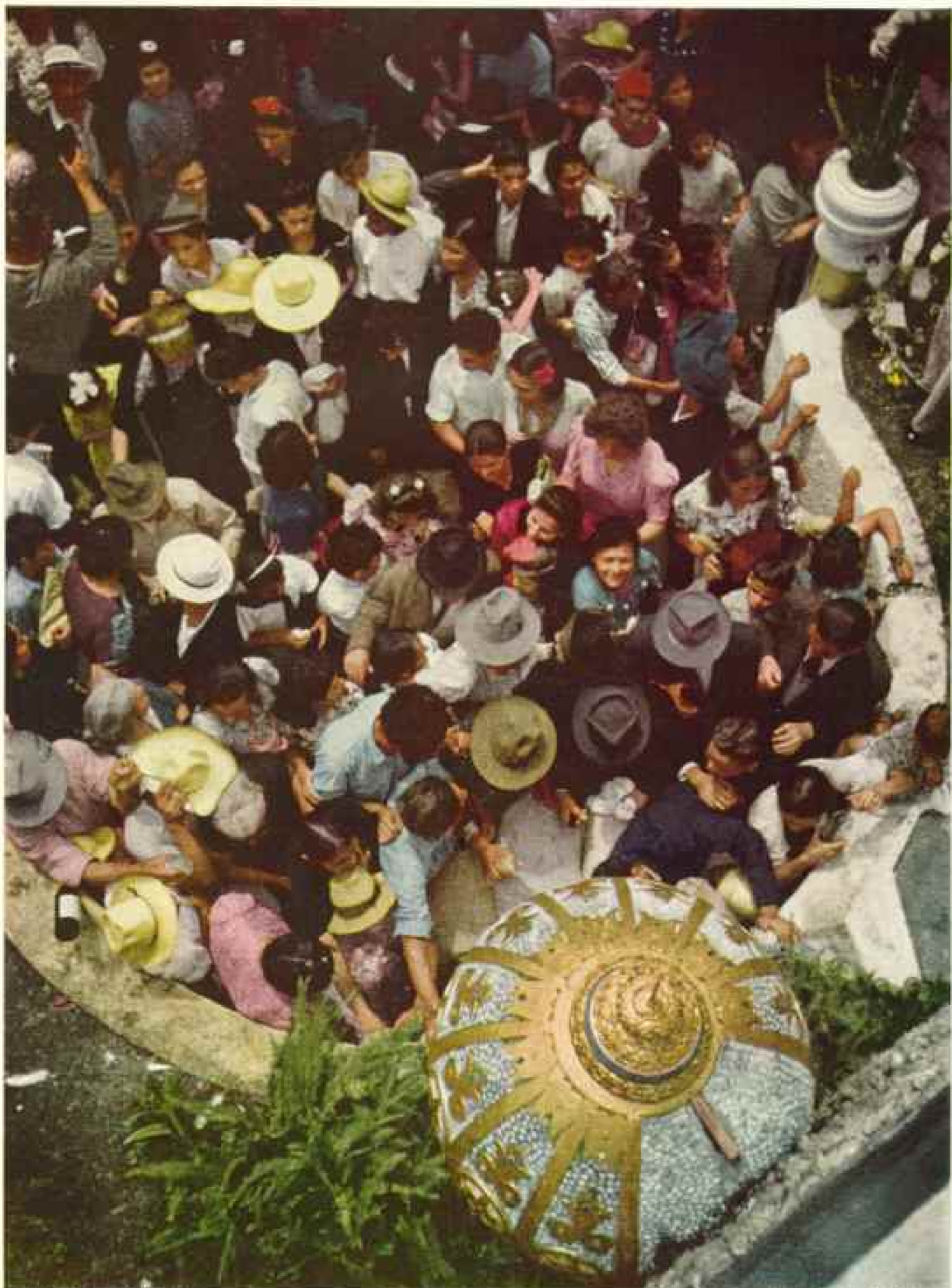


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Photographer: Luis Marden

Punto Dancers Whirl at a Lively Clip under a Hot Sun

Marimbas and guitars furnish the music. Here in Liberia the girls don costumes only for such festive occasions.



© National Geographic Society

Photographs by Lutz Marten

Crowds at Cartago Besiege the Spring of the Virgin of the Angels for Holy Water

On August 2, citizens carry an 8-inch-high figure of the Virgin, patroness of Costa Rica, in procession from the Basilica to the parochial church. The first Saturday in September they return it. It is affectionately called "La Negrita" (Plate X). Miraculous curative powers are claimed for the spring, which rises behind the Basilica.



Illustration by Lulu Martin

Young Women Represent Angels and Saints in the Procession of the Virgin of the Angels

Pilgrims flock to Cartago when "La Negrita" is removed from the Basilica. Girls vie for the honor of appearing in the procession. This time there were thirty-seven. Tradition says an Indian girl found the tiny statue of black stone some 300 years ago.



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Orchids Feed Chiefly on Moisture in the Air

Though some grow on rocks or on the ground, most use tree trunks or branches for support. Into bark crevices on this willow trunk near Cartago, a fancier shook tiny seeds. Now orchid hybrids bloom.



Photographs by Luis Marín

Costa Rica's National Flower Appears at Christmastime

However, most purple gauria orchids (*Cattleya skinneri*) blossom in February and March. Six to a dozen flowers sprout from a single stem. Inspiration of poets and composers, the flower still grows wild in forests.



© National Geographic Society

Reproduction by Eric Starlin

Up the Lazy Moín River at Limón He Paddles His Boat, Laden with Chopped Grass and Weeds for Captive Sea Turtles

Green turtles, which sometimes weigh 700 pounds, are kept alive in water pens at Limón until needed for export. Once, during the war, turtle meat helped relieve a beef shortage in San José. Coconut groves parallel the river for miles.

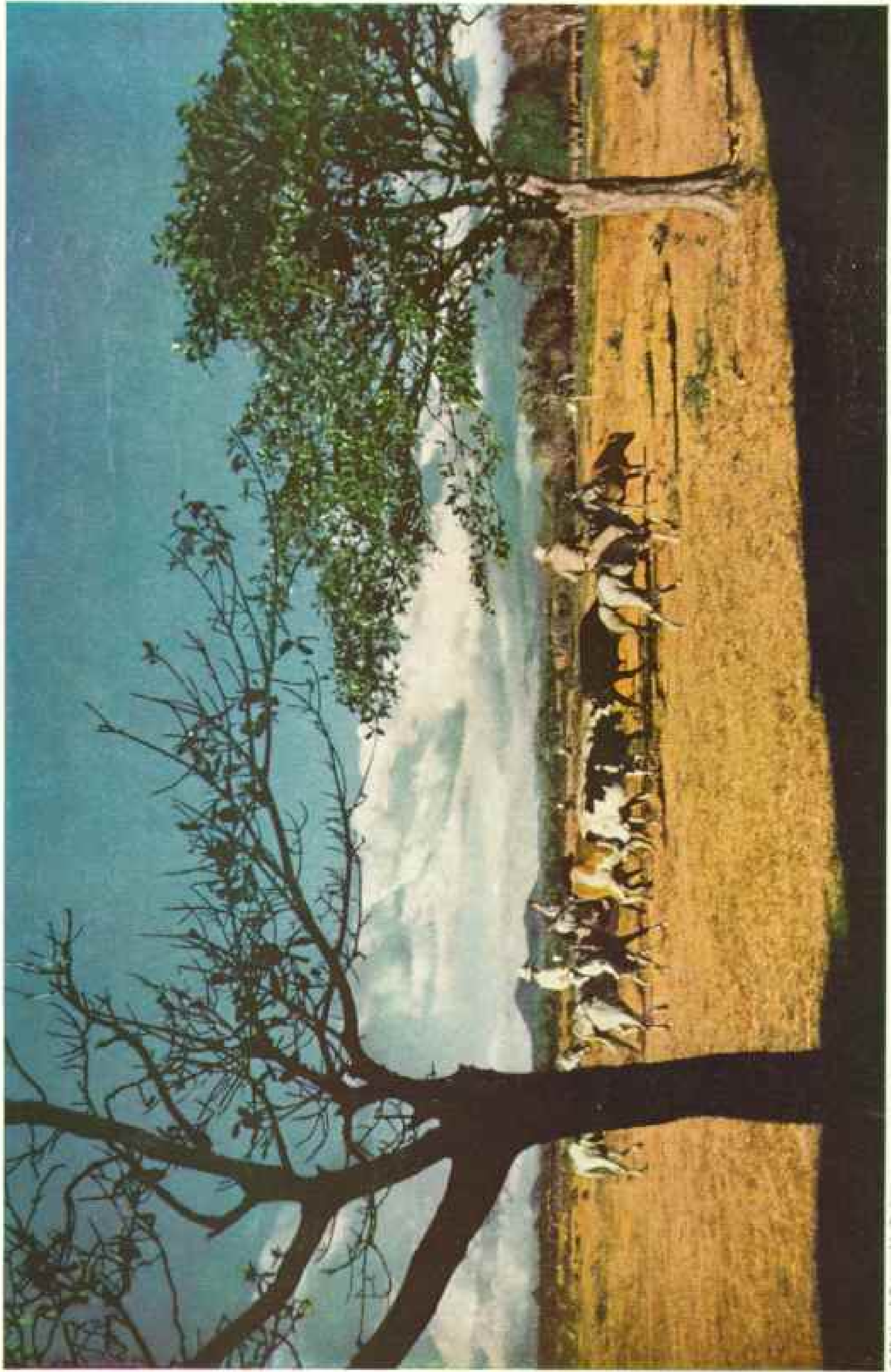


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Photograph by Luis Merdin

Cordage for Our Wartime Navy Came from This Plantation of Abacá, a War Crop Which Has Become a Peace-time Asset

On a tract near Limón this forest of Manila hemp was grown from Philippine cuttings. A member of the banana family, it flourishes on soil which banana growers abandoned because of plant disease. Central America has the world's largest abacá plantations; two are in Costa Rica.



© National Geographic Society

In Sunset Glow, Cowboys Drive Their Herd Homeward Across a Mountain-flanked Flatland of Northwestern Costa Rica

Guanaacaste Province looks like a bit of Texas, complete with horsemen and cattle. It takes its name from the umbrellalike guanacaste, or "pear tree," a variety of mimosa (not pictured here), which studs the prairies. Scenery, speech, and customs remind the visitor that the area once was part of Nicaragua.

Photographs by John Marden



© National Geographic Society

At Harvesttime Coffee Beans Dry in the Sun

Rollers crack the berries. The beans are soaked in fermentation tanks and washed in troughs until pulp sloughs off, then spread out to dry. Tumbling removes a parchmentlike skin and polishes the dried grains.



Illustration by Louis Mardett

Drying Corn Carpets a Sidewalk with Gold

Softened in lime water and ground, the grain is cooked into tortillas, circular flat bread of the American Tropics. Maize, a native of the New World, is cultivated much as it was when the Spaniards first arrived.



© National Geographic Society

Endarkmann by Louis Murnau

A Volcano's Steam Radiator Is Not Hot Enough; Coats Are Needed Two Miles Up on Irazú

Few areas have so many volcanoes in so small a space as Central America. Costa Rica has several that erupt sporadically. Weathered volcanic ash helps make a soil ideal for coffee growing. These sight-seers motored to Irazú's rim (Plate III).

the vegetation looked more tropical. Breadfruit trees with deep-scalloped leaves appeared, and then squat cacao trees, with green and brown pods like miniature footballs hanging from trunk and limbs, lined the right-of-way.

On sliding racks, red-brown cacao beans dried in the sun. I remembered that in pre-Conquest times in Mexico Aztecs used cacao beans for currency. Fortunes in cacao money lay in the sun nearly all the way to Limón.

On the coast plain at last, the line flattened and ran straight between plantations of bananalike abacá.

Abacá Makes Marine Cordage

Abacá, or Manila hemp, belongs to the banana family, but resists diseases of the fruit plant. Plantings in this area total several thousand acres; all come from original cuttings set out in 1925 in Panama.

Four countries of Central America planted abacá at World War II's beginning. Costa Rica now has the largest single block of abacá planting in Central America; Panama has the largest plantation (Plate XIII).

Like the banana, abacá grows from a piece of rootstock set into the ground. Workers cut the thickest of the broad-leafed stems, peel off outer layers, then pass the stalks through a series of rollers, which squeeze and scrape off the green pulp, leaving only the tough, yellowish fibers. Dried in hot-air ovens, the fibers go into bales for shipment to cordage plants.

Speaking of field workers, here I began to see the Negroes of West Indian descent, who live all along the Caribbean coast. One virtually never sees a Negro in the Costa Rican capital or highlands, but here they far outnumber whites.

I like to hear their kind of English. Once, when we stopped for train orders, I saw one shaking his fist at the retreating back of a colleague. The Negro shouted, "You vex me, and I cut you rear from rear." Turning to me he said, shaking his head, "Mahn don't like you, he give you bahsket to carry water."

Limón itself, principal port of Costa Rica, has wide paved streets and the arcades and balconies of the West Indies. Ships sail from Limón with cargoes of balsa, mahogany, rubber, cacao, and small amounts of bananas raised by private growers.

Rubber of the genus *Castilla*, or wild Central American type, comes mostly from the San Carlos River area, northwest of Limón, on the Nicaraguan frontier. Cutters work through this vast jungle area, slashing wild trees with machetes and tearing off the dried

black latex in strips—*burrucha*—exactly as I had seen them do in Nicaragua.*

Balsa Loses Much Weight When Dried

During the war, balsa wood found use in aircraft and life-raft construction. At a processing plant in Limón I watched stacked loads of balsa planks drying in steam kilns. For several days water pours in a continuous jet from the kilns. When the wood comes out, it weighs only half as much as it did when it went in (page 420).

At the balsa plant I met a Texan who, according to his boss, had gone native on the Caribbean coast, wandering from job to job. One day he introduced his boss to a woman and said proudly, "We're going to be married in three months."

"But I thought you had a wife," said the boss.

"Oh, her! She was on six months' probation, but only lasted five months and two weeks."

Bananas require from 9 to 12 months to produce fruit suitable for cutting. Together with a hot, sunny climate, they need heavy rainfall, well distributed throughout the year. In Costa Rica, rainfall on the Caribbean side averages 129 inches a year; on the west coast, 122 inches. Not much difference, but the catch lies in the distribution. Although it rains practically throughout the year on the east coast, rain stops for about four and a half months along the Pacific.

When large-scale banana growing migrated from east to west because of plant disease, some way had to be devised to supply moisture to the bananas during the dry months.

Engineers of the United Fruit Company finally worked out an overhead spray system of rotating portable nozzles which, turning slowly through a complete circle, irrigate 3.34 acres at a time. Vertical towers rise from pipelines laid in a grid through the farms. Workers move nozzles from day to day to cover the whole plantation (Plate IV and page 445).

Growers shifted to the Pacific coast principally because of Panama disease, which comes from a fungus in the soil; the disease was less prevalent in west-coast lands. Planters combat sigatoka, a form of leaf blight, by spraying plants with Bordeaux mixture.

All the lands now occupied by banana farms on the Pacific coast were wilderness until recently—Parrita and Quepos below Puntarenas, and, farther south, Palmar and Golfito.

* See "Land of Lakes and Volcanoes (Nicaragua)," by Luis Marden, NATIONAL GEOGRAPHIC MAGAZINE, August, 1944.



An Ingenious Device Sets Out Cinchona (Quinine) Seedlings in Regular Rows

At the cinchona nursery on the flanks of Turrialba Volcano, seedlings are transplanted with the aid of this wooden rack. Workers place young plants in slots, then slide a bar to close the openings with rubber flaps. When the rack lies in position in the furrow, earth is packed around roots, the slots opened, and the form lifted away (page 444).

Densely forested mountains fall sheer into the Pacific at the port of Golfito on Golfo Dulce. Earth and trees were cut away to make the ports, airfields, and railroads that run inland to the farms.

I rode in an oversize rail car from Golfito to the farm center of Palmar.

Felled boles of huge trees from the dense forest on both sides lay beside the track. Purpleheart trees tower 70 feet into the air. Their heartwood, smooth, dense and wine-colored, is much prized by cabinetmakers for ornamental work. Here it grows so commonly that settlers used it for the upright posts in their thatched huts.

Flocks of plush tanagers (*Ramphocelus passerinii*) flew up before us. Velvety black with fire-red backs, they looked like flames taken wing. Big-billed toucans solemnly cocked their heads to look down at us, and green parakeets flew overhead, sounding like

rusty gate hinges in flight. Macaws, parrots, and parakeets seem always to fly in pairs. Even when in large flocks, the little green parakeets fly two and two, like the passengers of the Ark.

Yellow-headed parrots usually fly in groups of six or eight, and the magnificent red, blue and yellow macaws wing in single pairs. Often at dusk one will hear, emanating from a tree, a conversation like the mumbling of two toothless old women. A pair of yellow-headed parrots are talking themselves to sleep.

Robber Monkeys Post Sentinels

The driver of the rail car talked of monkeys.

"Do you know the *cariblancos*, Señor, the white-faced monkeys?"

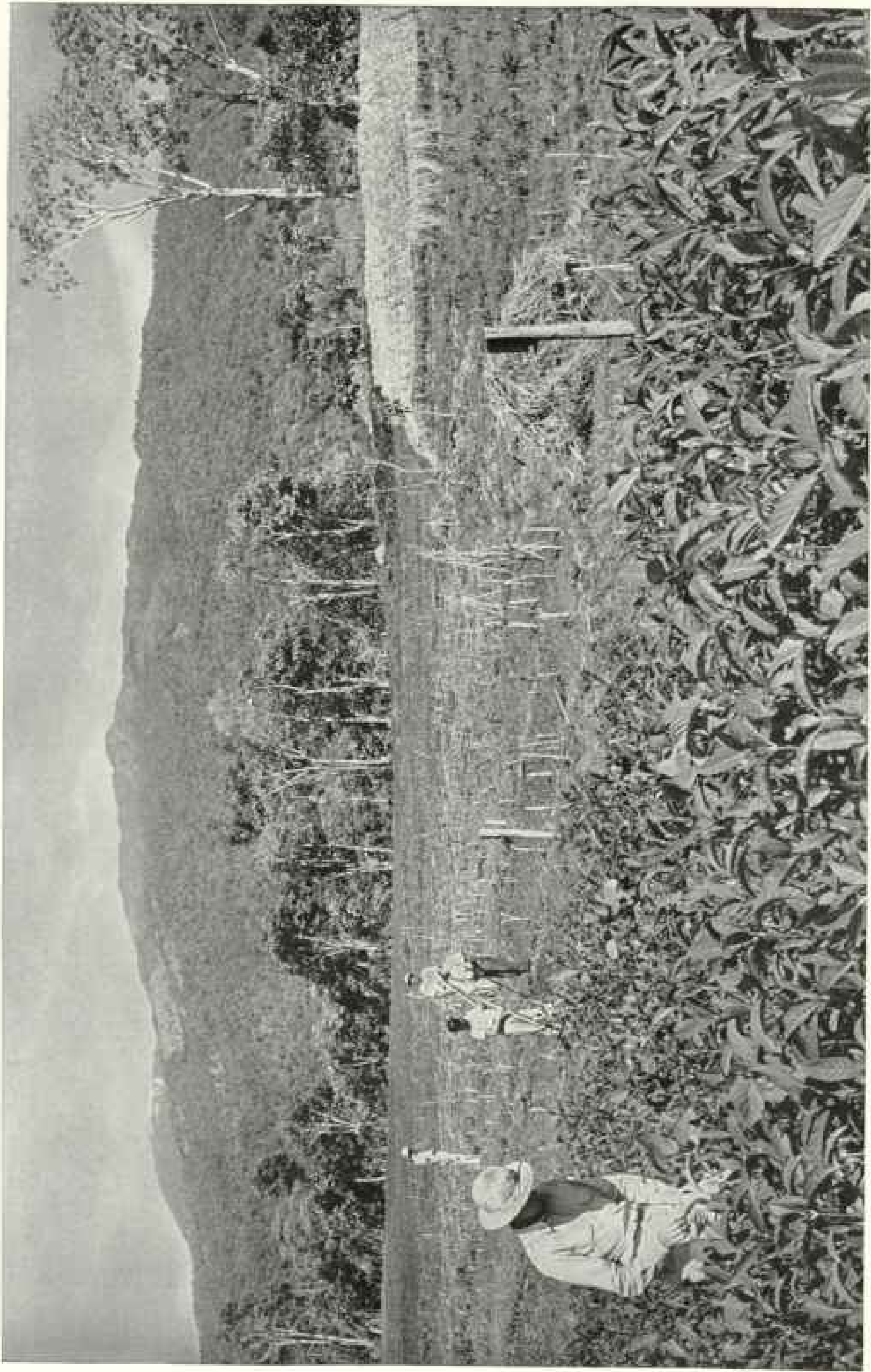
I said I had seen such capuchin monkeys only in San José's zoo.

"Well, they are the most intelligent," the man said. "When they go to rob a cornfield,



To Catch Wild Quetzals in a Butterfly Net Takes a Steady Hand

This photograph, made at midnight 8,000 feet up Irazú Volcano, shows how close to the ground the quetzal sleeps. In a moment Alberto will thrust upward, and the slumbering female will drop into the net. This attempt was successful; often the birds escape. Light does not disturb the sleeping quetzal; noise and movement do (421).



Refugees from the Beleaguered Philippines, Cinchona Seedlings Thrive Below the Peak of Turrrialba Volcano

While Japanese hammered at Batuan, Col. Arthur F. Fischer, formerly director of the Philippine Bureau of Forestry, flew out millions of cinchona seeds in a milk can. At this nursery of the American Cinchona Plantation, plants grown from these seeds and others are raised to sturdy transplanting size. Later they will go to permanent plantations on Poás Volcano. Trees produce quinine-yielding bark for commercial use eight years after field planting (page 442).



With Giant Water Sprays Man Aids Nature During the Dry Season on Pacific Coast Banana Farms

At Palmar an overhead irrigation system supplements rainfall essential to banana growth. Pumped from rivers, water at more than 100 pounds' pressure spurts from nozzles that turn through a circle in one minute. Each jet irrigates 3.34 acres. Numbered farms line the railroad to Golfito, on Golfo Dulce (Plate IV and page 441).



Sixteen Wedges Fit Like a Jigsaw Puzzle to Make a Cartwheel

Rarely today are oxcart wheels made of solid wood. Using no glue, makers fasten wedges together with screws through a metal hub and by shrinking on an iron tire. Alligator wood, white or yellow, is preferred because of its resonance (Plates XVII, XIX, and pages 416, 447).

they post one monkey as a sentinel. They twist the ears of corn until they come off, then tie the husks of two ears together and throw them over their shoulder, like a man carrying saddlebags. But if the farmer surprises them at it because of the watchman monkey's negligence, they chase the poor sentinel and make kindling of him—beat him until he cries."

As we approached Palmar, orderly rows of banana plants lined the tracks, their broad leaves glistening under the spray of the irrigating jets. In some places the jets swung across the line, and we had to run the gantlet of the cool spray.

On the farms they showed me several stages of growth of the banana plant, which grows from a piece of rootstock to a height of 18 to 25 feet in Central America. Each plant produces only one bunch, or "stem," of bananas, which emerges from the center of the broad leaves and droops over to one side, the "hands" of bananas pointing upward like

fat green fingers. The plant produces its single stem of fruit, then dies. New plants spring up from shoots, or suckers, around the base of the original planting.

Why Bananas Are Cut Green

Harvesting goes on continually, bananas being cut while green. If left on the plant, they would ripen partially, but with poor flavor, and would not be in condition to stand the journey north.

Using a long-handled sharp spade, the cutter first slices off the pendent red-tipped flowering stock, then cuts nearly through the trunk of the plant. As the "tree" slowly begins to topple over, the cutter eases its descent with the cutter pole. Another worker, the "backer," receives the stem on a little cushion on his shoulder, and the stem is cut free.

From now on, the bananas are pampered and protected on their way north, first in slat-sided freight cars lined with dried banana



You Need Fire and Water to Change an Oxcart Tire

Iron tires are heated nearly to incandescence in a charcoal fire, then hammered and jacked over the wooden wheel. Water poured over the hot tire shrinks the metal to the wheel. Metal rims account for little of the famed "singing" of Tico oxcarts. Most of the noise comes from loose play of wheels on the axle.

leaves, then in the holds of specially cooled ships.

As a boy, I used to watch banana ships unload on the Boston waterfront. One of the things that puzzled me was the sight of a man solemnly thrusting a thermometer into a banana. I found later that in this way he tested the rate of ripening.

Before the war, an average of four million stems of bananas was exported from Costa Rica each year.

Up the coast from Golfito another new seaport, Quepos, serves as outlet to extensive banana lands centering around Parrita. Off Quepos game fish abound. A list of inshore and offshore fishes caught would include red snapper, roosterfish, Spanish mackerel, tuna,* jack crevally, rainbow runner, dolphin, shark, and giant sailfish. Some sailfish weigh well over a hundred pounds.

Tuna, which school in countless numbers off this coast, bring commercial fishermen down

from California ports. United States tuna fishermen know well Puntarenas, which lies on the Golfo de Nicoya. To Puntarenas runs the electrified railway from San José.

Nearly as much English and Portuguese are heard in its streets as Spanish. Many United States tuna fishermen are of Portuguese descent. From Puntarenas boats sail to the head of the Golfo de Nicoya, then up the Tempisque River through Guanacaste, cattle-raising province (Plate XIV).

Cowboys Roam Savannas of Guanacaste

In Guanacaste vast savannas, studded with umbrellalike guanacaste trees, stretch to the horizon. Averaging only a few hundred feet above sea level, Guanacaste is hot.

In Liberia, capital of the Province, I attended a cattle fair. Here I saw the *punto*

* See "Tuna Harvest of the Sea," by John DeGelman, NATIONAL GEOGRAPHIC MAGAZINE, September, 1940.



A Bilingual Sign Marks the Height of Land near Cartago

The steam railway from San José to Limón crosses the Continental Divide at 5,049 feet above sea level. Streams rising to the east (left of picture) flow to the Caribbean; those behind the rail car, to the Pacific. For much of its 100-mile length the railway parallels the Reventazón River.

guanacasteco, national dance of the country, danced with typical cowboy exuberance (Plates VII, VIII, and page 421). Amid high-pitched ululations, dancers stamp and whirl, occasionally interrupting the marimba and guitar music with a shout of "Bomba!" to recite one of the humorous and ribald verses of this name.

I saw one happy cowpuncher, with leather-fringed chaps, throw his hat on the ground, leap over it and shout, "I won't swallow the sun, only because I don't want to leave the world in darkness."

Guanacaste once was part of Nicaragua, and the way the Guanacastecans drop their S's when speaking reminds one of that neighboring country. But Guanacastecans are Costa Ricans to the core, though they carefully distinguish between themselves and their compatriots from the highlands, whom they call *cartagos*.

Guanacaste's ebullience and love of exaggeration for effect reminded me of our own frontier days. Of a man who talks a lot, promises much, but does nothing, they say "He is all feathers, but he doesn't fly."

Once when, according to custom, an effigy of the Child Jesus was mounted on a live

burro for a religious procession, the animal started to buck and kick at the most solemn moment, and the figure, fastened though it was to the saddle, began to teeter.

Spectators, finished horsemen all, whooped and threw their hats in the air, shouting advice and encouragement. With perfect respect mingled with regional pride, they yelled, "Hang on, Jesus! Don't let anyone say Guanacastecans can't ride!"

Liberia, the White City, lives up to its name blindingly in the dry season. Streets are carpeted with soft white dust, which muffles the sound of horses' hoofs to a muted thudding. Horsemen ride through a golden haze of sun and dust.

With a friend I rode out of Liberia at day's end. After the red bonfire of sunset, night comes suddenly on the plains. We watched a crescent moon nearly embrace a planet in its encircling arms as it rose, first yellowing, then silvering the flat roofs of Liberia. From the lamplighted houses at the town's edge came the sound of a guitar.

My Tico friend turned to me and said, "Costa Rica is a good place to live."

I lived there for a while, and I think he is right.

Land of the Painted Ox carts



Oxen Are Half a Small Farmer's Riches; His Cart Is the Other Half

Costa Rica, unlike some Central American countries, is divided up mostly among small landholders. Early settlers were colonists, not conquerors.



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Illustrations by Louis Marden

Painted "Singing" Ox carts Are the Pride of Costa Rican Countryfolk

Wheels of resonant wood are fitted loosely on the axle, so that they rattle musically. By ear, country people can identify a cart at a distance. Each region has its own style of decoration (Plate XIX).



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Kidnappers by Lois Marden

Oxcarts and Coffee—This Is Costa Rica

Children (left background) pick lower branches. For each measure delivered, pickers receive a ticket good for money. When a cart is filled, the coffee goes to a storage bin. A small trapdoor in the tailboard empties the cart. Coffee harvesting is at its height at Christmastime.

Land of the Painted Ox carts



He Paints Traditional Oxcart Designs from Memory.

The youth represents the third generation of cart builders in Sarchi. His shop's entries have won first prizes in competitions. Best designs are carved into the wood in high relief, then painted.



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Exhibitions by Lois Marden

It Takes Three Men to Paint This Wheel, Each Using His Special Color and Design
Outlined with compasses, the entire decoration is completed in less than an hour. Formerly wheels were made of solid wood; now wedges are fitted together because big trees are scarce.



Pejibaye, a Palm Nut, Has a Chestnutlike Flavor

Boiled with salt and eaten cold, nutritious *Guilelma gasipaes* is rich in fats and carbohydrates. Costa Rica has seedless varieties. Indians have cultivated this palm from remote times.

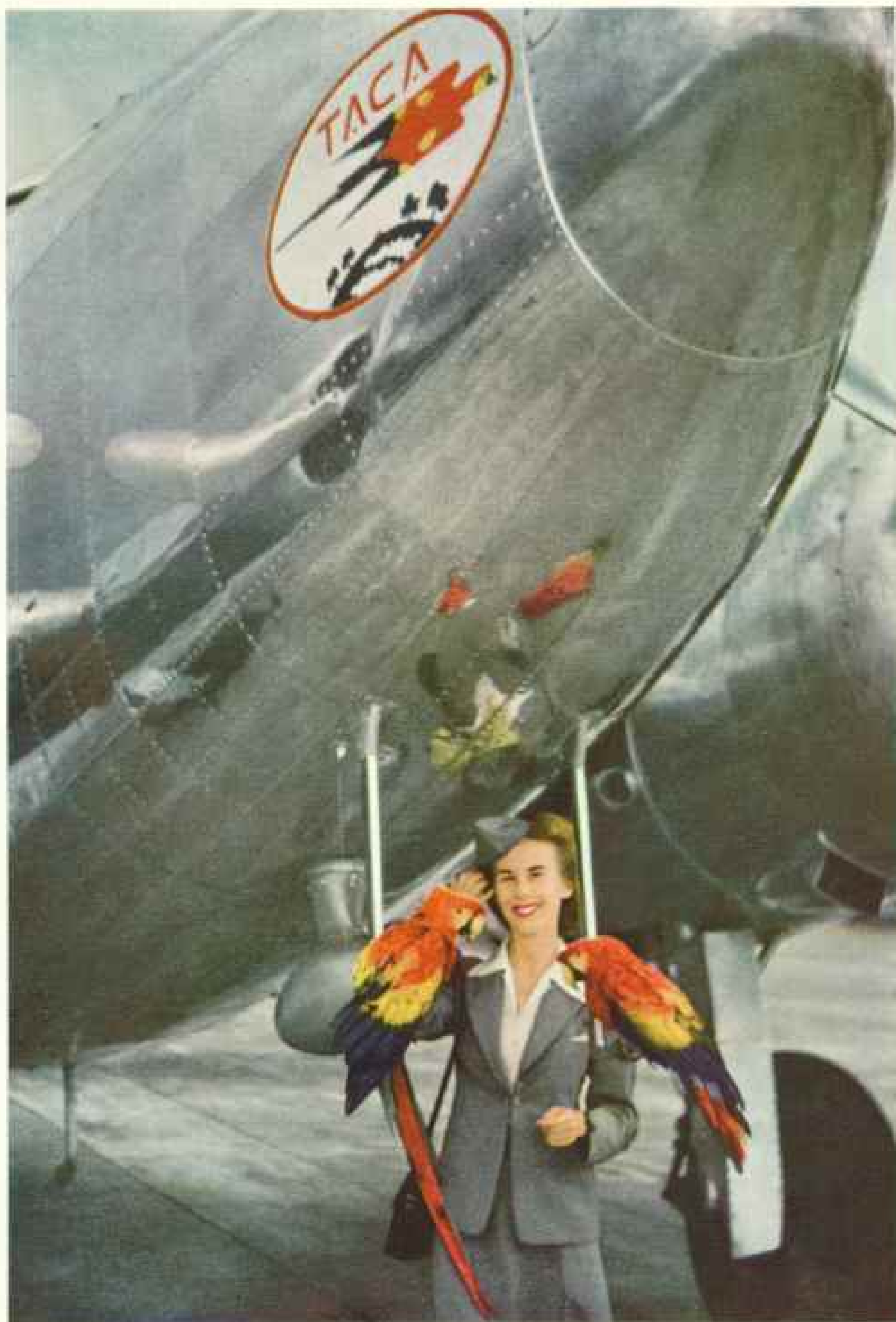


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Kobachinas by Luis Merino

No Costa Rican Saddle Is Complete Without a Crupper

Usually it is decorated with horsehair rosettes and tassels. Skirts of black fleece hang from this saddle. Into the pommel the maker has tooled the owner's initials.



© National Geographic Society

Illustration by Lilla Hadden

Bright-feathered Macaws Do Mascot Duty for TACA at San José's Airport

A stylized drawing of a macaw in flight is part of the trade-mark of the line, which operates in Central America and also between Central and South American points and Florida. Lockbeeds bring San José within eight hours of Miami.



Mother Hummingbird Thrusts Nectar down Her Youngsters' Throats

Miniature nests of down and lichens are well camouflaged. Costa Rica has many species of hummingbirds, which live well in captivity. These two lusty young are almost ready to leave the nest.



© National Geographic Society

Kodachromes by Leta Marden

Turrialba Orchids, Handsomest of Their Family, Like the Rain

Sweet-scented *Cattleya dowiana*, found near Turrialba, prefers a warm, moist climate. Fanciers prize it for its usefulness in hybridizing. Many famed hothouse orchids have Turrialba as a parent.

The Shy Quetzal, Sacred Bird of Ancient Americans, Lives in Highland Rain Forests

Quetzal tail feathers adorned head-dresses of Maya and Aztec nobles, and covered sculptured and painted representations of Quetzalcoatl, the Feathered Serpent.

Pharomachrus mocino, a member of the trogon family, has long been a symbol of freedom because he does not thrive in captivity. When caged, quetzals suffer from lack of their peculiar diet. They feed principally on small, fleshy fruits (*Ocotea*). Hovering birds pluck the olive-shaped fruit on the wing, then return to their accustomed perch to swallow the big mouthful whole. In about 20 minutes they digest the fruit and spit out the large pip. With time and patience, quetzals may be weaned to other foods.

Quetzals nest in old woodpeckers' holes. To accommodate their bulkier body, they enlarge the entrance by tearing away decaying wood with their beaks.

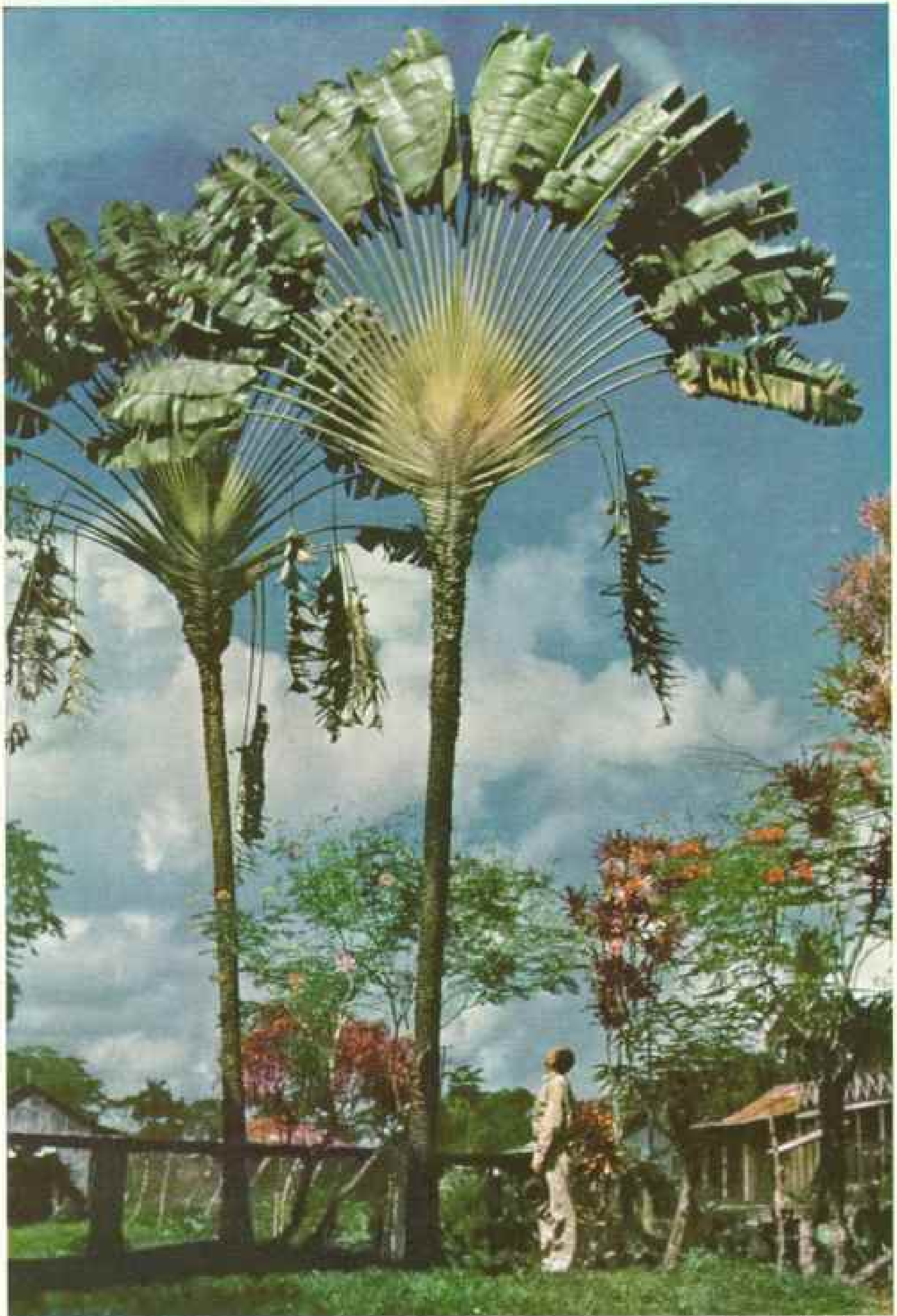
Though they perch and fly high during the day, quetzals sleep close to the ground at night. Usually the male sleeps on the lowest limb, sometimes so low that a man may pick him up in his hand.

This young male's tail feathers have not yet reached their full growth. Often they are more than a yard long.



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Kodachrome by Lois Marden



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Reproduction by Lida Marcks

Giant "Palm-leaf" Fans Store Cool Water for Man under a Blazing Sun

Pierce the fleshy leaf bases of the traveler's-tree and out gushes a refreshing drink of rainwater which has collected there. Though these natives of Madagascar growing near Limon appear to be palms, they are not. Legend says their leaf edges always point north and south. Don't believe it!

Americans Stand Guard in Greenland

BY ANDREW H. BROWN

“WELL, this is it! Here's what makes it all worth while!”

The pilot shouted at me over his shoulder as he pulled the B-25 out of its dive and leveled off a hundred feet above the dozen waving men on the ground. Foreshortened figures stood beside the cluster of buildings and antenna poles at Walrus Bay, remotest U. S. Army weather-radio station in Greenland.

The plane banked sharply to line up for the first “bomb run” over the camp.

Our “eggs” were 16 bags of mail, gifts, fresh food, and technical supplies. I crawled back through the narrow tunnel to the body of the plane to help drop them out of the belly hatch to the eager men below.

This was March, 1945. They had received no mail here since before Christmas.

As the plane “dragged” the camp, just above the tips of the radio poles, the pilot shouted “Let 'er go!” over the interphone to the radio operator, who, earphones in place, straddled the square opening in the floor. One at a time we pushed the fat sacks through the small hatch. We both jumped on each bag, holding tight to the sides of the plane, until it dropped out, like a cork from an upturned bottle.

If we looked quickly, we could see the boys grinning up at us from the snowy ground. This was the pay-off, for all of us. The pilot was right. What a reward to see the look of joy on those upturned faces!

A Spectacular but Lonely Land

Here was a tiny outpost of U. S. military society, 500 miles north of the nearest American base at Ikateq, almost cut off from the world. Here a handful of men had to get along with one another for 12 to 14 long months in a spectacular but lonely land.

They took pride in their job, sending out vital weather reports to make North Atlantic flying safer and to hasten the European victory. Nonetheless, we knew they counted the days and hours until the annual supply vessel should nudge through the bay ice to unload the relief party and carry the old crew 1,200 miles south to “the base,” at Narsarssuak, and home to the United States.

Ice-capped Greenland held no glamour spot in the recent war. Press notices of D Day for American troops on the huge Danish island (months before the United States was at war) were slim, for friendly forces went ashore by agreement without let or hindrance.

The blond Danes and tawny Greenlanders who watched the gray “invasion” ships steam up their fjords in July and August, 1941, were mighty glad the masthead breezes flapped the Stars and Stripes and not the black swastika of Nazi Germany.

Comdr. Donald B. MacMillan worked in Greenland during the war on Navy air surveys. The late Capt. Bob Bartlett, mourned by all devotees of the North, took his famous schooner *Effie M. Morrissey* up both coasts of the island on inspection and maintenance voyages for the U. S. Army.*

Capt. Eddie Rickenbacker and Gen. Carl Spaatz were in the vanguard of famous advisors and visitors to Greenland. Bernt Balchen, Admiral Byrd's chief South Pole pilot, commanded the big airbase at Søndre Strømfjord, above the Arctic Circle.

I spent 25 months in Greenland, most of the time at the main base, Narsarssuak, as an officer in the Army Air Forces Weather Service (map, page 459).

To GIs It Was “Groanland”

Despite Greenland's startling medley of jagged peaks, ice-jammed fjords, crawling glaciers, and cold blue seas, most of the thousands of soldiers and sailors stationed there found the duty pretty dull.

GIs were quick to seize on the aptness, from their point of view, of the Danish spelling for their colony, “Grønland”; with feeling, the homesick soldier called it “Groanland.”

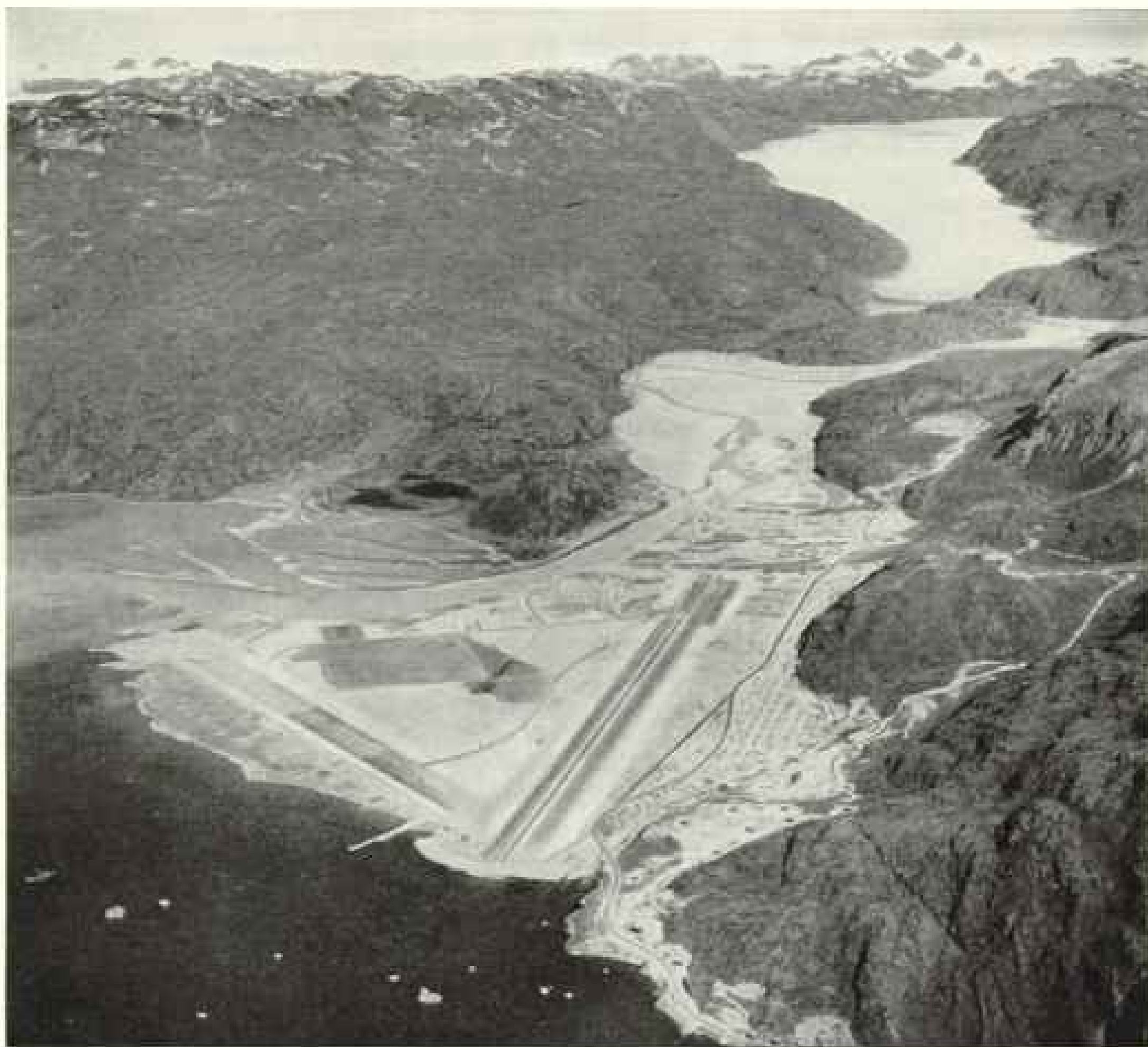
A few of us had a better time of it, because our work allowed us to learn something of the real Greenland, away from the military installations.

Most soldiers who went to Greenland were keen to see the icecap, certainly one of the wonders of the Arctic world. I was lucky to get my first air view of the appalling spectacle soon after I arrived.

It looked exactly as I had imagined it, only more so. The icecap is like the Grand Canyon: you can't believe it until you see it, and then you can't believe it! An hour after taking off from the base, I glanced around the horizon and saw nothing but ice and snow. It was a weird feeling. I knew the cap covered four-fifths of Greenland. Still, I kept thinking, “It can't be. There just isn't that much ice!” But there was.

The frigid waste stretched off endlessly, a gently rolling, utterly empty sea of white,

* See “Servicing Arctic Airbases,” by Robert A. Bartlett, NATIONAL GEOGRAPHIC MAGAZINE, May, 1946.



Air Transport Command, Official

Hidden in a Wilderness of Ice and Rock, BW-1 Was a Welcome Mid-ocean Perch to Thousands of Allied Airmen

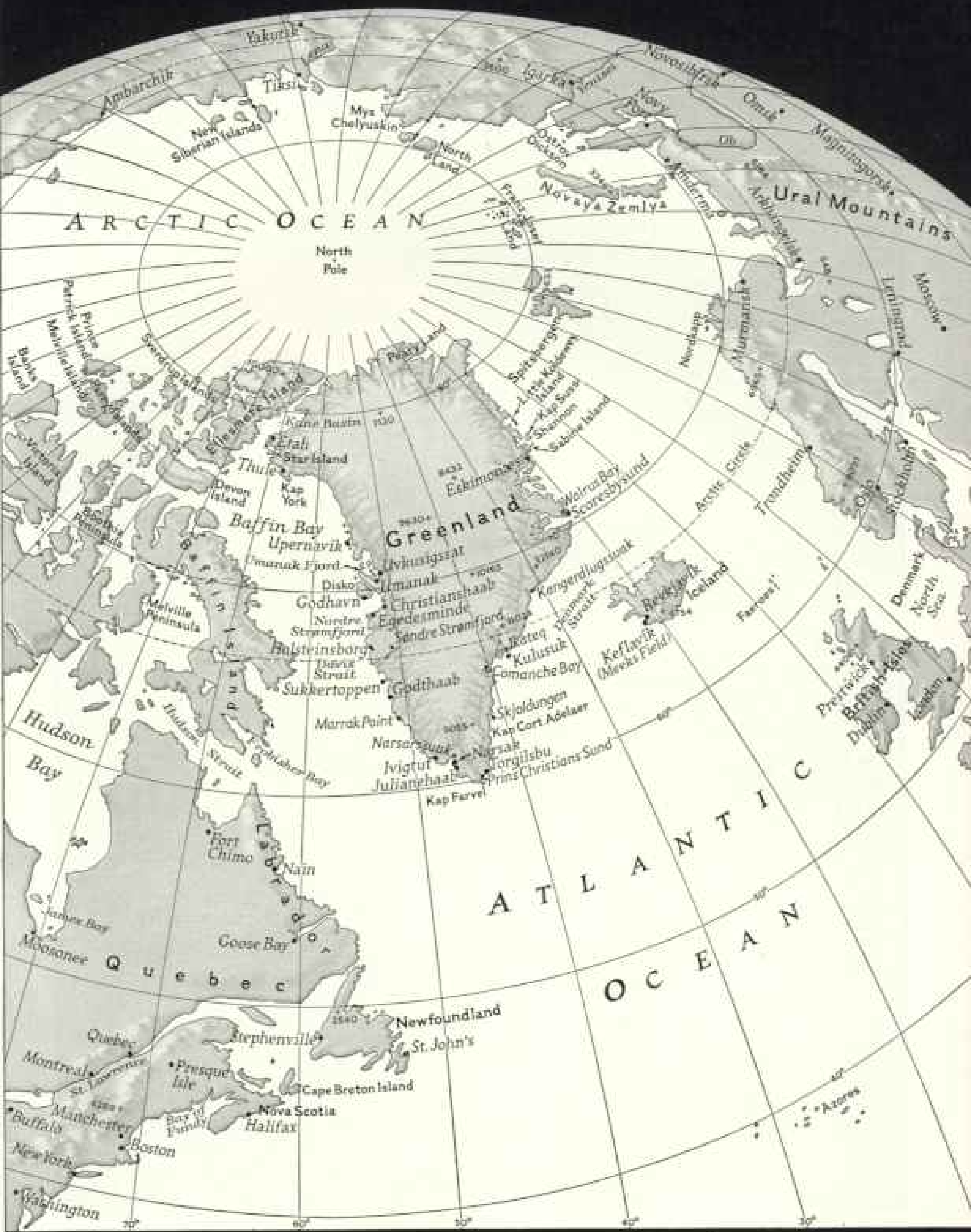
Long stretches of cold, gray North Atlantic waves separated BW-1 (Narsarsuaq) from Goose Bay, Labrador, and from Meeks Field, Iceland. Narsarsuaq was a refueling stop in the recent war for twin-engined aircraft flown from the United States and Canada to the United Kingdom over the northern route. It also was a ferry point for hundreds of four-engined bombers, first going east to Europe and then, after V-E Day, bound westward for the United States. The winding road (bottom) leads to the port area of the big base. The glacier sweeps down from the icecap, distant background.

seamed with crevasses toward the rim and patterned like a wind-blown beach with *sastrugi*, those wavy ridges formed by icecap gales. It was all too easy to imagine how grim it would be to get lost down there and left to face the sifting snow that drifts like desert sand, the searing cold, the whistling gale, the godless wilderness void of life.

Greenland has more real estate (most of it ice, not land) over a mile above sea level than any other region in the world except Antarctica and central Asia. Apart from a narrow fringe of terra firma from one to 150 miles wide, the big island's vast acreage is covered by the inland ice.

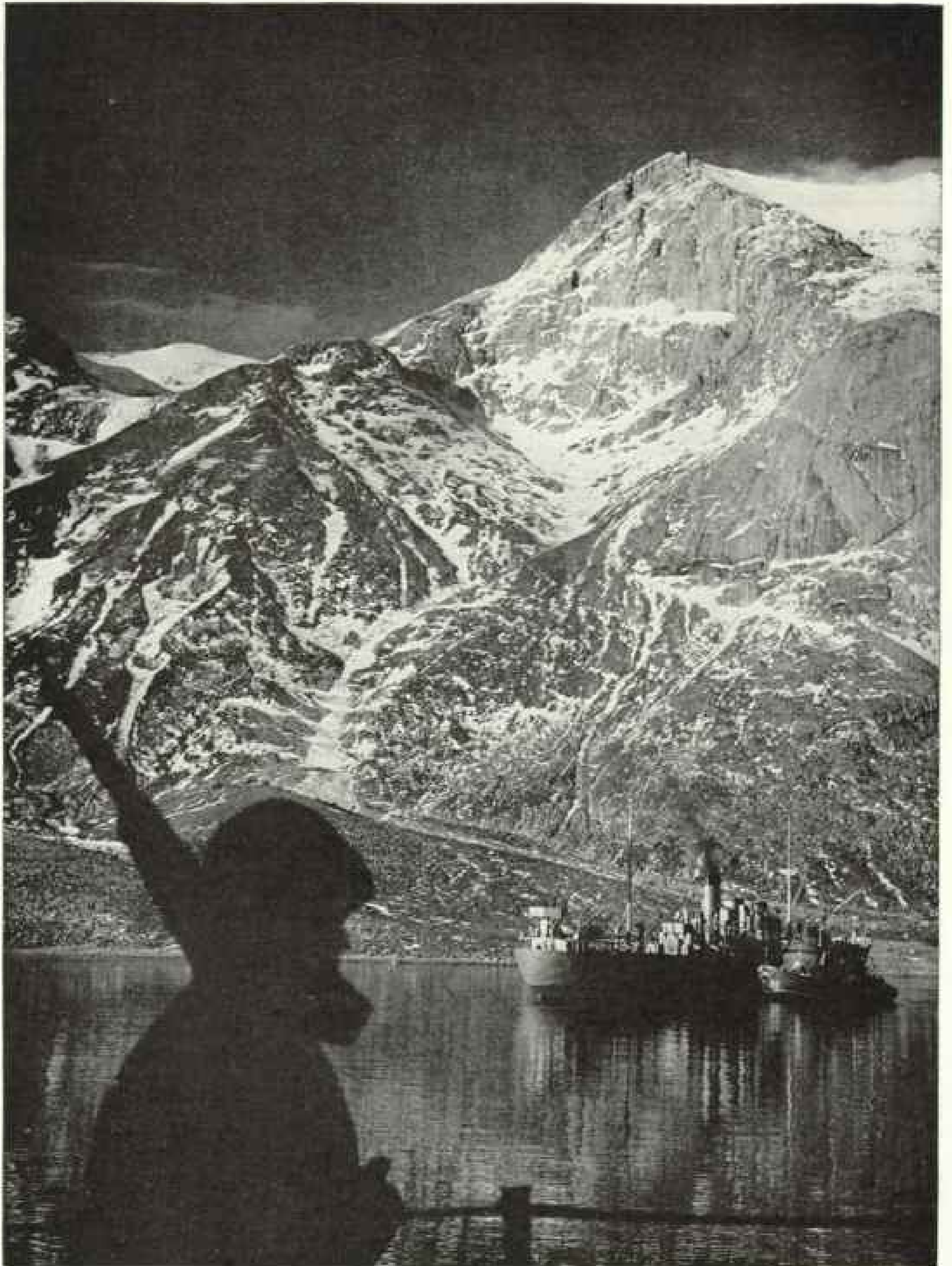
No one knows the average elevation of Greenland. Its crest along the meridial axis of the icecap has been measured here and there, giving heights between 8,000 and 11,000 feet. By reflected sound from explosions, the late Alfred L. Wegener, German geophysicist, meteorologist, and Arctic explorer, calculated the depth of the cap itself (above any subglacial land) and found thicknesses ranging from 5,600 feet, 75 miles in from the midwest coast, to 8,850 feet, 250 miles inland at the middle of the cap.

An evening's idle pastime in Greenland was estimating how many ice cubes could be chiseled out of the icecap, or how much the ocean



Greenland Gave Vital Weather Data and an Aircraft Way Stop to the Atlantic War

United States forces, put ashore in 1941 and 1942 on the ice-capped island bigger than Mexico, averted ambitious German plans to establish an extensive chain of weather stations and airbases (page 461). Interest of the U. S. Army and Navy in problems of Arctic warfare is increasing. Greenland, like other northern lands in our hemisphere, looms ever larger in strategic plans for high-latitude defense.



U. S. Coast Guard, Official

Snow-dusted Cliffs Tower in Majesty above the Coast Guard's Kungnat Bay Anchorage

A guard stands vigil overlooking the deep landlocked harbor where convoys met in rendezvous during the months when German submarines slashed at North Atlantic shipping. The tug *Arundel* shepherds a freighter in this roadstead not far from Ivigtut, site of Greenland's cryolite mine and of wartime U. S. Army and Navy bases.



Dr. H. J. S. Tiesie

Hugging the Ground, a Turf Hut Makes a Staunch Refuge for Storm-weary Hunters

Near the seaward end of Nordre Strømfjord, this hunting camp gave access to the sealing grounds. Half subterranean, its floor, roof, and walls are made of earth blocks. Greenland nimrods are armed with old-style shotguns. Apart from seals, this area provides good shooting for sea birds, ducks, geese, and ptarmigan.

level would be raised by melting its millions of gelid tons.

Suggested amateur plans for eliminating the troublesome barrier ranged from spreading lampblack on the surface so that more of the sun's heat would be absorbed ("But suppose," sneered one Jeremiah, "it snowed?") to vaporizing the frozen mass with a blast of the hot air generated in the officers' club on Saturday nights!

Island Vital in Wartime

Why were United States armed forces stationed in the Danish colony of Greenland?

Because after September, 1939, it became clear that the island held a key strategic position. Its huge bulk was anchored halfway between the United States and Europe on a great-circle course, thrusting an icy lobe southward toward the busiest transoceanic air and ship lanes in the world.*

Such vital areas, if undefended with military strength, invited enemy occupation.

German interest in Greenland was signaled back in 1940, immediately after the invasion of Denmark. The Nazis sent reconnaissance ships and long-range aircraft to east Greenland. A landing party from a Norwegian

gunboat under British control in September, 1940, wiped out an enemy weather station at Torgilsbu, southeast Greenland, and captured its personnel.

The Anglo-American bases-for-destroyers deal had just been concluded.

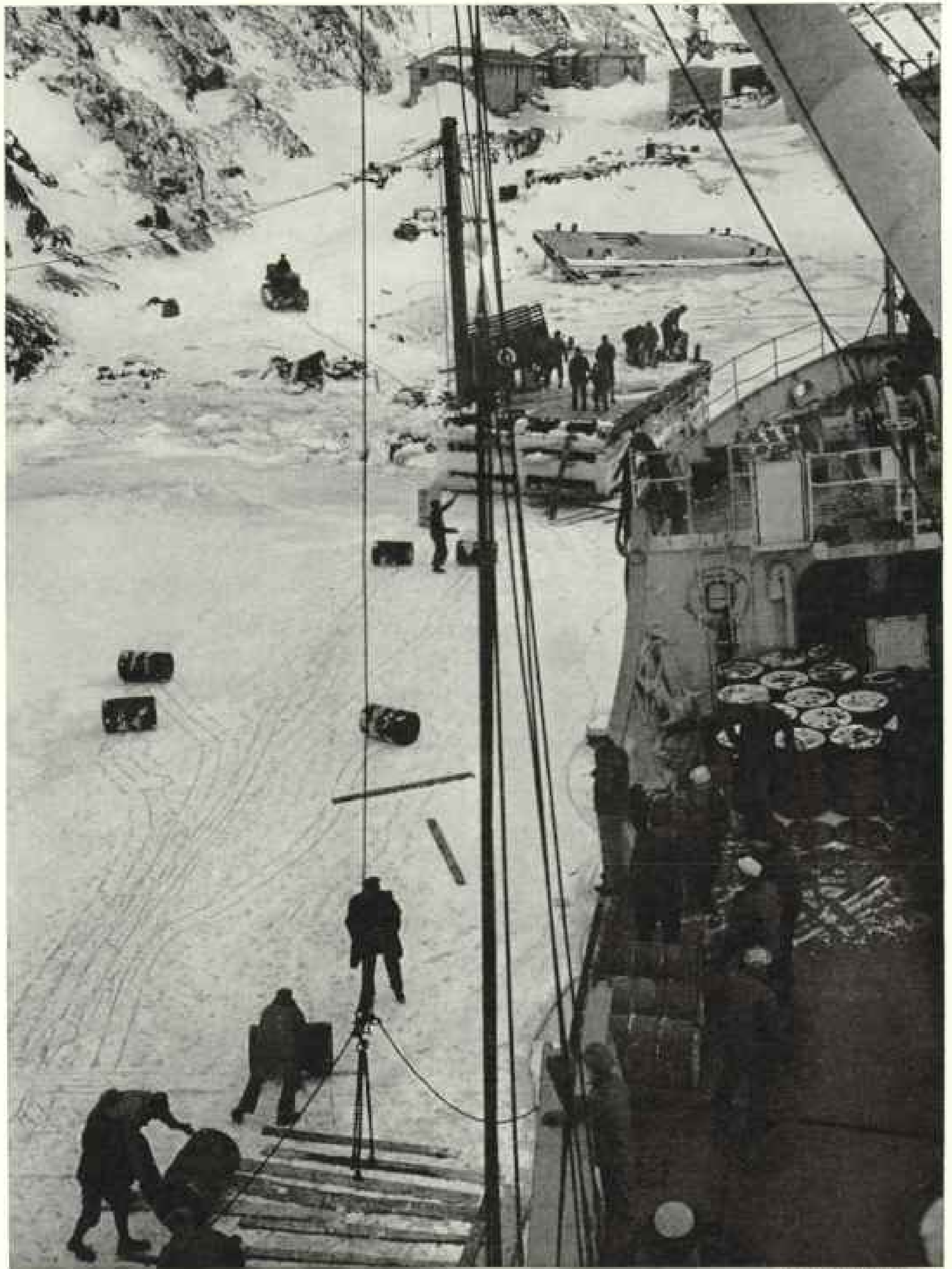
It was a time for action. With relentless power, the United States moved toward military defense of various unfamiliar spots around the North Atlantic. Among them was Greenland.

On April 9, 1941, a year to the day after the German invasion of Denmark and less than a month after Lend-Lease became law, an agreement was signed between the United States and the Danish Minister to Washington, acting on behalf of the King of Denmark. It granted us the right to build airfields and other military and naval installations in Greenland for defense of Greenland and the American Continent.

In effect, this put the Danish island under the armed protection of Uncle Sam.

Time was of the essence. On the very same day, U. S. Marines, vanguard of a survey party, landed in Greenland.

* "Greenland from 1898 to Now," by Robert A. Bartlett, NATIONAL GEOGRAPHIC MAGAZINE, July, 1940.



U. S. Coast Guard, Official

"Roll Out the Barrel!" Has Urgent Meaning at an Island Outpost

Crewmen unload drums of fuel oil at Simlutak, stopper island in the mouth of the fjord leading to the main Army base at Narsarsuak. Simlutak was a weather and radio check place for aircraft to and from Narsarsuak. In mid-February the cutter *Laurel* has pushed through ice close to the dock (center).



U. S. Coast Guard, Official

Hitler Henchmen Step Out in a "Conga Line" of Surrender

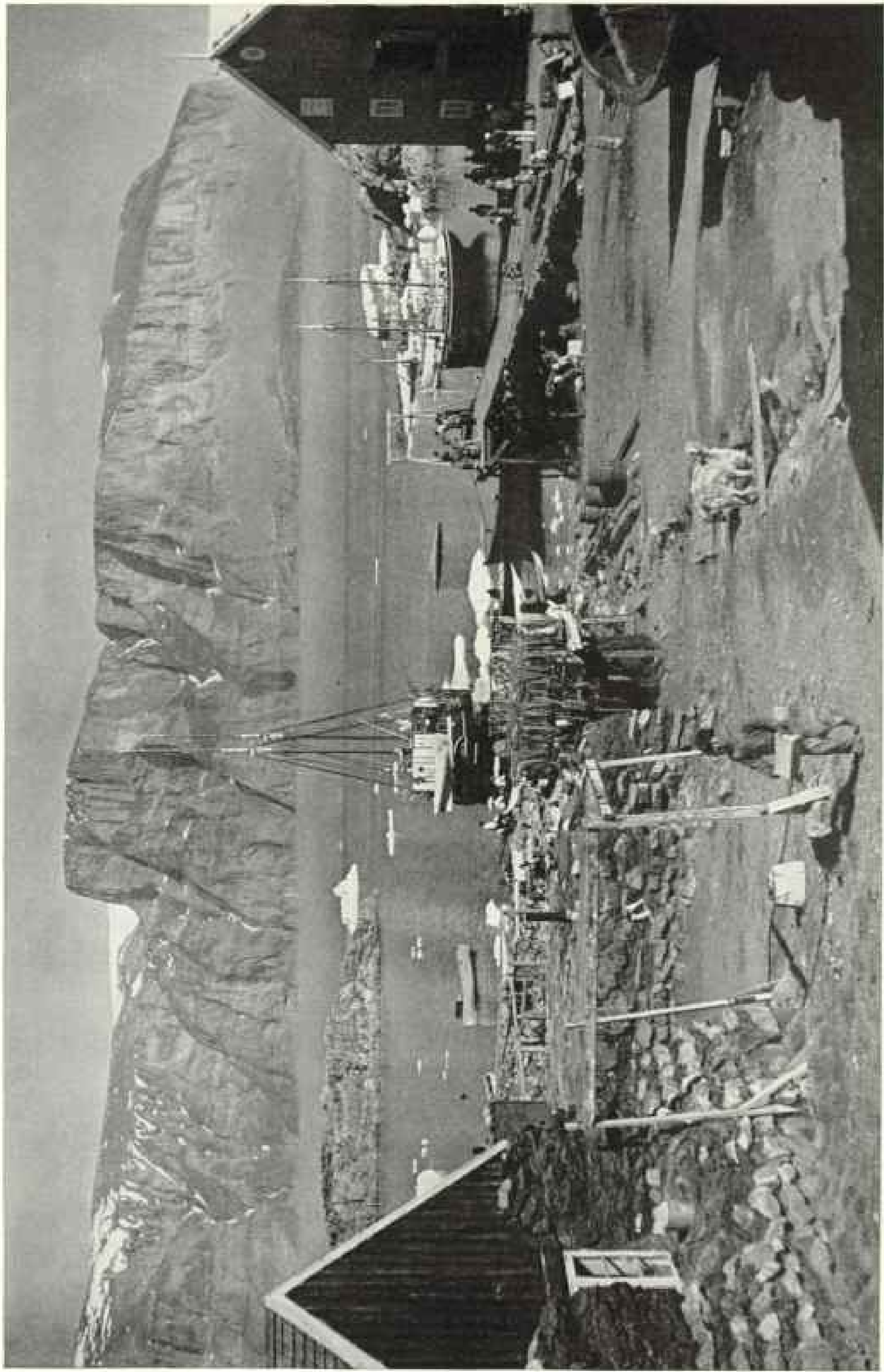
The staff of a Nazi weather base on Little Koldewey Island use their hands to call quits, not for their accustomed Nazi salute. A patrol from the cutter *Eastwind* surrounded the enemy weather-radio station.



Staff Photographer Maynard Owen Williams

A Walrus's Own Tusk Furnishes a Handy Hook to Hold Back a Flap of Blubber

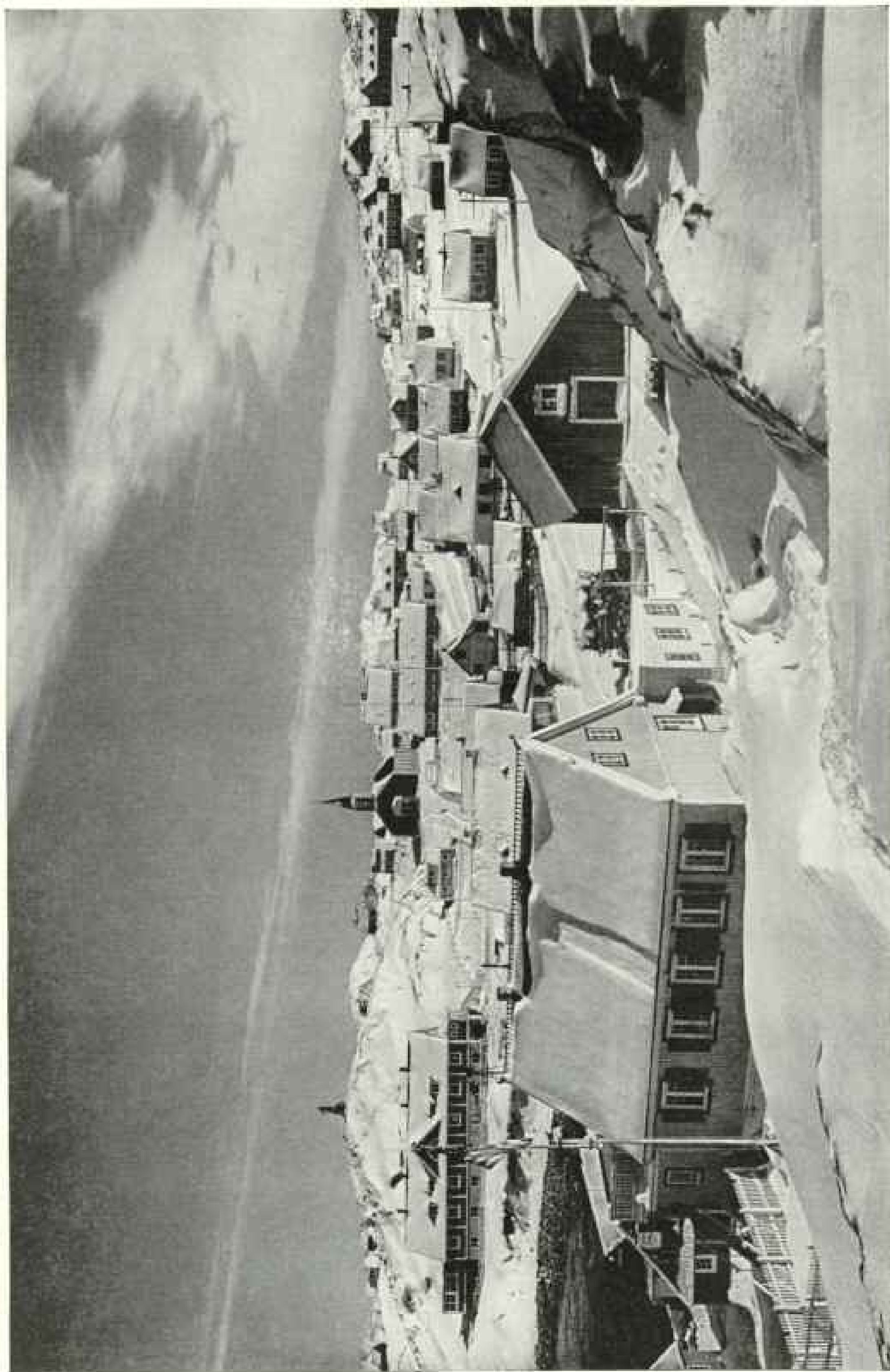
Three Greenlanders cut up a fat victim at Star Island. The walrus provides meat, fat for oil, tusks for carved household articles, and hides for thongs. Hides also may cover supply caches, roofs, and floors. The man at the right wears a complete sealskin suit. The central figure sports natty bearskin pants.



Many Greenland Villages Face an Austere Outlook over Fjords, Icebergs, and Mighty Peaks

Two warehouses flank the harbor front at Umanak where dwell some 400 native Greenlanders and a dozen or so Danes. Schooners that ply in coastwise trade are always spick-and-span. At the base of the ravine-scarred cliff lies a thin fog bank.

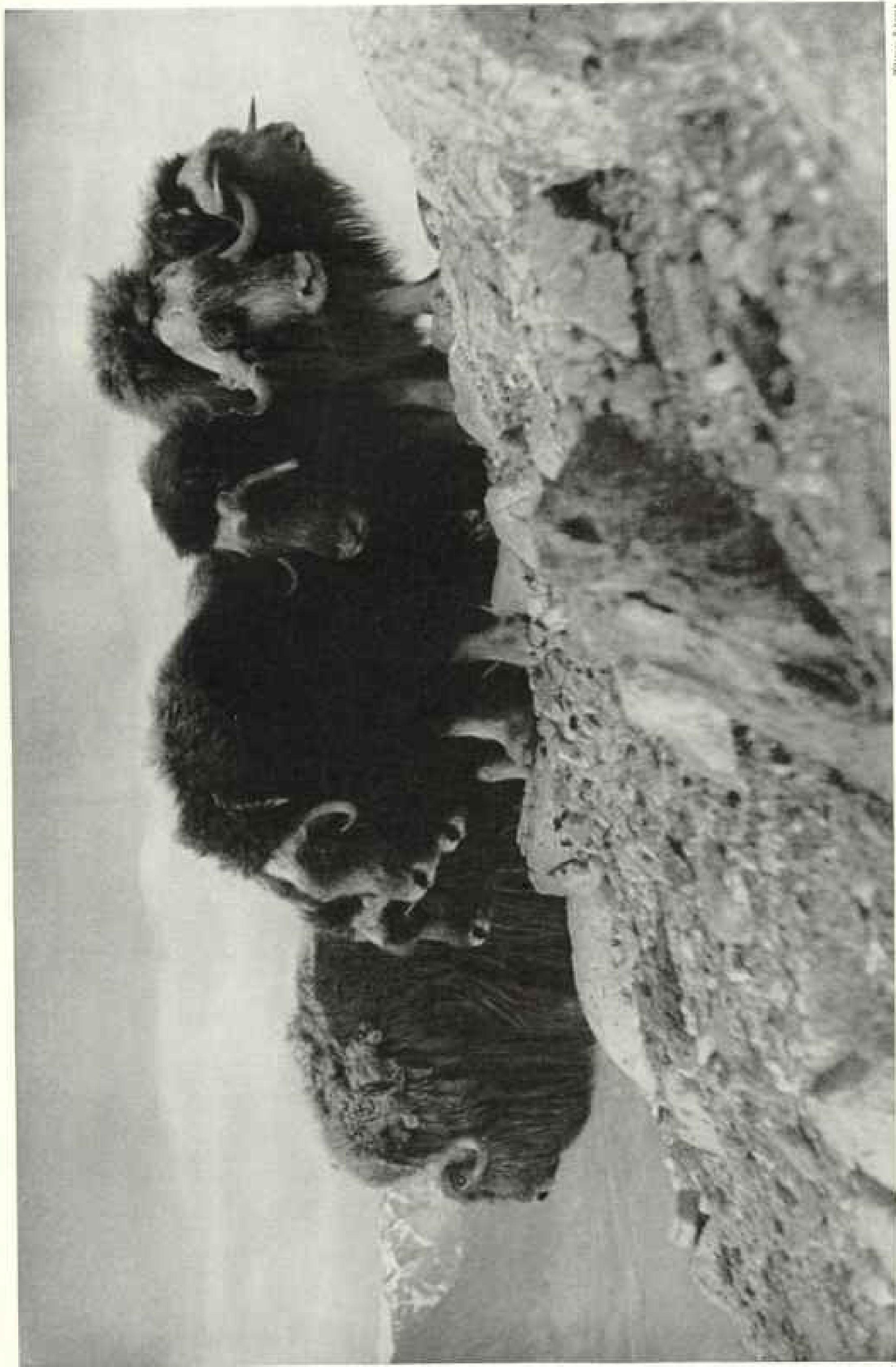
Dr. H. J. A. Wilks



James Penfield

On a Far-northern Shore, Hans Egede's Statue Overlooks the Tidy Snow-blanketed Homes of the Settlement He Founded

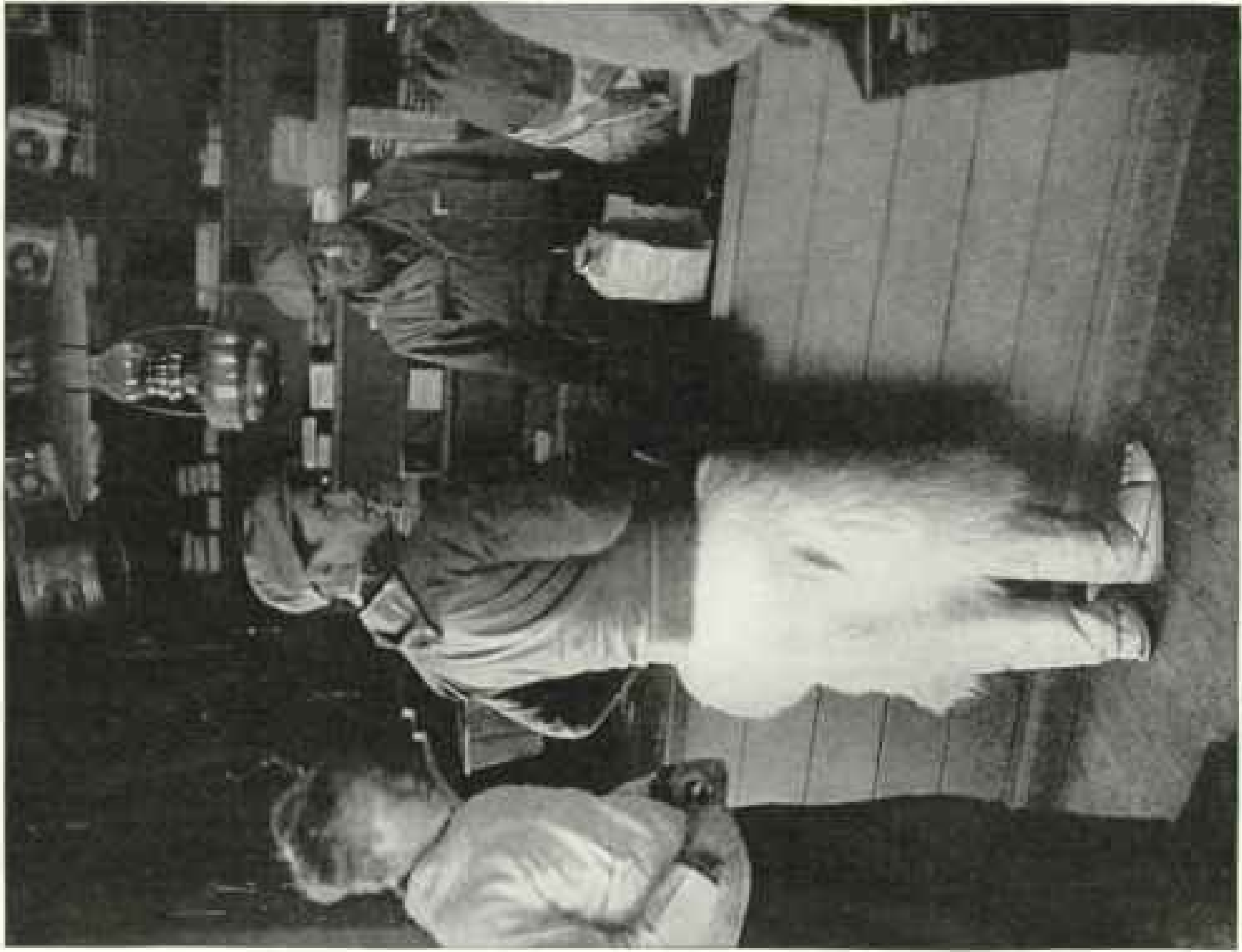
The heroic Norwegian pastor, who revived Greenland colonization early in the 18th century, rises in effigy above Godthaab, capital of Greenland (page 486). The American flag flanks the former United States consulate (foreground). A colony hospital stands just beyond the cove (left).



Three Oxen

At Danger's First Alarm Musk Oxen Form a Tight Ring of Defense with Horns Lowered "at the Ready"

These shaggy creatures take a position to protect themselves against wolves and bears, but they offer an easy target to men with rifles. Musk oxen are found in extreme northern Greenland and south along the east coast to Scoresbyund. They are protected by local statute.



Bearskin Pants Are the Trademark of the Thule Men

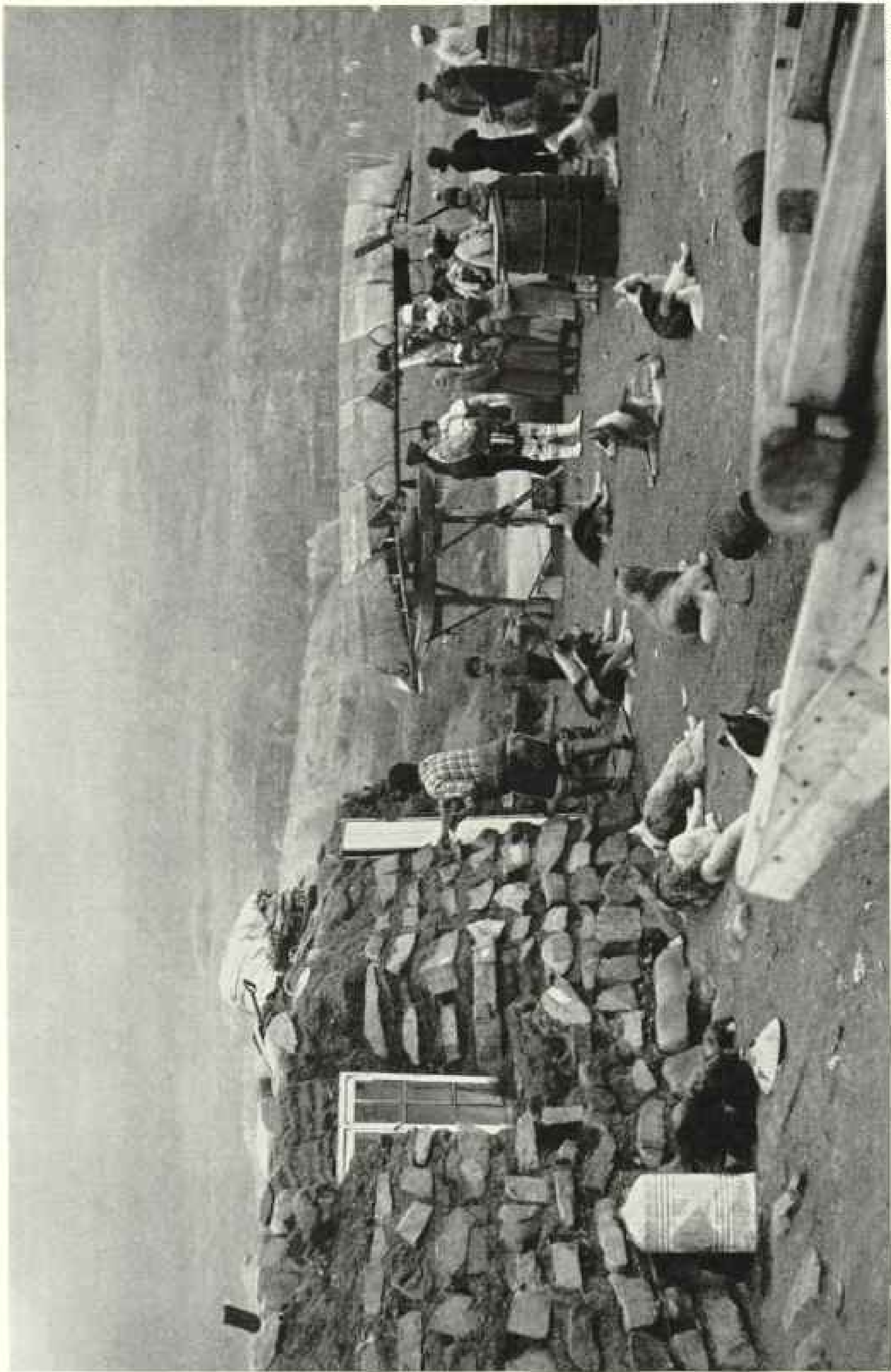
The white bushy trousers, practical warm garments, are also sought as souvenirs. The man trading in the Thule store is not one of the local people. The Thule natives are properly called Eskimoes, for they still are a nearly pure-blooded strain. Far-off Thule is the northernmost sizable town in Greenland.



Dr. H. J. E. Tuckin

Every Puff Is Pleasure Unalloyed

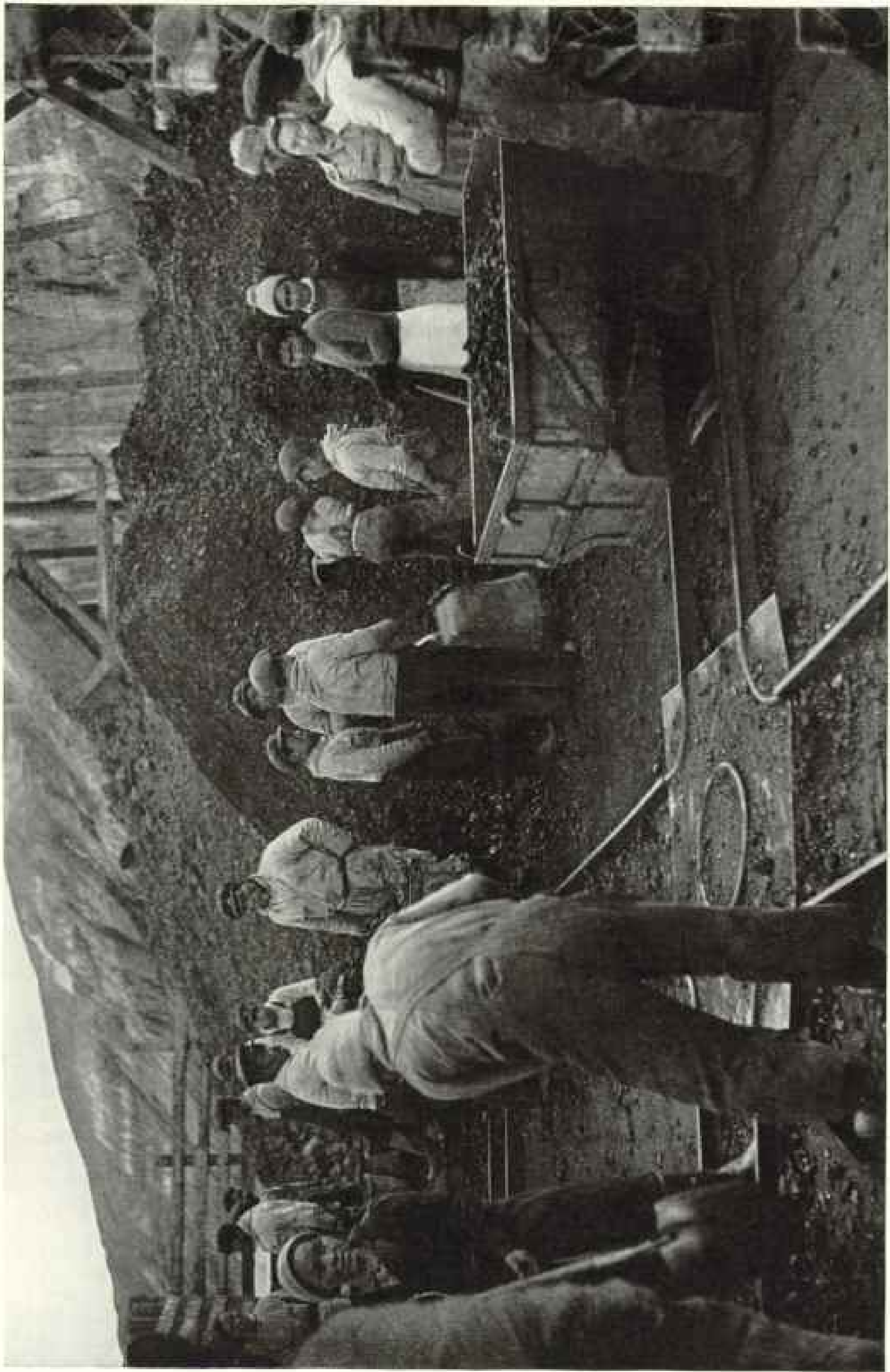
Greenlanders are insatiable smokers. They run along the ice for miles beside a moving ship, fighting good-naturedly for packs of cigarettes thrown to them by soldiers crowding the rail for their first view of Greenland's people. The old-fashioned hair-do of these two Uvksisigssat women is seldom seen today.



Dr. H. J. A. Fisher

Stone-and-Sod Hut, Idle Dogs, and Sealskin-covered "Women's Boat" Are Familiar Symbols of Native Life

Under the near end of the umiak (women's boat) is tucked a kayak (district. Wood used in treeless Greenland must be imported or recovered from driftwood. Lazy in summer, the big sled dogs come to life in winter, when travel by dog sled is the common mode from Holstenborg north.



Dr. H. J. S. Tuohi

Men Join in Women's Work—Shoveling Coal at the Qutdliffssat Mine, Disko Island

Among Eskimo peoples women perform the mental tasks, while the men hunt, fish, drive dogsleds, and discuss their prowess. Here they load soft coal into small cars which are tipped into barges. Some 6,000 tons are produced yearly, enough to meet most of west Greenland's heating needs.



Dr. B. J. B. TIDDE

Wool Caps and Dress of Cotton Print Bring an Ancient Costume Up to Date

A Greenland mother at Christianshaab seems amused that her costume attracts attention. The decorated *anorak* (parka) has the traditional peak between the legs and a spacious hood to hold the wide-awake youngster. Boots are of sealskin, pants and *anorak* of seal with the hair turned out. The patterned panels and borders are carefully wrought from brightly dyed sealskin.

So it was that throughout the summer of 1941, from early July until the close of navigation, deep-laden gray ships, shepherded by sleek naval craft, off-loaded at Narsarssuak (popularly called BW-1) and other selected spots, then went back for more (Plates IV, V).

Thus bases were established which frustrated any enemy ambitions to gain Greenland footholds from which to bomb America, or from which to send out submarine wolf packs to cut Allied shipping lanes to the south.

Thus airstrips were laid down which provided temporary havens for thousands of Europe-bound aircraft and welcomed squadrons of planes homeward bound after V-E Day.

Hazards to Flying

But first, before facilities attained peak operation, came months, even years, of the hardest kind of work in the ruggedest imaginable setting. A hazard to flying the island's skyways was its awe-inspiring landscape, poking needlelike peaks and humping its icy back thousands of feet into an often cloudy sky.

Radio ranges and other radio aids to aerial navigation had to be constructed. Coastal navigation was treacherous because of rock-rimmed, ice-jammed seas, clutching toward passing ships with jagged cape and reef, with unyielding pack ice and silent, deadly iceberg. Radio beacons were needed. Radar had to be installed in ships.

Of equal importance was the urgent need to build and man an extensive chain of weather stations, both observing and forecasting, as widely as possible throughout the island (Plate I). The man who did this, in the face of many obstacles, was Maj. Robert B. Sykes, Jr., my boss in Greenland.

Except for a few hundred Danes, the 20,000 people in the dog-wagging colonial tail of Denmark are Greenlanders, concentrated on the more accessible west coast. These natives, a mixture of Eskimos and whites, live by sealing, walrus hunting, and fishing. Around Søndre Strømfjord some hunt caribou; during the war musk ox, protected in peacetime, supplemented the diet at Scoresbysund (*sund* means "sound"). A few make boats, mine coal, and work in weather stations.

An order issued to all troops, based on an agreement reached between the Greenland Administration and the United States Government, placed all native settlements off limits to American forces.

This regulation worked a hardship on American troops in one respect: many GIs and gobs spent as much as two years in Greenland and never visited, or even viewed, a Greenland village. Some never even saw a Greenland.

At a few outposts an exception was made, and our personnel were allowed the freedom of local settlements because of the proximity of the stations to towns.

Because Greenland's own weather net was linked with the Army's system, inspection teams of Army weather and radio men were authorized to visit towns where Danish weather stations were situated. Several of our officers and enlisted men became good

friends of local colony managers and other Danish families in the coast towns, such as Godthaab (the capital), Julianehaab, Sukkertoppen, Holsteinsborg, Godhavn, Umanak, Scoresbysund, and others (Plate XIV).

One bright August day I had to inspect the Narsak weather station, perched on a rocky cape a few hours' boat trip from Narsarsuak. We roared down the fjord in a rescue crash boat, playing hide and seek with bergs and ice pans. After delivering food and mail to the soldiers at the weather station and completing our inspections, we motored around the point to the village of Narsak to pay our respects to the mayor and the chief policeman.

Sheep Graze near Glacier-topped Mountain

Narsak occupies a dramatic site on a strait between two fjords. It stands on grassy knolls, which grazing sheep keep clipped like city lawns. A glacier-crowned mountain towers behind the town.

Our craft nosed gingerly into the narrow harbor between huge foundered bergs whose melting flanks shone in the afternoon sun as if lit from within. Catching sight of our launch, villagers abandoned their boats, quit domestic carpentry, dropped drums of oil, trooped out of houses, put off whatever they were doing, and ran toward the stone wharf.

By the time we were tied up, the whole population seemed to have assembled on the pier, crowding each other to stand at the very edge, laughing and gossiping among themselves. They waved gaily and we waved back. Tiny children peered at us from between the men's legs or from behind their mothers' skirts.

Grinning broadly, some of the reception committee managed an accented "Hello," "How are you," or an irrelevant "O.K."

Bright colors predominated in the women's clothing; few were without a red sweater, a checked blouse or skirt, green stockings, or a flowered dress. Most of the men wore dark trousers, an old sweater or shirt, and sealskin *kamiks* (boots).

The Danish "chief of police" and the Greenlandic mayor met us on the path. Our business done, we were free to wander at will around the polychrome village.

Prominent buildings—well-built houses, church, school, and warehouse—were painted in postcard colors: rich red, dark green, lemon yellow, orange, or blue. From a little distance they resembled toy houses. Some homes had yards enclosed in whitewashed fences, often with neat vegetable gardens.

No bush had been left in the town, but the close-cropped grass was like a carpet every-



Dr. H. J. Z. Tuckie

"Keep Your Distance, Mister!"

An Eskimo youngster at Thule shows mild distrust of the photographer. He keeps one hand on the door of his peat-block home. While the boy's legs and his father's are clad in swagger bearskin pants, his sister and mother wear high bleached sealskin boots and short foxskin trousers.

where. In some places neat dirt paths had been overlaid with wooden boardwalks.

School had let out when we trooped into Narsak's modern schoolhouse. It had several rooms, blackboards, junior-size chairs and desks. Here Greenlandic children learned to read and write their language (Plate XII). We were unguided, so Don and I sat at two desks while Chuck tutored his two "pupils" in the additions and subtractions left on the board.

Nowadays an illiterate Greenlandic is rare indeed.

Some master carpenter who loved his work

built the Narsak church. It is a gem. The style is Scandinavian, the effect chaste and simple, clean, cool, and restful. White paint and mahogany stain, shiny brass and spotless altar, clean windows and carved timbers merge in a memorable house of peace and worship.

We entered one fine home with varnished floors, imported furniture, new drapes at the windows, and pictures on the walls. We also visited a stone and sod hut with boards for a bedstead, boxes for chairs and tables, broken windowpanes, and a door that wouldn't close. Even in this remote hamlet, prosperity and poverty were neighbors.

Two girls seemed to be the town flirts; their grandfathers would not have recognized them. They wore heavy lipstick, city shoes, and cotton stockings, and smoked cigarettes in a manner intended to be smart. They were listening to an old phonograph grind out antedated European jazz. We sat down beside them and they served us tea.

Raw Turnips Treat for Children

Strolling toward the dock, we noticed an old fellow working in his fenced-in vegetable garden. Three or four children played at his back. Every now and then the man pulled up a turnip and added it to a small pile.

Outside the garden gate a crowd of women and children lounged on a parklike square.

The gardener's children frequently threw a few turnips to the people over the fence. Shrieking and laughing, the "outside" youngsters fought for them. The mothers snatched the earth-coated turnips from their offspring, produced knives from pockets of their skirts, peeled the vegetables, and handed them to the children to eat raw.

As our boat pulled off into the bay, a somewhat reduced crowd cheerfully waved good-bye. An old man cleaning a batch of trout beside the wharf didn't even look up.

A matter-of-fact message from Prins Christians Sund came to my desk early in the fall of 1943. The garrison of that outpost was restraining under armed guard two unheralded visitors whose first view of the camp was along the barrel of an Army rifle. They lacked adequate identification. Would we clarify the matter with Greenland Base Command and forward a radio O.K. if their guests' presence was legitimate?

I learned that the strangers were a fully authorized map survey party. But because the Prins Christians weather station had not been warned to expect the two scientists, they

might have "enjoyed" a sharp welcome from a .30-caliber slug.

How the Germans were bested in "the battle of northeast Greenland" already has been described in magazines and newspapers. What tempted the Germans primarily to Greenland was *weather*.

Reports transmitted from the vicinity of Eskimonæs and northward most definitely gave German planners considerable help in anticipating Allied bombing strikes on the Continent. In addition, warnings from the Arctic aided the foe to plan submarine attacks for periods of good weather in the Allied shipping lanes.

If these footholds had been secured, meteorological data from them, taken with other available information, might have given the tip-off on D Day in Normandy.

The roll call of German weather stations captured, rifled of equipment, or destroyed in east Greenland totaled at least four (page 463). Add to that German sealers and armed trawlers put out of action (two were seized as prizes, two were scuttled by the enemy, and one was demolished by the Coast Guard) and the success of the counterattack against the invading Germans is clear.

Because access to the enemy-occupied area was by sea, it was natural that the U. S. Coast Guard played the decisive role in the actual assaults on the German positions.* U. S. infantry troops, however, formed part of the expedition to Shannon Island.

Balchen Flies Again

One German station on Sabine Island was bombed and strafed by planes of the U. S. AAF under Col. Bernt Balchen. And on land the tireless Greenland Sledge Patrol, made up of expert Danish hunters under the command of Capt. Niels Jensen, snooped by dog sled over a vast area of country. They spotted enemy activities for our forces, setting in motion the plans for effective counterblows.

Select items of German food stores brought back from captured stations to Narsarssuak somehow found their way to our barracks. No fruit we had from America tasted more delicious than the succulent Hungarian plums, swimming in thick, sugary syrup, that were a sample of choice canned goods the Nazis sent to nourish their Arctic weather spies.

German quartermasters would have snarled in anger had they guessed that delectable Norwegian sardines, packed in rich Spanish

* See "Life with Our Fighting Coast Guard," by F. Barrows Colton, and "Coast Guard Patrol in Greenland," 8 Kodachromes, NATIONAL GEOGRAPHIC MAGAZINE, May, 1943.

Uncle Sam's Icebox Outposts



Army Observer, Hydrogen Balloon, and Theodolite Make Up a Greenland Weather Team

By following the gas bag, the telescope determines upper-wind direction and velocity. Other balloons carry transmitters radioing data through clouds and darkness. Greenland observations guided Atlantic flights.



© National Geographic Society

Photographs by John E. Schneider

For Drinking Water, Soldiers at Marrak Point Chop a Hole in Nature's Icebox

This same hole may be used for catching fish. If an 80-mile wind confines the men, they melt snow. Marrak Point is an emergency landing field in southwest Greenland.

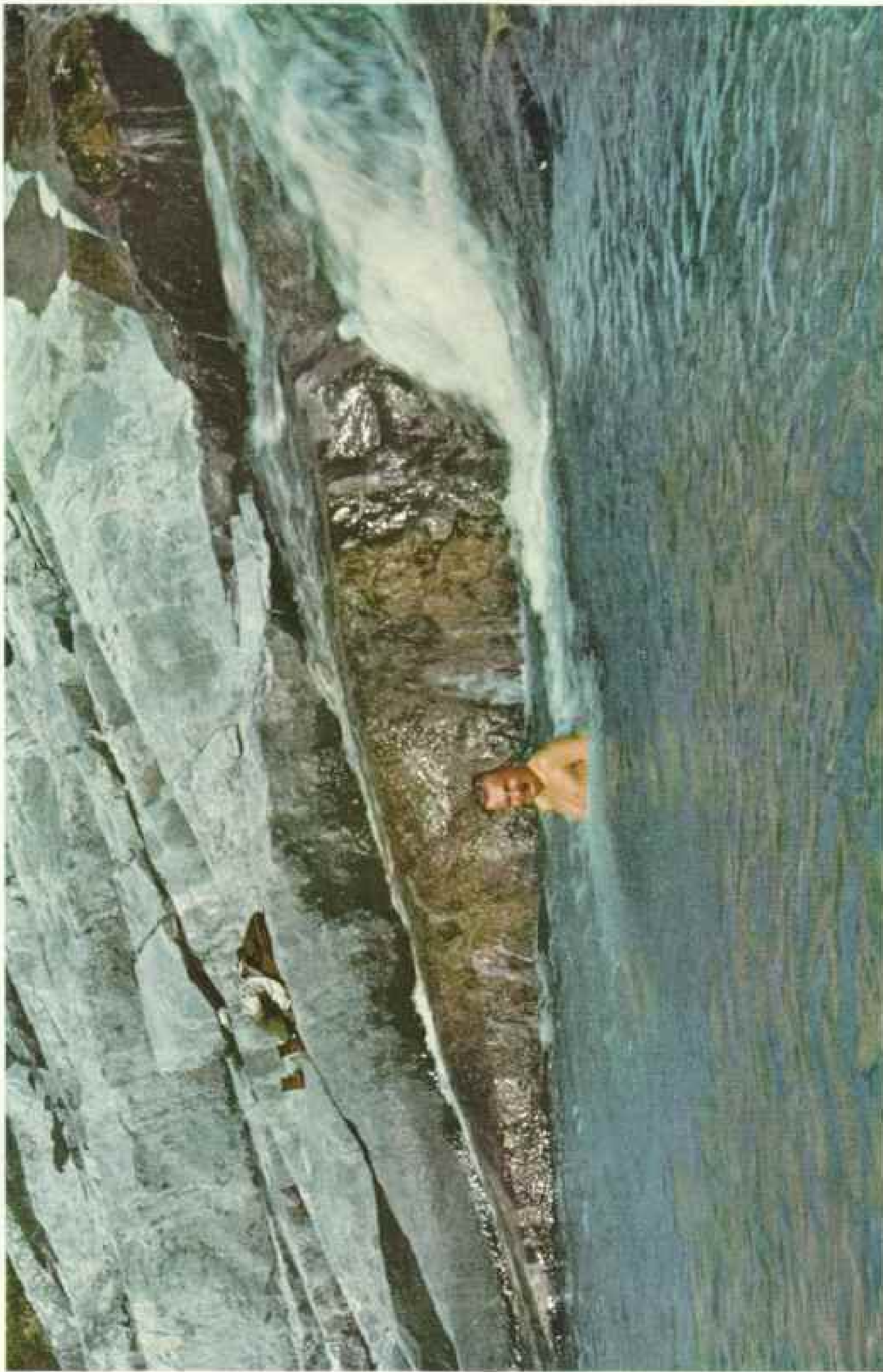


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Photograph by John E. Schaefer

Low Stratus Clouds Creep In on Murrak Point. In 15 Minutes the Landing Field Near By Will Be Fogged In

Quick weather changes along the Greenland coast make flying hazardous. Lost almen get their bearings by riddle from direction-finder stations. This lonely GI surveys Graede Fjord and 4,000-foot Mount Katedlavat, near Murrak Point. Though it is June, snow lingers in the hills, as it does all summer.

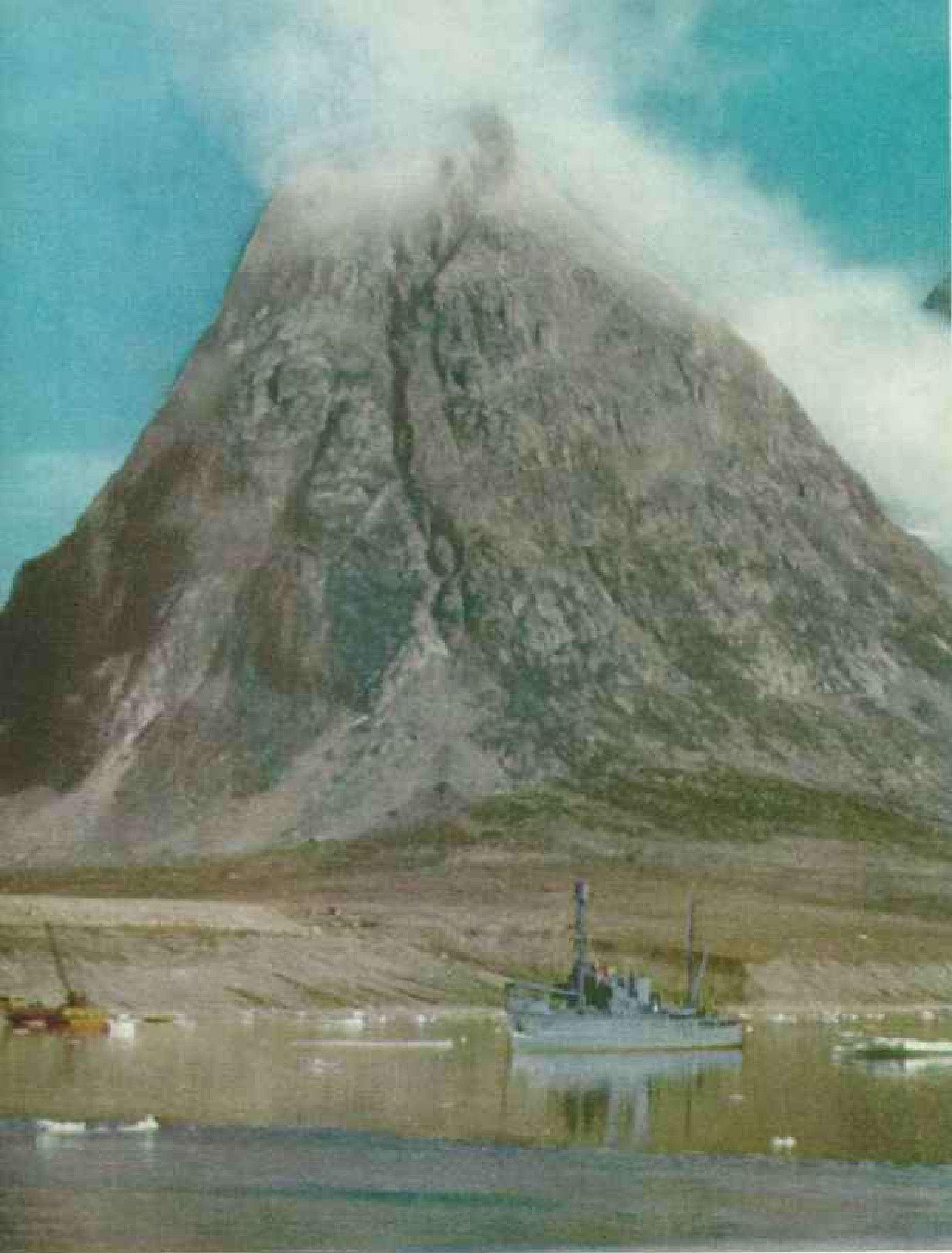


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Reproduction by John W. Robertson

Swimming Is Not Popular in Greenland, Yet It Can Be Done in a Glacier-fed Stream

Often the air is warm—60° to 70° F.—but the water remains cold. A plunge and a few hurried strokes satisfy most GIs. This river, having flowed several miles over sun-bathed rock near Marnik Point is a "moderate" 45°. Trouble is, mosquitoes like this kind of weather.



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Ikateq's Rugged Scenery, Pleasing to the Eye, Is a Menace to Airmen

The split mountain, which Americans nicknamed "Brennan's Peak," towers 4,000 feet above the east coast. Narrow fjords provide approach corridors for planes to Ikateq, yet surrounding mountains are so hazardous that a minimum cloud ceiling of 2,000 feet is required for landing on the strip (extreme left). Here the twin peaks are shrouded by stratus which only a few moments before blanketed the entire area.



Kodiakome by John E. Schneider

A Glacier Fills the Crevice Between the Hills; Small Icebergs Sprinkle the Fjord

Here, just below the Arctic Circle, several hundred Americans led lonely lives. In midwinter, when the sun never rose, they kept their small city lit 24 hours a day. In summer, when daylight never ceased, they fished, hiked, and climbed these mountains. A gasoline-powered tow hauled skiers up a slope on the left. Ikatoq base was built in 1947 as an alternate landing field. Supply ships are the Army's *FS111* and the Norwegian freighter *Anak*.



© National Geographic Society

Illustration by John E. Johnson

It Is Hard to Say Who Enjoys a Hike the More, the Soldiers or Their Dogs. "Our Pups Never Failed to Accompany Us"

It is April at Mærsk Point, and snow is melting. A lieutenant, "one of the boys" in Greenland, and an enlisted man (right) examine a colored stunt. The dog between them sired the four pups. "Our dogs joined our hikes soon after they started to walk," says the photographer. "In tough places, we had to carry them."



© National Geographic Society

Kobukhmas by John E. Heinecke

Greenland Celebrates Its Brief Summer. The Broad-leaved Willow Herb Thrives among Boulders Left by a Retreating Glacier

Over this tranquil beauty hundreds of planes winged their way between continents. Nararsuak, a big American base, lay just behind the photographer. GIs stationed there enjoyed trout fishing in the stream. They saw the wild flowers break out in June. Some were still in bloom when snow fell late in August.



Kulachrome by Robert D. Seker, Jr.

Captive Polar Bear Cubs, Bound for a Danish Zoo, Enjoy Their Last Greenland Swim

Army men on the east coast often hunted bears; a big white skin was their favorite souvenir. They were startled sometimes by bears walking into camp. These 2-month-old twins were caught near Scoresbysund.



© National Geographic Society

Kulachrome by John E. Schneider

Marrak's Camp Dogs Study the Surf; They Become Fishermen During the Capelin Run

June brought millions of these small fish into the fjords. Many were caught by nets. Others, stranded by tides, were gathered by hand. To men tired of the usual chow, they contributed many a palatable meal.

olive oil and shipped at great hazard to north-east Greenland, composed many a late-evening snack for the hated "decadent democrats."

Wild winds, fantastic landscape, the very existence of the icecap and the pack ice, have led to nicknaming Greenland a "weather factory," "birthplace of Europe's weather," and "breeding ground of North Atlantic storms." Such half-truths oversimplify the problem of the origins of weather.

Actually North Atlantic—and Greenland—weather at any moment results from meteorological processes that did not "originate" anywhere, but which, rather, have been constantly working on the atmosphere in its vast, ponderous movement from west to east.

A "Switch Gate" for Storms

Greenland's geographical position, its stupendous topography, and the character of the ocean that washes its shores do strongly influence weather in its environment. The island is a mighty "switch gate" in the North Atlantic, diverting some storms up its west coast and sending others eastward toward Iceland and north Europe.

United States Army and Danish weather reports and forecasts from Greenland provided, and still provide, valuable data for North Atlantic flying. These data supplement similar reports and forecasts from Labrador, Newfoundland, and Iceland.

Greenland filled what would have been, for lack of it, an embarrassing blank spot in North Atlantic weather coverage.

In Greenland, as everywhere overseas, the soldiers' spirits soared or ebbed in direct proportion to the frequency of mail delivery. Everyone kept an eye cocked at the sky. If the sun shone we might get mail; if the day was bad—well, another zero went on the calendar.

The barometer of morale thus paralleled the rise and fall of the mercury at the weather station. Our men grew accustomed to the endlessly repeated query, "Will a plane get in today?" If a bad spell persisted, we would overhear good-natured mutterings: "Let's requisition a new weather department."

A job that engrossed everyone, including the men assigned to perform it, was clearing the snow off the runway. Hardly had a storm started sifting white flakes over the land than out would roar the convoy of huge plows to play follow-the-leader up and down the concrete. Engineer troops took pride in making sure, if a break came in the clouds, that a pilot would not have to wait "upstairs" for an open runway.

On one point there was agreement: Greenland put on a four-star weather show.

Principal in the cast was the mighty *foehn* wind, near relative of the western American chinook. It blew, when atmospheric conditions were ripe, in most of the coastal reaches of southwest Greenland.

The Menace of the *Foehn*

Sometimes the steady blast screamed past at 100 miles an hour. Sometimes it was fickle and unpredictable, perhaps whistling by one moment at a paltry 60 m. p. h. and then suddenly "ringing the bell" with a booming gust to 120. A rampant flood of air, it poured over and down from the icecap to the sea.

Everything small that was not tied down took off for foreign parts when the *foehn* let loose. Boards peeled off lumber piles like fighter planes rising to attack, and sailed fjordward end over end, a peril to life and property. Empty oil drums flew across the airfield, sometimes doing damage and sometimes missing by a whisker targets such as barracks, hangars, parked planes, and struggling pedestrians.

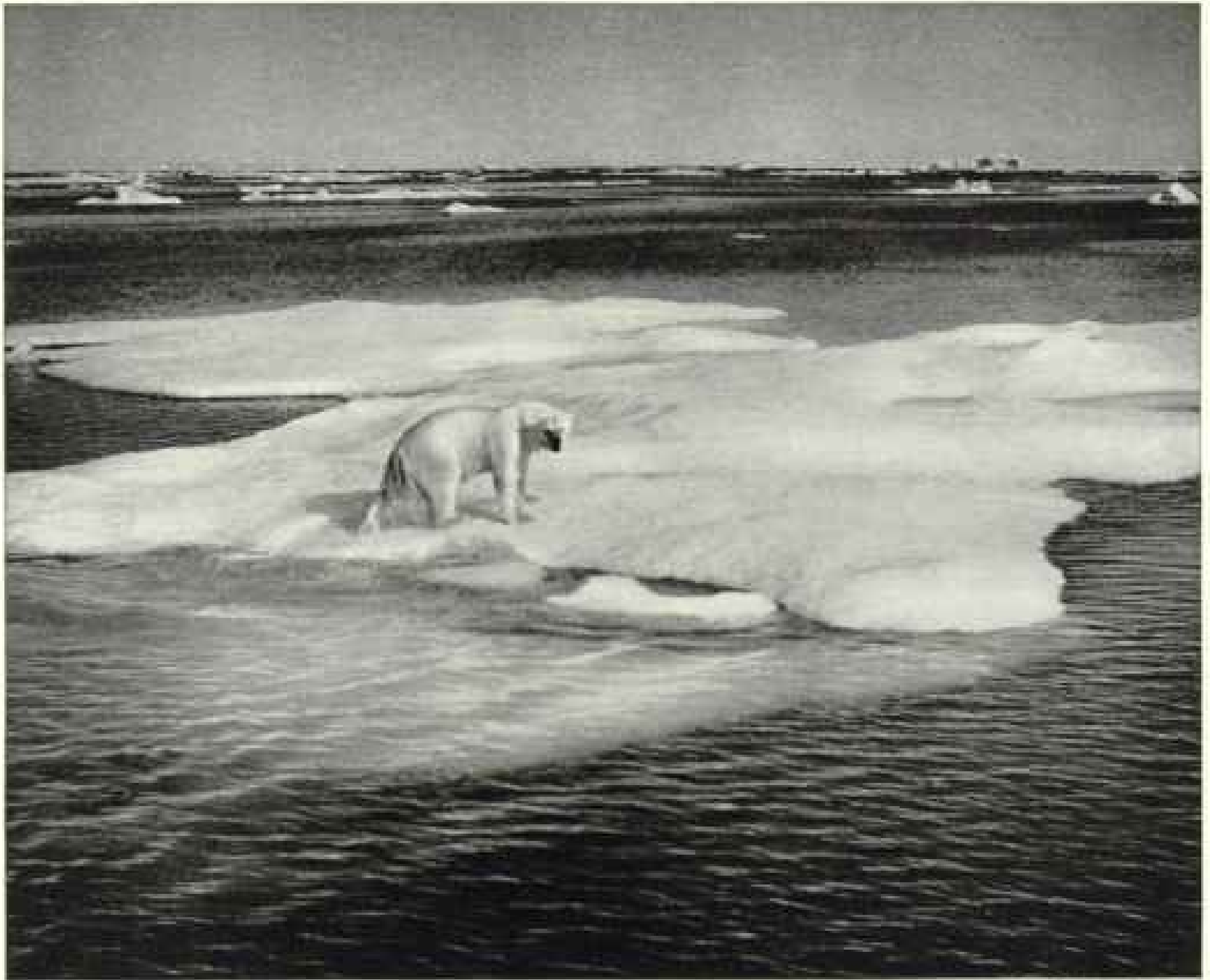
The *foehn* was a malicious genie that swept up sand, gravel, and small stones to hurl them with spiteful violence at the works of invading man. This abrasive compound of gale and grit pitted vehicle windshields to look like ground glass, punctured neat round holes in windowpanes, shredded jeep tops, sand-blasted buildings, toppled antenna towers, sent men to the hospital with inflamed eyes and nasal passages, tore small boats from their moorings and ground them to pulp on the rocks.

Once the *foehn* genie showed a whimsical sense of humor. With a huff and a puff it carried away the whole superstructure of a rather vital temporary building and sent its sole occupant, a certain astonished weather man, hustling for shelter, stinging particularly fleshy portions of his anatomy before he could lift and secure protective clothing.

That the *foehn* came from the icecap, yet blew warm, puzzled all who didn't know the why and wherefore.

The air in the fjord at Narsarsuaq comes from the east coast and is forced to rise over intervening terrain to some 8,000 feet. When it descends to sea level again (because of thermodynamic processes) it is warmer and dryer than before. Local terrain accounts in part for the high wind speeds and the apparent wind direction—northeast. A heavy snow might be followed by clear, bitter cold days.

Then the *foehn* would come. The temperature would jump from 10° below zero to 40°



Capt. Robert A. Bartlett

Cornered on an Ice Floe, a Dripping Polar Bear Turns to Snarl at the Foe

Adult polar bears, of tremendous strength and endurance, have seldom been captured alive. Cubs usually are caught by lassoing them in the water. A big male may reach a length of 11 feet and a weight of 1,600 pounds. Living almost exclusively on seals stalked with stealthy skill, these bears seldom are found far from the sea ice. Polar bear young, usually two, are born in midwinter. They are so small and helpless that the mother keeps them close to the birth place for three months (Plate VIII).

above. Licked by the dry and balmy gale, the snow would vanish overnight, a little of it melted, most of it sublimated directly into the thirsty wind.

Army records point to Prins Christians Sund, on the island's southern tip, as Greenland's wind capital. Steady cyclonic winds of 100 miles per hour, with gusts to 120, were frequent at that station.

Observers had to estimate the force of Prins Christians Sund's biggest blow. When the anemometer cups on the wind-recording device vanished in the gale, gusts already were topping 125 miles an hour. But the wind, showing its strength, blew harder.

When the weather station began to vibrate like a tuning fork, the men gulped their pride and scrambled. A rope was strung for a hand-rail between weather station and barracks. The wind caught one man and held him out

horizontal, flapping like a flag, while he clung to the rope with a desperate grip.

From the vantage of the better-sheltered barracks they estimated extreme steady speeds close to 170 m. p. h.; the strongest gusts, 200 m. p. h. The weather station survived the ordeal, battered but intact.

Fighting off one terrifying northeaster at sea, a Coast Guard cutter, often running at full speed and never under one-third speed, made seven miles in two and a half days!

Caprices of Island Weather

Extremes and contrasts marked Greenland weather.

Skjoldungen measured 50 feet of snowfall in one winter. The camp was constructed late in the fall. Snow buried a pile of lumber which had just been taken off the ship. No one remembered where it was. Much of it



U. S. Coast Guard, Official

Canted Crazy by the Grinding Ice, a Scuttled Nazi Trawler Tells a Stark Tale of Defeat

Coast Guardsmen scramble over piles of equipment and supplies dumped on the ice by the Germans, who burned out the vessel before abandoning it. On Kap Sussi, Shannon Island, a few miles from the wreck, a landing party found an abandoned enemy weather station. In the background is the Coast Guard cutter *Northland*, proud veteran of successful American actions against German installations in east Greenland.

was not found until the following summer.

Snowfall was so light at Søndre Strømfjord, on the other hand, that observers often reported visibility of 30 to 40 miles while it was snowing. In 1942-43 only 20 inches fell during the whole winter, less than has fallen in a single day at many places in the northern United States.

Early in 1945, a snowslide wiped out half the buildings at Skjoldungen. Plans were made to evacuate the personnel. But the ice-breaker sent out on the job couldn't get through the *storis* (old and heavy rafted ice from the Arctic Ocean). Cheerfully the men stuck it out until summer.

The history of the original Beach Head Station at Comanche Bay at one point said: "By winter's end the building was buried in 20-25 feet of snow, making living conditions difficult."

At Søndre Strømfjord, north of the Arctic

Circle, the temperature averaged 20° below zero for several weeks, with a thermometer in a parked plane hitting a minus 54° low.

Capricious midwinter mild spells hit Søndre Strømfjord. After 13 continuous sub-zero days in March, 1943, the following week produced thermometer readings of 38°, 40°, and 46° above zero. Observers noted with pleasure several days on which New York City recorded colder weather than their high-latitude station.

One day in the Narsarssuak weather station I noticed that Comanche Bay was reporting steady winds of 75 miles per hour with higher gusts and a temperature of 20° below zero. This cruel combination continued for 24 hours without deviation in wind or temperature.

Noting the uniformity of the reports, we privately agreed that the men at the station could not be blamed if they crawled into "the sack" and stayed there until the weather moderated. Perhaps they did. We never asked them.



U. S. Coast Guard, Official

Eastwind's Propellers Churn the Air as Huge Swells Hamper an Ocean Rendezvous

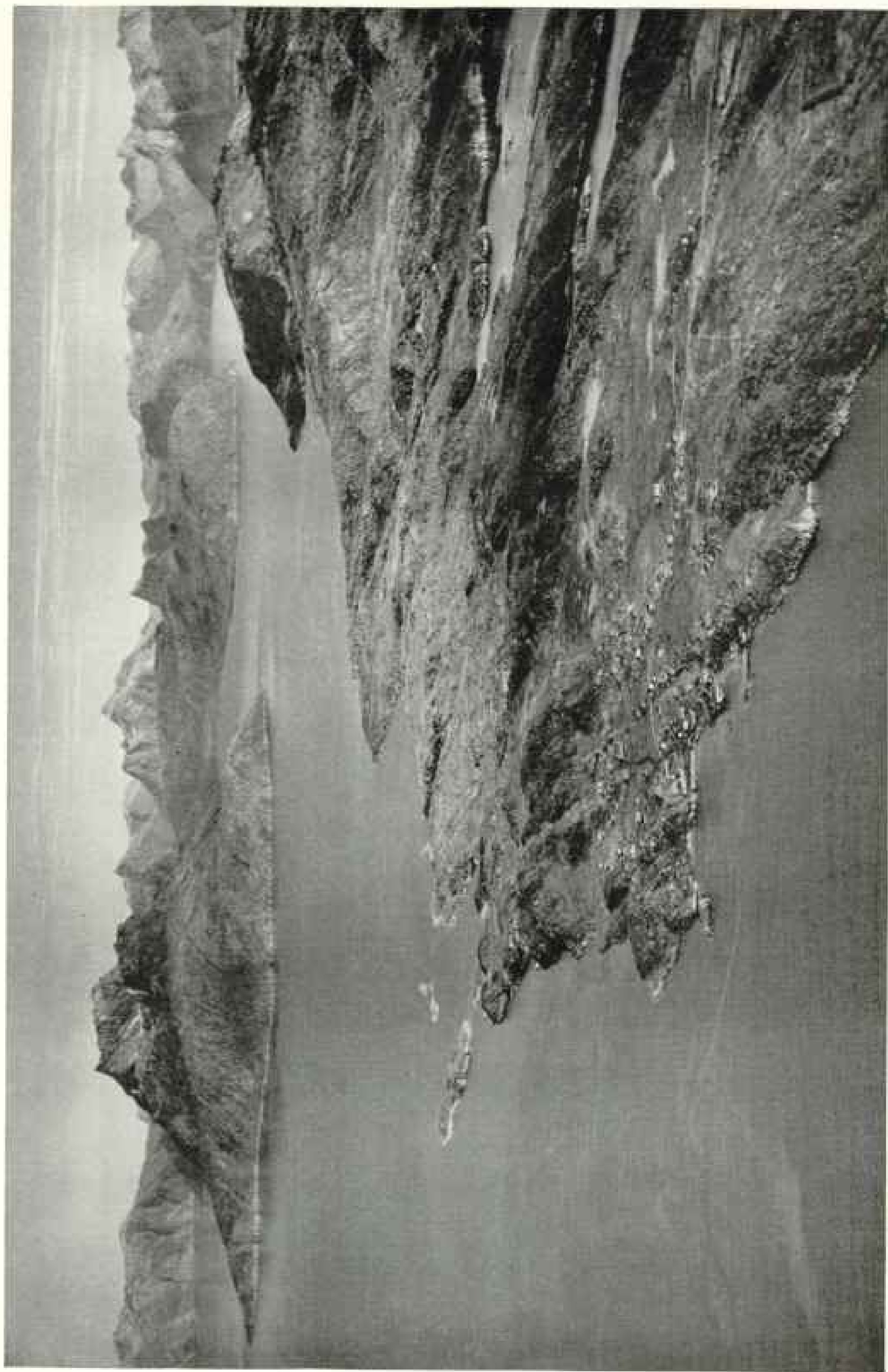
Following action against the enemy, the cutter *Norbland* (foreground) damaged her rudder and later bent her screw, cutting down her ability to maintain headway in a storm that arose. Despite mountainous seas, the *Eastwind* managed to take the *Norbland* in tow as the two ships maneuvered within five feet of each other.



U. S. Coast Guard, official

"To the Victor Belong the Spoils"—With Evident Relish Coast Guardsmen Munch Captured German Canned Goods

At a few minutes past midnight, above the Arctic Circle in late July, the sun is already high in the sky. The enemy foodstuffs were found piled beside an abandoned Nazi trawler, jammed in the ice off Shannon Island. The foe had used it as a weather and supply ship.



U. S. Army, Official

Godthaab Seems Camouflaged by Its Rocky Setting; Actually, Brightly Painted Houses Stand Out Sharp from the Air

Greenland's capital frequently was host during the war to American Army and Navy officers working with the Greenland Administration on problems of defense. A few American-made vehicles carry freight and passengers in summer over the white road between the main harbor (off scene to right) and the village (page 465).



Dr. B. J. E. Thorne

Sailors from the North Sea and New England Share This Resting Place with Native Greenlanders

Whalers and fishermen from the United States and the British Isles once came often to Hobsteinsborg. Foreign victims of drowning and disease were buried here in the town cemetery. The church at the right is Lutheran, the Danish state religion.

In one day freakish weather doused Ikateq, a few miles below the Arctic Circle, with two and a half inches of *rain* on December 10, 1943. Repeating the paradox, in February (the coldest month) of that winter, a *thunderstorm* dumped almost four inches of rain on the same base.

Summers Short but Days Are Long

Greenland summers are brief, but days are so long that everything that grows burgeons swiftly. Grass is thick on the lowlands, even far above the Arctic Circle. Birch shrubs push out dense and shiny leafage. Wild flowers in profusion color the hills (Plate VII).

By the use of glass-covered growing frames most of the Danish settlements take advantage of the long hours of summer sunshine and raise lettuce, beans, radishes, turnips, carrots, even tomatoes and peas.

June and July enveloped us in long, sunny evenings that never ended but just merged with the succeeding dawns. They were made to order for outdoor play. Softball leagues ran heavy schedules. Green hills and rocky crags echoed with shouts and laughter of hikers (Plate VI).

Where in the winter few pastimes were as popular as "hitting the sack," on these halcyon summer days no one went to bed before 11 o'clock or midnight. Hiking parties into the mountains and picnics along the fjord often outlasted the night.

After supper we used to go fishing for trout in the fjord. We also caught them through the ice on river pools in winter and in open streams and ponds in summer. The Greenland trout is as handsome a fish and as sturdy a fighter as swims.

On a calm evening, about 7 o'clock, when the fjord was rippled quicksilver in the sunlight and spangled ebony in the shadow of the hills, two or three of us would borrow a canoe or skiff and head for a certain rocky point where fish always lay.

If we caught three or four trout, trolling slow and deep with jumbo spoons, it was a big night. The fish were fat, lusty fellows, averaging three or four pounds and jumping clear of the water in scorn of the tackle's weight.

If we caught nothing, it didn't much matter. The relaxation of tranquil hours on the bay, surrounded by natural beauty rarely equaled elsewhere in the world, was reward enough for a few miles' paddling or rowing.

Snow crest golden in the slanting sunlight, a mile-high mountain reared against a mother-of-pearl sky to the south. This near-by nameless peak seemed a balance pin on which hung

blue sky and encircling mountain world. From eastward, beyond the airfield, a broad glacier, spawned by the invisible icecap, stretched out an icy arm toward our base (page 458). Green-brown hills, Trossach-shaped but treeless, contained the view to the north.

Southwest to the sea stretched the limpid waters of our fjord, the whale path of Beowulf in a landscape he would have loved.

Flotillas of blue and white icebergs swam majestically with the tide. From the water's edge near at hand, grass- and shrub-clothed hills billowed up to the sky, here green as Ireland, there gray with moss and rock, and all pied with wild flowers, yellow, blue, white, and red. Flocks of Greenland sheep grazed on slopes above a forbidden hamlet near Narsarssuak.

Scenery Palls—Away from Home!

Yes, Greenland's summer beauty is striking—but don't try to tell that to your soldier just back from a year and a half in that Arctic ice factory! Few things accentuated GI loneliness like an empty landscape. Scenery palls fast, away from home!

You'd ask a friend in the morning how he felt about the new day. Like as not he'd answer, "They look a little closer this morning." Then he might stagger a little, thrusting outward with both arms. You knew he wasn't crazy—just an 18-month veteran making the familiar reference to the hills "closing in."

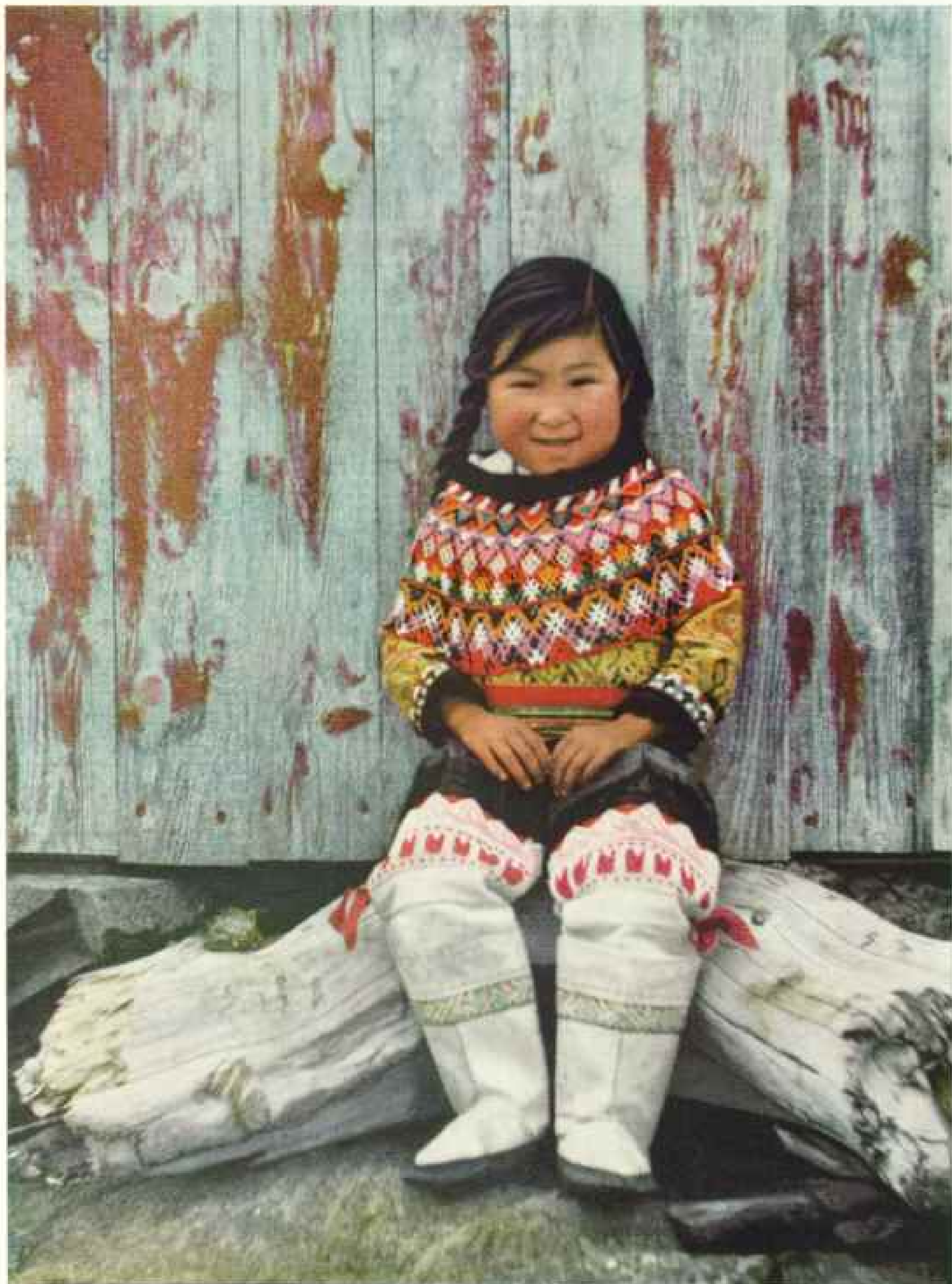
You'd casually glance out the window, an indulgent smile on your face, and start. Dog-gone if he wasn't right!

Most officers and men in Greenland enjoyed the benefits (such as they were) of duty at one of the main airport bases. Only a few hundred were "privileged" with assignment to one of the isolated or semi-isolated outpost stations which clung to the narrow land margin of the island, from Walrus Bay in east Greenland around to Egedesminde on the west.

At the main bases services and utilities for maintenance and welfare of the troops were almost identical with those found at military camps in the United States. Narsarssuak had the hospital, electric power, water supply, and sewage-disposal systems of a fair-sized American town.

Recreation facilities also largely duplicated those found at domestic bases. Only Narsarssuak, however, had a Red Cross club complete with charming attendants, bowling alleys, and a beer and social club, the "Gay Nineties," where buxom chorus "girls" affected feminine wiles in lusty local talent shows.

Uncle Sam's Icebox Outposts

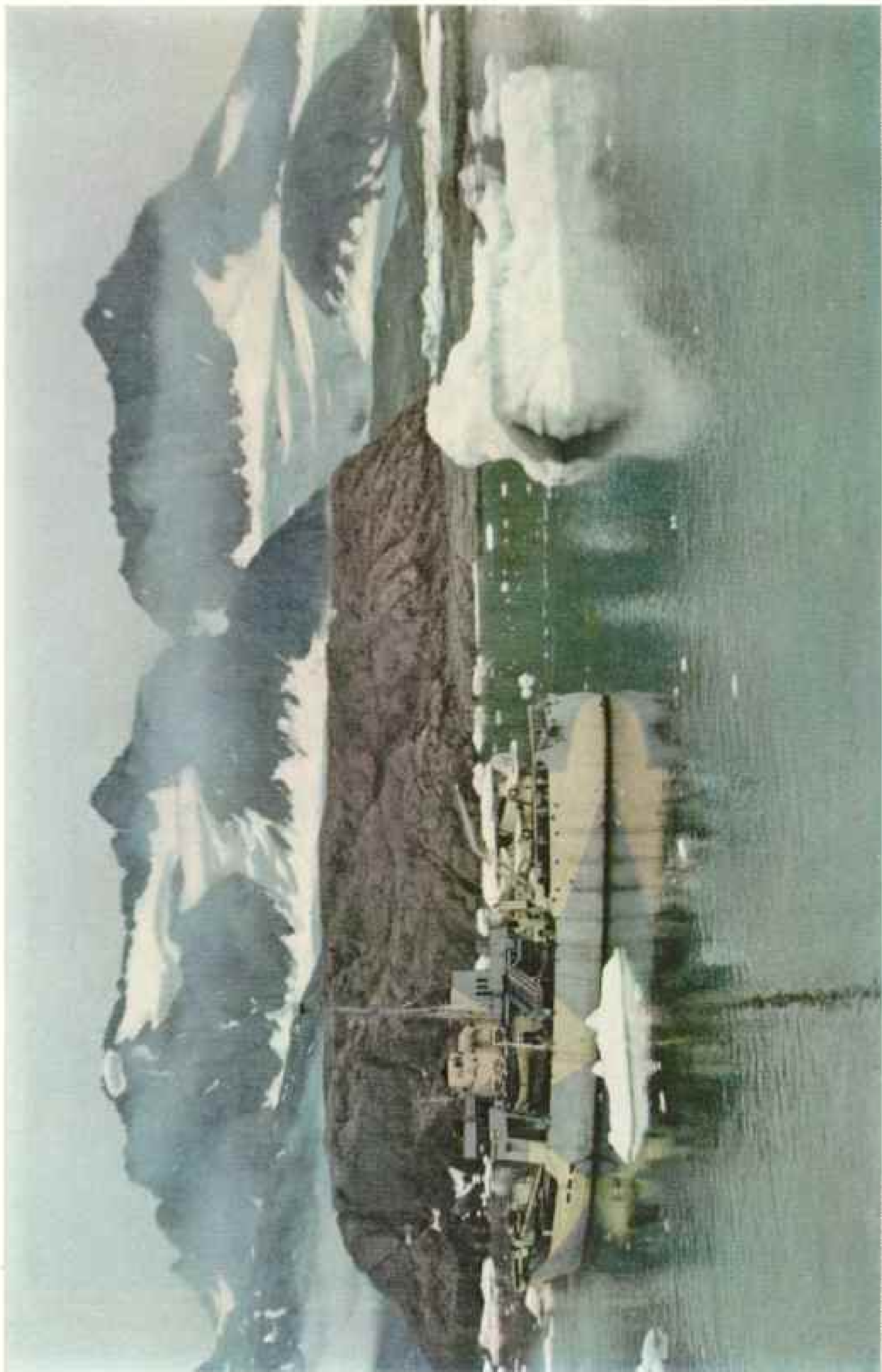


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Kobehaus by John E. Schneider

A Candy Bar and Plenty of Coaxing Win a Smile from Shy Miss Greenland

Just come from church, she wears the traditional native costume. Soon she will return to everyday cotton-print dress. "I visited her sod hut in Kulusuk one Christmas Eve," says the photographer. "It was gay with candles and magazine color pictures. As the youngsters romped, the parents and I played rummy and drank coffee."



© National Geographic Society

Illustration by Robert H. Ricker, Jr.

A Coast Guard Cutter Carries a Small Plane to Reconnoiter Treacherous Ice Blocking the East Coast

In August, 1945, the *Storis* was the last ship to supply isolated Kangerdlugssuak, a United States weather station manned by Danes and Greenlanders. No other people live within 200 miles. Soon, when winter locks the fjord, radio and parachute will be Kangerdlugssuak's last links with the world.



© National Geographic Society.

Illustration by Robert B. Fisher, Jr.

Baby Icebergs Dot the Fjord Like Sheep on a Meadow, but Skjoldungen Is Open to Navigation

Danes operate this American-built weather station. All supplies must be shipped in during the late summer. In September, 1945, these Coast Guard and Army men replaced buildings destroyed by snow avalanches the previous winter. Floating "growlers" have enough underwater bulk, if rammed hard, to sink barge or motorboats.



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School Lets Out in Kulusuk. Children Line Up Beside Teacher's Home. Seal Meat Hangs to Dry above the Kayak

These youngsters learn to read and write their own Greenland language. One wears sealskin pants (eighth from right); others prefer store clothes. In summer they love to go barefoot and swim in 40° water. An Army camp near by was an attraction; one boy mimicked the weather observer's complete routine.

Photograph by John K. Rappaport



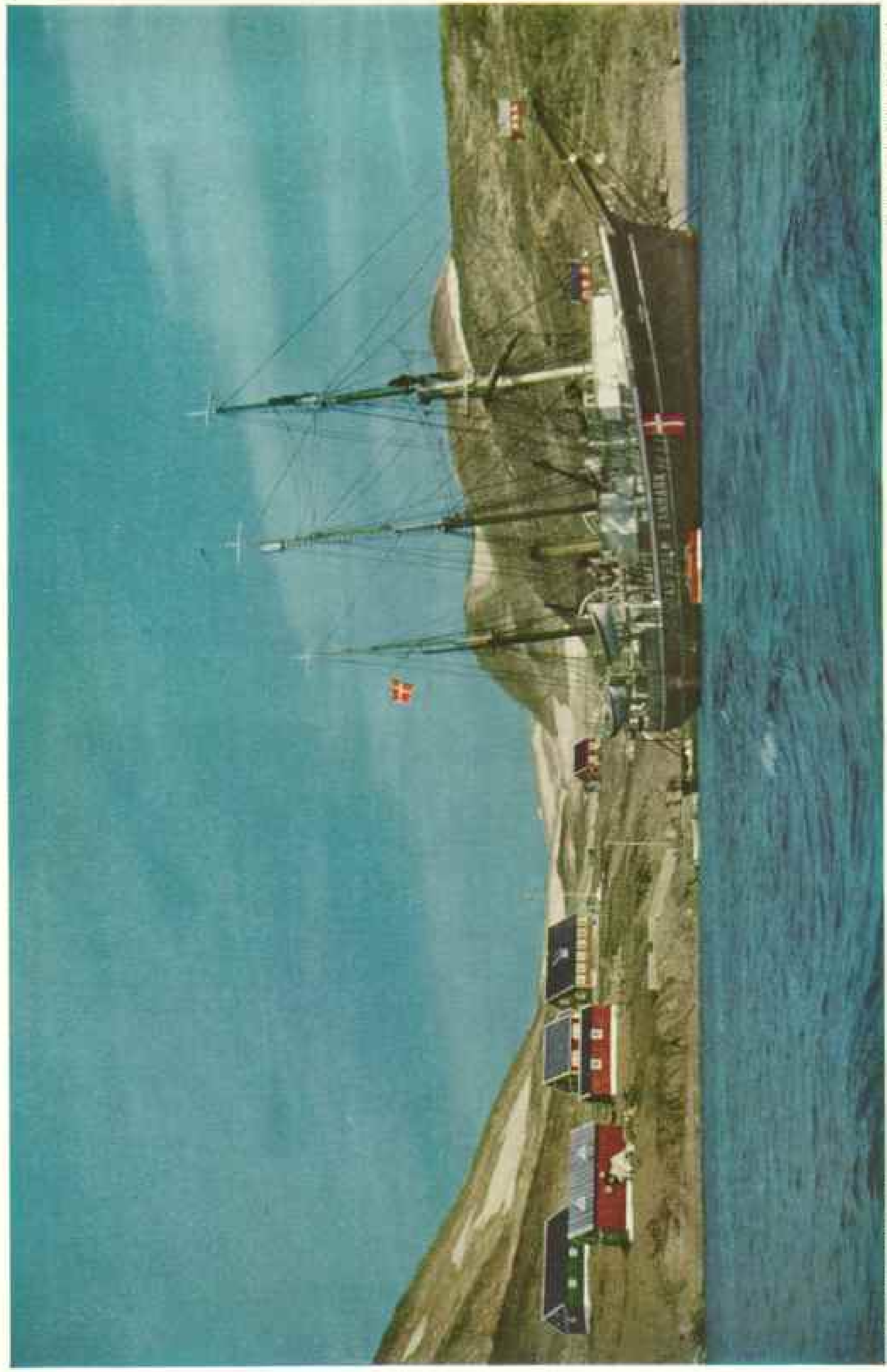
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A 4-foot-tall Angler in Eskimo Boots Throws in Her Line



Photograph by John H. Schmittler

She Lands a 3-foot Cod and Sports Her Army Zipper



© National Geographic Society

Illustration by Herbert H. Jones, Jr.

Scoresbysund Knows the War Is Over. It Comes the *Gustav Holm* with the First Supplies from Denmark in Five Years

Mall arrives again! Everyone, including women, helps unload cargo for a year. During the emergency America supplied this village of 100 souls (metropolitan area, 250). Out of the sound worked a sledge patrol that helped eliminate Nazi weather spies in northeast Greenland.



© National Geographic Society

Exhibitions by Robert B. Heber, Jr.

A Greenland Boat, Oared by Women, Meets an Army Launch and Passes the Time of Day

Americans like the Greenlanders but seldom meet them. Bases generally are isolated from settlements. These Army men are from remote Walrus Bay, a weather station two miles from Scoresbyvund village (opposite plate). Greenland women do all the rowing, a task which men consider demeaning.



Junior, in Army Cap, and Papa, in Army Fatigues, Repair a Kayak at Kulusuk

Americans who imitated kayak paddlers' underwater spins achieved only a drenching. Snowbound eight months, weather men near Kulusuk grew bored with their 12 sound films. For variety, they ran them in reverse!



© National Geographic Society

Kulusukmen by John H. Schindler

Kulusuk Girls in Beaded Capes and Sealskin Pants Were a Novelty to the Yanks

"These girls," says the photographer, "quickly picked up our tunes but used their own words. At Christmas they sang carols with us in our camp. They were proficient seamstresses; we often wore Eskimo boots."

Outpost living definitely was more rugged. There was no shortage of volunteers for isolated duty, however, chiefly because men who served at outposts put in shorter overseas hitches than their buddies at the bases.

At remote stations personnel were relieved once a year, July to October. These places could be reached only by ship; ice cut off navigation from October to July. Planes dropped mail and emergency supplies once every month or six weeks. On rare occasions, at two or three of these outlying spots, small planes on skis landed to evacuate sick soldiers or flyers who had crash-landed crippled aircraft near by.

Normally there was no way for the isolated soldier to dispatch his own handwritten letters during the long winter vigil. As a second-best substitute, a system of "radio letters" was put into effect. By transmitting groups of numbers which represented phrases and sentences on lists held both at outposts and at Narsarsuak, each marooned man could send out messages to family and friends, which were translated into written form at the base and forwarded.

Building Strapped to Rocks

Wooden buildings at outposts were strapped to the rock with cables so that winds wouldn't blow them, or snows push them, into the sea.

Apart from his daily shift of weather or radio duties, a man "on isolation" never caught up with camp chores. There were oil drums to haul up from the shore through soft snow on a rickety sled pulled by a cranky tractor. Heavy machinery, technical equipment, and living quarters cried constantly for repairs.

Someone always had to give the cook a hand with KP. There was food to bring up from the warehouse, snow to melt for water, stoves to clean, clothing to wash and repair, and unsuspected odd jobs by the dozen, always cropping up when plane and radio traffic were heaviest.

Everything possible was done to make the lot of the isolated men easier and more pleasant. They had washing machines, 16-mm. motion-picture projectors and films, Arctic clothing and equipment suitable to the vagaries of weather and occupation, rifles and ammunition for hunting, and generous kits of games and books.

Each station had a liberal stock of frozen fruits, vegetables, and meats, with reefer boxes in which to store them. Transportation was provided for beer, soft drinks, candy, extra smoking supplies, and toilet articles, which the men purchased according to their wish.

The four weather men, five radio men, cook, and enlisted medical man, who composed the strength of the average outpost, were carefully screened, both physically and psychologically, to determine their suitability for isolated duty.

Many of the volunteers for these lonely assignments graduated from the Arctic Training School run by the Army Air Forces. Men who had been through the rough-and-tumble of this school were almost guaranteed to be stable, adaptable, well-balanced individuals.

To stand the gaff, our first-rate outpost non-commissioned officer-in-charge had to be a cool customer with no nerves.

Such a leader wrote this casual entry in his station diary: "Feb. 16. Kharkov recaptured by the Russians. Sound full of ice. Varnished bookshelves in dayroom."

All permanent Greenland outposts were located on the coastal land fringe.

Experimental icecap stations were established, however, by the Base Ice Cap Detachment. Working back from Comanche Bay, this group of Arctic experts, in addition to other valuable research, set up temporary weather-observing stations inland on the great ice. Weather observations on the icecap also were recorded by several Army survey parties, including one that skied to the center of the cap in June, 1944.

Some Lucky Escapes

Lucky escapes and rescues were a dime a dozen. There was the Britain-bound bomber crewman who parachuted from his storm-tossed plane on a mean night over the Greenland coast. He alighted unharmed on a grassy hillside (in a region about half water) within sight of the Narsarsuak airfield.

Walking to a Greenlander village on the fjord, he quickly got a boat ride to the base. He disembarked scarcely ruffled.

His plane and fellow crew members landed safely at the same field.

Likewise at sea. Leaving Kap Cort Adelaer in October, 1943, the ship *Polar Björn* (Polar Bear) was halted by engine trouble. A U. S. Army officer on deck fancied he saw strange lights flashing from a small island. A party took off in the ship's boat and found three RCAF flyers huddled, half-frozen, on the rocks. Their skipper was from Louisiana.

Weak from lack of food, they were also suffering from shock. Two of the three still were nursing feet thawed out just the day before at the cost of pain that made them scream.

Soon they were back at Narsarsuak and, after treatment, were returned to Canada for hospitalization.

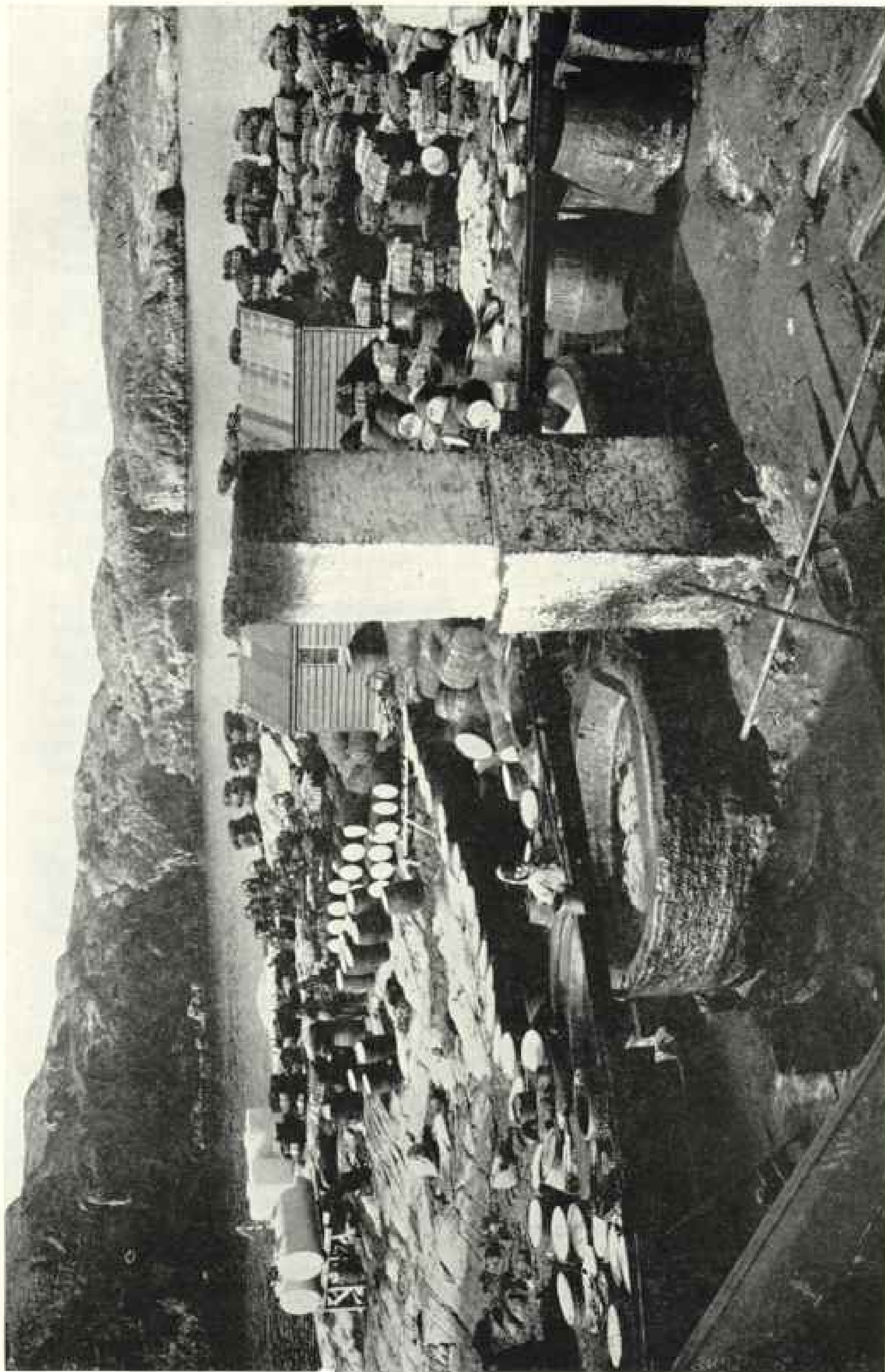
Their story: Eleven days before, they had



H. A. Arner; Gifford

Trucks and Jeeps Speed Along a Black-top Boulevard Above the Arctic Circle, Blasted Out to Move the Makings of an Airfield

Before planes could land at Sandre Strømfjord, contractors had to build this costly 8-mile supply road from the port area at the head of the fjord to the gravel flats where the runway and main camp area were constructed. GIs would "let it out" along this road when the MPs weren't looking.



James P. Smith

In Big Vats at Egedesminde, Seal Blubber Is Rendered into Seal Oil, a Profitable Export

Fat layers from seals are melted down by fires built beneath the big kettles. A Greenland ladles the oil into a wood trough from which it pours into barrels for shipment. Bundles of barrel staves (top the rocks (background)). The U. S. Army had a weather station at this village.

crash-landed their bomber 20 miles off the coast. They made shore in a rubber dinghy, which became their meager shelter. All the food they had was a few malted-milk tablets, some barley sugar, chewing gum, and chocolate bars. To save body heat, the men huddled tight together, while sleet, wind, and driving snow howled about them.

Once a possible rescue ship glided past and several big bombers raced across the sky. Neither ship nor planes responded to their flares. When they caught sight of the *Polar Björn* they blessed the day for being bright; otherwise, there would have been no reflections from their pocket heliograph.

When a Flying Fortress came to grief on the icecap in August, 1942, the navy blue came to the aid of the olive drab in a flying boat, a sturdy, dependable PBY. Lt. (jg) A. V. Parumak, pilot of the big plane, set his ship down on a lake formed by melting snow in a hollow of the cap, picked up the stranded crew, and beat it for home.

In the nick of time. Shortly thereafter, another plane passing that way reported that the lake had disappeared.

In a tangle of tragedy and heroism, disappearance of one plane led to the crack-up of a searching aircraft and the expenditure of five months of effort and the lives of five men to save the crew of the second ship.

One engine smoking, a plane flying between Iceland and Greenland in November, 1942, was seen proceeding on a northerly course by personnel at Skjoldungen. The plane crashed, but remained in radio contact with the "outside"—for a while. It never was found.

Housekeeping in a Fuselage

A number of aircraft set out to find the first plane. One of them, a Flying Fortress, crashed not far from Comanche Bay. One man was seriously injured; others were less badly hurt. The crew set up housekeeping in the broken fuselage.

Toiling with the smashed radio, the operator after nine days managed to tap out an SOS. The position was picked up and rebroadcast. A plane from Søndre Strømfjord first found the wreckage and dropped supplies.

From a party of scientists and Arctic experts, under Capt. Alan Innes-Taylor, who were studying conditions on the icecap near Comanche Bay, Lt. Max H. Demorest and Sgt. Don T. Tetley were dispatched by motor sled to the crash scene. Afoot, Demorest reached the plane, but in an attempt to bring up his motor sled the vehicle broke through a snow bridge and fell into a 150-foot crevasse, carrying the officer to his death.

Meanwhile, the Coast Guard cutter *Northland* sent out its small amphibian plane to attempt a rescue. Locating the downed B-17, Lt. John A. Pritchard, Jr., pilot, skillfully landed his craft on the icecap. His ship could carry out only two of the injured at once. Two were selected, and the plane took off.

Pushing his luck, Pritchard returned to the wrecked plane next day, took off with one more of the Army men in thickening weather, and vanished into the fog and snow. Wreckage of the plane was found but no trace of the crew. Pritchard and his two companions apparently had been able to walk away from the crack-up but were unable to reach help.

Fifth fatality in the protracted rescue was Pvt. Clarence Wedel. While attempting to remove one of the injured plane crew by motor sled to the coast, he—as did Lieutenant Demorest—fell to his death in a crevasse.

Saddened but undiscouraged by this new mishap, Col. Bernt Balchen came up with a daring plan to rescue the stranded party. He suggested landing and taking off big PBY (Catalina) flying boats on the icecap snow.

The Navy offered full cooperation and two PBYs. Lt. Bernard W. Dunlop, by three successful landings of his big flying boat on the icecap between February and April, 1943, at last took off all the remaining crash victims.

Speaking of luck, we are fortunate in having the accompanying color illustrations by John E. Schneider. In the spring of 1944, Schneider was an Army weather observer near Kulusuk, east Greenland. He was leaving the hydrogen generator shack (hydrogen for upper-air balloons had to be manufactured at each station) and had just reached the door when the shack blew up. The blast hurled him 30 feet through the air and set him down hard, singed but unhurt.

Every day at Narsarssuak I used to walk from my barracks to our office. One brilliant morning in September, 1945, soon after celebrating both V-J Day and my second anniversary in Greenland, I strode along enjoying the autumn scene.

The powerful roar of engines cut through my reverie. A "Big Charlie," as we dubbed the C-54 transport plane, poised briefly at the head of the runway. Then with a flourish it swung into its take-off run and roared down the concrete, westward toward America.

I stopped. Greenland's charms? They vanished from my thoughts. In fancy I was on that ship, now climbing fast to the horizon. Instinctively I looked at my watch. Yes! It was high time I went home.

A month later I got my wish.

Palestine Today

BY FRANCIS CHASE, JR.

A PALESTINE friend whose home was originally in Zürich stood with me recently on the shores of the Dead Sea and pointed out that it might well be Lake Constance, on the Swiss border, with the mountains beyond not those of Moab, from which the Children of Israel first sighted the Promised Land, but the Alps.

The thermometer stood that day at 110° F. in the little shade afforded by varicolored beach umbrellas borrowed from the closed winter-resort hotel near by.

The temperature in all reason should have ruled out such a comparison. Yet the intense coloring of the sea, the shifting hues on the overhanging slopes and deep gorges, and the blue-white clouds caused by excessive evaporation did make it seem more a Swiss landscape than a Palestinian one.

In Jerusalem I sat with a Yugoslav friend in one of the tiny coffeehouses which dot Ben Yehuda Street, as well as many other short streets bisecting Jaffa Road in the modern city, leisurely talking politics over cheesecake and coffee to the soft music of a string quartet. His eyes grew dim, and he confessed that there, in that moment, it was like Belgrade before the war.

In few other places has the atmosphere of the Central European coffeehouse been so well preserved as here (page 502).

In Tel Aviv, when you walk down the broad, tree-lined Rothschild Boulevard or in the Zina Dizengoff Place with their numerous sidewalk cafes, citizens of this all-Jewish city will ask you wistfully if it doesn't remind you of Paris.

In honor of modern Palestine's chief patron, the late Baron Edmond de Rothschild, an effort was made to lay out Tel Aviv after the manner of Paris, but it doesn't quite come off (page 512). Tel Aviv is white and shining, new and ultramodern, with little of the mellow, age-softened beauty of the French capital.*

Shrine of Three Great Faiths

Palestine today—as it has been through the ages to men of Christian, Moslem, and Jewish faith—is all things to millions of people. Each little group of nationals strives desperately to plant here the best seeds of the culture they left behind them, to see in this new but eternally old country something of the lands from which they came.

Being American, I may be pardoned, then, for concluding that Palestine is, in a broad

sense, the United States of the middle 1800's at the same time that it is, paradoxically enough, California of today.

This dual character of present-day Palestine derives from the fact that it is still a pioneer country, but a pioneer country of the 20th century in which ox-drawn plowshares have given way to tractors and the tempo of development is swift, certain, and scientific.†

Big stretches of untilled and unsettled land are dotted, as our own Middle and far West were about 1860, with settlements in various stages of development.

A new one, with crude wooden barracks hurriedly thrown up and the fields just beginning to be worked, lies only a few miles from older settlements, such as Petah Tiqva, near Jaffa, which started in precisely the same way. Petah Tiqva now has grown into a municipality of some 20,000 citizens, with modern homes and large municipal buildings and apartments. A still-growing community, it stretches out its suburbs like green fingers in the desertlike dunes.

Reminders of California

Like the pioneer United States, Palestine is dependent primarily upon agriculture. Perhaps a century separates it from the United States of today. Also, like the United States, it drew its modern immigrants from almost every country of the Old World. It is particularly fortunate, however, in that its Old World immigrants looked to the New World for certain methods of agriculture, and particularly to California (page 513).

This is not strange, for in certain aspects of climate and topography the Holy Land, although only about the size of Vermont, is closest to California. Allowing for the fact that the vegetation of California is much less disturbed after 150 years of settlement than is that of Palestine after 1,500 years of intensive cultivation during Biblical times and 1,300 years of comparative neglect after the Arab conquest, the natural vegetation of the two is very similar.

The palo verde tree of the Colorado Desert and Coachella Valley desert area has a counterpart in the shittah tree of southern Palestine and Egypt's Sinai desert.

* See "Bombs over Bible Lands," by Frederick Simpich, NATIONAL GEOGRAPHIC MAGAZINE, August, 1941.

† See "Bible Lands and the Cradle of Western Civilization," map supplement with the December, 1938, issue of the NATIONAL GEOGRAPHIC MAGAZINE.



International

In Zion Square the New Jerusalem Dresses like a European City

Jerusalem, holy to Christians, Jews, and Moslems, was terrorized last July when extremists bombed the King David Hotel, killing fourscore Britons, Jews, and Arabs. Soon barbed-wire barricades appeared on the streets. Zion Square, which lies outside the city walls, is a new commercial center. Signs in English reflect the influence of the mandate power, Great Britain. Other notices are in Hebrew. This once-dead language of scholars has revived as the living tongue of 600,000 Jews in Palestine. Arabs number more than a million.

The thornbushes of Palestine, camel's-thorn and Christ's-thorn, correspond to California's mesquite and catclaw.

The seasonal grass in the highlands of Trans-Jordan and around Beersheba is reminiscent of the grassland savanna of the highland areas of southern California.

New Jerusalem Heart of National Life

Remnants of the mystic forests of oak noted by the Crusaders and by Napoleon's army are still found in the maritime plain of Judaea. They are like the evergreen oak woodlands in the foothills of southern California. The forests of pine, cypress, and cedar of Lebanon, which grew in the mountains around Jerusalem and were largely cut down by the Turks during World War I to furnish fuel for their locomotives, correspond to the forests of pine, big-cone spruce, and redwoods of California.

Even more Californian in aspect is the Palestinian's propensity for vocalism and his tremendous pride of country. He points proudly to Jerusalem as the cultural heart of the national life, referring, of course, to the new city outside the walls which has grown up in the past forty years; and to Tel Aviv, founded in 1909 and already grown to a city of some 200,000, as the expression of this culture (pages 503, 512).

As in many American cities of four decades ago, or in Washington, D. C., today, there is relatively little industry in Jerusalem. The city is the administrative center, with both the British mandate officials and the Jewish Agency for Palestine located within walking distance of each other.

Jerusalem is the site of the Hebrew University, on Mount Scopus, overlooking the city. The University rapidly is becoming the cultural center of the Jewish people. Its faculty



Black Star

Tel Aviv, Booming, Bustling Pride of Zionism, Was Only a Sand Dune 37 Years Ago

Neighboring Jaffa sent the first settlers in 1909; now the mother city is but half the size of her daughter. Despite feverish building, Tel Aviv has been plagued by a chronic housing shortage. Rents always have been high, taking about a quarter of the family wage. These men work on a cooperatively owned apartment building; the city has few one-family houses. Today construction lags, for materials are scarce (page 512).

in sciences is particularly excellent. Many of its professors were drawn from the finest technical schools of Germany and Austria. The same is true of its Medical School and the Rothschild Hadassah University Hospital, where research in diseases of the Middle East promises to aid greatly in eliminating many plagues of this ancient land.

The primary problem of the city at the moment is housing.

Every hotel and small boardinghouse is jam-packed, and although apartments and individual houses were erected as rapidly as possible until war's outbreak halted building, the floods of immigration before, during, and after the war years have caused a most acute shortage.

There is no reconversion problem here or readjustments such as are now taking place in the industrial cities of Tel Aviv and Haifa. But Jerusalem probably felt the most direct

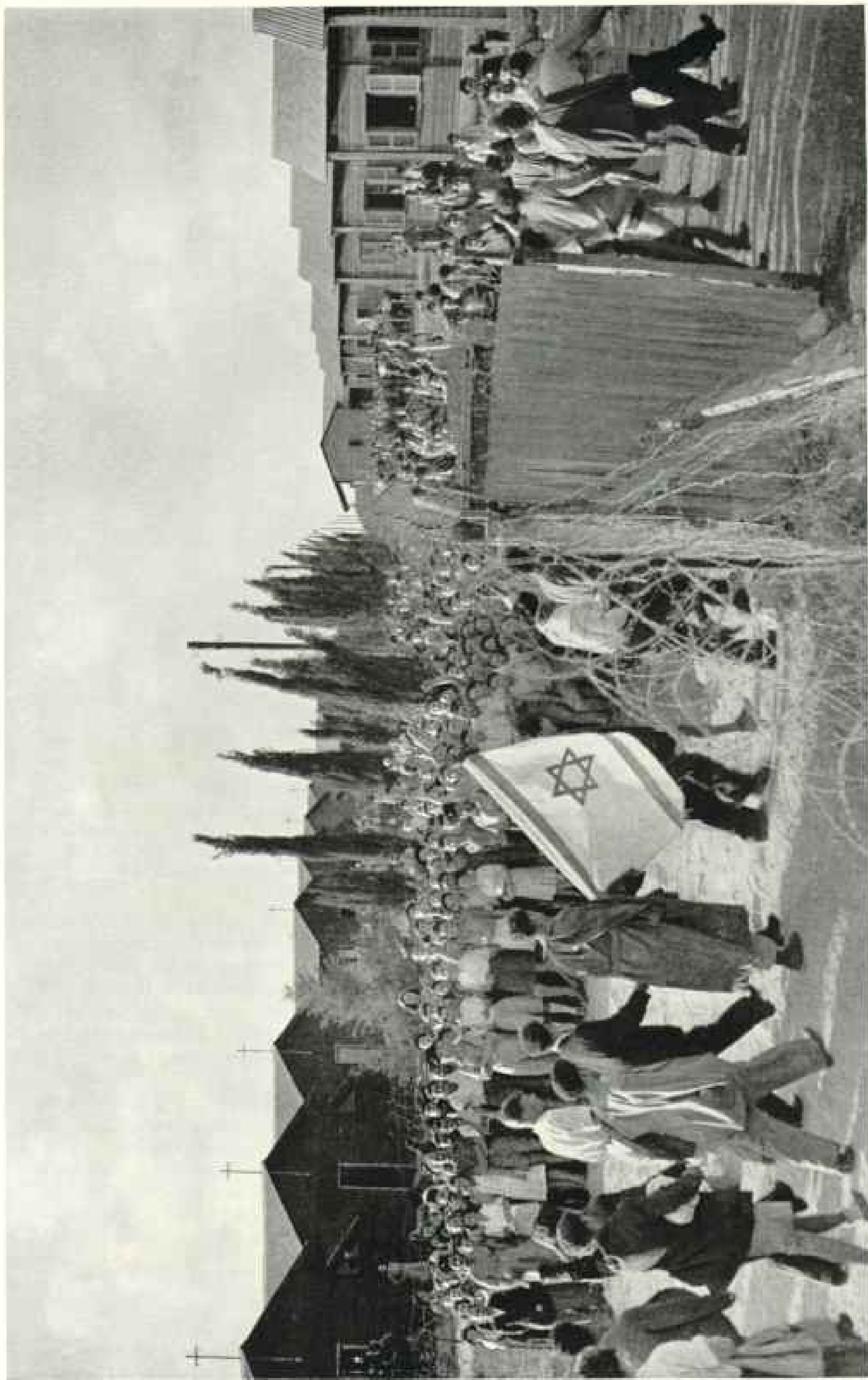
lash of what turned out to be Palestine's major wartime problem, in that the economy of the mandate is centered in Jerusalem.

Where other nations suffered from a lack of foodstuffs, Palestine suffered from an overproduction of citrus fruit. Oranges rotted on the trees for five years for lack of shipping space in war-packed vessels.

Industry in Palestine is on a par with that of our early years, especially such basic industries as food packing and canning. Foodstuffs which might have been stockpiled were lost and tremendous income potentials became liabilities, since land had to be worked and citrus groves cared for.

Plenty of Everything—at High Cost

Food prices remained high. Wages are high, too. There is little production of textiles and other finished goods and their importation makes prices excessive. Cost of



AP from Prout Auer's

Singing, Shouting Fugitives from Concentration Camps March Through Barbed Wire with Delight

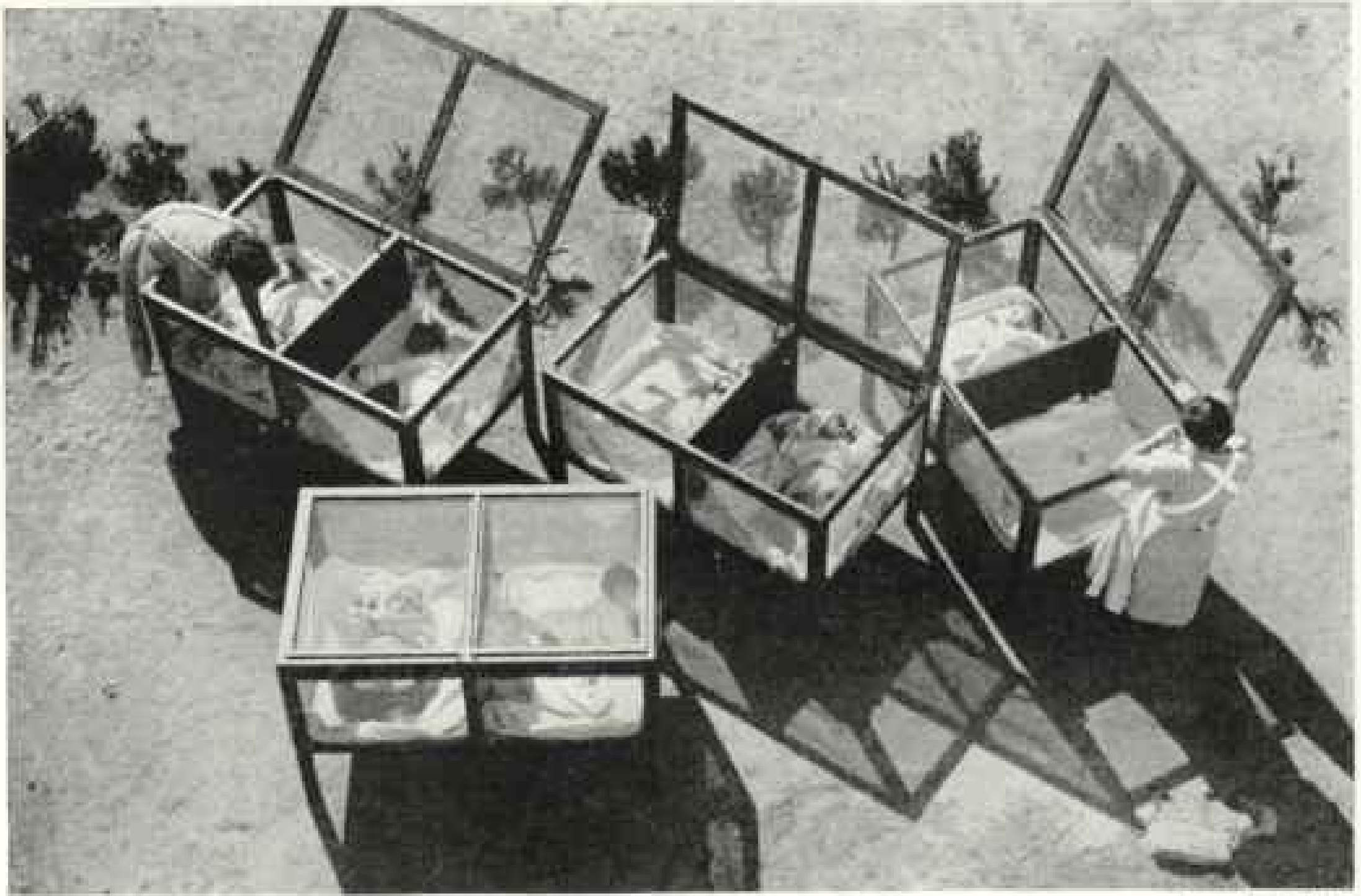
These men smuggled themselves into the hands of Palestine authorities. At 'Alit camp, near Haifa, they had to remain until the quota system—1,500 immigrants a month—certified them. They carry the Star of David, their national flag. A few bundles represent their only possessions. Senior prisoners and Palestine police (caps) watch the parade. Men's quarters (right) and women's are separated; the sexes are allowed to mix during the day.



Mr. Thompson's Collection, 6010104

Salts from the Dead Sea, Four to Six Times as Briny as the Ocean, Whitewash Evaporating Pans at the Jordan's Mouth

No fish can live in this witches' brew; yet it helps sustain life, for Dead Sea potash fertilizes Palestine and could supply the world for a long time. Chlorine, sulphuric acid, and caustic soda are other valuable products. Brine is pumped into the pans; sunshine extracts the minerals (page 515).



Kerrin Harwood, Ltd.

Nurses at Na'an, a Collective, Care for Babies While Mothers Work in Fields

On the typical communal farm, teachers supervise children and dieticians select meals. Parents see their children only after work and before dormitory bedtime (page 515).



AP from Press Ass'n

Sulphuric Death for Parasites Is Blown on Orange Trees in an Arab Grove

Palestine's soil and climate are suited to citrus culture. In 1939 the country ranked fifth among producers and second among exporters. War, which monopolized shipping, brought a setback. Markets vanished, oranges rotted, and plant pests multiplied in neglected groves. Some orchards were abandoned (page 513).



AP from Press Ate'n

Arab Boys Carry Bananas, the Fruit of Elisha's Spring in Jericho

Old Jericho, where "the walls came tumbling down" for Joshua, is a mound of ruins covering 18 settlements stretching back to 5000 B.C. New Jericho, an Arab settlement, lies about a mile away. It is 820 feet below sea level. When Jerusalem is freezing, Jericho basks in sunshine.

living is higher than in most countries of the Near East. There are no queues to stand in. Plenty of almost everything is available for those who can afford the high prices.

In ultramodern Tel Aviv some wartime industry did grow up, with small factories specializing in the manufacture of precision tools and instruments.

Center of Diamond Industry

At Natanya, 18 miles north of Tel Aviv, much of the diamond industry, with many technicians uprooted from Antwerp and Amsterdam, is taking root again. Diamonds are turned out for industrial use, as well as gem stones for jewelers of the world.

Today, these many small factory owners are striving to fit their wartime activities to peacetime needs.

Undoubtedly the greatest development, which is already well under way, will be in food preservation.

Chocolate factories, refrigeration plants, and canning plants are prime requirements of a country whose agricultural development has been truly phenomenal but whose industrial growth is only beginning (page 508).

Creative work of many people who live

in Jerusalem finds expression in Tel Aviv.

The Jews have always been avid theatergoers. The Habimah (The Stage) and the Ohel (The Tent) Theaters not only provide enjoyment for those living in Tel Aviv, but their companies make regular tours of the rural settlements so that colonists working on the soil may see them.

Season after season the Habimah has presented Shakespeare and Tolstoy, Ibsen and Shaw, as well as original Jewish historical themes, winning the applause of other countries where they have appeared.

Two newer companies—the Sadan, presenting nothing but comedies translated from the French, Russian, and English into Hebrew, and the Matate (The Broom), specializing in satirical revues after the manner of the French—started in time to aid during the war with soldier entertainment programs.

The Palestine Orchestra plays each season to more than a hundred thousand people, not alone in the cities but in villages and settlements. But in the conversations in the cafes, ranging from politics to archeology and astronomy, one gathers the best estimate of the level of thinking in the two cities which Palestinians proclaim the centers of their cultural life.



Staff Photographer Maynard Owen Williams

Giv'at Brenner, a Collective Farm, Cans Its Fruit

Here 1,300 Jewish settlers, living a communal existence, farm 850 irrigated acres and operate a garment mill. Most collectives have cold-storage rooms, and food processing keeps idle hands busy while fields lie fallow (page 503). Palestine's produce helped feed Allied armies in the Middle East.

Actually, however, the cultural heart of Palestine is not to be found in Jerusalem or Tel Aviv but on the land and among the pioneers and colonists who give it life. And it is there that the striking resemblance to last-century America and modern California is most apparent.

In "The Valley of Death"

Typical of the settlements I visited this past summer is Gan Shemuel, 25 miles south of Haifa, founded in an area called by the Arabs "The Valley of Death."

This was no idle name. For centuries the land had lain fallow, and sand dunes, unopposed by man, rolled in from the Mediter-

ranean, despoiling rich farmland and blocking off parts of the sea. A swampy area was built up.

Malaria made life there impossible for the Arab, and some decades ago a colony of Germans, of the German Templar Society, purchased the land and sought to drain it. After more than a thousand deaths from the malignant malaria prevalent there, they gave up and moved inland.

Today this colony, 20 miles distant, is one of the richest in Palestine, although when I was there it was being used as an internment camp for the descendants of these same settlers.

Purchasing the original area from the Germans, a colony of Polish Jews moved in, and again the death rate was terrific. Some 1,500 deaths resulted in this new effort to drain the land, but other colonists came to take the place of the fallen. Large-scale drainage was supplemented by planting groves of eucalyptus trees imported from

Australia to dry up the excessive moisture. By 1926 the land was ready for cultivation.

Today Gan Shemuel is a prosperous settlement of more than 500 people working collectively as did the Mormons during their early years of settlement in Utah. It is also, being neither very old nor very new, a typical Palestine settlement.

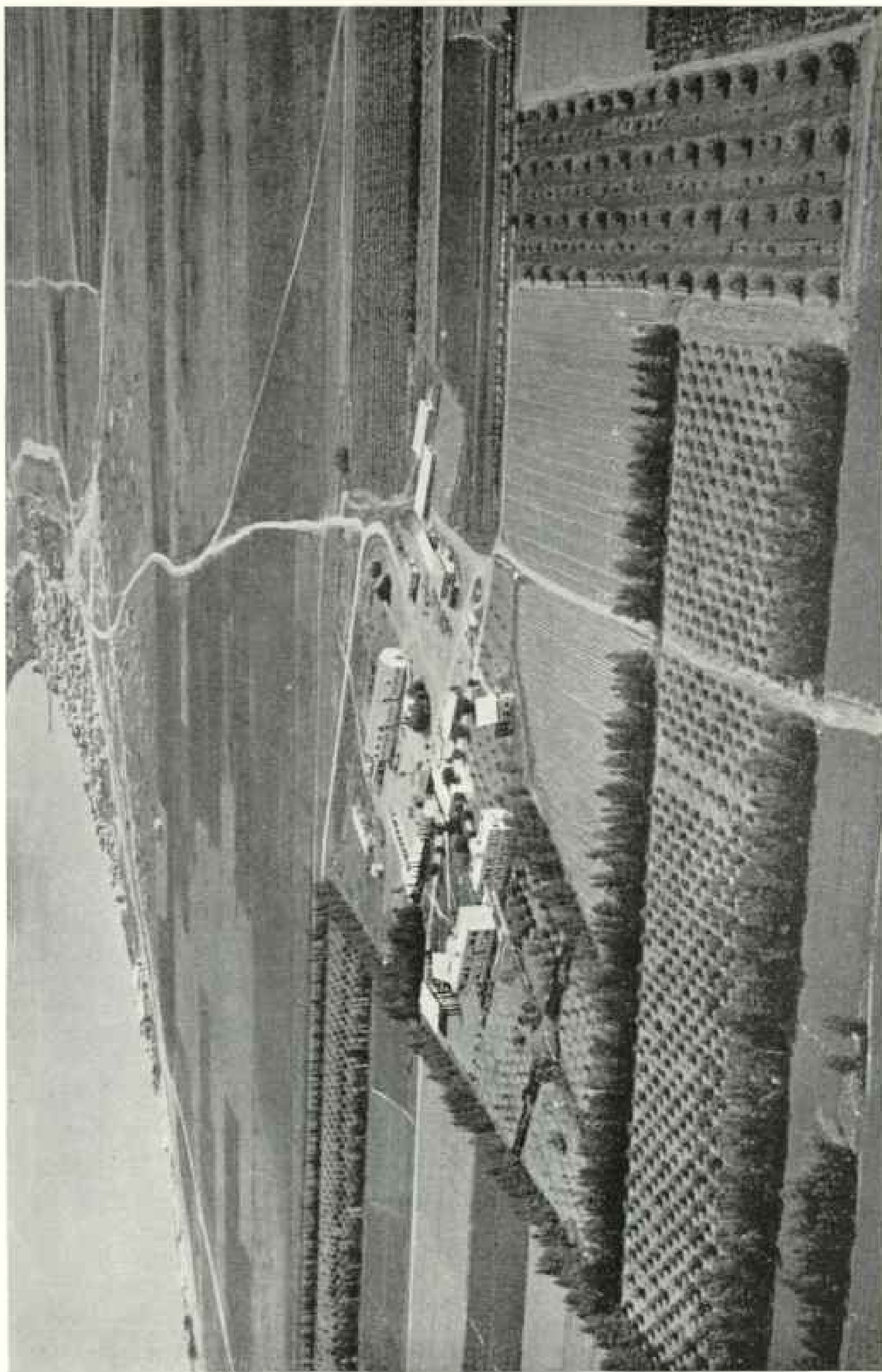
Jan Wadslas, once a professor of philosophy at the Free University of Warsaw, in Poland, was my guide at Gan Shemuel. His particular job is to maintain and service the modern machinery with which the soil is worked. He is no less a philosopher or teacher for using his hands and his mechanical ability. As he told of the four years when their orange



Staff Photographer W. Robert Moore.

Westernized Haifa's Streamlined Balconies Stretch for Oriental Breezes

Here Jews have lived since Biblical times. Their city slumbered until their brethren returned from 2,000 years in exile. With them they brought tastes and techniques acquired in the West. Their designers built a shiny, airy, modernistic world of Venetian blinds, electric refrigerators, and porcelain fixtures.



© O. Yehli Museum

Along the Sea of Galilee, Where Christ Walked on Water, an Arab Village and a Jewish Collective Farm Exist Side by Side. Deganya B (center) is the young sister of Deganya A, Palestine's oldest communal settlement, founded in 1909. Malaria, which incapacitated half the pioneers, has been conquered. Fertile fields, irrigated with Jordan water, produce eight clover crops a year. Cypresses form windbreaks for young orchards.



A Survivor of Horror Camps Tills the Land of Her Dreams

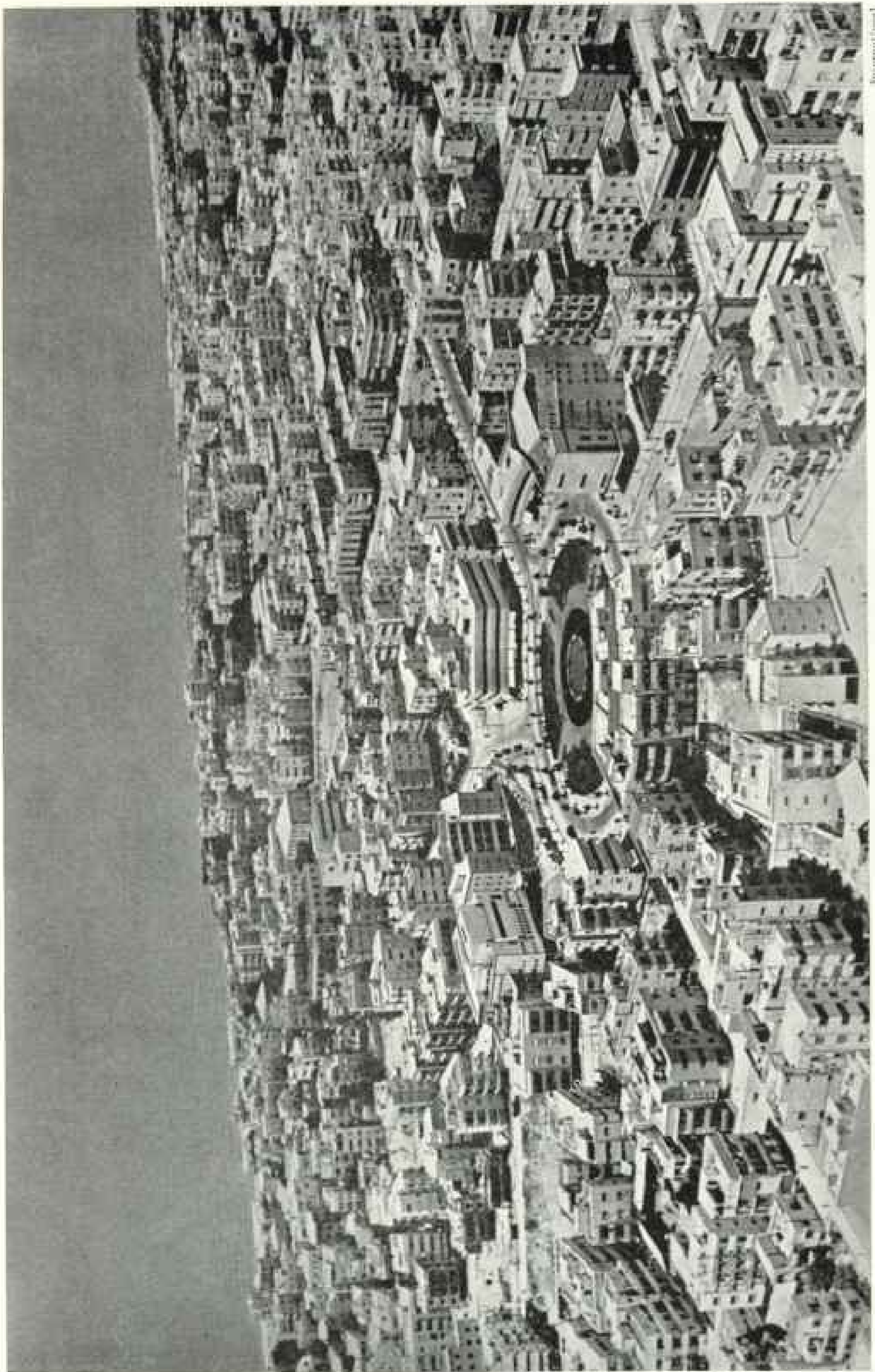
Buchenwald and Belsen behind her, this 17-year-old girl plants tomato seedlings in Palestine. Her parents may have been among the six million Jews massacred in Europe. Now she is among friends, and her terror has abated.



Black Star

An Arab Farmer, Complete with Sword, Supervises His Workers

A semi-feudal economy prevails in isolated Arab farm communities. Others have been quick to adopt Western improvements. Capital acquired by selling acreage to immigrants has enabled many Arabs to irrigate their remaining lands.



(Illustration)

Modernistic Tel Aviv, Home of 200,000 Jews, Is Laid Out in Avenues and Circles Like Paris and Washington, D. C.

Last July 30 this all-Jewish city was surrounded and all its communications silenced. As launches patrolled the harbor, 20,000 troops began a house-to-house search, questioning every adult. In hospitals, plaster casts were X-rayed to determine if suspects were faking injuries. During the four-day siege ammunition caches and suspected terroristists were seized. Zina Dvirngoff Place (circle) is named for the wife of Tel Aviv's founder and first Mayor (pages 501 and 503).

crops went unpicked while Europeans were hungry, there were tears in his eyes.

He took me first to see the open shed where three men—a lawyer, doctor, and a Polish peddler, prior to their arrival here—and two women were greasing and painting tractors and combines. It is difficult to purchase new equipment, and it is Jan's job to see that none of what they have fails through neglect. It is regularly serviced and charts are kept of periodic examination.

Next we visited the large wooden dairy barn where colonists were feeding and milking a new breed of cattle developed in conjunction with the Agricultural Research Station at Rehovot.

They are a cross between Syrian and Lebanese cattle, on the one hand, and Holsteins from the Netherlands and Jerseys from England. The former are admirably fitted to survive in the terrific heat but niggardly in their output of milk, and the latter, although unable to withstand the climate before crossing, are excellent milk producers.

Wadslas told me that since 1924-25, when dairy farming on a large scale in Palestine was started, the milk output on Jewish farms had grown to 14,784,000 gallons in 1943.

In the dairy barn, again, was an interesting cross section of the pioneer human types in Palestine.

There were three attorneys, hailing from Germany, Poland, and Czechoslovakia, respectively; two professors from Germany; seven doctors from Germany, Austria, and Poland; and eight who had formerly been small shopkeepers and merchants in central and southeastern Europe.

Doctors Run Poultry Farm

I was reminded of a poultry colony I had visited a few days before. It had been settled entirely by doctors of medicine or law who had escaped from Germany with some money and had turned their trained minds to the production of more and better eggs.

They found the native Arab hen a scrawny fowl, delivering an average of 70 small eggs per year, but by crossing her with Leghorns they had produced a larger hen which averaged 150 large eggs per year.

But the basic crop at Gan Shemuel was citrus fruit (page 506). In 1926 settlers started planting the Shamouti orange, a native variety of very high quality which they improved with new methods of cultivation.

Three years later, after sending one of their people to California to study citriculture there, they introduced the Washington navel and the Valencia.

Case histories are kept on each tree under different types of cultivation. This past summer Gan Shemuelites gave up the ditch type of irrigation to employ the method of overhead spray, which is used to a certain extent in some California areas.

Since the country is almost identical with that around Los Angeles, and since long rows of beehives, as in California, are kept near the groves for orange honey, the fields of Gan Shemuel seem really like California.

The fields of the settlement extend now far beyond the original stockade, which still stands with its watchtowers at each corner of the high barbed-wire fence.

At the time of my visit, I was told that not since the disturbances of 1936 had the towers been manned, although the buildings of the settlement are all within the barbed wire except for the bee house and a vegetable-sorting shed near the fields.

In a Collective, Everyone Works

Within the stockade you feel the real pulse of modern Palestine. In the collective settlement, which is by far the most numerous type, everybody works and shares in the results, regardless of sex. Rows of one-story apartments built of local sandstone rim the compound, and each family is allotted one room in these apartments.

At first glance this arrangement seems primitive, even for a pioneer community. Actually, the room is equivalent only to the bedroom of the heads of a family.

Inside the compound there are also a community dining room where all adults eat; a nursery school with dining room and bedrooms where young children are kept; a secondary school with dining room and bedrooms where older children stay; a community laundry where each colonist turns in his clothes once each week and draws fresh laundered clothes; a library and community house.

This organization of the community was adopted to permit the most intensive cultivation of the soil, since Palestine is so small. It enables the largest number of colonists to exist on the minimum amount of land.

Although most of the farmers come from other walks of life, they seem to find in working the soil a happiness seldom seen elsewhere, and if money is an evil, it is an evil from which these people do not suffer.

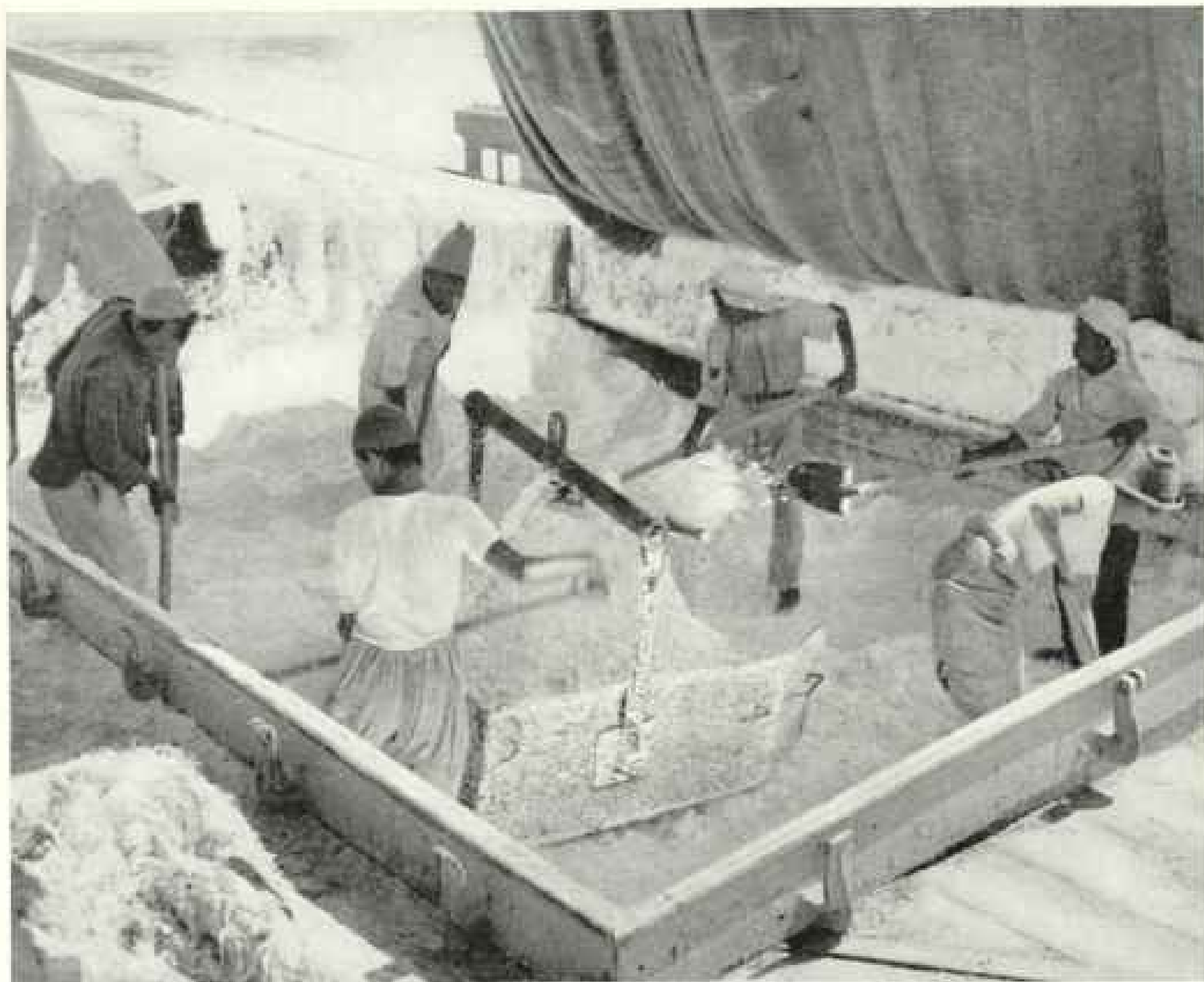
Even during the war, when their crops, except honey, brought no income, they were assured of enough food through their own labor, while the income from their hives provided needed manufactured products.



AP from Press Ass'n

Ships, Trains, and Cargo Gram Haifa, Palestine's Only Deep-water Port

Haifa's primitive harbor was modernized in 1933 in ample time to meet the Iraq oil pipeline. Two breakwaters were driven into the sea. This quay stands on reclaimed land. Here Arabs unload Dead Sea chemicals from Palestine Railway cars. Jews, who for centuries turned away from the sea, maintain a school for sailors in Haifa. They have also organized the Jewish Merchant Fleet.



Wide World from Press Ass'n

Carnallite, a Source of Potassium, Comes Sun-baked out of Dead Sea Brine

Here, 1,286 feet below Mediterranean level, acclimatizing men from Europe presented a serious problem. It was solved without a single epidemic. A thousand Jews now work beside a thousand Arabs (page 505).

The one phase of organization which draws the most criticism from visitors is the seeming lack of family life, with young children separated from their parents from the time the mother returns from the maternity hospital. Settlers who have lived under such a system maintain that, since they see their children after working hours and since, in the average household, parents are so rushed that they haven't time or temper for children, the child-parent relationship is stronger here than in the traditional home.

Scientifically, they claim, their system is far superior to the traditional one, since trained teachers and dieticians supervise their children's lives during working hours, while after work and before bedtime parents have their children when they are at ease and have time for them (page 506).

When we entered the nursery at Gan Shemuel, I could not help but notice one blond-haired youngster of three. She kept laughing and talking an infantile Hebrew, and wan-

dered away from the group to be with us as we watched the others at their instructional play. Houses which required teamwork to erect, because of blocks too heavy for one child to lift, taught them in early youth the necessity for cooperation.

Not until we were ready to leave did Jan tell me the reason the youngster kept following us and laughing so joyously. She was his daughter. There was no doubt of the father-daughter love in either of them.

Arabs Take to Tractors

Practically all of the pioneering in present-day Palestine is a result of Jewish capital coupled with the skilled and highly trained minds of the refugee settlers. But no visit can fail to show that, though they may do little of the actual pioneering, many Arabs are quick to follow the path of the pioneer to a higher standard of living (page 511).

In a field next to Gan Shemuel I saw an Arab plowing with a tractor and stopped to



AP from Press Ass'n

Palestine Immigrants Get a Checkup in Detention Camp Lest They Spread Epidemics

These women, just off an overcrowded ship, have been exposed to contagions. At Atlit Detention Camp they are examined by Jewish Agency doctors. Here they receive clean beds and wholesome food. By last August camps were full and 4,000 refugees waited on shipboard. Six British warships, sealing Haifa harbor, prevented their delivery to Israel. Many were deported to Cyprus.

talk with him. He had a large orange grove, and said he hoped to install an overhead-spray system as soon as he could get an import license for the necessary equipment.

He no longer lived in a mud hut, but was building a sandstone house with an extra room for the livestock. He had got his orange trees from Miqve Yisrael, an agricultural school near Jaffa, where Jewish boys and girls are taught farming by dividing their days—half a day for study, half a day for actual practice on the huge school farm.

Farther back, in the Samaritan hills, I saw Arabs terracing their hilly land as farmers in Biblical days did here and as the more modern Jewish farmers around Jerusalem were doing again for their vineyards.

The black goathair tents and mud huts were giving way to houses, and as the land became more solidly settled there was no longer need to bring livestock into the house

at night for safekeeping. Not only were houses going up but barns as well.

If I had a feeling of "this is where I came in," it was strictly legitimate, because, on a wider and more far-flung frontier, my own ancestors had participated in much the same sort of thing.

There was a difference in time, in methods, and in equipment, but on a miniature—almost a laboratory—scale, a visit to Palestine today is much like a visit to America of yesterday.*

* See, in the NATIONAL GEOGRAPHIC MAGAZINE, additional articles on Palestine: "Changing Palestine," April, 1934; "Pageant of Jerusalem," December, 1927, both by Maj. Edward Keith-Roach; "Change Comes to Bible Lands," by Frederick Simpich, December, 1938; "Canoeing Down the River Jordan," by John D. Whiting, December, 1940; "Geography of the Jordan," December, 1944, and "On The Trail of King Solomon's Mines," February, 1944, both by Nelson Glueck; and "American Fighters Visit Bible Lands," by Maynard Owen Williams, March, 1946.

Back to Afghanistan

BY MAYNARD OWEN WILLIAMS

With Illustrations from Photographs by the Author

“BACK to Afghanistan? That’s a new one. I never knew anyone who had been there once. But going back . . .”

My friend’s voice faded away and I understood.

How far away and romantic is the very name of Afghanistan! Surely, dangerous adventure must lie beyond Khyber Pass.

Long a buffer State between the Lion and the Bear, Afghanistan is important in the affairs of the United Nations (map, page 521).

The nation used to be a closed land, a honeycomb of diverse tribes confined in isolated valleys, a country jealous of its independence, suspicious of change, true to Islam, lacking the woman’s touch.

Now Afghanistan is educating its youth, building new roads, turning its wide caravansaries into truck shelters, draping the tight curls of karakul about milady’s back, and scaring supercilious camels with the honk of motor horns.

I wanted to see what the years had done to this virile, mountain-cut land since it spread its carpets of hospitality and poured its green tea of refreshment for us members of the Citroën-Haardt Expedition across Asia in the hot summer of 1931.*

From Peshawar there were two ways to reach Kabul. For \$60 one could thread the Khyber in a comfortable private car to soften the bumps and sinkholes of the road, and spend the night, as the Mogul emperors did, at Nimla, near the garden of Shah Jahan.

Then, fed and rested, one would zigzag up to the Lataband Pass and coast down to the rich valleys and castellated mountainsides which provide a spectacular setting for Kabul.

To Kabul in the Afghan Mail

Choosing a harder, better way, I rode to Kabul in the Afghan Mail. For 24 hours, with battered back and bruised shins, I conditioned myself to a humble land where comfort is scorned, where ease is an effeminacy, and where hospitality is without price.

We were twenty men crowded into one creaky bus, with our obese bedding rolls perched on the roof. Some of my companions, long since inured to canter or camel pitch, hung out of the windows in the throes of car

sickness. Then they spread their blankets, slipped out of their shoes, faced toward Mecca, and prayed.

Ignoring their own discomforts, they did all they could to make my way pleasant.

An Afghan in a Cornell Jersey

When I bought two seats—I wanted room for *both* hips—I had lingering regrets at my decision to go by bus. But when a husky Afghan showed up, wearing his Cornell wrestling shirt, these doubts vanished.

Swiftly we rolled across the Peshawar plain to Jamrud’s shiplike fort, showed our permits for threading the Khyber, and sped smoothly up that famous pass.

Since last I saw the Khyber, gun stealers had become construction workers, and motor trucks had stolen the freight of many a dromedary. Bactria, that ancient region (now mostly contained in northern Afghanistan) which gave its name to the double-humped camel, had turned to Detroit for moving its cotton and karakul.

Twice a week caravans shuttle up and down as they have for ages, bulky burdens swaying to the slow stride of beasts who fit this arid landscape as no motor can. But where roads exist, the camel’s back is too weak, his shuffling feet too slow for a motorized world.

Every day, trucks and buses follow the trail of conqueror and pilgrim, culture and art. Many of them are mere chassis, with packing-case drivers’ seats and the windshields labeled “Afghanistan.”

As we crossed the frontier, the Afghan official who was to stamp our passports sat in a dusty garden, punctuating his dreams with the burbling of his water pipe.

A balky carburetor had delayed our start, and November chill hovered in the shadow of tall cliffs.

In India one has two breakfasts. The “little breakfast” appears at your bedside while you are still asleep. Between small milk pitcher and bulging teapot stands a thimble of sugar. Closer, where even a fumbling hand can find it, is the cup, and beside it a puny banana curves about two tiny bits of toast.

This humble repast gently opens the eye of day, smooths one’s shave, and makes a cold shower a heart-warming thing. Then comes a more formal breakfast.

By 6 p. m., both of mine had lost their in-

* See “Citroën Trans-Asiatic Expedition Reaches Kashmir,” by Maynard Owen Williams, NATIONAL GEOGRAPHIC MAGAZINE, October, 1931.



Oxen and Donkeys Tread the Ramp of Bygone Glories at Ghazni, Seat of Conquerors

To Ghazni, Mahmud carried back the plunder of India nine and a half centuries ago. Its splendor died in 1152 when Ala-ud-Din, giving it to fire and sword, earned the title of "World Burner." Ghazni was stormed in 1839 when the British blew in this gate. Now it is a peaceful market town on the motor road from Kabul to Kandahar (page 541).

spiration, so Kabir Ludin, the Cornellian, dropped in on the head official at Loe Dakka and let Afghan hospitality take its course.

A delicious pilau of rice and mutton was brought in from the bazaar by a barefooted servant, the customary "Your health" was said, and our host withdrew, so that if we wanted to use forks instead of fingers, his presence would not embarrass us.

Search for Opium, Alcohol, Pictures

Down in the market place, bedding rolls of all passengers were opened in the dust, pillows pommelled in search of opium, and boxes searched for alcohol and forbidden pictures or books. Thus do customs inspectors help Afghanistan resist the wiles of the world, the flesh, and the Devil.

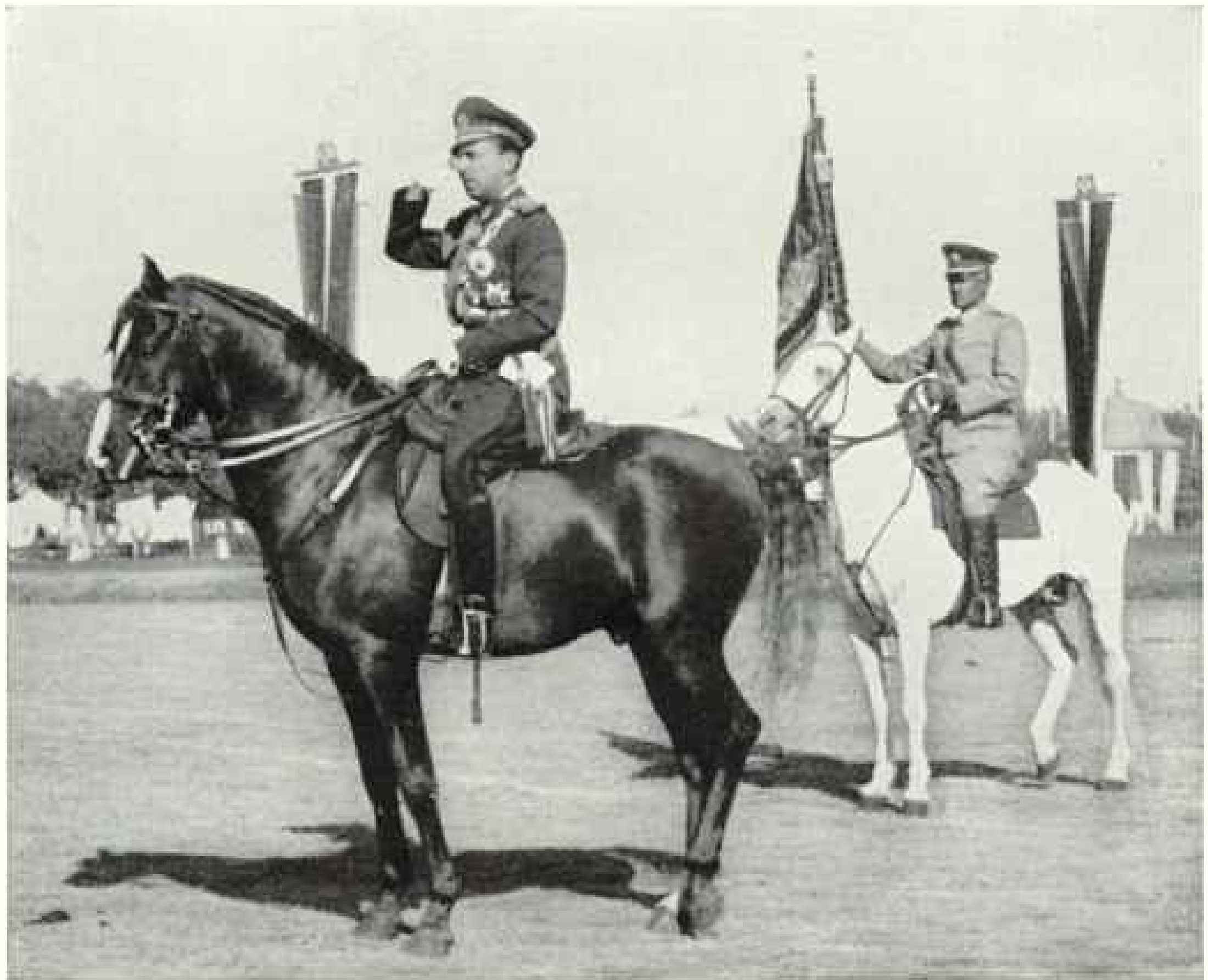
While officials searched for the evil instruments of Iblis, the Moslem Satan, one of my fellow passengers spread his prayer rug on

the platform of the baggage scales and did his devotions. The weight beam, fluctuating to each prostration before Allah, seemed to ponder his genuflections.

In the evening we passed near Hadda, five miles south of Jalalabad and center of the Gandhara school of art, which resulted when Greek met Indian artist on this common ground. Hadda's treasures show that not conquest, but a fusion of Hellenic and Indian cultures, was the lasting result of Alexander's swift foray to the banks of the Jhelum in 326 B.C.

At Jagdalak we stopped outside a humble teahouse. White-trousered Afghans released their strangle holds on our shaky bus, unwrapped their hooded heads, and directed their attentions to warm sheet bread, scored in the making by sharp fingernails (page 522), and hot green tea in fire-blackened pots.

The driver had no idea how long we would



Afghanistan's King Takes the Salute as His Troops Pass in Review

Mohammed Zahir Shah's title is *Almutawakal Allalah* (He Who Puts His Trust in the Lord). He is the first Afghan king educated in Europe. His government maintains friendly relations with the United States.

stay. The smoky shelter behind the samovars was crowded with talk and throat-clearing. My Afghan friend and I rented two cord bedsteads, opened our bedding rolls, and tried to sleep under the cold stars.

Cornell hadn't weakened Ludin's resistance or tamed his snores. But I lay and shivered, hoping for a speedy dawn.

Nomad Campfires Splash the Dawn

Nothing I might have dreamed of could have equaled the reality. Above black, distant mountains a strip of lemon light stretched across the east. Down in the valley—shadowy pageant of Afghanistan's nomadic life—a score of campfires splashed their ruddy glow against the void of river bed and low-massed shrubs.

To the west a band of salmon pink, edged in purple, slowly widened and floodlighted the high hills. Down steep slopes, between the morning glow and the flickering fires, a mile-long caravan stalked noiselessly along.

Behind the grotesque, stilted beasts, against the tawny mountainside, black-clad nomad women formed a pattern of shrouded grace. The seasonal migration was displaying its drama in an amphitheater whose slopes were high mountains, whose low-swept lighting was the rising sun.

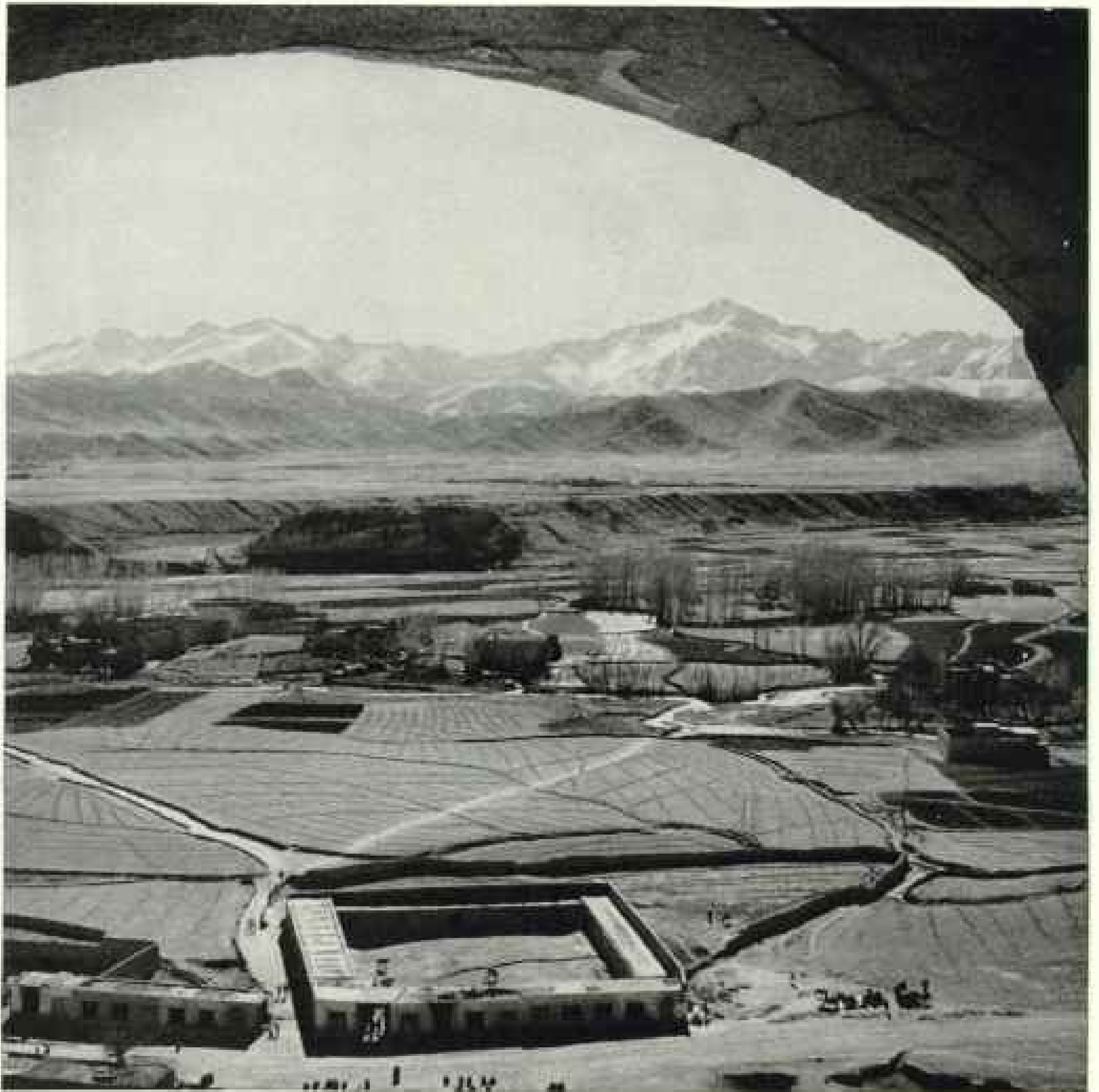
The cold I felt was the same relentless villain that sent these nomad communities trooping down from bleak highland pastures to the warmth of sunny plains.

Just before Pearl Harbor, scores of Germans and Italians had left Kabul, and I had the bare hotel to myself.

My bed was clean and soft, my room spacious, and the bath towel big enough for a tent. But since I was the only guest, it was beyond reason to expect hot water.

Feeling unkempt, I went out into the capital. Many things had changed since my last visit. Streets were wider and cleaner, and signs of building pervaded the city.

Where soft-lipped camels had circled cloak-



What the Photographer Saw When, Growing Dizzy, He Almost Fell off a 175-foot Perch

Overhead is the arching roof of the niche containing the Great Buddha on whose head the author stood to get this picture (page 536). Crouching, Dr. Williams lost his balance as he rose. Historic Bamian and the snow-clad Koh-i-Baba range reeled before his eyes. Around the quadrangular caravansary, men and beasts appear ant-size. Farmhouses are fortresses. Mud walls divide the fields.

loads of golden fodder, naked-motored trucks dripped oil and gnashed their steel gear teeth.

Long sleep and a crystal-clear morning brought back the city's old-time charm. As I left the hotel, a sunshiny airplane looped and circled in the bluest of skies. Bare-ankled schoolboys on their way to class slid gaily over patches of ice. I went to the bank.

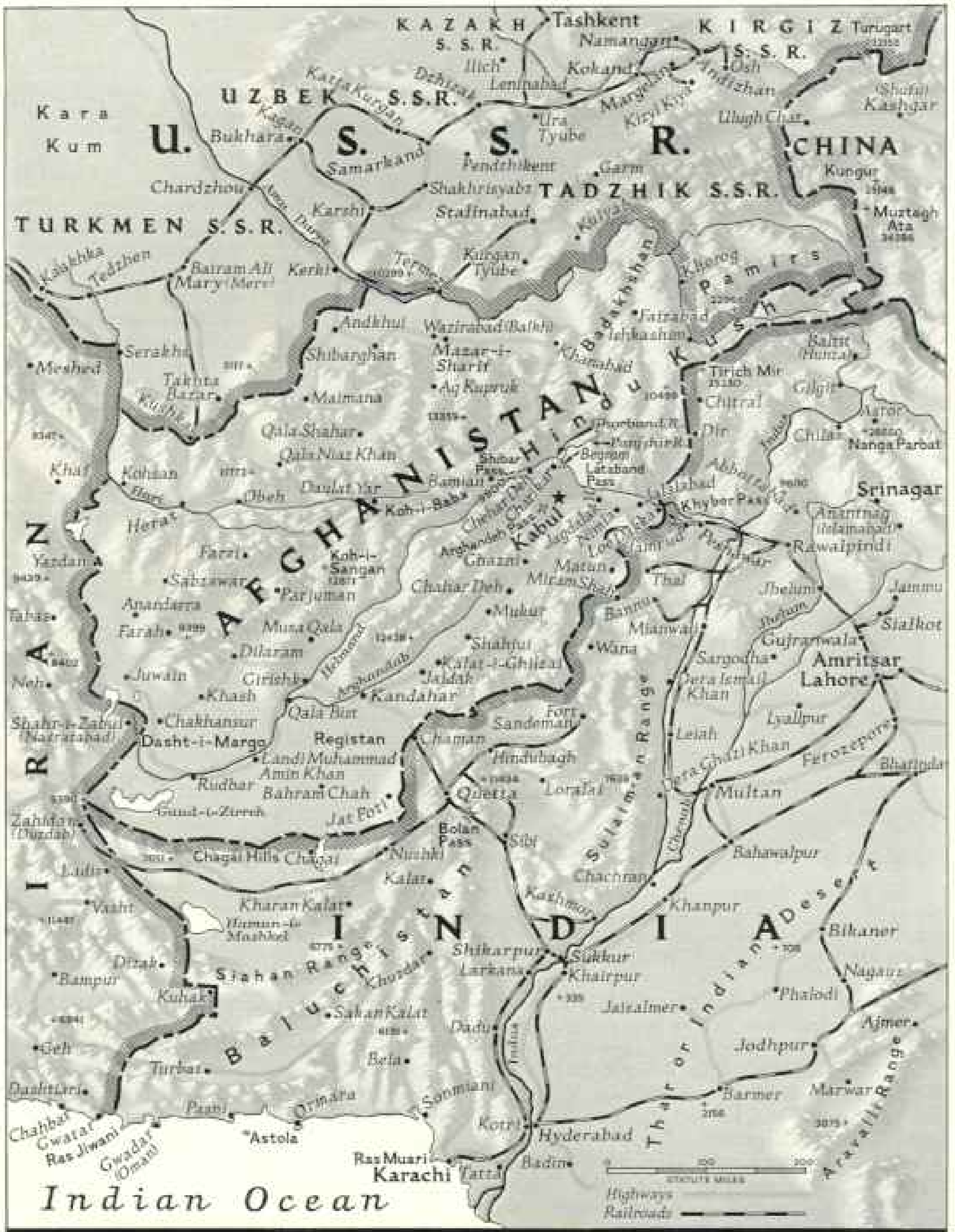
Bandanna Serves as Billfold

In this crowded meeting place, costume gives no clue to one's financial resources. Some tribesmen resent the substitution of paper money for hard, but one soft-booted

Uzbek from north of the Hindu Kush—probably a karakul merchant—profited in one way from the change. His turn at the teller's window was ahead of mine.

Bundle after bundle of 100-*afghani* notes, each note worth about \$8, was counted out and stacked on the counter. Then a big turkey-red bandanna was knotted around his bulging burden of wealth, and he walked out in his soft-soled boots and protecting galoshes, carrying a sizable fortune.

Had the afghanis been hard money, the rustic-looking capitalist would have needed a donkey train to transport his funds.



Drawn by Theodore Price and Irvin K. Alliman

Near the World's Roof Lies Afghanistan, Buffer Between Russia and India

Kushka, the Soviet Union's southernmost town, lies on this mountainous country's northern border, 65 airline miles from Herat. Historic passes on south and east, including the celebrated Khyber, are century-old gateways to and from India, used alike by caravans and conquering armies. Automobiles and trucks have come to Afghanistan with the building of new highways, including those between Kabul and Herat, and Kabul and Peshawar, India. Many roads still are passable only for camel and pony pack trains.



No Waxed Wrapper but Plenty of Flavor Has This Hardtack

There is no need for dating the loaves. Customers, knowing when the baking is done, hasten to the streetside counter in Kabul. With his fingernails the baker scores each loaf to keep it from swelling.

It was evident that the north country is not neglected when money is passed out, but in language the Kabul Government seems to look south and east toward the Indus.

Pashto, the half-obscure language of Afghan tribes, reaches well beyond the Indian frontier and is being widely taught.

The chief nonofficial medium for fostering the national language is the Pashto Tolana, or Academy, a union of the Literary and Pashto Societies, to which the NATIONAL GEOGRAPHIC is an eagerly awaited monthly visitor.

As when Turkey went to school to learn the Latinized alphabet under Mustafa Kemal's leadership,* open-air classes in Pashto flourish about many a Government office, especially

when classrooms are chilly and the sunshine is warm. I was surprised to find that in so rigidly Moslem a land, Arabic, the language of the Koran, seems to be understood by few.

In the bazaars I renewed contact with gray-bearded letter writers, makers of karakul caps, venders of grapes and melons, of silver bracelets and gold-embroidered skull-caps, their richness to be hidden under loosely wound turbans.

Grains Roasted in Hot Sand

The Afghan bazaars reveal one strange food combination, English-walnut meats mixed with dried white mulberries, and a novel method of roasting.

In a round-bottomed kettle, grains and oven-hot sand are stirred together until the proper degree of popping or brownness is reached. Then the mixture is tilted through a sieve, the evenly roasted grain separated, and the still-hot sand shoveled back into the oven for the next

batch. "How does the sand taste?" asked my facetious hostess in Delhi.

Evidently English walnuts are not usually so treated. But I bought half a pound or so for four cents, had them roasted for a few *puls*, and found that when cooled they were delicious.

Smallest modern coin I employed was the five-pul piece, and the ancient tradition that a single pul was, as its name suggested, good for a meal, must have been abandoned.†

Hanging from high poles were gaily em-

* See "Turkey Goes to School," by Maynard Owen Williams, NATIONAL GEOGRAPHIC MAGAZINE, January, 1929.

† A *pul* is about a twelfth of a cent. The word means both "meal" and "money."

broidered sheepskin cloaks, which are almost as good as tents for herdsmen and cameleers, and the equally tentlike *burkas*, which give a ghostly formlessness to Afghan females.

The self-effacing Afghan women twist their all-concealing gowns until the devil of allurements is strangled. For all its new buildings, wide streets, and electric-transmission towers, Kabul remains a man's town, through which veiled women move unseen by gentlemanly eyes.

Masculine, too, is the audience at the cinema, where Hollywood sirens, well censored in advance, have less appeal than the female Indian actresses—closer to home and also closer to the Afghan ideal of femininity. But a good gun-and-gallop Western is thrilling cinema fare in Kabul.

Lack of Gas Stalls Trucks, Buses

In the city streets the chief symbols of progress are stiff-jointed traffic cops, directing the uncertain movements of donkeys, camels, and *tongas* (two-wheeled carts) with the fanatic precision of recruits (page 524).

But Afghanistan, like many another land, has a gasoline shortage. Having partly divorced itself from the slow pace of camels, this land now looks to trucks and buses, some of which don't move at all. Outside the Customhouse and in the caravansaries they stand, awaiting fuel. No wonder the camels sniff and burble as they pass!

Even the Prime Minister rides a horse, and woe betide the minor official who indulges in a joy ride!

Gay trucks, decked out in red, blue, and gold, bear highly imaginative paintings of Ital-



Hollywood Thrillers Spell Adventure to Kabul Boys

Vainly the crowd tries to interpret "You'll Gasp! You'll Howl! You'll Thrill!" Given the price of admission, they unwittingly fulfill the poster's promise. Sons of horsemen, they love the hard riding of American Westerns. A special section is reserved for women, all discreetly veiled.

ian lakes and waving palms (page 526). Neat in cream paint and chromium, new buses are ready for their close-packed travelers. In the display windows of the Motor Monopoly there are neat little Balillas, shiny Fords, streamlined Buicks, and sturdy Chevrolet trucks.

But they stand on idle display while haughty camels plod past, making haste slowly and casting contemptuous glances on these modern beasts of burden which cannot go "eight days without a drink."

Across wide roadways barelegged workers, scooping up water from roadside streams, tossed it into jeweled arcs which, falling, turned the dust to mud (page 530). Bending low under bulging brown goatskins, other

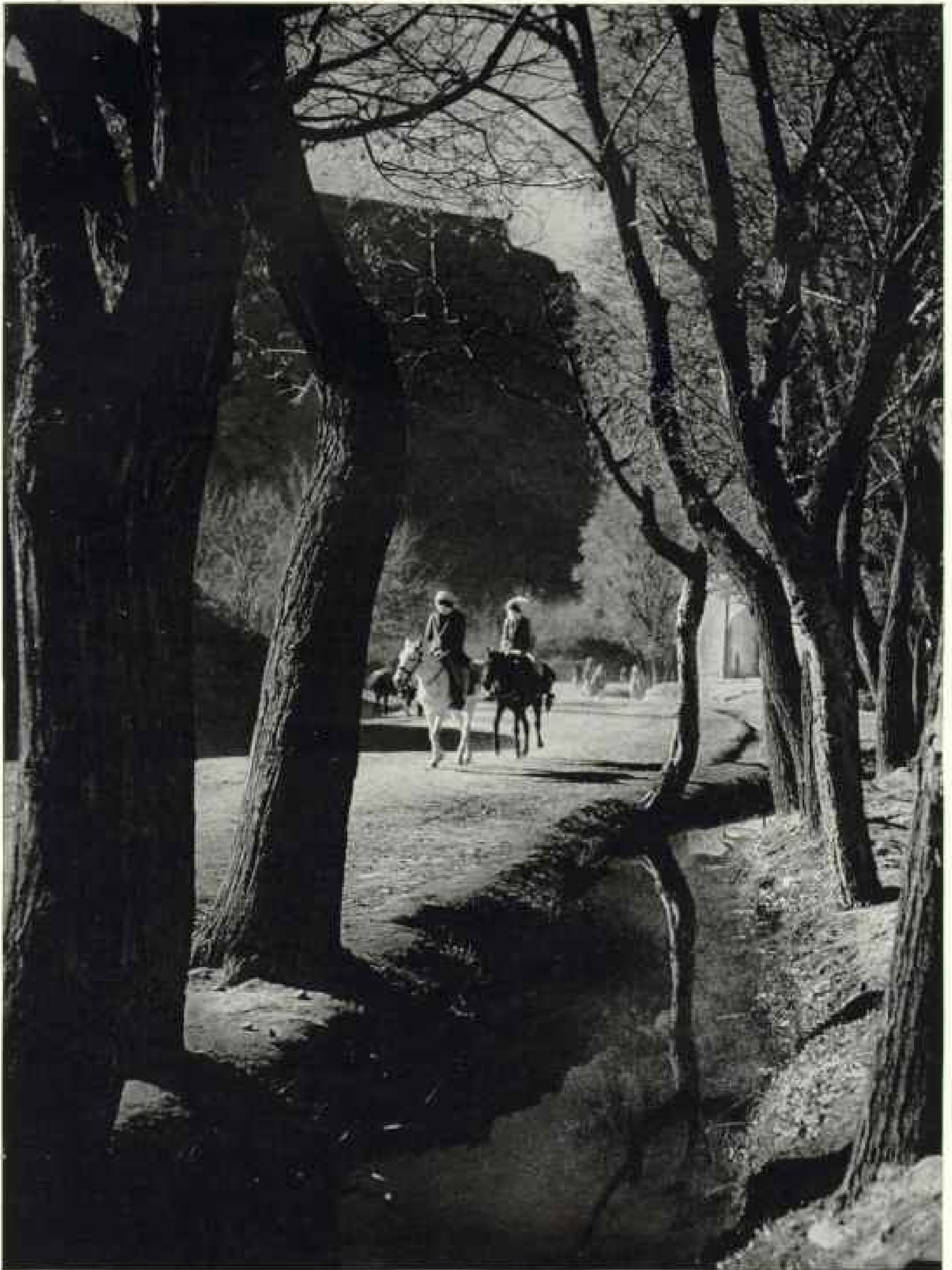


Near the Royal Palace's Outer Wall a Kabul Driver Waits with Two-wheeled *Tonga*. Tonga drivers are an independent lot, the author discovered to his discomfiture. If they or their horses become hungry or cold, they stop, collect fares, and let passengers proceed on foot (page 543).



What Forgotten King Leaned on These Ivory Throne Panels?

Recently unearthed at Begram, an ancient crossroads of culture, they are now in Kabul Museum. Though they show a strong Hindu influence, India has discovered nothing like them (page 535).



A Master of India's Palaces Chose This Simple Valley as His Burial Ground

The road near Kabul leads to the tomb of Baber, founder of India's Mogul dynasty. Though his empire was magnificent, Baber never forgot this quiet spot. According to his deathbed wish, his body was borne here from Agra, his capital. Today he shares his garden, just behind the battlemented hill, with tennis players.



In Afghan Desert, Trucks Carry Their Own Lush Landscapes on Their Sides
 Seen near Kandahar, the painted lake, forest, and city are copied from scenes in Europe (page 523).

street sprinklers swished wide swaths amid the scattering feet.

White-shrouded women, fleeing the flush of street sprinkling, lifted modestly wrinkled skirts, revealing neat two-tone slippers.

Sitting surrounded by bright-red apples, yellow melons, and festoons of lady-finger grapes, turbaned fruit sellers with well-trimmed Moslem beards looked with amiable eyes on this dust-laying operation, which would save them much polishing. Near many a soft-carpeted shop, pet birds in quilted cages greeted the sunshine with cheery songs.

As I tramped along half-familiar roads, men beat down autumn-colored leaves and stuffed them into sacks as winter fodder. Little girls in red watched their pet sheep gorge themselves at the foot of bare-limbed poplars whose white skeletons rose starkly into the unbelievable blue.

Amid such simple pastoral scenes I came to the tomb of a man in whose veins flowed the blood of Timur and Genghis Khan; the man who bridged the gap between Mongol and

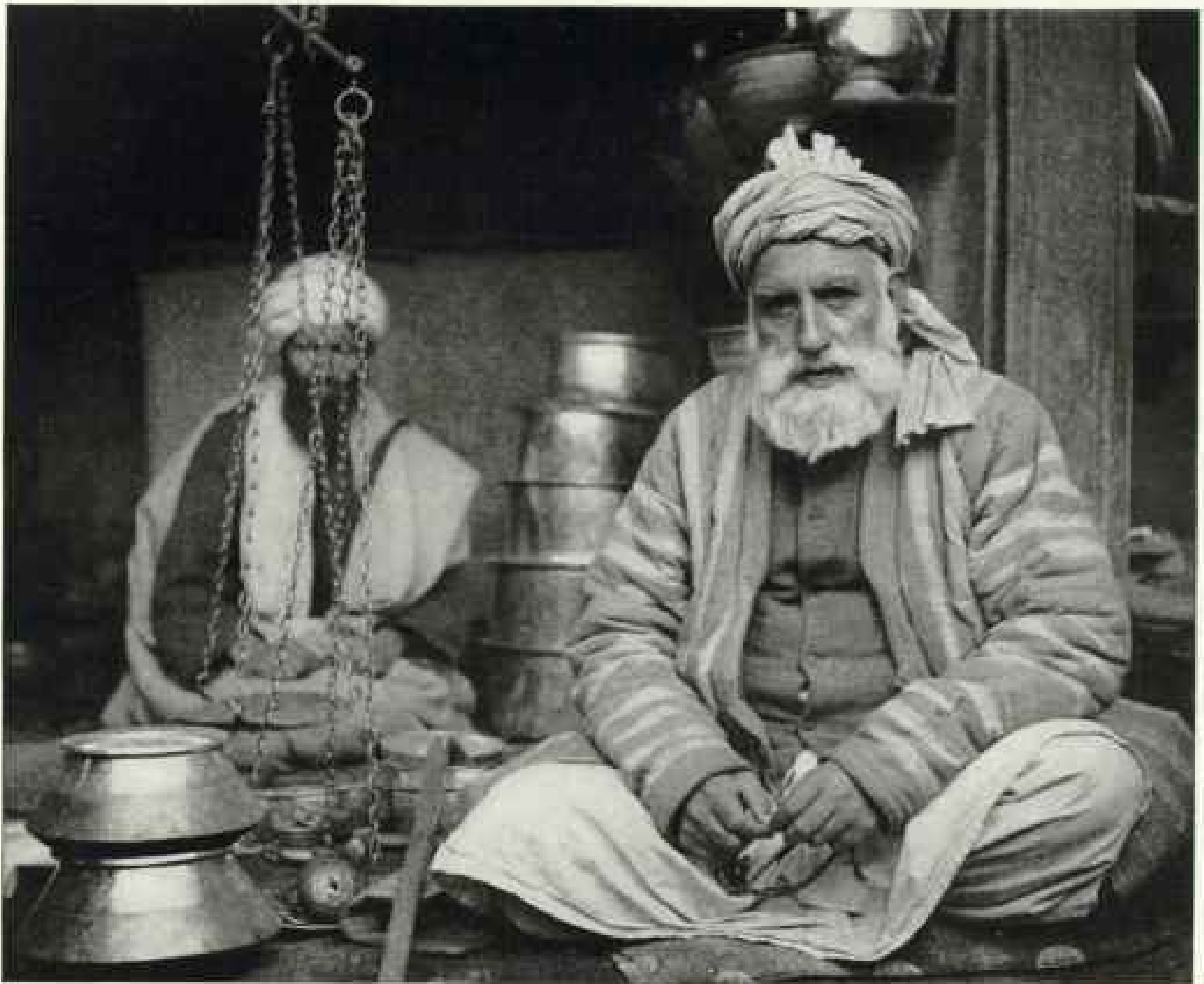
Mogul; who ushered in the age of Shah Jahan. To the recovery of his opium-drugged son, Humayun, Baber pledged his own life, and back from the capture of Delhi and the Kohinoor diamond his body was brought to the valley he loved (pages 525 and 542).

Swimming Pool Near Baber's Grave

Close to his grave is a large, clear swimming pool, gold-flecked by autumn leaves. Below it is a shady-verandaed cafe and a tennis court. Kabul's most modern place of sport centers about the tomb of Baber, King of Kabul.

His philosophy was "Enjoy life freely, O Baber, for none enjoys it twice." He loved practical jokes, a good drink, and a good fight. But he never forgot this peaceful valley.

With the bugles of an army band echoing from the mountainside and the wives of the foreign diplomats sunning their brown backs beside the swimming pool, Baber's final resting place is pleasant. Probably it is as congenial as was his first place of interment at



A Coppersmith's Tolerant Eyes Measure the NATIONAL GEOGRAPHIC Photographer

Afghanistan's medley of races includes the Aryan type. This Kabul merchant, fingering prayer beads in his open-air shop, is a handsome example. If he changed his dress, he would look very much at home in an American country store.

Agra, although there the loveliest of all tombs, the Taj Mahal, was soon to push its wide arches, bubble dome, and tall minarets into the Indian sky.

Camels file past the garden where Baber lies; farmers sit behind small piles of produce; wrinkled grandsires circle the first steps of sturdy babes with their protecting arms; and talk centers about the smoking samovar.

Hardy villagers, calf-deep in the ice-fringed water, laugh and joke as they sweep the air with dripping laundry and spread it in snowy patches along the river bank.

Farther from the town is a combination machine shop, woodworking establishment, and marble works, where turbaned Afghans use modern machines. There a dark young Afghan suddenly lifted his arc-welding helmet and exclaimed, "Monsieur Williams!"

As an Expedition servant, Ghaus had accompanied us through Afghanistan, over the Himalayas, across the Gobi, and on to Peiping

—probably the only Afghan who ever followed all that long trail across Asia. Meeting him added an unexpected joy to my day's tramp.

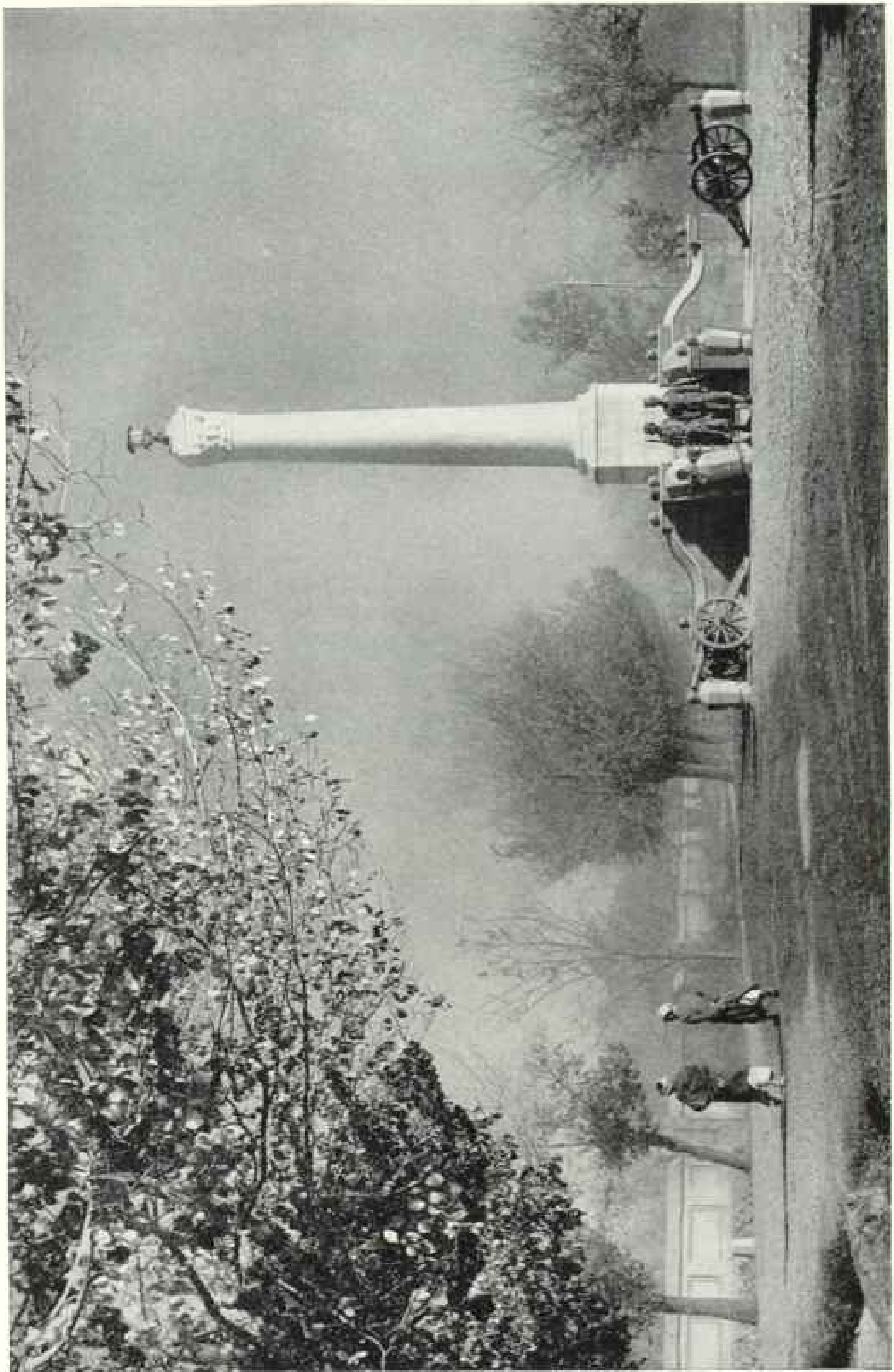
Work Resumed on Vast Building

I had been told that Kabul's most pretentious building, the one Amanullah erected as a Parliament before he was deposed in 1929, had become a university. But there at the end of a magnificent boulevard, framed between two rows of tall poplars, the impressive building stands, unfinished and windowless, just as we saw it years ago.

Bits of the decoration have peeled away, pigeon droppings are piled a bit higher in the big oval assembly hall, and rusting radiators clutter the side halls.

On my return to the bazaars, I was due for a shock. A young man, speaking tolerable English, asked, "Why do you photograph such dirty people?"

A Christmas cap, instead of the loosely



The Flame of Afghan Liberty Shines from the Independence Column at Kabul

Though world conquerors have marched through his valleys, the warlike Afghan in his mountain fortresses has never been permanently subjected. Afghanistan's independence dates back to thirty years before the United States was born. Its full control of its foreign relations makes it an effective buffer State between India and Russia.



A Smile Belies Reputation's "Brooding, Suspicious" Afghan

When the photographer had motor and police trouble at Ghazni, this switchboard operator engineered a long-distance S.O.S. to Kabul. By his expression, the result was "O.K.," an Americanism well known in Afghanistan.



Pack on Back, Sweat on Brow, and Rope Burn on Wrist

These are a porter's badges. His conquering Mongol ancestors came this way on ponies; this humble Kabul youth does his work afoot. Often he trots while carrying a 90-pound load.



Barelegged in an Icy Ditch, a Sprinkler Tosses Water on a Dusty Kabul Street

Afghanistan's capital has a stretch of experimental paving. On dirt roads dust is laid by hand. Many young trees have been planted along the streets.

wound turban, would have transformed my amiable model into a typical Santa Claus. Having nodded approval at my camera, he quite obviously took delight in our collaboration. A long, straight nose gave character to a white-bearded face which glowed with goodwill. An open smile quite eclipsed his undeniably patched but tidy garments.

Yet my self-appointed critic called him dirty—an obvious slander.

For thirty years I have noted such disdain of the Oriental townsman for the humble man of the soil.

"Do you think you would make a better model?" I asked.

Hitching his cape-worn overcoat higher about his shoulders, the student looked at me with shifty eyes, but asked, "Why not?"

"You are young. I see no signs of character in your face. Your dress does not mark you as an Afghan. Pardon my saying so, but this handsome old fellow is a far better model than you."

"I think you make fun of us."

It was no use. Salaaming to my anonymous but venerable model, I went my way.

Later I had an interview with the Vice-Premier and Minister of Education, cousin of King Mohammed Zahir Shah. Despite his youth, this intelligent, hard-working leader of the nation's students remembered my former visit. He is now Minister to London.

Handsome, tall, and clean-cut in his tweed and flannel informality, His Highness Sardar Mohammed Naim Khan is an admirable model of the cultured young Afghan. But he feels no disdain for humbler folk and has no objection to picturing them.

"I well remember your former photographs," he said, by way of making me feel at home. "All we ask is that you take no photographs which will discredit us.

"Of course," he added, smiling, "the NATIONAL GEOGRAPHIC MAGAZINE would never publish them if you did."

We sat in a large and sunny room, fitted with



Out of Kipling's Pages at Bamian Steps a Camel Boy in Turned-up Slippers

The tether makes a virtue of its weakest link, the string between chain and rope. If the beast takes fright, it will break away without detouring the caravan.

a Russian wall stove and several electric heaters. But between the double windows long rows of red geraniums were banked like a line of flame. The winter sun, shining in a cloudless sky, was warm on our backs. We turned to the matter of education.

"Will you help us get some American teachers for Afghanistan? The two we already have are doing good work. The Afghan students whom we sent to America are helping develop our country. But we need more teachers."

Basketball at "Beloved College"

One of Afghanistan's heroes is the Amir Habibullah—"The Beloved of God"—who ruled from 1901 to 1919. He founded the *Maktab-i-Habibia*—the Beloved College—which bears his name. Facing a tremendous task and crowded into narrow quarters, this school was doing admirable work with the aid of two American and several British Indian teachers.

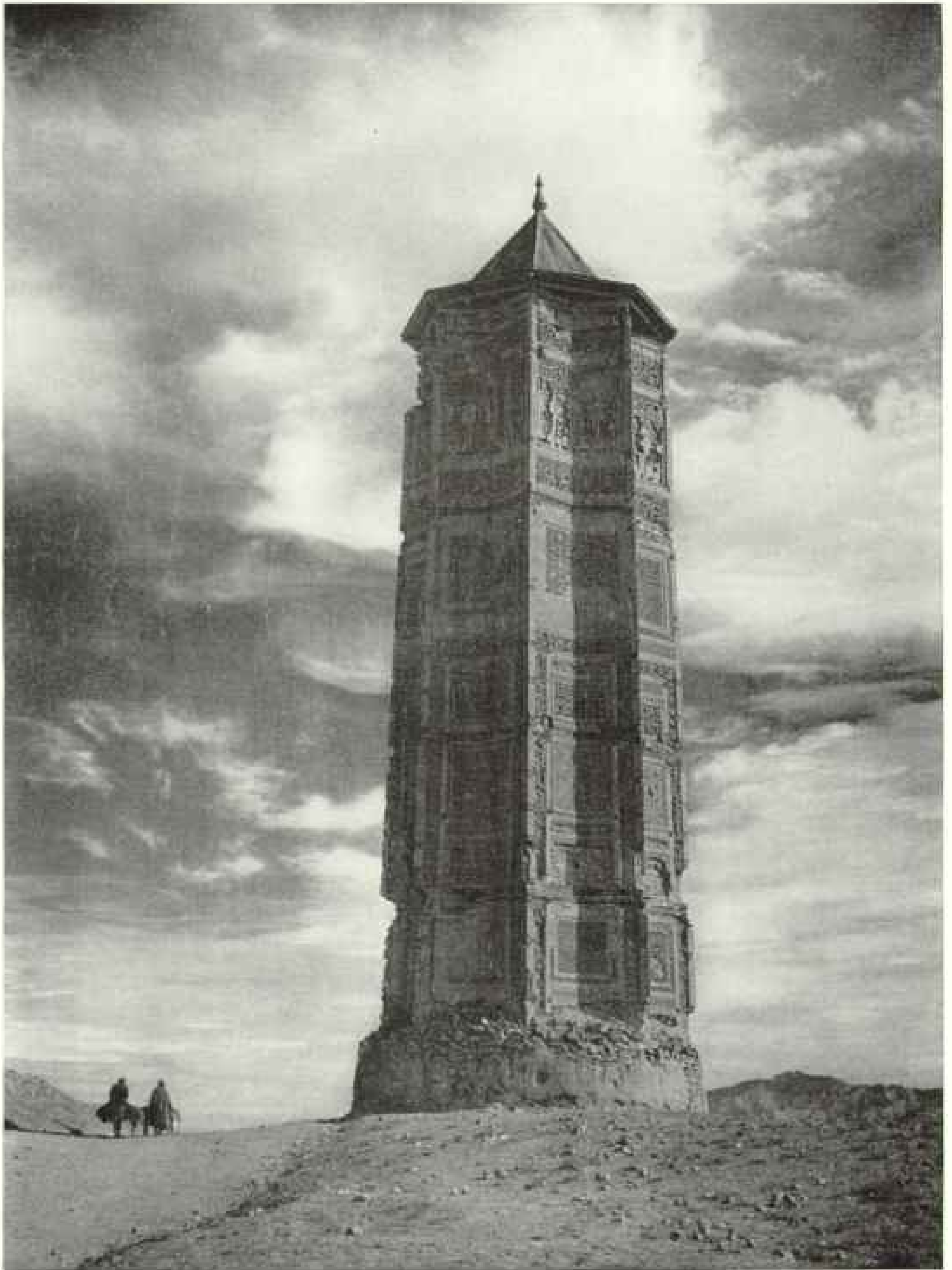
Several times I dropped in to play basketball with the Habibia boys (page 535), and my fellow Americans cheered up many an hour when the winter sun had set and the chill of evening invaded my hotel room.

Soon after my arrival in Kabul, I was sought out by Ahmed Ali Kohzad, who was our guide, interpreter, and friend years ago. For him the intervening years have been fruitful ones. Director of the Kabul Museum, Director of the Historical Section of the Afghan Academy, scholar, translator, and playwright, Ahmed Ali is a most useful citizen.

He greeted me warmly, noted with old-time banter that my French was as fluent and bad as ever, and placed himself at my entire disposal.

First, he introduced me to M. Hamelin, whose skillful fingers have assembled and preserved some of the choicest of central Asian treasures.

My companion of the Afghan road also took me to see the Assistant Minister of Education.



Mahmud's Victory Tower near Ghazni Is a Monument to Moslem Conquest

To spread Islam, Mahmud sent 17 Afghan expeditions through Khyber Pass. Called the "Idol Breaker," he smashed stone gods in Indian temples. Loot built this 11th-century minar, stocky brother of the slender minaret. Another, built by Mahmud's son, is near by.

Then followed a visit to the Chief of Protocol, an amateur photographer of real talent, who helped me in my desire to see as much as possible of Afghanistan.

This was not simple. With suspicion rife and the police watching every move of foreign visitors, with gasoline almost unobtainable, my return to Afghanistan was badly timed.

When I learned my fate, it was better than I had hoped. I could go to Bamian and could traverse, in the opposite direction, the route we had followed from Kandahar to Kabul. With winter threatening the mountain passes and, incidentally, forming deep, painful cracks in my heels, I had a cowardly feeling of relief that my original plan of circling the land in infrequent mail trucks must be abandoned.

Treasures of Past Unearthed at Begram

My first trip was to Begram, where M. and Mme. R. Ghirshman were continuing the archeological work of my dear fellow traveler in Central Asia, the late Joseph Hackin.

On a high mound overlooking the mountain-circled valley in which the Ghorband and the Panjshir unite, the archeological site reminded me of the mound of Carchemish, where, in 1913, I saw Woolley and Lawrence unearth huge blocks of basalt picturing Hittite priests and soldiery.*

Although all Iraq and Iran lie between Carchemish and Begram, both lay close to the victorious route of Alexander the Great.

Ten years ago, ancient Greek coins were common tender in the bazaars of Balkh (Wazirabad). But that vast ruined city has not yet revealed such treasures as has Begram, where were found Indian ivories the like of which has never been discovered in India itself.

In the Kabul Museum I photographed these delicate carvings under the direction of M. Hamelin (page 524).

Working in a room whose bright Afghan costumes and rich embroideries were worn by women who hide their faces from the world, I looked through my camera at narrow-waisted Indian goddesses, round of breast, wide of hip, scanty of costume, and voluptuous of pose.

In the same excavations were discovered ancient plaster medallions on which the straight-nosed, curly-haired portraits might have been those of Alexander's Macedonians. Alexander and the Greek rulers of Bactria also brought double-died coins of rare beauty to Gandhara, ancient district near Hadda and Peshawar.

Shortly before our arrival, the Ghirshmans had discovered a soft-gold bracelet,

bright as new, circled with square-cut rubies, behind each of which was mounted a sheet of gold foil to add luster to the gems.

Mme. Ghirshman also showed us her copies of some Persian mosaics, made by a method so logical that it is a wonder it is not more widely used. A special paper, similar to that used for taking a squeeze of inscriptions, was beaten down onto the mosaic when damp, so that each cube was clearly marked. Then, matching cube for cube, the original colors were copied in all their richness and charm.

For me, this visit to Begram had a peculiar appeal. With the warm sun on my back and a jovial company about folding luncheon tables loaded with pilau and *mast* (Persian curdled milk), I sat on one of the Expedition campstools which had served us on our 315-day trek from Beirut to Peiping.

Before sitting down, I washed in one of the same basins which we had used until Mongolian cold turned all water to ice and made face-washing a lost art.

Led by M. Ghirshman, I inspected the royal city where tile drainpipes 2,000 years old remain unbroken, and stood in the military camp—rectangular as those of the Romans—which commanded this valley route to India.

Begram, the ancient Kapissa—yesterday an obscure earthen perch for legends by Ptolemy and the Chinese pilgrim and explorer, Hsüan Tsang—is now yielding evidence of unsuspected cultural relations. It was probably in Afghanistan rather than in India that Buddha became the central figure in Buddhist art, and through Afghanistan Buddhism moved to China, Korea, and Japan.†

In Afghanistan pilgrims from the East, deserting the fabulous Silk Route to Rome, turned south in search of authentic texts and documents of their new-found faith.

Road Links Russia and India

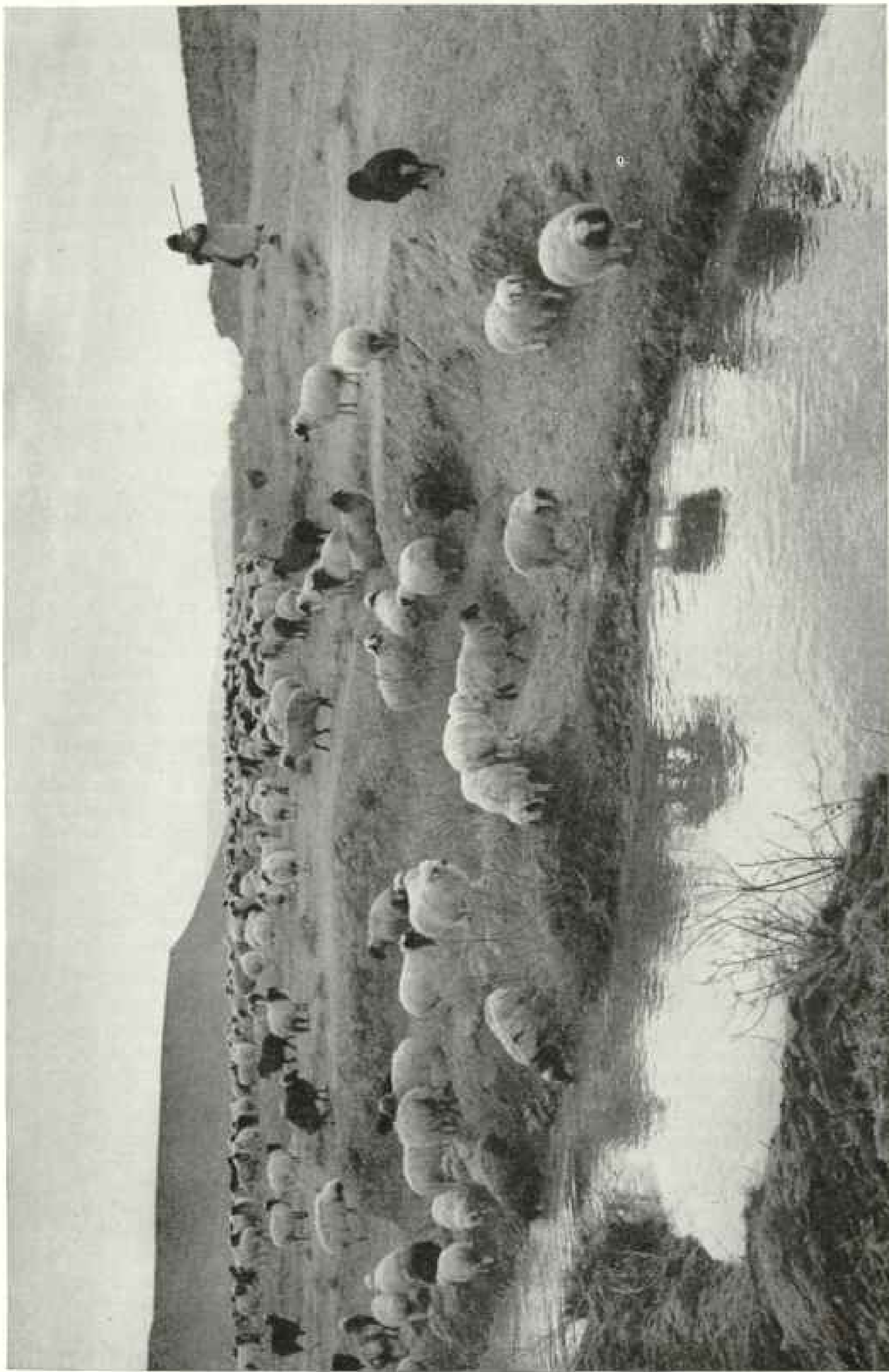
The next day, in a bright new Studebaker sedan, I left for an even more famous Buddhist site—Bamian—at the crossing of the T where Silk Route and pilgrim route were joined.

The road is the best in Afghanistan. Creation of the late King Nadir Shah, this highway crosses a break in the Hindu Kush, unites oft-separated Afghanistan, and, despite bad stretches at both ends, joins Russia and India.

Having united Afghanistan's Turkomans, Uzbeks, and Tadzhiks with the many-tribed

* See "Archeology, the Mirror of the Ages," by C. Leonard Woolley, NATIONAL GEOGRAPHIC MAGAZINE, August, 1928.

† See "Jap Rule in the Hermit Kingdom," by Willard Price, NATIONAL GEOGRAPHIC MAGAZINE, October, 1945.



Without Sheep—His Clothes, Meat, and Money—the Proud Afghan Might Be Shivering, Hungry, Penniless

Pressed into felt or woven into cloth, wool shuts out winter's winds and summer's sun. Exported, it provides cash. In a land where pigs are taboo and the climate does not suit cattle, mutton feeds the Moslem. Often he uses sheep's-tail fat as a butter substitute.



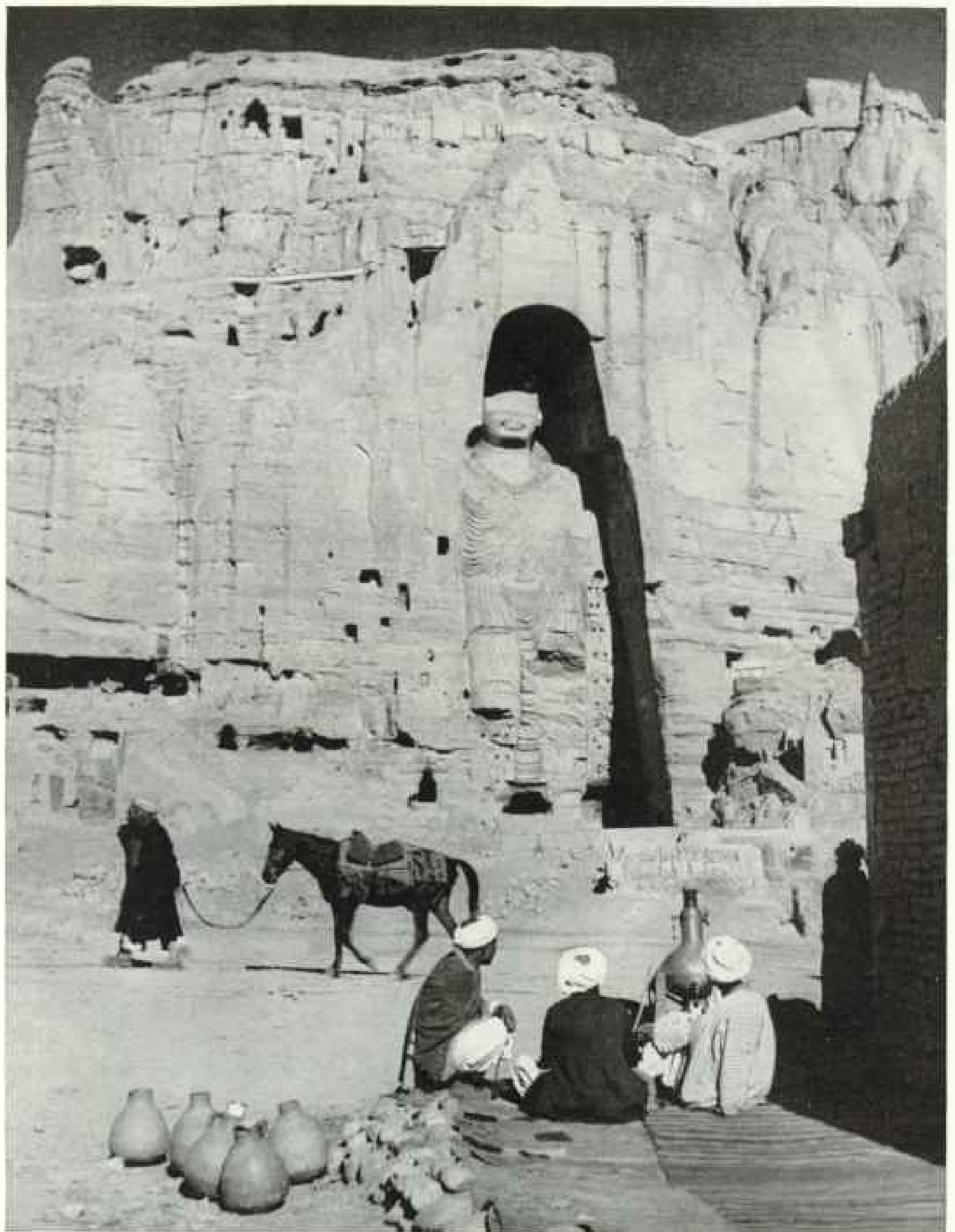
Just a Moment Ago He Was Playing Basketball!

Carrying street clothes on arm, a Kabul student wears the school shirt of Habibia College. His basketball conches are American teachers (page 531). Pride of the Afghan male is his karakul cap, made of curly lambskin.



His Crown of Feathers Is Ruffled and Beady-eyed

Top button on this Kabul porter's coat bears an American eagle from World War I. Thousands like it, distributed with surplus Army uniforms, were scattered across the Orient. World War II left a similar legacy.



Moslems at a Samovar Gaze on a 175-foot Buddha Disfigured by Idol Breakers.

Bamian, site of this marvel, was a crossroad of Indian, Greek, and Chinese cultures. Past this spot pilgrims carried Buddhism to China. Gone a thousand years are the Buddhists, but their shrines and cells, honeycombing the rock, still provide living quarters for village folk. The colossus within the cliff was carved in the first century. At the upper left is a bridge by which the author reached the figure's head. There he grew dizzy and almost fell (page 540).



Cartridge Belts and Mirror Shirts Are Summer Dress of Kharoti and Ali Khul Tribes

While with the Citroën Trans-Asiatic Expedition in 1931, the author encountered this group at Mukut. On a winter visit a dozen years later, he searched in vain for such costumes. The spangles on numbers 2 and 5 are tiny mirrors.

Shinwaris, Duranis, and Ghilzais south of the Hindu Kush, Nadir Shah's road-building triumph might thus become an international highway.

Nearly 400 miles long is this road from Kabul to Mazar-i-Sharif. Along it, when gasoline is available, thousands of trucks move back and forth, threading narrow gorges and crossing the 9,800-foot Shibar Pass with tight-packed loads of cotton bales from Badakhshan or lustrous karakul pelts bound for New York's fur center.

Mud Cylinders Serve as Tin Cans

North of Kabul we crossed a wide, fertile plain, famous for its grapes and mulberries, almonds and peaches, and turned into the narrow valley of the Ghorband, where the road clings to a ledge between steep mountain and swift river (page 539).

Following the peach-and-apricot valley where isolated farmhouses stand between the

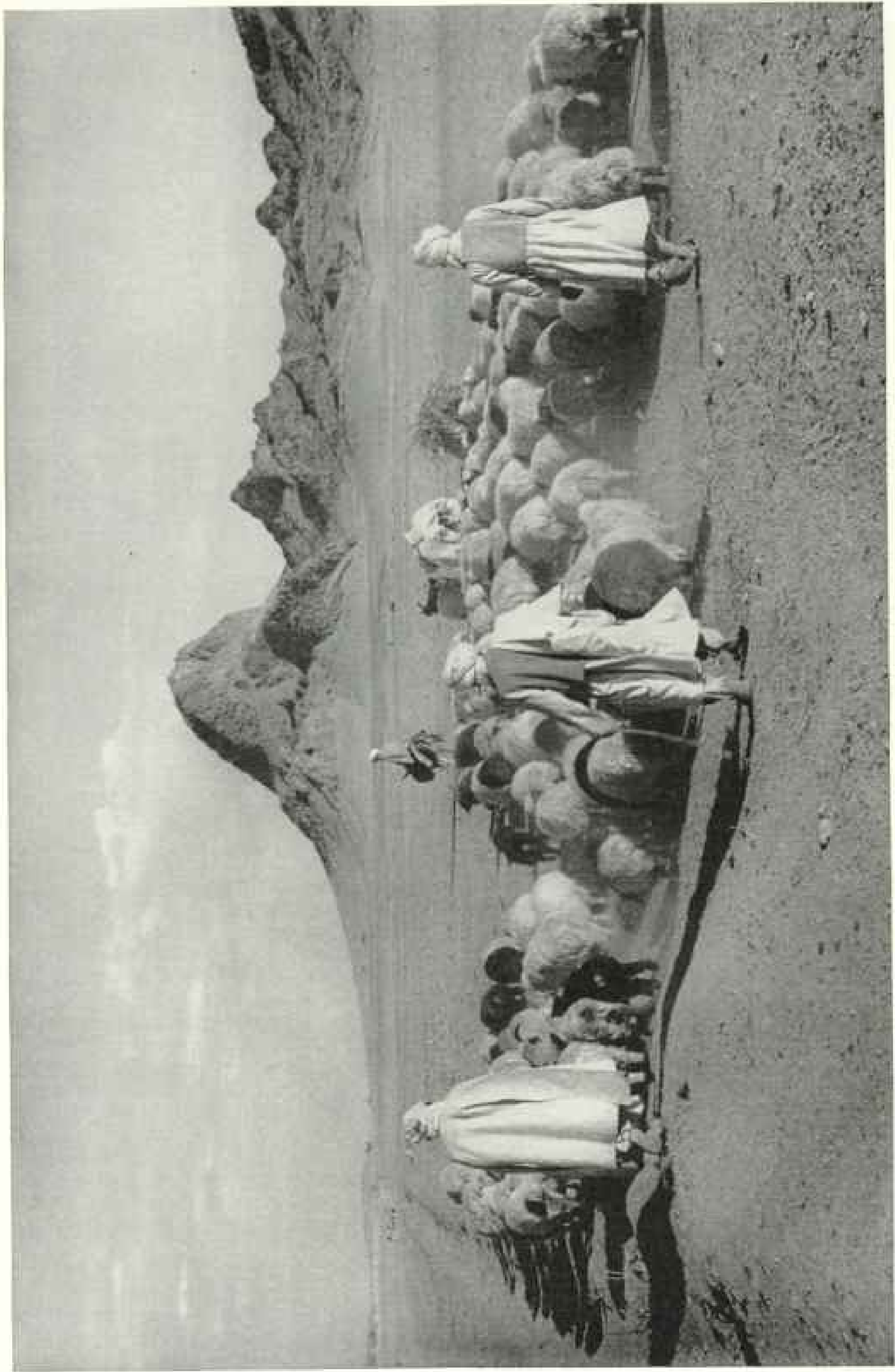
tall poplar windbreaks, we came to Chehar Deh.

While I lunched on hard-browned chicken in a clean-swept teahouse, my driver piled big hunks of dried mud into the trunk of his car.

These earthen cylinders were an Afghan substitute for Deepfreeze or tin can. Each of the mud gobs had been formed about big clusters of delicious grapes. Months later the Afghan splits the mud container like a coconut shell, revealing luscious fruit still well preserved.

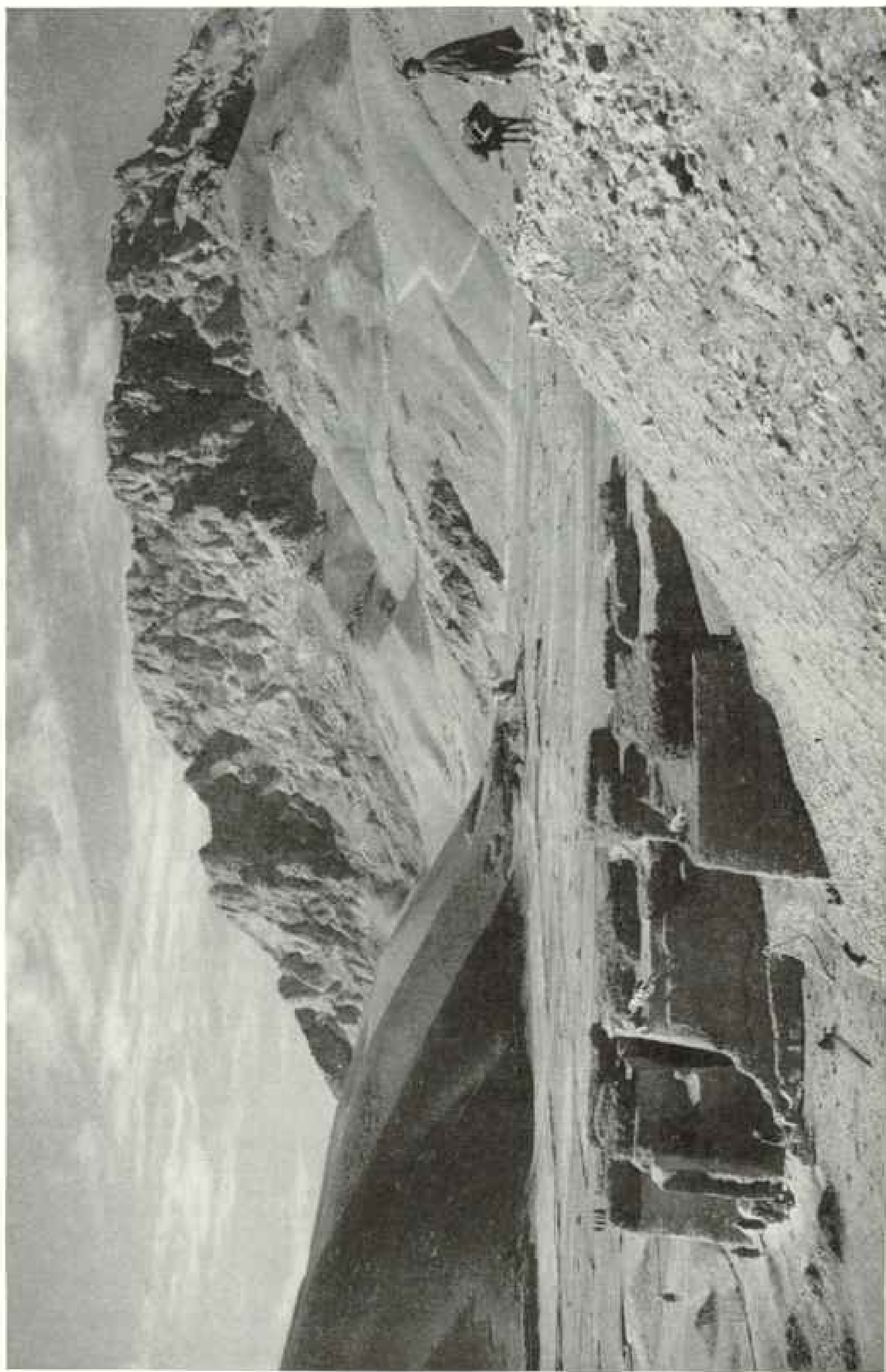
The valley beyond the wide-open Shibar Pass would appeal to any sportsman, for the clear, swift streams teem with trout, and full-breasted partridges and pheasants range the rocky hills.

One hundred and thirty miles from Kabul one enters a Y of narrow gorges, lined with towering cliffs of a warm red. Here is a true "bottleneck," yet trucks have plenty of room to pass one another on either road.



Across Rocky Barrens with Scarcely a Wisp of Grass, the Flock Migrates Toward Green Meadows

Shepherds, dressed in Biblical style, leave the Arghandab River country. Now they head toward Kandahar, an important trade center (page 543). Seen on the distant left, riders and donkeys travel the road.



Mountaineers' Homes, Clinging Together for Comfort in the Cold of 9,000 Feet, Form a One-story Mud Apartment House

Roofs are crowned with twigs and roots to cook the food and temper the chill. One-room flats contain little more than stoves and sleeping platforms. This is the Ghorband Valley near Shibbar Pass. Tribesman and donkey (right) follow the road from Kabul to Mazar-i-Sharif (page 537).



Skilled Toes Hold Broken Cup in a Living Vise for Busy Hands to Mend

With his bow drill, the workman in Kandahar bores small cavities into either side of the crack. Brads of soft copper are hammered in, binding the pieces. From Iran to Tientsin, this is a common repair.

Bamian's great Buddhas, one 175 feet high, the other 116, still face with sightless eyes across a rich valley dotted with fortresslike farmhouses, as they have since vandals worked their destruction centuries ago (page 536).

At the giant Buddha's feet, old Central Asian bazaars and caravansaries, dating back to the Silk Route's opulent days,* had been destroyed. New shops lined the roadway. A fine new school was being built. Across the valley a new hotel occupied the site of the resthouse where we stayed in 1931.

But from the wide arch above the old Buddha's brow, the matchless view of the snowy Koh-i-Baba range is still framed in ancient tempera paintings (page 520). In one a rich but relatively insignificant patron bows in homage to smiling Buddhas. The time-worn frescoes hang like a polychrome aureole about the giant Buddha's head.

Bad Place to Get Dizzy

When I climbed down from the Buddha's head—higher than Niagara Falls—my legs still shook from an experience which might have sowed superstition at Bamian, where there are already vague wonderings why those who have worked on the great statue are now dead.

Archeologist Joseph Hackin and his wife were lost at sea. Their assistant, Jean Carl, committed suicide out of grief at the news. Paris and Boston are robbed of Alexandre Jacovleff's varied talents, including faithful copies of Buddhist tempera paintings, reproduced in their own medium.†

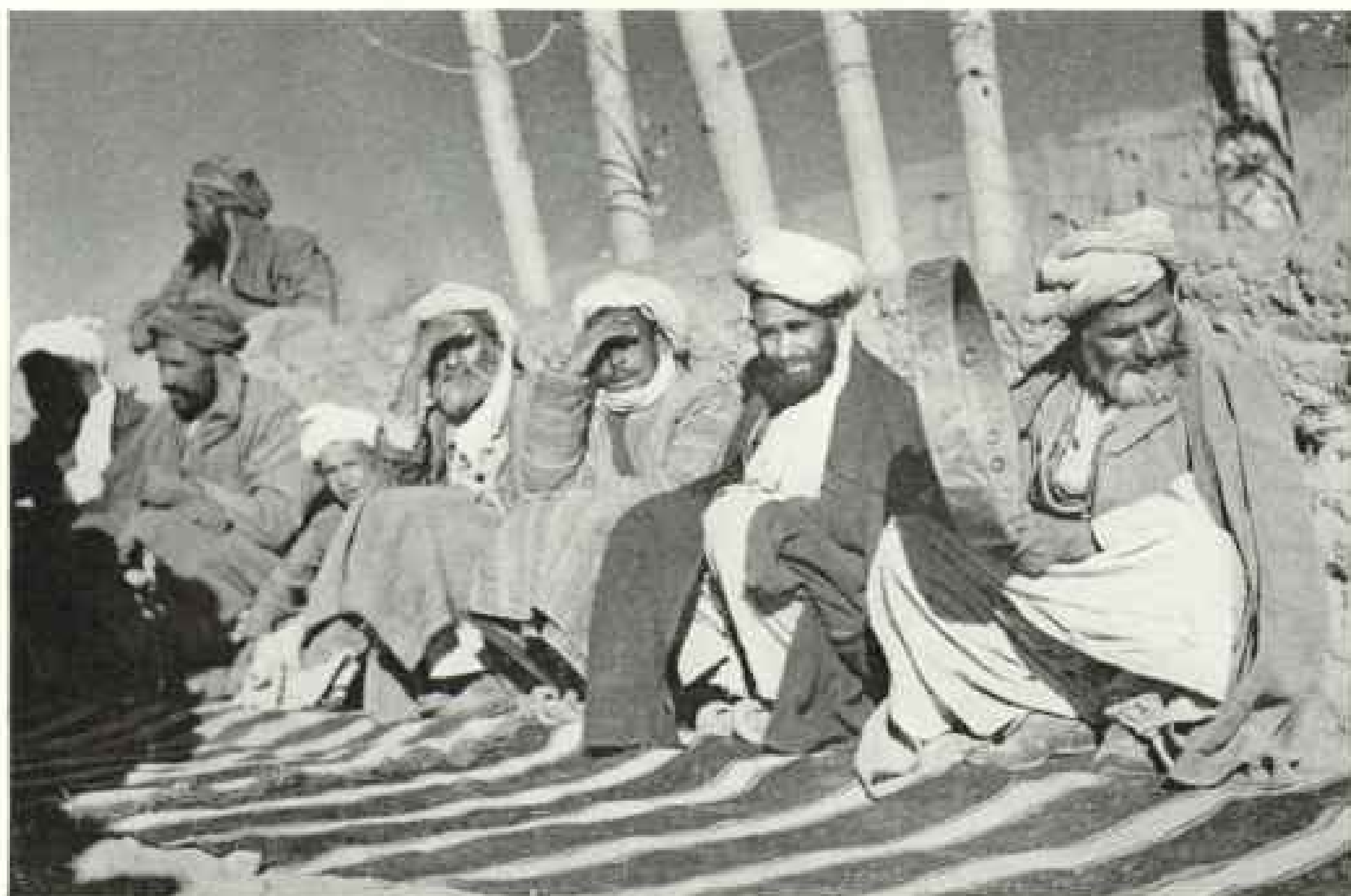
Everyone knows the momentary dizziness which comes when he rises quickly after sitting on his calves. My tripod was a pocket affair, and for some time I squatted low, seeking, better than before, to picture these delicate-toned paintings of the long ago.

These operations took me far out on the statue's forehead, and when I straightened up, the Bamian valley and the Koh-i-Baba range went out of focus into a dizzy blur.

Luckily there was ample space amid the bird droppings on Buddha's rough pate, but my guide seemed to wonder why I sat down so suddenly and gripped my little camera with so trembling a hand. The curse of Tutankhamen's tomb would be less dramatic than

* See "In the Realms of the Maharajas," by Lawrence Copley Thaw and Margaret S. Thaw, NATIONAL GEOGRAPHIC MAGAZINE, December, 1940.

† See also "Faces and Fashions of Asia's Changeless Tribes," 26 illus. in color from paintings and drawings by Alexandre Jacovleff, NATIONAL GEOGRAPHIC MAGAZINE, January, 1936.



For Men Only. This Is Half of a Wedding Party—Women Celebrate Separately

In Bamian the author found the tumbourine player beating his one-face drum. Meanwhile, daring young riders, dressed in their richest gowns, raced past giant Buddhas carved out of a cliff.

a dive past the towering limbs of the massive Buddha of Bamian.

My same day yielded a new memory—a native wedding.

Around a flat field the peasants gathered to the squeak and throb of a native orchestra, while daring riders, risking their choicest clothing, prepared to race their horses past the cave-scored cliffs. I was welcomed like an old friend, but told that the ceremony would not start for hours.

When I returned, sweaty from climbing in the rare atmosphere, 8,500 feet above sea level, fife and drum had disappeared inside a high-walled farm enclosure, along whose roof edge girls in bright silks and heavy coin necklaces were ranged against the sky. The camera could not catch the scene, for in Afghanistan a lens, like a gentleman, sees only males.

Comedy of Cameraman and Police

Kabul, a mere 6,000 feet above the sea, seemed springlike after Bamian, but the threat of winter overhung the Arghandeh Pass and the thought of Kandahar's wide, fruitful plain lured me on. I set out for Ghazni and the south.

In the old city of Ghazni was staged a now amusing comedy of the photographer and

the policeman. Afghanistan was one of the last lands to turn self-conscious before a camera, but photography is now suspect to a degree unforeseen when I roamed the Herat bazaars in 1931.

In Ghazni I had a clear conscience, however, for I bore full permission, albeit verbal, from the highest authorities.

Many citizens of Mahmud's one-time capital are handsome fellows and their red-embroidered sheepskin cloaks the ultimate in masculine chic. But every time I tried a picture a policeman's hand blocked my lens.

When, in desperation, I took a two-wheeled pony cart out to the 900-year-old Towers of Victory (page 532), a policeman trailed me on a bicycle and looked with impatience on my efforts to project the famous old monuments, with their super-Times Square inscriptions, against rapidly fading clouds.

I finished my work and rolled back to town.

Our auto had broken a carburetor part, and as the neat-bearded telephone operator got through to Kabul (page 529), the policeman appeared with a scribbled message that I was taking photographs and that something should be done. Something was.

Within a few minutes I was surprised to have the phone handed to me and to hear



Near Kabul Rests Baber, the Afghan King Who Founded India's Mogul Empire

In 1526 Baber made the last permanent invasion through the Khyber. Introducing artillery to India, he combined his big guns with the cavalry tactics of Alexander the Great. Baber's army of 12,000 men scattered the Delhi Sultan's 100,000. His dynasty produced such famous rulers as Akbar the Great and Shah Jahan (page 526).

the voice of a Foreign Office interpreter speaking from Kabul.

"Why are you delayed in Ghazni, and what is your trouble over photography?"

I explained.

"We will send a new carburetor at once. And don't worry about the pictures," he added, ambiguously.

While lurching against the sunny wall of the hotel, I looked up to see Ghazni's chief of police and a German-speaking interpreter. With delayed-pass verbs and German expressions which had lain dormant in my brain for years, I learned that I had full permission for anything but military scenes.

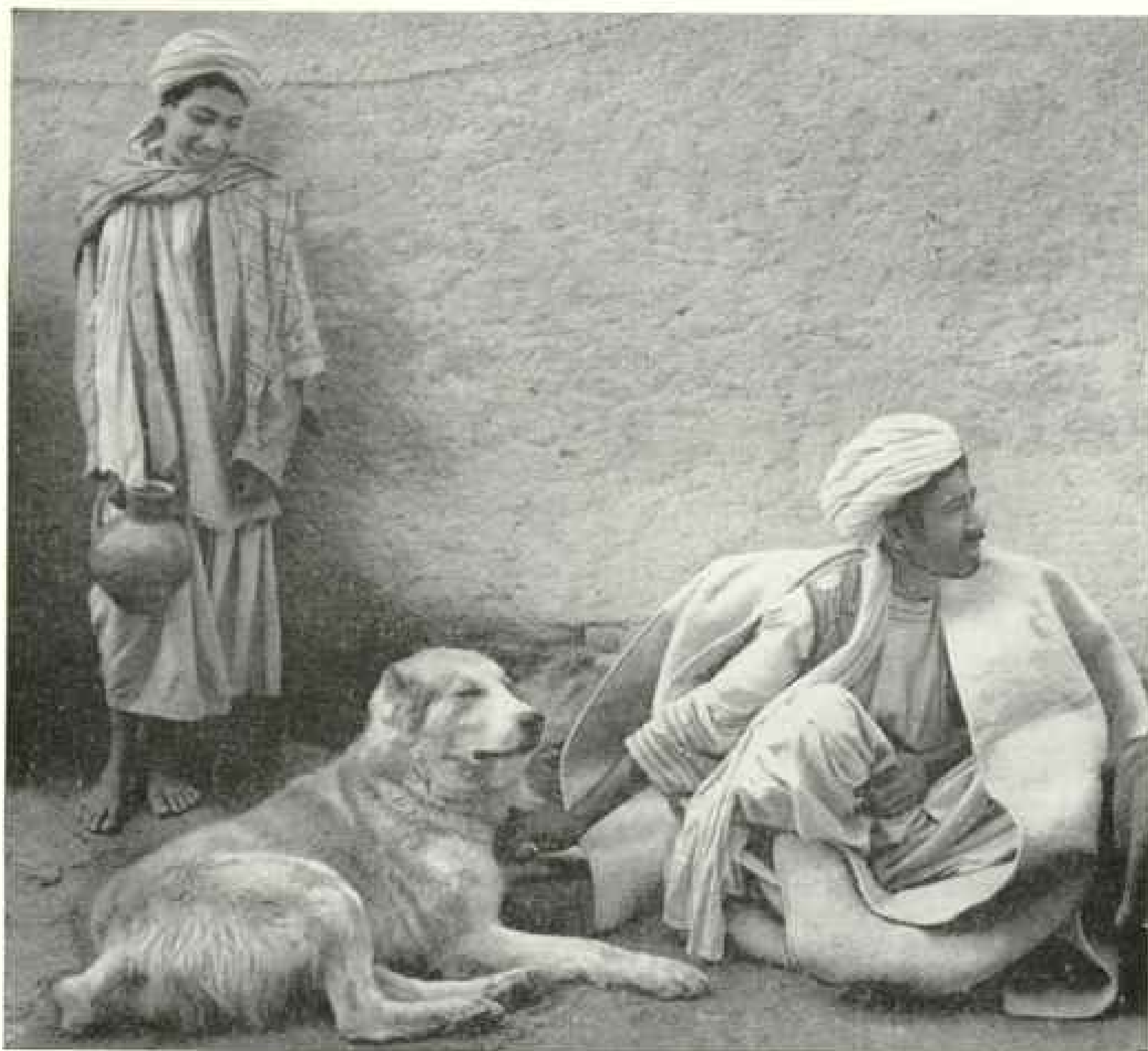
As we parted with wide-smiled expressions of mutual esteem, up came my friend the cop,

taking off his glove for a hearty handshake and a tardy but spirited smile.

Heaven help the Ghaznevid—man or boy—who refused to pose for me after that! My newly converted helper seemed bent on a photographic census of the whole town. Chests had to be stuck out, fingers straightened, and a police-record uniformity given to all subjects.

Ghazni, Mahmud's Capital

In spite of this, Ghazni remains in my memory as a pleasant place, a model among mud-walled cities, with sheepskin-cloaked manhood pouring from its high-set gateway and the beat and hammer of cobbler, blacksmith, and silversmith filling the vine-roofed bazaar. Mahmud's fortress still looks the



So Gentle under His Master's Touch, the Sheep Dog Is the Flock's Savage Protector
Not silky-haired Afghan hounds but such heavy sheep dogs are the shepherds' assistants. This animal's ears are clipped and his tail is mutilated.

part, a thousand years after it was the base of Moslem advance into India (page 518).

At Ghazni I again experienced, as I had in Kabul, the independence of a tonga driver. Whether he was hungry, or his horse was, or whether some atavistic sense of liberty hit him in mid-route, I can't say, but he stopped his two-wheeled cart, said the ride was over, and could he have his fare?

Smilingly I paid, grateful that it was not a cold night.

Here in Ghazni, saddled with a motor that wouldn't moté and a driver who wouldn't drive, progress seemed an illusory thing. Luckily, I could walk. And I did, homeward through the bazaar.

Smiles greeted my passage, I was urged to partake of countless cups of green tea, and the shadows lengthened in pleasing pattern

along the gray-brown walls of the old city.

We left Ghazni in a brief blizzard, through whose flurry silent-footed camel trains grew before the eye like the darkening image on a developing photographic negative.

Stopping at Mud-walled Huts

With winter blotting out the wide, flat landscape, we rolled steadily along, stopping at various mud-walled huts which disgorged their crowds of the curious. At Mukur and Kalat-i-Ghilzai I kept my eye peeled for fine specimens of some of the best manhood in Asia (page 537).

Nightfall found us enjoying the mild evening air of Kandahar, where, to judge from the right-angled crisscross of shop-lined streets, everyone sells or buys and no one lives. This bustling mart of dried fruit and embroidered

jackets, of high-fluffed cotton and imported soaps—Lux, Palmolive, or Camay—seems as commercial as Broadway.

Narrow alleyways, piercing the commercial façade, lead to the city's courtyards and dwellings. Thence come curious youngsters who follow a photographer with tireless interest.

Beyond the rectilinear market town, Kandahar is building an attractive villa section, with each bungalow in a well-kept garden. The pattern of flower bed and irrigation ditch is laid down simultaneously with the walls, and by the time the house dome is whitewashed or tinted, the front yard is abloom with chrysanthemums.

Kandahar has the best Government hotel in Afghanistan, with a fine short-wave radio. My dinner was ending with a piled-high plate of juicy pomegranate when the music of a string quartet came softly in. Being the only guest, I ran the gamut of four wave bands, trying to see whether WRUL or some other short-wave voice was coming through from the United States.

The director of Radio Kabul had assured me that a finer receiving set, then on order, would establish the connection.

For two hours in Kandahar I twirled the dials, combing the ether for those sound waves which blare forth from loud-speakers in every large town of once-isolated Afghanistan.

Every second station I got was Berlin. Oriental music from India; Berlin; Oriental music (male) from Kabul; Berlin; sophisticated discussion of swing from London; Berlin; Spanish rhythms from Buenos Aires; Berlin. But no news from home.

Freedom-loving Afghans Feel War's Impact

Afghanistan prided itself on having a more complete coverage of war bulletins than any of its neighbors. And one night in the Soviet Embassy in Kabul I appreciated the variety of foreign impacts, for in "Vasilissa the Beautiful" I enjoyed a Russian fairy tale as unworldly and fantastic as anything seven dwarfs ever cooked up around a wishing well.

Long a Central Asian retreat of rugged individualism, Afghanistan is now swept into the world orbit of short-wave radio, motion pictures, gasoline rationing, and a shortage of sea transport for karakul skins.

Before I left Kandahar I rode out to the Arghandab River, where a new bridge was replacing one destroyed by floods. American Caterpillar Diesels were pumping water through the river-bed gravel and turning cement mixers in an effort to solve Afghanistan's problems arising from dusty sand and

badly mixed concrete, which is a major cause of waste.

Seven deep piers were being constructed of what seemed harder and more enduring cement than any I had noticed in this land of peeling porches and crumbling bridges. I thought of the appeal by Kabir Ludin, Minister of Public Works, for competent engineers from America and of his own difficulties in buying American engineering materials because of priorities.

"Come Over and Help Us"

Once the signboard at the end of the Khyber read, "It is absolutely forbidden to cross this border into Afghan territory." Now Afghanistan, faced by economic problems as dangerous as Amanullah's fatal tilt against Afghan veils, cries, "Come over into Afghanistan and help us to build a land and direct our thoughts."

Maj. Gordon B. Enders made an informal visit to Afghanistan previous to the opening of the American Legation by the Honorable Cornelius Van H. Engert, the American Minister. Mr. Engert was warmly welcomed, since he was the first American diplomatic officer to visit Kabul, in 1922.

In 1943 the Honorable Abdol Hosayn Aziz arrived in Washington to open the first Afghanistan Legation there.

From the pleasant orchards and vineyards of Kandahar I rolled down to the Indian rail-head at Chaman. At the frontier, an ultra-polite Afghan officer sat in a garden amid winter-withered chrysanthemums and stamped my passport for leaving.

He had something very definite to say, but it took two of his assistants, my chauffeur, and a Kochi nomad from the bazaar to express it. It came to this: "I hope you like my country."

I grasped his hand, nodded my head, and said, "I do."

Part of Chaman seemed more Afghan than Afghanistan. Bearded Ghilzais squatted in their tentlike sheepskin cloaks, warming their tough feet on the sheepskin. "Kandahar markets" of dried fruit and Afghan rugs dotted the Chaman bazaar, and pushing and hauling on heavy handcarts of freight were freedom-loving tribesmen, caught in the toils of modern life.

It was of them I thought as my train pulled out for Quetta. Against their straining limbs, harnessed to modern life, I pictured a black-bearded Afghan of Ghazni, free as a hawk, clad in red-embroidered sheepskin cloak and fondling a gun, while a gray-breasted pet partridge chattered pleasantly in his ear.

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To carry out the purposes for which it was founded fifty-eight years ago, the National Geographic Society publishes this Magazine monthly. All receipts are devoted in The Magazine itself or expended directly to promote geographic knowledge.

Articles and photographs are desired. For material The Magazine uses, generous remuneration is made.

In addition to the editorial and photographic surveys constantly being made, The Society has sponsored more than 100 scientific expeditions, some of which required years of field work to achieve their objectives.

The Society's notable expeditions have pushed back the historic horizons of the southwestern United States to a period nearly eight centuries before Columbus crossed the Atlantic. By dating the ruins of the vast communal dwellings in that region, The Society's researchers solved secrets that had puzzled historians for three hundred years.

In Mexico, The Society and the Smithsonian Institution, January 16, 1930, discovered the oldest work of man in the Americas for which we have a date. This slab of stone is engraved in Mayan characters with a date which means November 4, 361 B. C. (Spinden Correlation). It antedates by 200 years anything heretofore dated in America, and reveals a great center of early American culture, previously unknown.

On November 11, 1935, in a flight sponsored jointly by the National Geographic Society and the U. S. Army Air Corps, the world's largest balloon, *Explorer II*, ascended to the world altitude record of 72,395 feet. Capt. Albert W. Stevens and Capt. Orvil A. Anderson took aloft in the gondola nearly a ton of scientific instruments, and obtained results of extraordinary value.

The National Geographic Society-U. S. Navy Expedition camped on desert Canton Island in mid-Pacific and successfully photographed and observed the solar eclipse of 1937. The Society has taken part in many projects to increase knowledge of the sun.

The Society cooperated with Dr. William Beebe in deep-sea explorations off Bermuda, during which a world record depth of 3,028 feet was attained.

The Society granted \$25,000, and in addition \$75,000 was given by individual members, to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees in the Giant Forest of Sequoia National Park of California were thereby saved for the American people.

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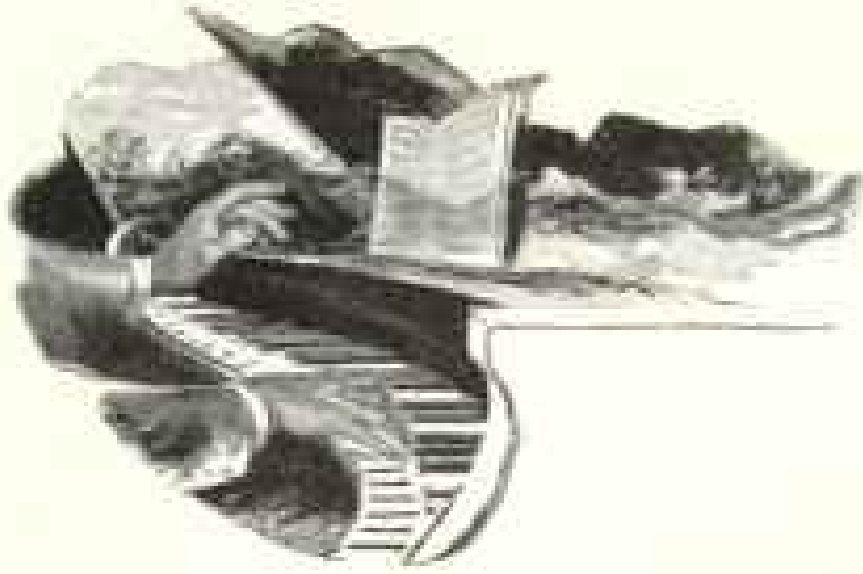
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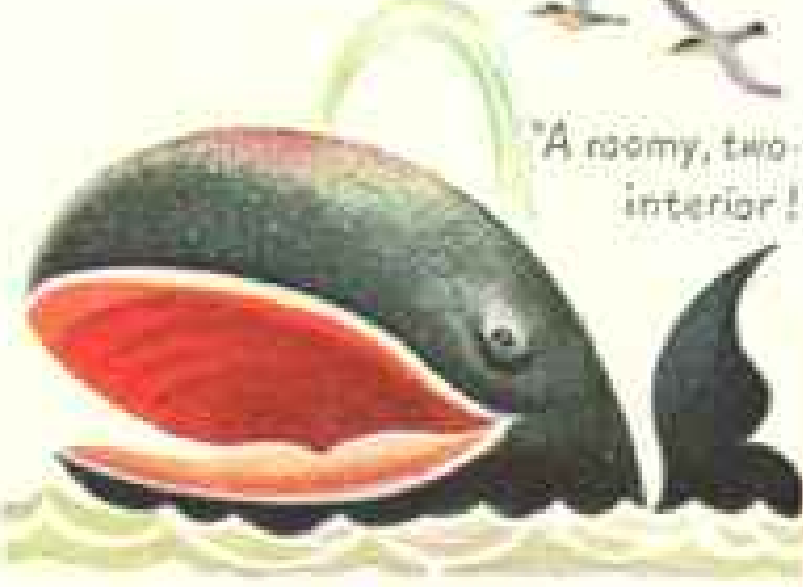
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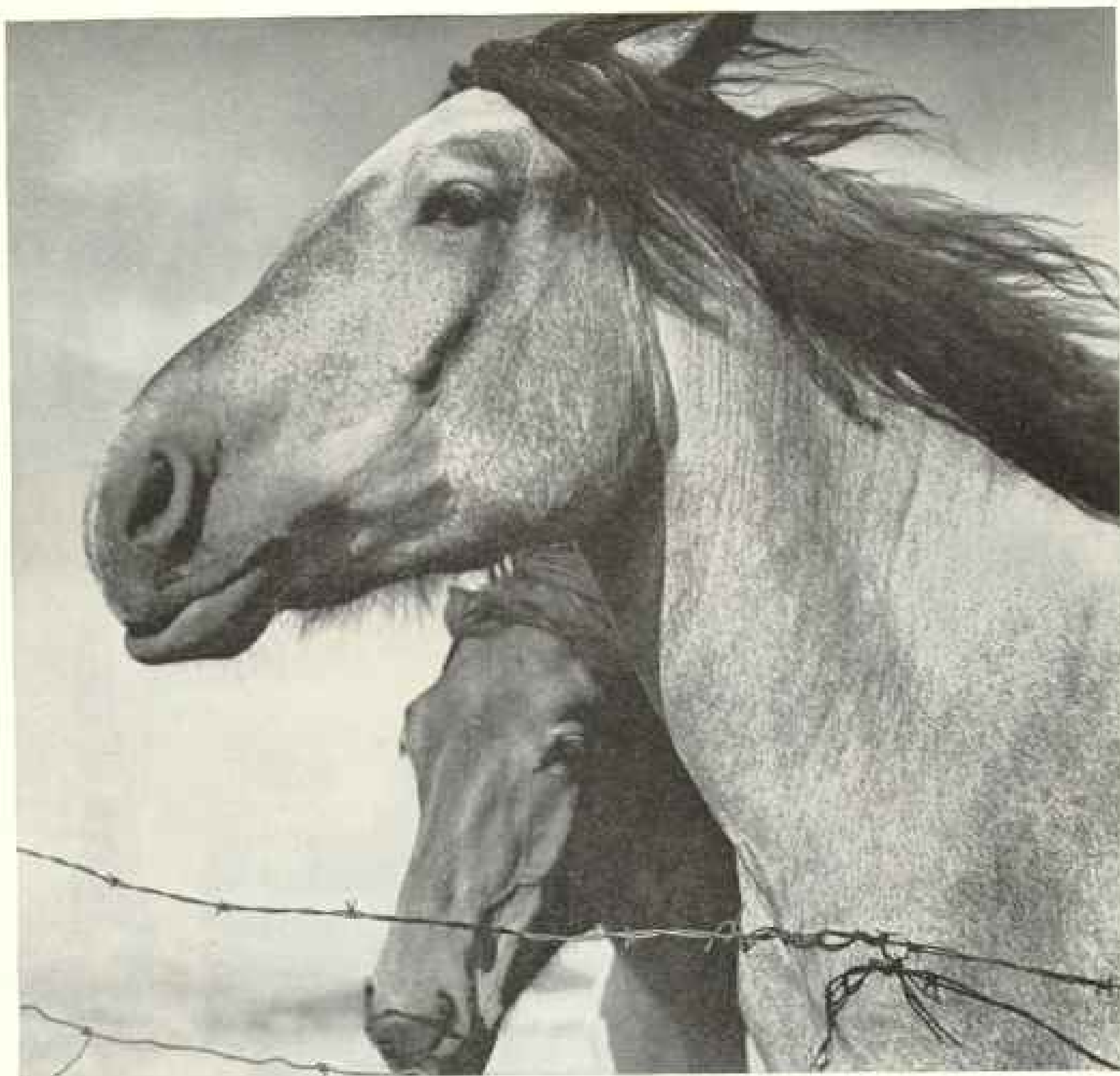
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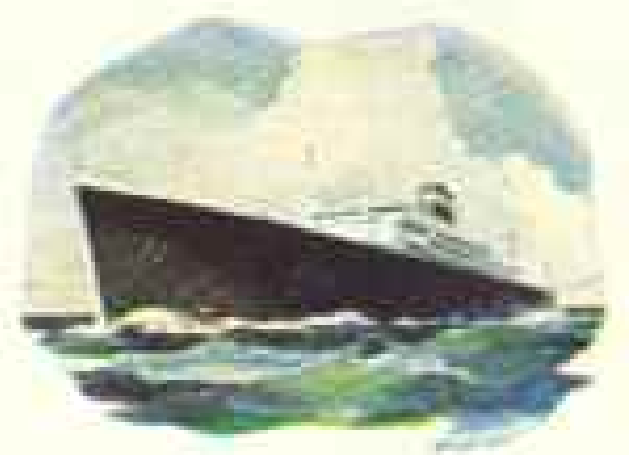
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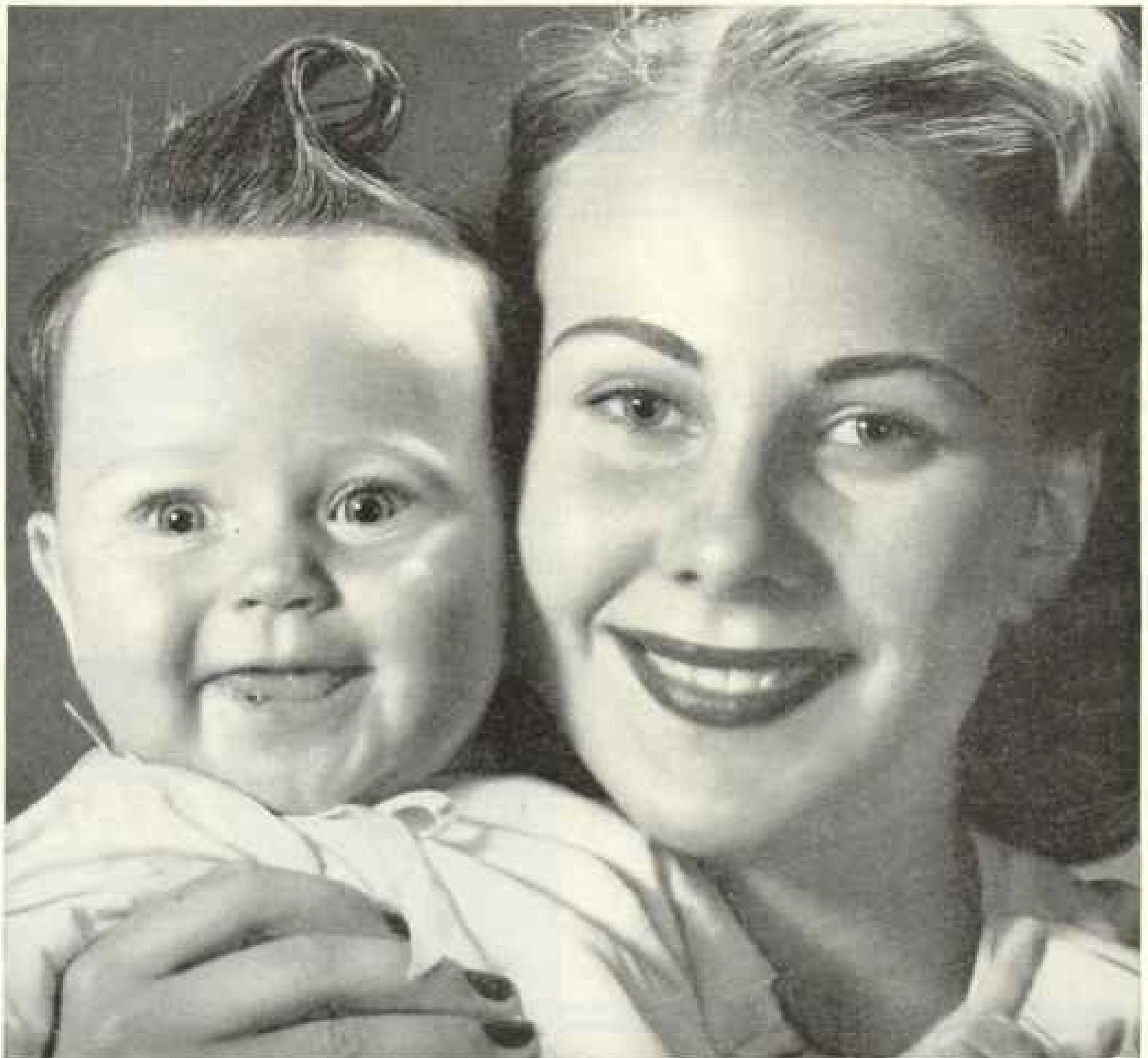


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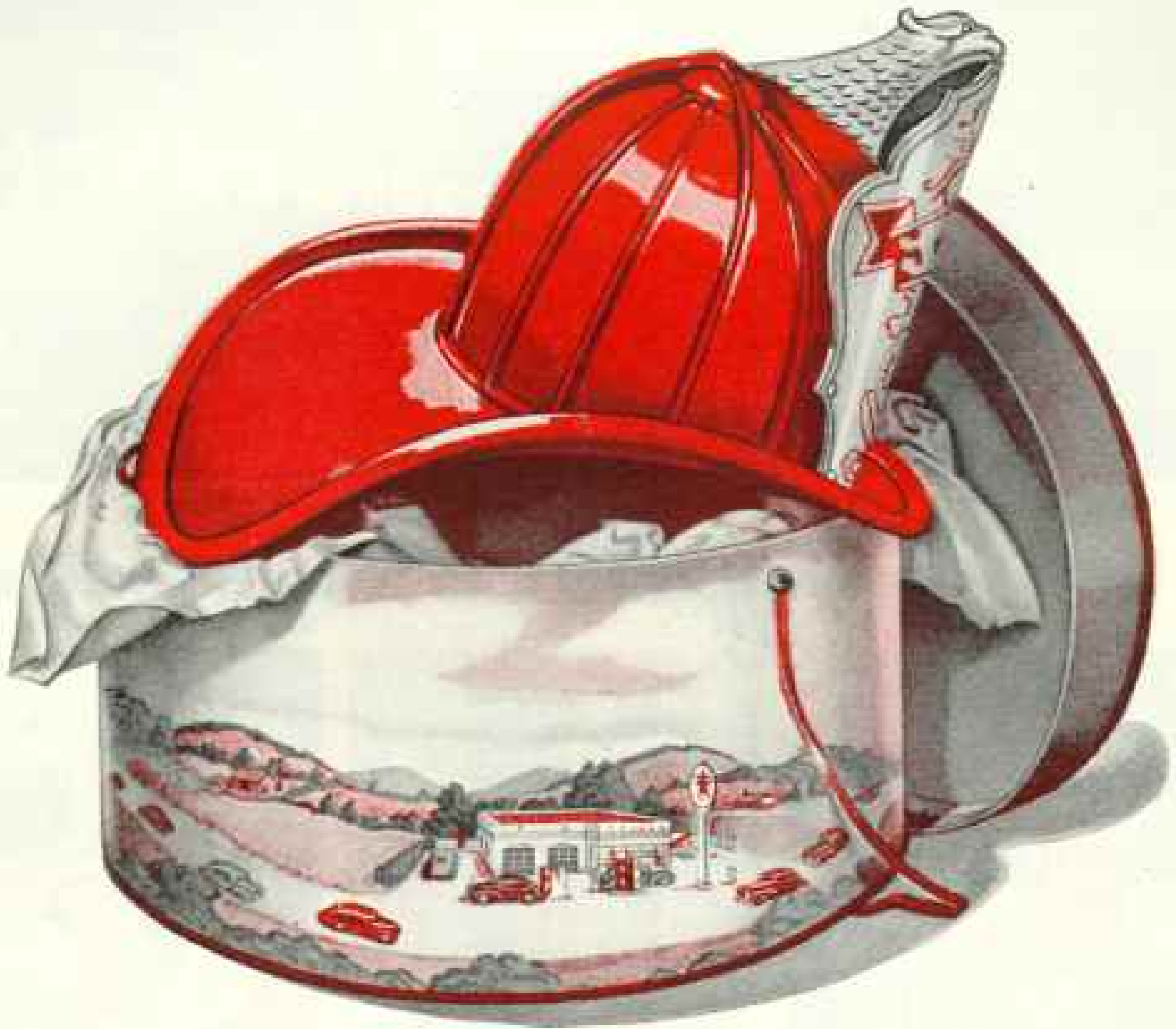
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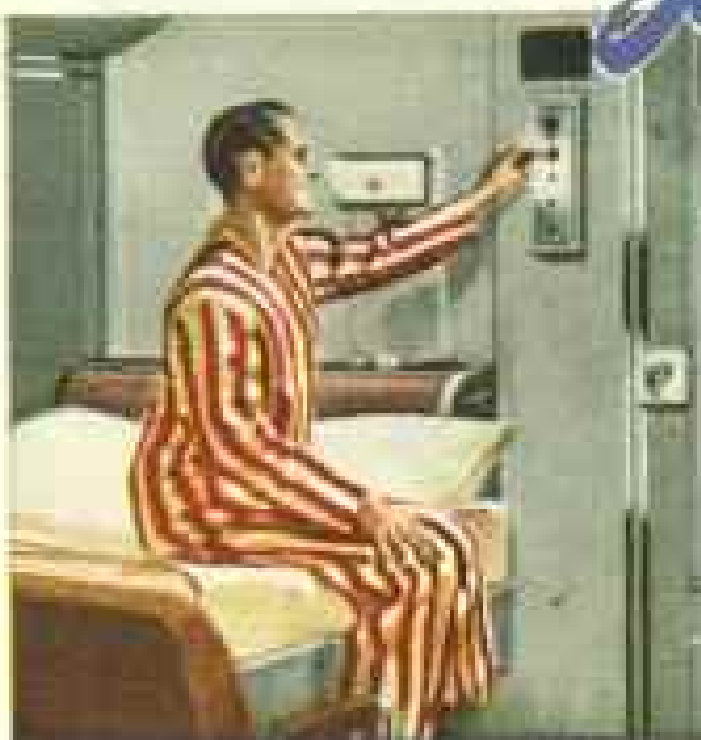


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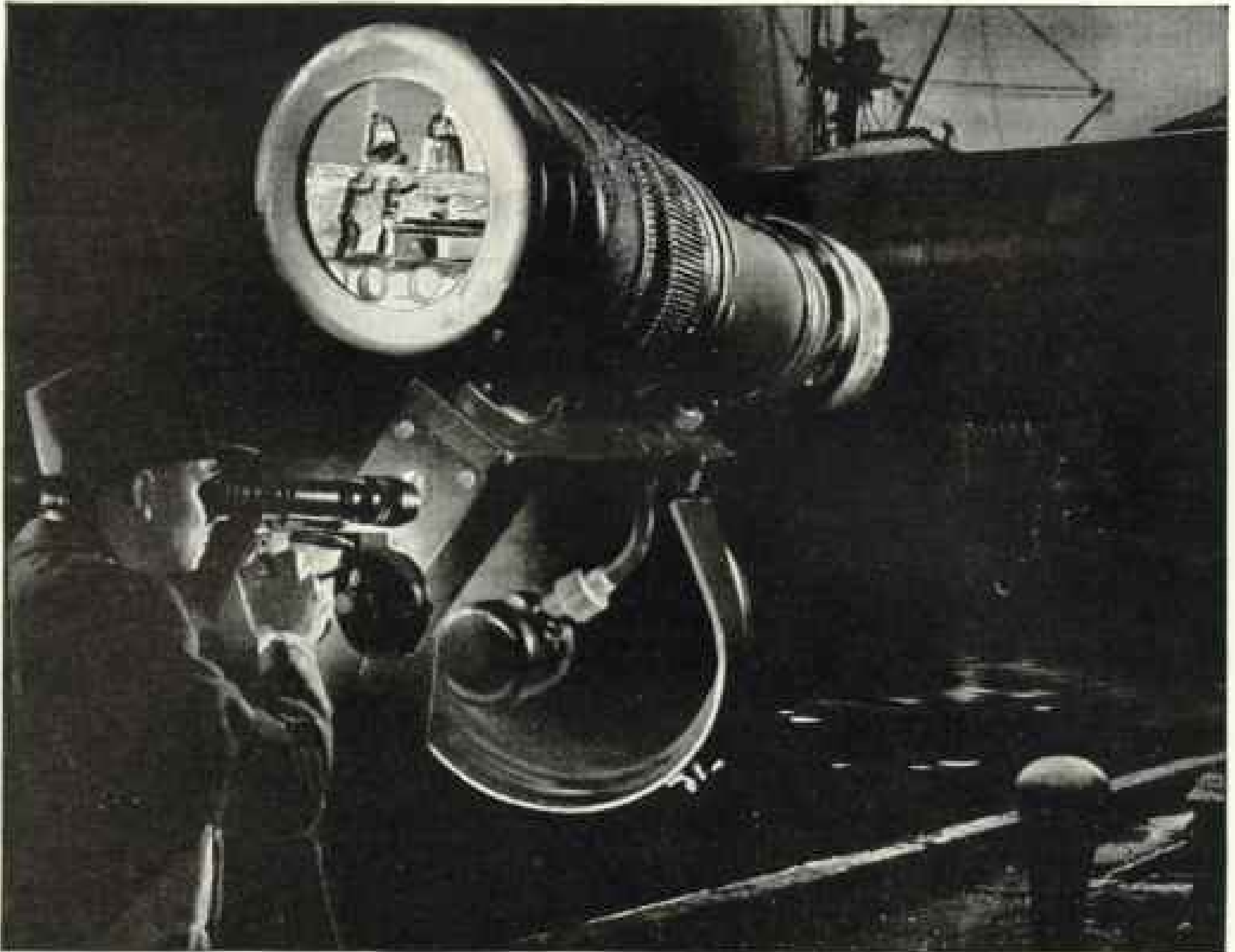
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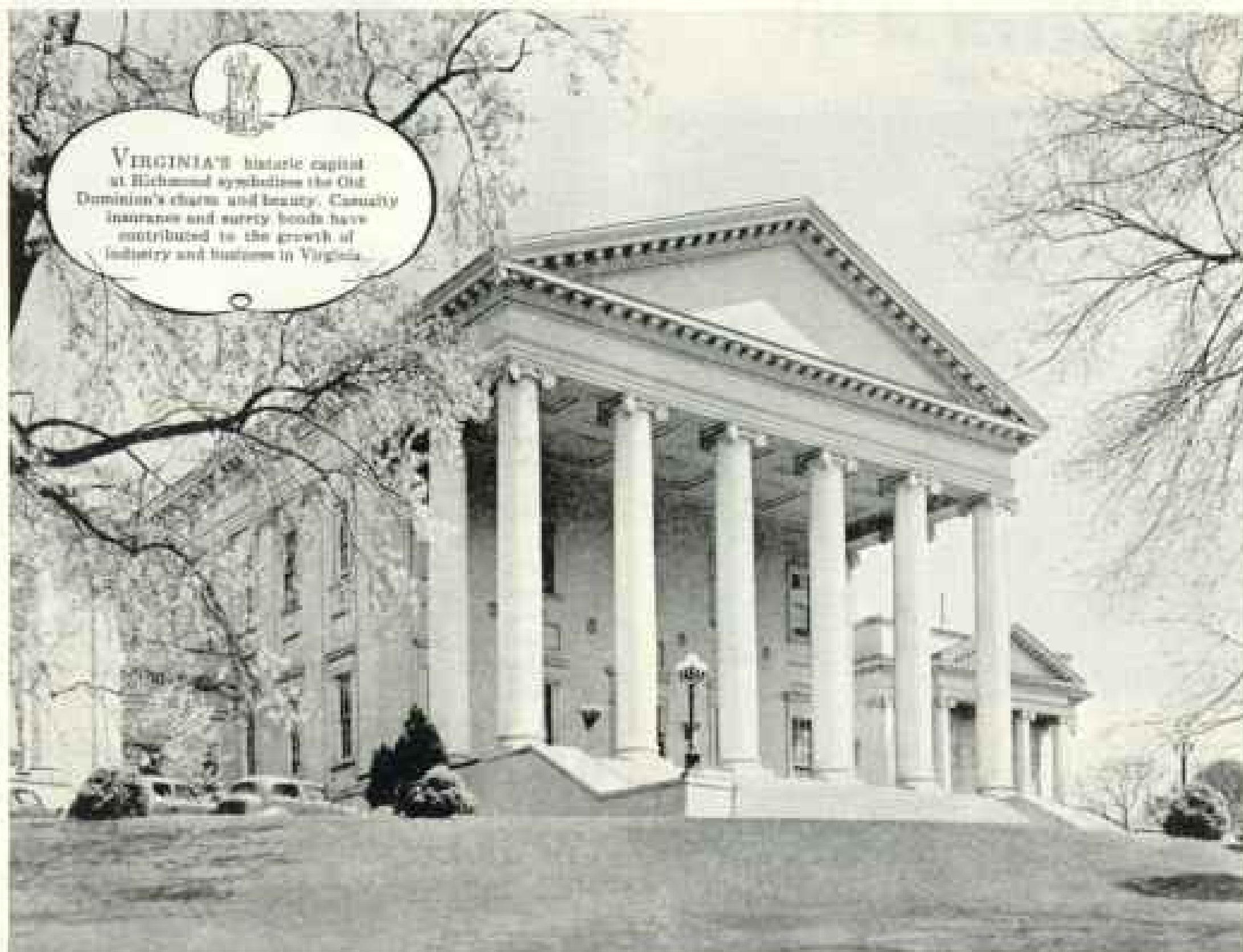


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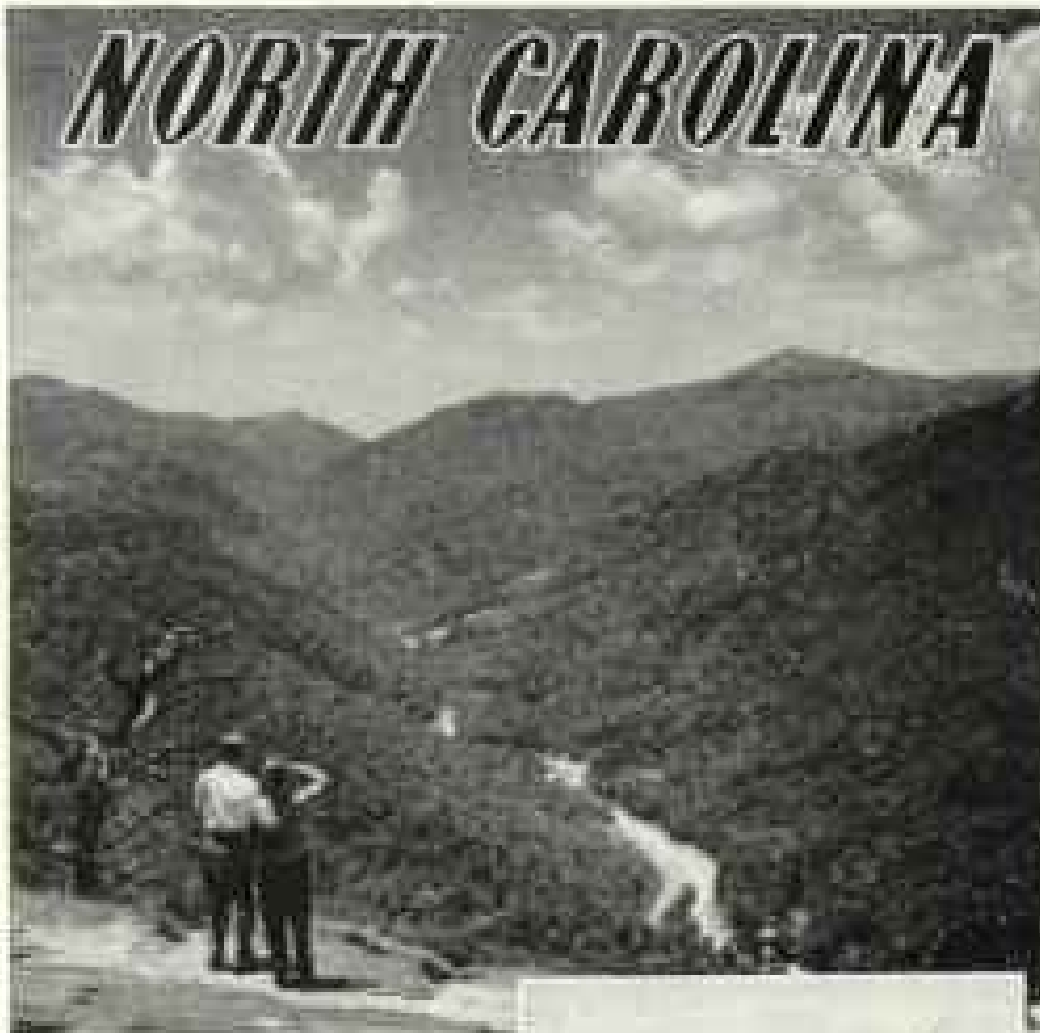
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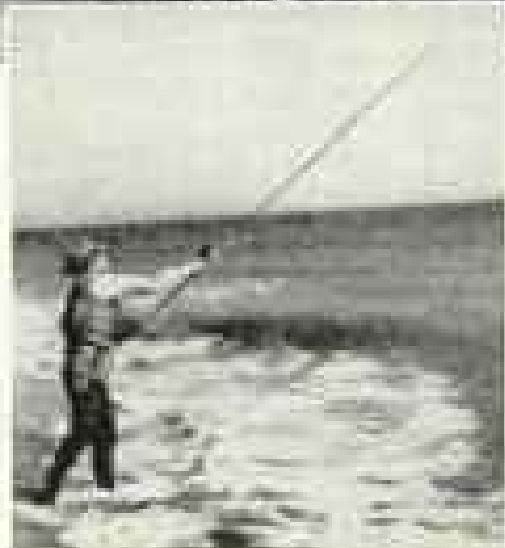
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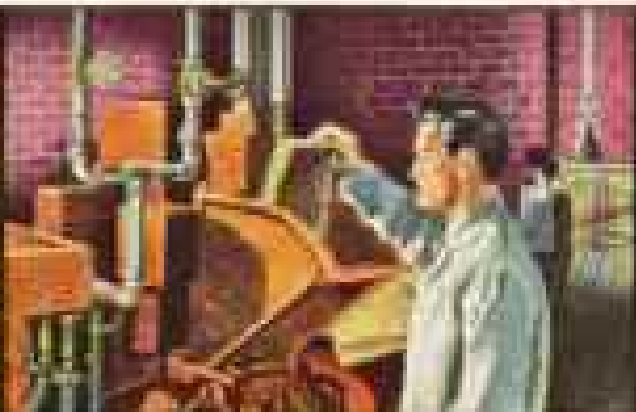
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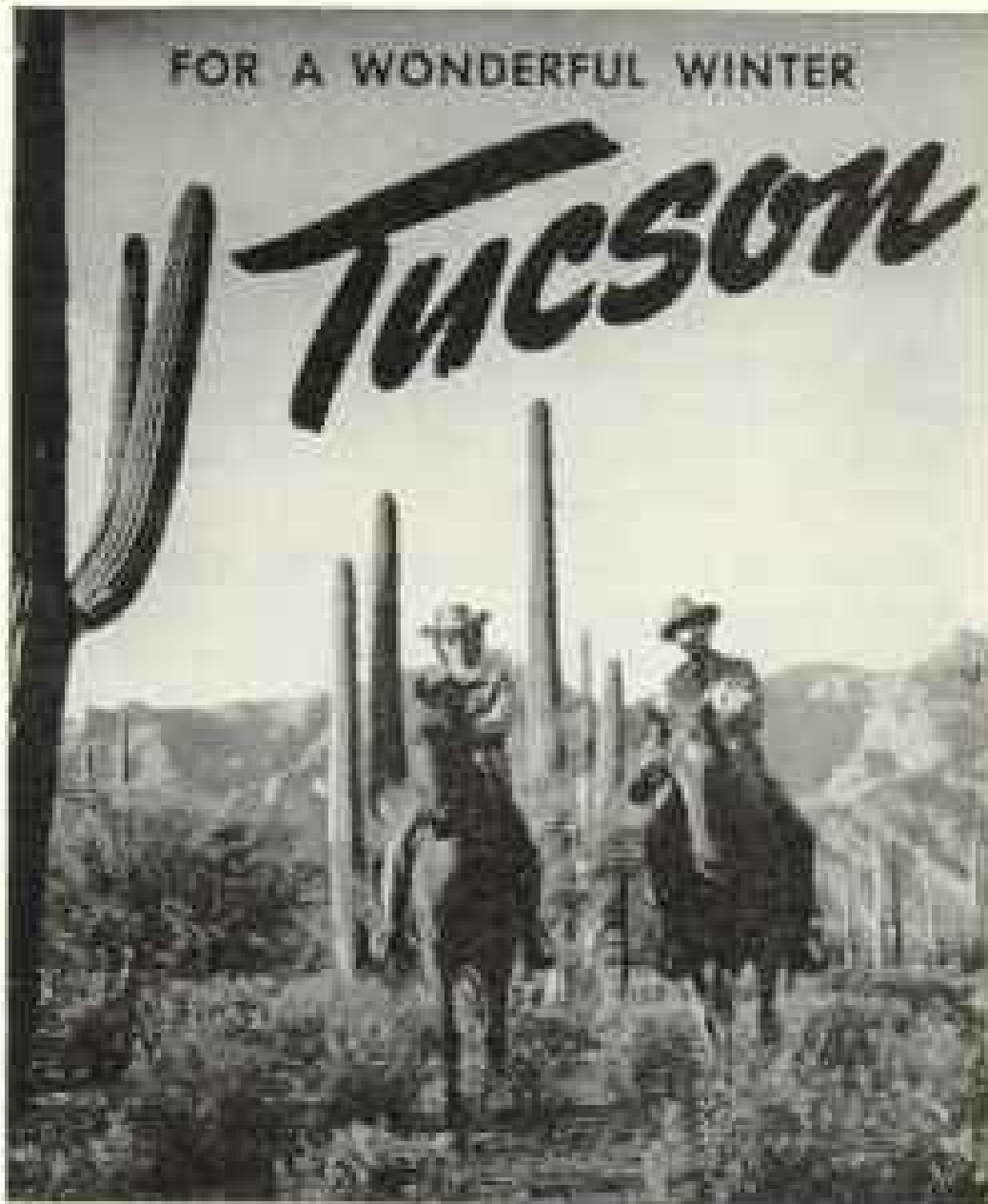
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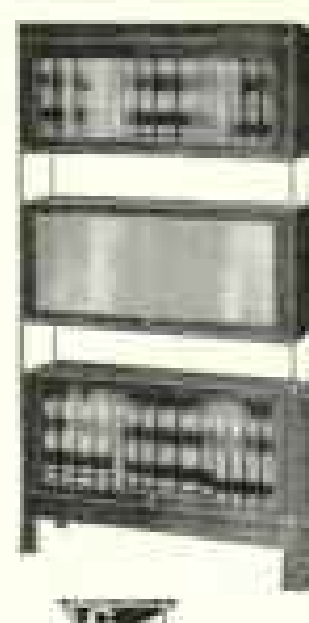
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Q. How is medical science attacking cancer?

A. Doctors are treating more patients in the early stages of cancer, when the chances of cure are greatest. Intensive studies now being carried on to determine the causes of cancer and to develop new methods of diagnosis and treatment. These include research with hormones, and experiments with radio-active substances and certain chemical compounds.



Q. What should *everyone* do about cancer?



A. First, learn the *danger signals*. Second, when such warnings appear, get *medical advice immediately*, for there are only two ways of curing cancer: complete removal by surgery, or complete destruction by X-rays or radium rays. It is estimated that 30 to 50 per cent of the deaths from cancer today might have been prevented by earlier recognition and prompt treatment.

What are cancer's "danger signals"?

1. Any unusual lump or thickening, especially in the breast. 2. Any irregular or unexplained bleeding. 3. A sore that does not heal, particularly about the mouth, tongue, or lips. 4. Noticeable changes in the color or size of a mole or wart. 5. Loss of appetite or continued unexplained indigestion. 6. Any persistent changes in normal habits of elimination.

Important note: These signals do *not necessarily* mean cancer. In fact, 88 out of 100 women who came to one cancer clinic proved *not* to have the disease. However, the signals do

indicate that something is wrong which you should have checked by your physician. His examination will reassure you if cancer is not present, or, if it is, will permit prompt treatment.

To learn more about cancer, send for Metropolitan's free booklet, 106N, "There Is Something YOU Can Do About Cancer."

Metropolitan Life Insurance Company

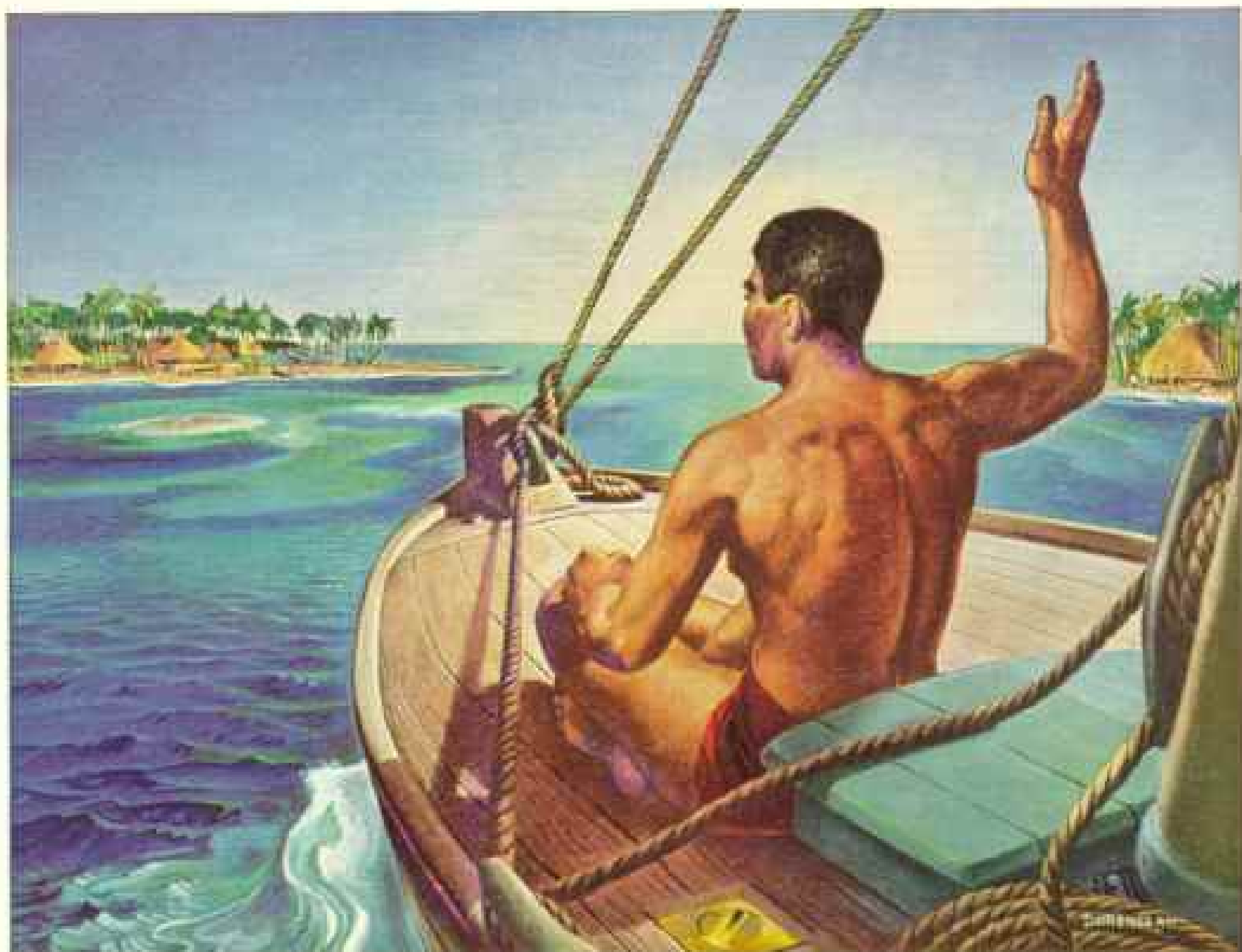
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So the trader puts an islander up in the bow. The native looks at the water ahead, and signals the helmsman so that he can steer clear of trouble.

You can't help thinking how nice it would be if each one of us could have somebody with the ability to look ahead and show us how to steer clear of trouble. And, as a matter of fact, you can

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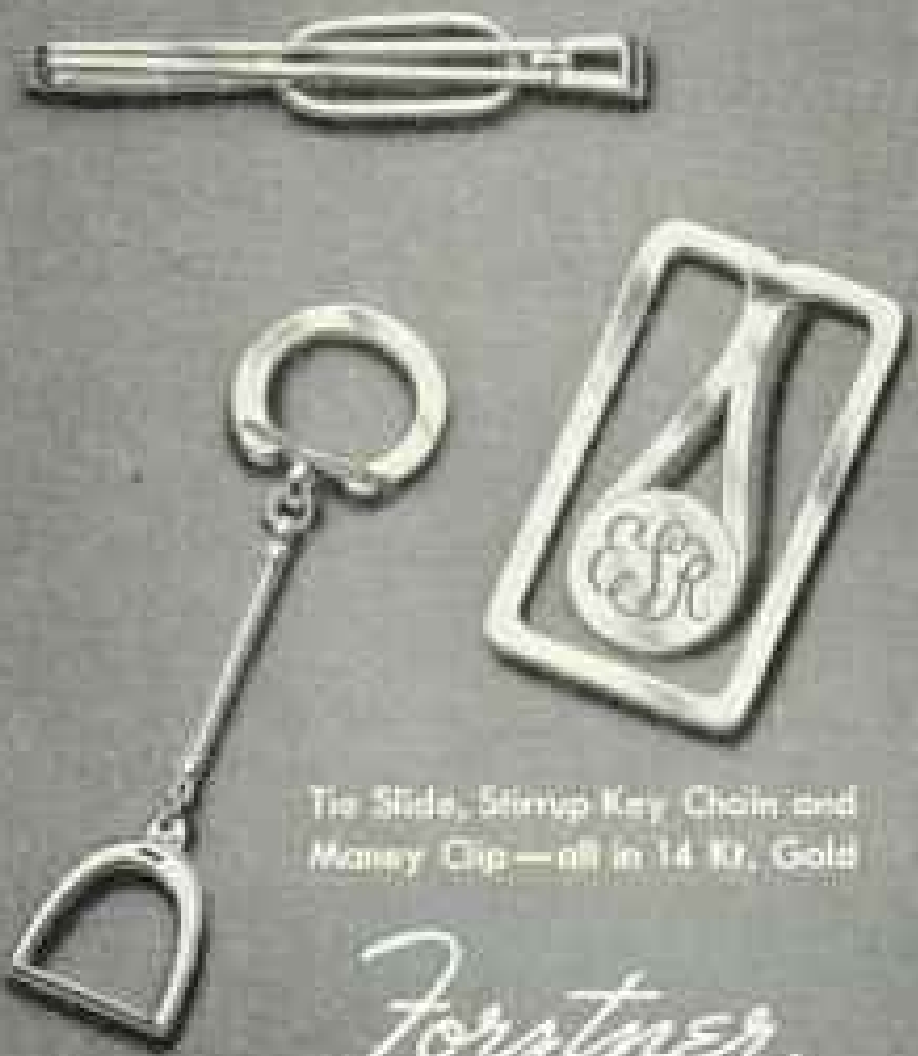
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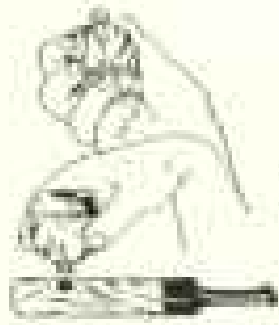
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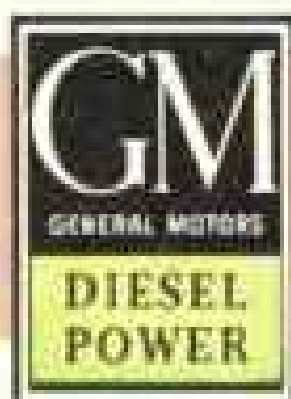
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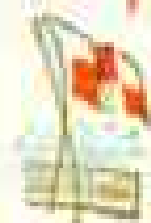
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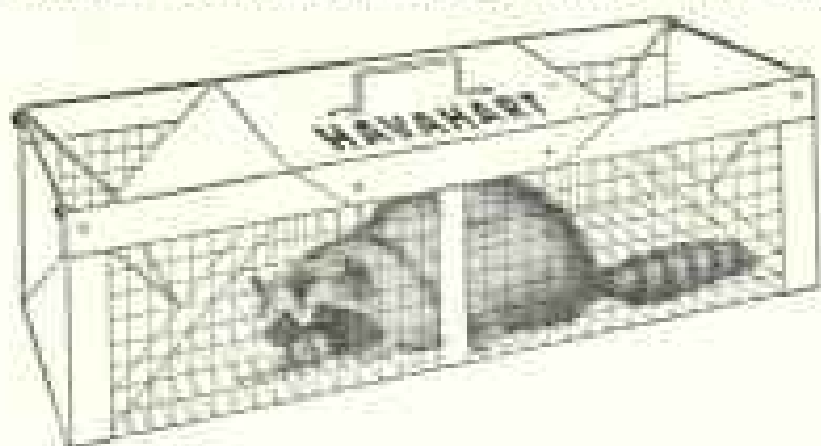
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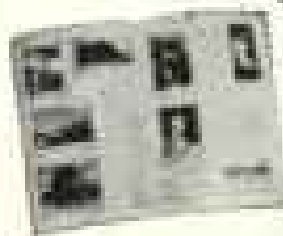
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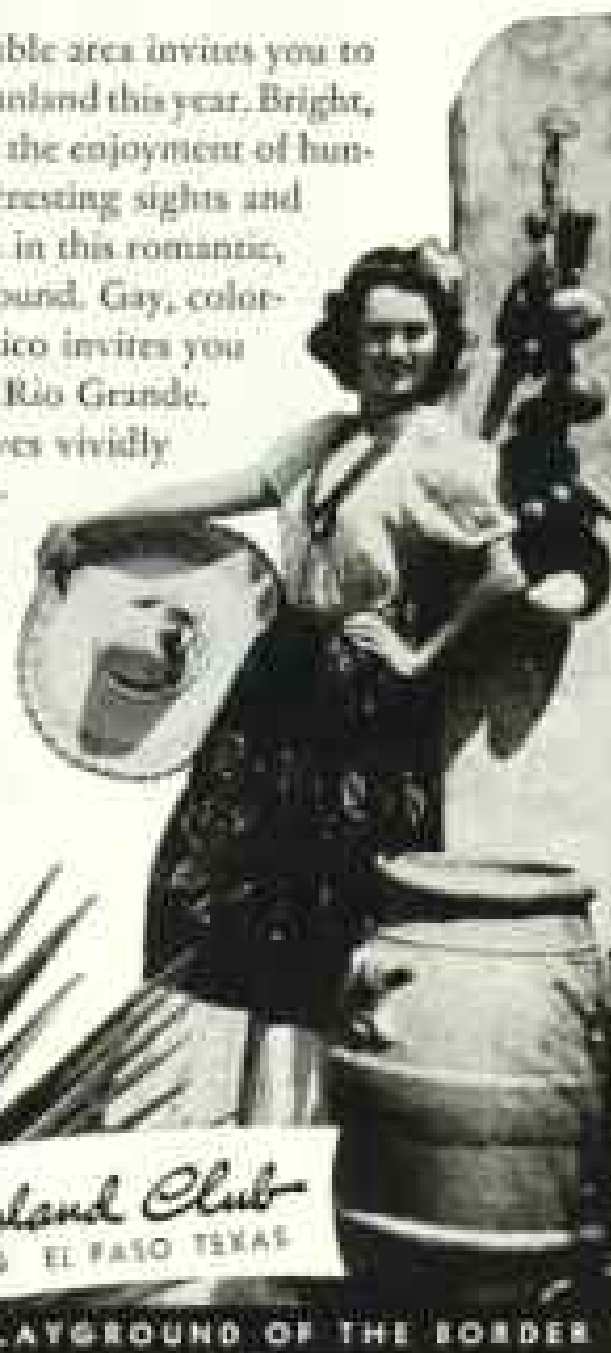
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