

VOLUME LXXII

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# THE NATIONAL GEOGRAPHIC MAGAZINE

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## Map Supplement of South America

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With 25 Illustrations and Map

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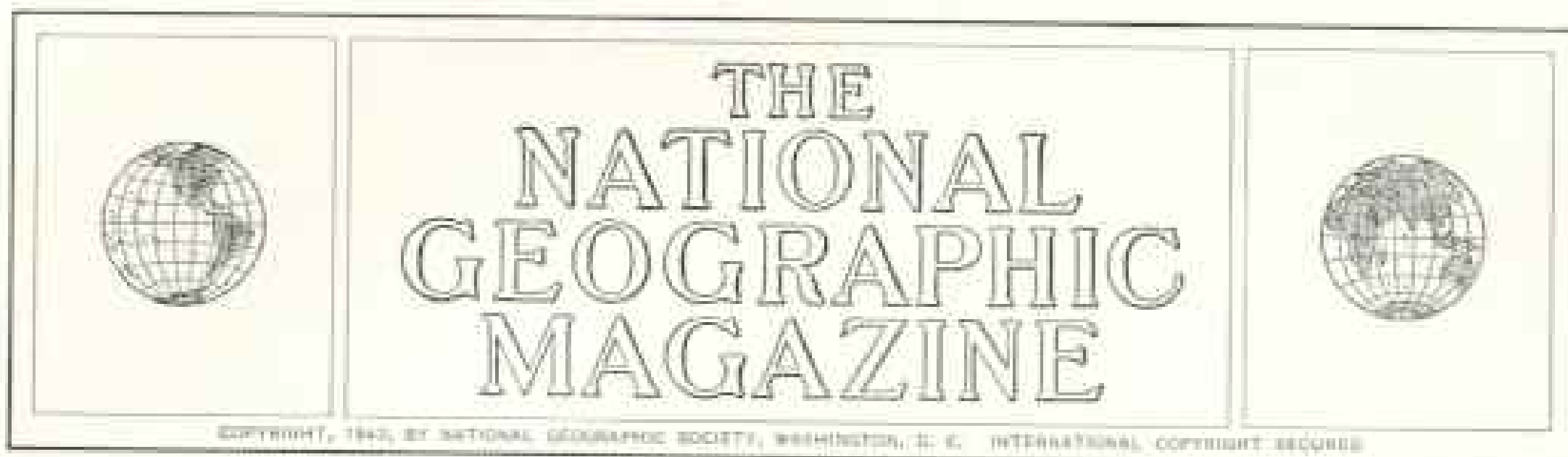
LIEUT. FREDERICK SIMPICH, JR.

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## Wartime in the Pacific Northwest

By FREDERICK SIMPICH

*With Illustrations by Staff Photographer J. Baylor Roberts*

**E**XPLORING the Pacific Northwest, we saw how Canada and the United States now fight side by side.

Hunting enemy submarines, we flew through cold, foggy days with Royal Canadian Air Force bombers. When they can't find an enemy pigboat, they bomb the whales with harmless smoke bombs for practice, scoring 30 percent of hits.

From decks of sweepers we watched our Navy scour the sea for mines. To let our boat pass, men pulled back a submarine net that guards a certain strategic harbor.

Barrage balloon crews, shielding an air base by flying scores of elephantine gasbags at the end of long cables, showed how they maneuver their strange-looking craft. Any Jap plane that tries to break through this maze of steel ropes gets its wings cut off. Pilots dread them; so do neighbors. When winds break them loose and they drift across country, their dangling cables play havoc with power and telephone lines (Plate VIII).

Here are vast soldier cities that shelter 50,000 men. Here, too, are lonely island posts manned by veterans of another war, veterans with tattooed arms, gold teeth, and rheumatism. Cheerful and lively, they scan sea and sky for advancing enemies, betimes playing bagpipes or throwing rocks at wild bears that rob camp kitchens (Plate X and page 462).

### 4,700 Miles from Tokyo

There are 9,000 miles of coastline to be defended from Attu, western tip of the Aleutians where the Japs landed, down to Panama. There are 700 miles of coastline from Prince Rupert, British Columbia, down to Astoria, Oregon, the stretch we studied (map, p. 425).

Alaska is closer to Japan, but this Pacific Northwest, by the Great Circle route through the Aleutians, is only about 4,700 miles from Tokyo. Its army posts, naval bases, docks, airplane factories, ship and lumber yards, mines, forests, railway terminals, and fishing fleets are all possible objects of enemy attack. After the Aleutian thrust, Japanese U-boat shelling of Vancouver and Oregon coasts was no surprise.

Portland, Seattle, Tacoma, Vancouver, Victoria, Prince Rupert—all are exposed to the risk of air raids. But now their all-out defense works, and grim evidence of aggressive warfare, meet you at every turn.

Great rifles and antiaircraft guns point their deadly snouts from coastal groves and hidden nooks (Plate I).

Destroyers, mine layers, sweepers, submarines, and patrol bombers depart on grim, mysterious missions.

Soldiers afoot and in trucks patrol the roads and beaches (page 427).

### Soldiers Sail for "Some Northern Port"

Barbed wire and guards hold the inquisitive public far back from busy water fronts where blacked-out troop trains discharge men and where Army transports load in dark, rainy nights for "some northern port." Trucks, tractors, bulldozers, and long-nosed cannon on big wheels are swung aboard by powerful cranes.

"Aaronson, Adams, Ames . . . Baker, Barnes, Boone . . . Caples, Caldwell, Cameron . . . Zalenski and Zook." So a lieutenant called the roll, checking his men as they crowded up the gangplank (page 422).

Following these joking, singing soldiers



**"We Don't Know Where We're Going, but We're on Our Way!"**

With windows dark, troop trains pull into Port of Embarkation in dead of night. All is dark. Here a lieutenant calls the roll as his group marches aboard an Army transport about to sail into the unknown. Each man carries full pack and rifle.

aboard, we watched them stow their gear, find bunks, and settle down for their ride to the unknown.

"We don't know where we're going, but we're on our way!"

Mountain-high on the docks were piled the things campaigning armies use: engines, planes, extra wings, soap, flashlights, iron pipe, wire, typewriters, kitchen ranges, tubs, pots, pans, bales of blankets, candy, cigarettes, rolls of camouflage material, big steel mats for making airplane landing floors on sandy beaches or rough fields, tents, tools, mattresses, even dog harness; food, too, shiploads of it.

"How much grub is here?" I asked of a quartermaster colonel.

"Millions of rations," he said. "Perhaps enough to keep one soldier fat for 260,000 years."

Even Russian freighters are in this port—which must be nameless—loading lard, flour, and other goods for our fighting Soviet friends.

Guns are being mounted now on these Russian ships, and bullet-proof cement walls are being built about their bridges.

"On every trip into Vladivostok, the Japs try to halt us," a Russian said. "So far, we've just ignored them. This trip we'll have guns, and 32 gunners." War between Russ and Jap?

One Russian icebreaker was in for repairs. Pigs, chickens, and cattle are taken on board alive and eaten on the homeward voyage.

**Thousands Watch Skies for Enemy Planes**

On a wooded Oregon hilltop we came to a high tower. Up in its lookout box were three high school girls with telephone and binoculars (page 434).

"We're aircraft watchers," they said. "The Army appoints a chief aircraft observer and he names us local spotters. There are 200 in this area; each one serves free, a few hours a week. They say there are half a million in the whole country."



### One Shift of Nearly 9,000 Men Knocks off Work at a Portland Shipyard

In the background lies a nearly completed vessel, launched by the Oregon Shipbuilding Corporation. Here, and at yards near Tacoma, Seattle, and Vancouver, hundreds of ocean-going craft are being built.

"Isn't it lonely up here?"

"The boys say it is at night, when the cougars howl."

"What do you do when you see a plane?"

"Call the operator, say 'Army flash,' and she connects us right away with the Army's regional Fighter Command filter board. Somebody at the center says 'Army, go ahead, please,' and we report what we see."

Later I sat in such a center, earphones on, and heard reports coming in. One woman's voice said: "A big plane with four motors. Flying 10,000 feet up. Going fast southwest. Anna two."

The last words, "Anna two," were the code words for the location of that woman's lookout station. Local maps are laid out in squares, with each square identified by a girl's name and a number, just as various sections on National Geographic Society maps are designated as F4, G3, etc.

All over the Pacific Northwest, as all over the country, this simple system is at work.

Volunteer watchers are on duty day and night. Their lookout posts may be shacks on a beach, village water towers, roofs of skyscrapers, or a tower out in the hills, such as that used by the three girls.

Reports from them flow in to filter centers, where other volunteers watch the local map and push small painted blocks about to show the movements of aircraft as reported (Plate V). Next comes an information center, where all data are coordinated. Here is a big map which shows the location and movement of all Army, Navy, or commercial planes and their changing locations, either in the air or on the ground.

### Air Minutemen Ready for Action

Officers from both branches of the armed services are on duty here, telephones at their ears. Movements of every plane are carefully followed by using long sticks to push symbolic blocks about on the table map.

Quickly sifted and sorted, all such data are



**It Looks as if They Have Moved the Washington Monument out to Seattle**

And there in the background is Jefferson's graceful Monticello. Victory Square is thronged with thousands of people. Reproductions of these national shrines were built here, and every day at noon bands play and war bonds are sold. Stirring speeches are made by any eloquent volunteer, from major general to visiting showgirl.



**American and Canadian Forces Cooperate in Pacific Coast Defense**

Ocean and inshore patrols by planes and surface ships scour Pacific Northwest waters for lurking enemies, while thousands of civilian lookouts help keep watch for invading aircraft. Barrage balloons hang protective cables about important war goods factories. Coast artillery and antiaircraft guns defend every spot where enemies might strike. Always, a Canadian or an American air or water patrol takes up where the other leaves off—not a coastal square mile is left unscoured (page 421).

then sent to yet another big room, the operations center, which shows the distribution of air and ground forces.

Normally, the Army and Navy men on duty know at once, say when "Anna two" reports a four-motored ship going southwest, exactly what ship it is, when and where it started, and where it's going.

But if it's unidentified, or there's doubt, interceptor planes go up to investigate. At the nearest convenient field they're waiting, engines all warmed up.

But what would happen, you ask, if a fleet of enemy planes should suddenly be reported coming in from the sea?

Plenty would happen. Automatic range finders, listening devices, searchlights if needed, antiaircraft guns, Army Signal Corps, Navy and Army lighters and interceptors, barrage balloon crews—every device for repelling an air raid would get set for action.

Also, warnings would be flashed to any city or town that might seem in danger of enemy bombs. There civilian defense groups, also on duty day and night (Seattle alone has enrolled more than 50,000), would watch their signal board. A yellow light means a warning; a blue means "Black out at once; danger threatens." A red light means "A raid is coming; get busy!"



"Seaside Has Everything but War," Says This Signpost—Then Came the Japs!

Set up in a beach resort near Fort Stevens, on the Oregon coast, the marker points to where you can go "if you want war." Then, last June, here came a Japanese pigboat. First it shelled Estevan Point, on Vancouver Island; then it sneaked south and threw nine shells on the beach north of Seaside. Apparently the submarine had tried to bombard near-by Fort Stevens.

Then firemen, policemen, air-raid wardens, Red Cross—all the machinery for civilian defense gets under way.

#### Few Men in Multi Here

We haven't enough planes and gasoline to patrol all the skies all over America. But we do have military air bases strategically placed. So this watch-and-alarm system works like a man calling a taxi. When he calls, a cab comes from the nearest cabstand. Should the operations center find that the city of X was faced with attack, interceptor planes from the nearest air base would be called.

The farther north I got with cameraman Joe Roberts, the more conspicuous we felt in civilian clothes. At some far outposts we were absolutely the only men not in uniform.

In cities war has vastly changed everyday life.

One big shop that used to make railroad cars and buses now makes only welded tanks, vicious fire-vomiting monsters. Shops that made bathing suits and sports sweaters now make blankets and mittens for soldiers.

Solemn, silent, mysterious as a pagan cemetery was one big tree-covered hill. Tomblike powder magazines line its steep, crooked trails. Here are stored such potential volcanoes of explosive power that, were they all fired at once, they could blow navies of all the world sky-high. Yet stand a half mile off and look and you might say, "What a serene little mountain!"

For the first time since the Civil War, troops in one area are quartered in city halls, Masonic lodges, even

churches and schoolhouses. We ate lunch in a soldiers' mess in the same big room that was used at another hour for school children.

Flying fields and Army camps now cover more ground than all the football and baseball fields, race tracks, and golf courses put together.

Over all is the hush of censorship. How much of this article may pass Washington and Ottawa censors I do not know. Enough, I hope, to show millions of Canadian and American readers of *THE GEOGRAPHIC* that we people of common heritage and destiny are determined not only to defend ourselves



**Time and Again Soldiers Stopped and Searched The Geographic's Car**

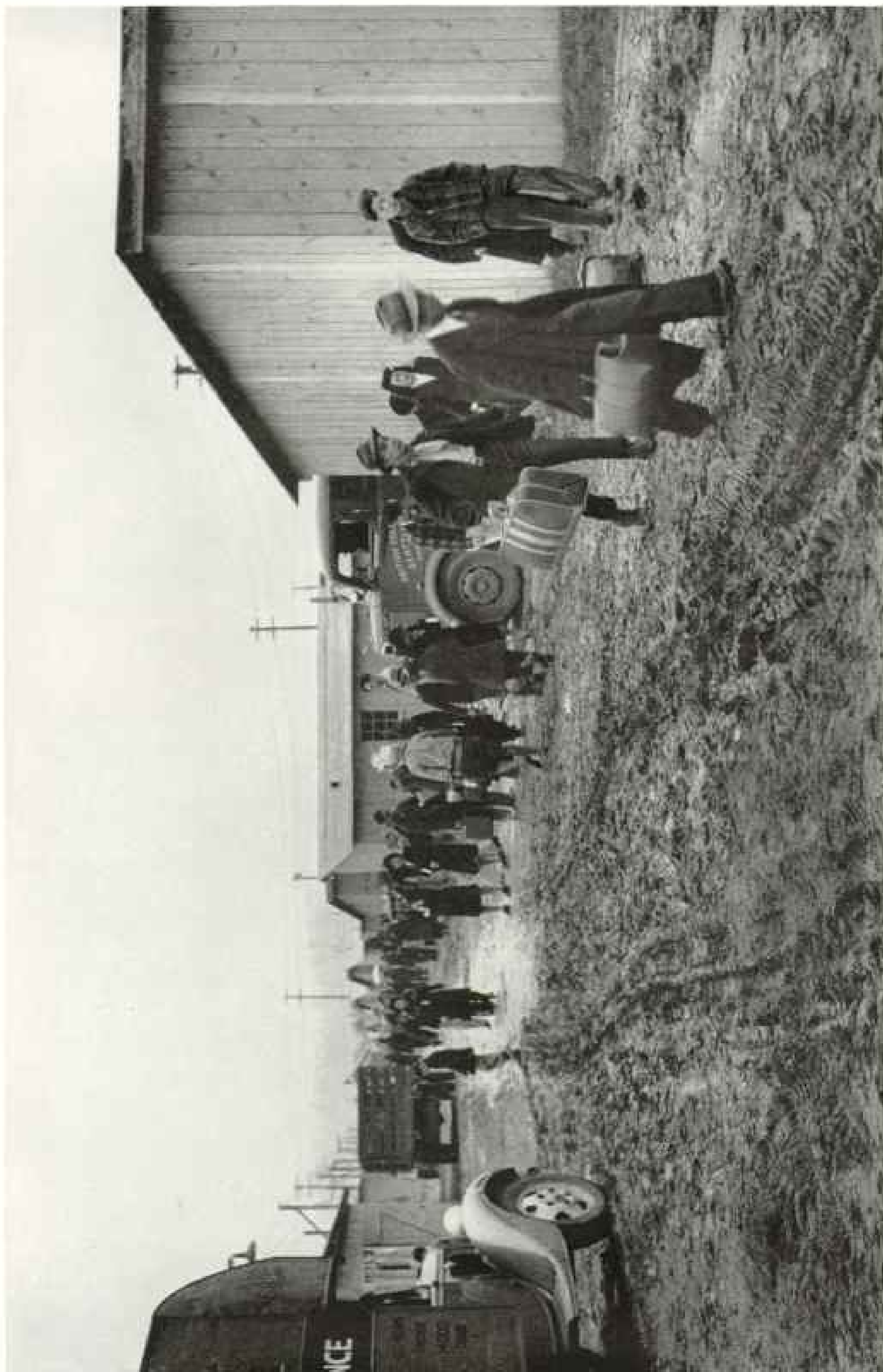
This had to be. In war, no exceptions to sentry's orders. Here, for example, a bridge is guarded. Any saboteur, if unchecked, might drive out and damage the structure.



**"If We Grab His Gun, No Enemy Can Take Pot Shots at Us"**

So says Washington's Chief of State Patrol, James Pryde. All Japanese and other aliens must surrender firearms, ammunition, radios, cameras, binoculars, etc., for war's duration. Seized items are in a vault at the Capitol, Olympia (Plate XIII).





Who Says All Orientals Are "Inscrutable"? These Japanese, Arriving at an Evacuation Camp, Plainly Show They're Worried

This is "Old Home Week" at Camp Harmony Assembly Center, Puyallup, Washington. Thousands of men, women, and children—rich and poor alike—were brought here, with their hand luggage. Many are sent to inland points, to help on farms. In all, about 112,000 west-coast Japanese are being evacuated (page 436).



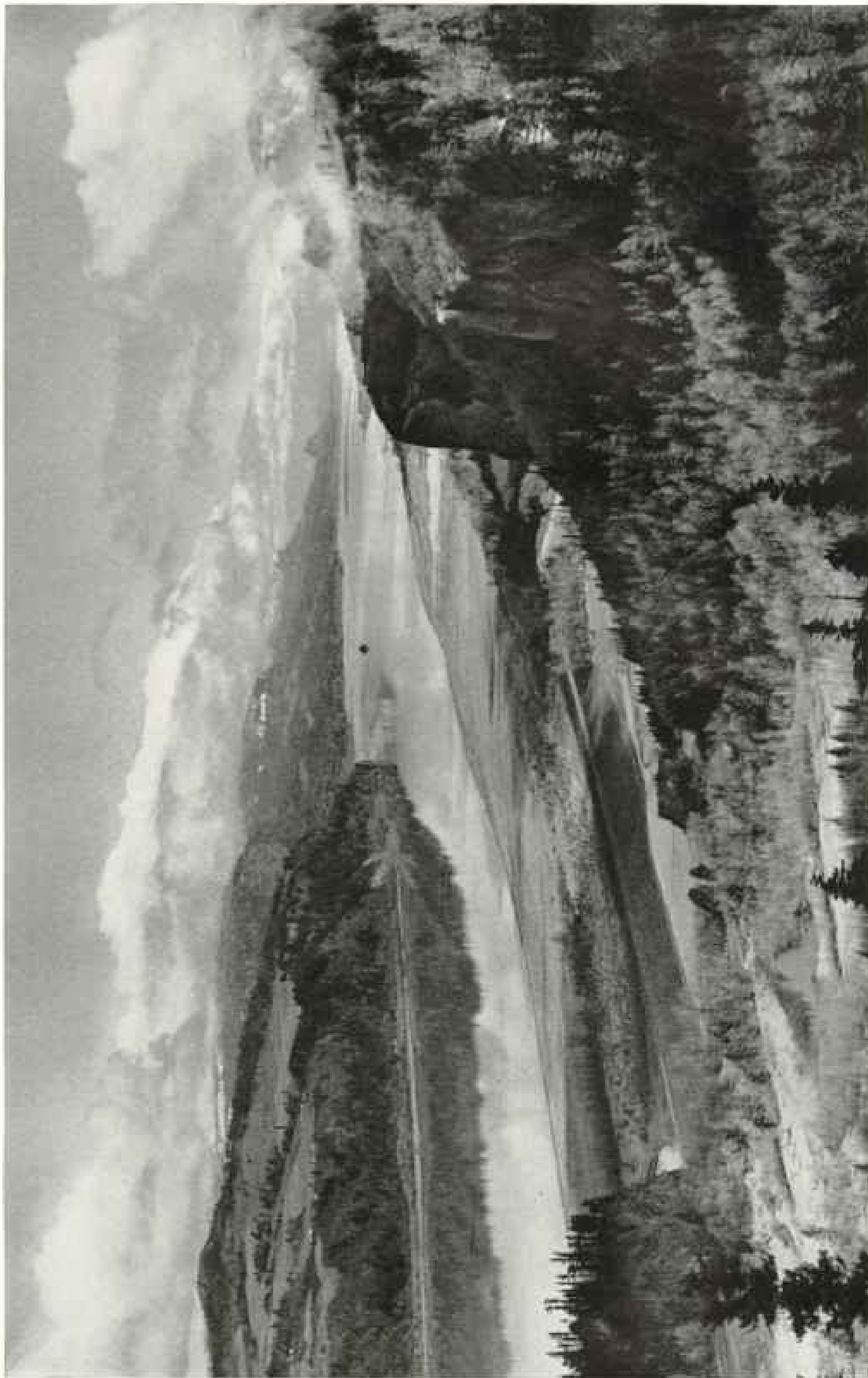
#### Why That Rope Tied to the Gunner's Foot?

His foot presses the trigger of a Bofors antiaircraft gun. It shoots fast, and its shells are costly. Also, in firing, sometimes a gunner gets excited and forgets. Often, then, a rope is tied to the gunner's ankle. If he loses count and shoots too long, a buddy simply yanks the rope. That saves ammunition. (page 461).



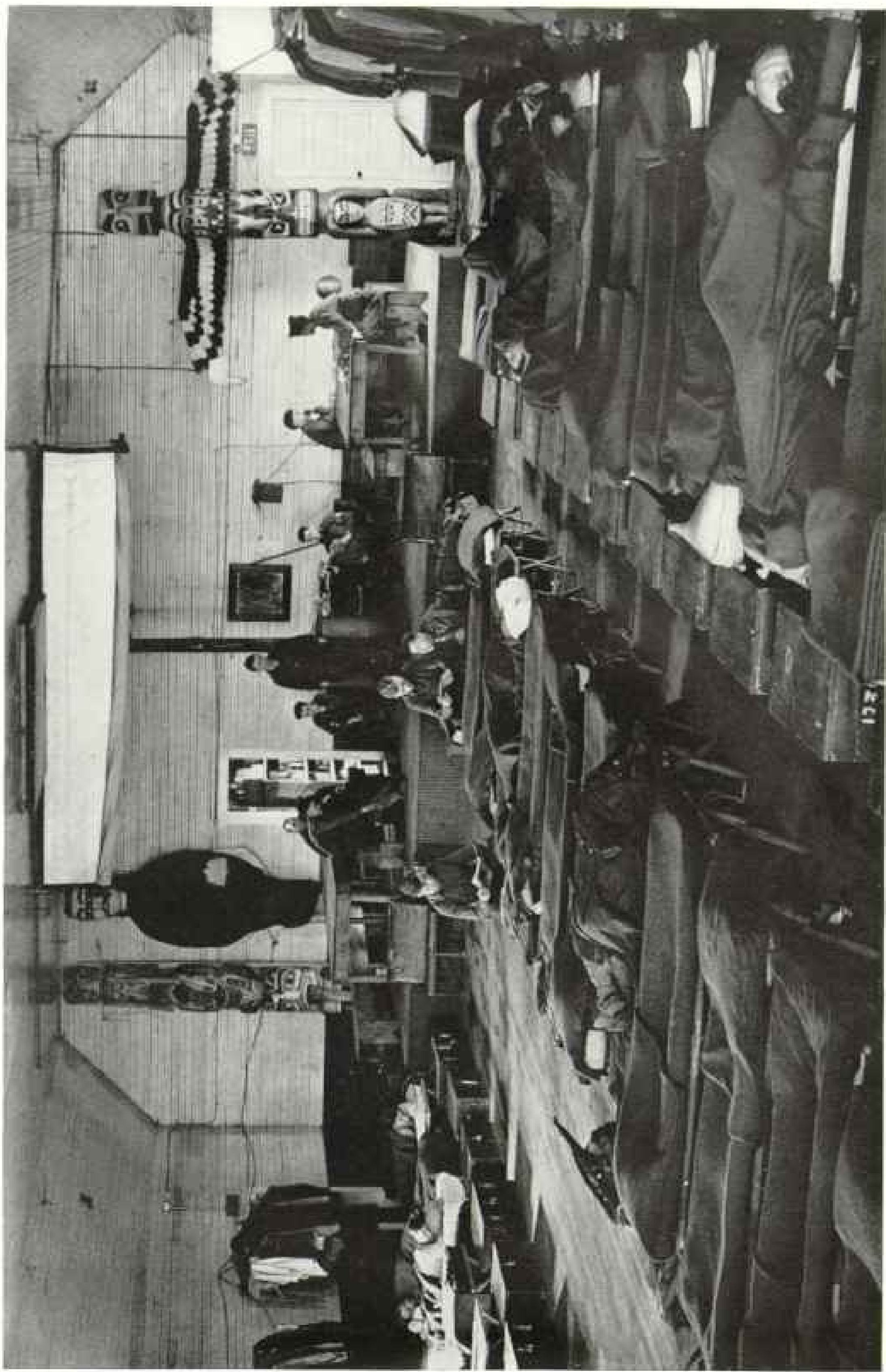
#### "What Is War, Sis? Why Are Our Names on These Tags?"

They talk English, played American games in Seattle's public schools, claim this their native land. But now to internment. "Probably not five percent of the thousands we're interning would be dangerous if left at large," said a provost marshal's aide. "But how identify that small percentage? So we corral all."



**Like the Rhine above Coblenz, the Lower Columbia Sweeps Past Farms, Cliffs, and Wooded Slopes:**

Escaping here from the mountains, the mighty river soon meets the incoming Willamette River and forms the rich, long-settled valley of that name. Most navigation, plus between Portland and the sea. Pioneer fur-trading Astoria stands near the river's mouth. More hydroelectric power can be developed by the Columbia with its tributaries than by any other river in the United States (page 416).



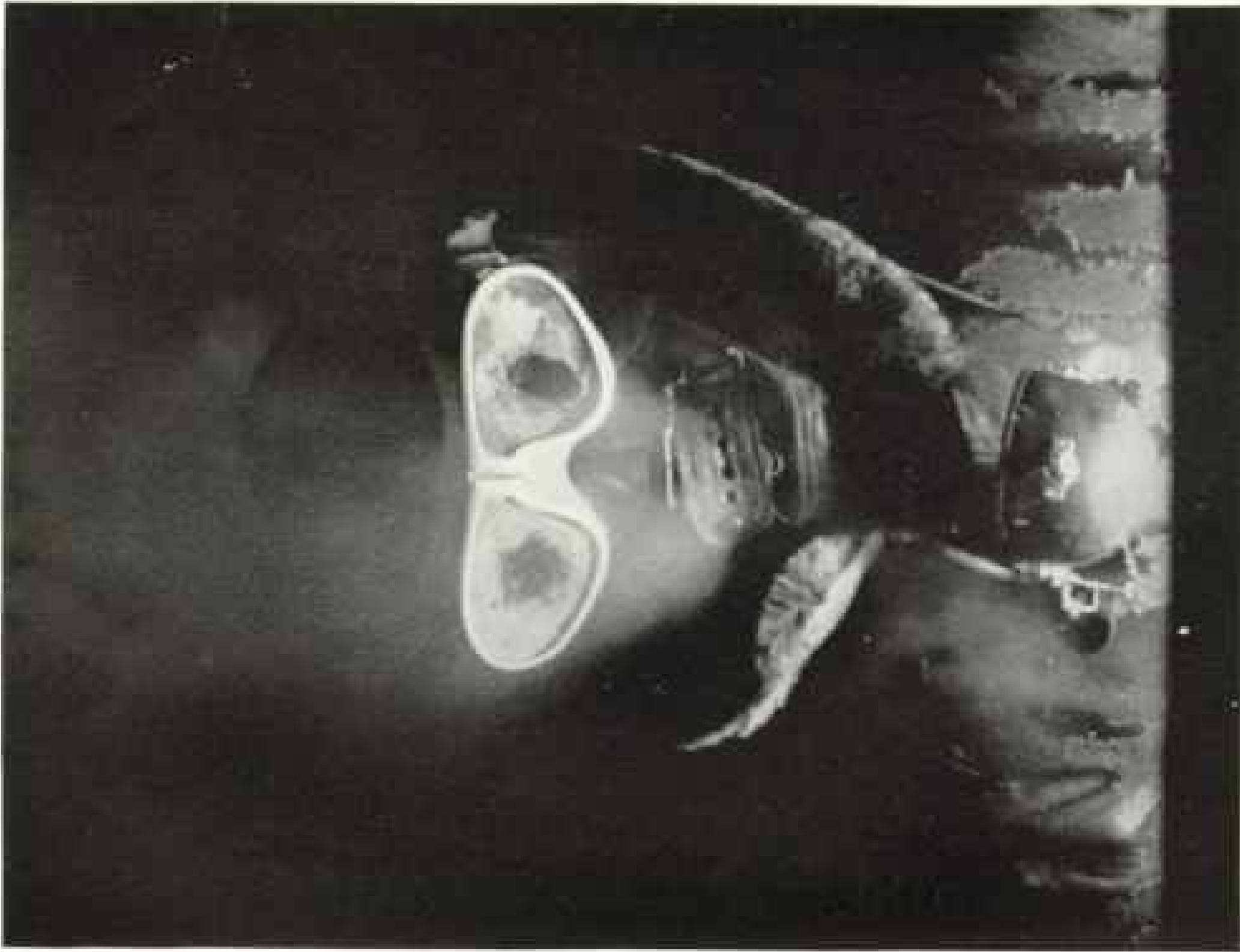
**Strange Totem-pole Faces Stare Down on Soldiers Quartered in an Indian Council House**

Other troops harrabouts bunk in schoolhouses and lodge rooms. Infantry, coast artillery, signal corps men, and airplane and infantry patrol crews are on duty all along the lonely stretches of our Pacific coast. Together with motorized guns and quartermaster trucks, one also sees a rolling dental laboratory.



**Scenery of Unearthly Beauty Slips Past on a Sunlit Afternoon Air Trip from Prince Rupert South to Vancouver**

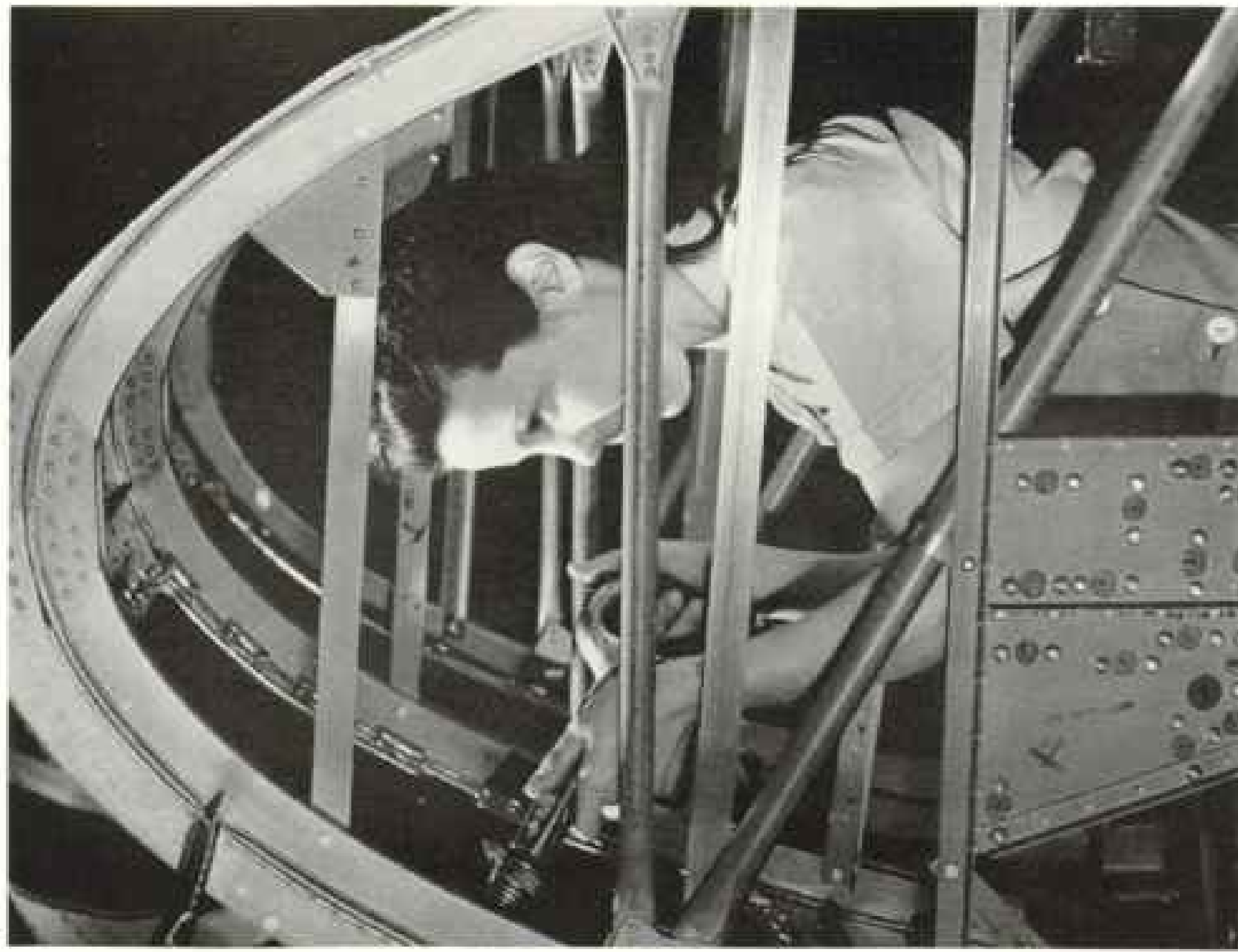
In early summer snow still sticks to rolling green ridges along this coast. Scattered showers, lit by late rays of sunset, reflect brilliant rainbows. Odd, animal-shaped islands dot the Inland Passage to Alaska. Long, silent leagues of this dream world show no sign of man or his works (page 461).



Boeing Aircraft Company

### He Looks Like a Mummy, or a Fake Snapshot of a Spirit

However, he is a Boeing engineer behind the window of a Strato-Chamber. This laboratory "cold room" produces atmospheric conditions like those five or six miles "upstairs." Here oils, metals, and moving parts are tested, to see the effect of minus 65 or 70 degrees Fahrenheit (page 445).



### More and More Girls Release Men for Military Duty

Many skilled men are more useful in shops than on battlefields. But, wherever possible, jobs are given to women, many of whom have had mechanical training in factory classes. This aircraft girl is riveting a wing section, for a Flying Fortress.



#### High-school Girls, Like Chickens Gone to Roost, Man an Oregon Watchtower

Civilian volunteers are trained as aircraft watchers. By telephone they report the type, direction, speed, and height of passing planes to filter boards at information centers. Such lookout posts, on the beaches or atop water towers and tall buildings, are scattered all around our coastal regions. Boys on night duty at this lonely tower often hear the scream of cougars (page 422).



**"Halt! Who Goes There?" Through His Loudspeaker a Night Guard Challenges Strangers**

Prowlers and all others, so challenged, must give the recognition sign. This armed watchman is among the sentinels at a Washington hydroelectric plant. In dead earnest, now, all big plants are guarded against saboteurs.

but to go overseas and punish those pagans who attacked us first.

**Crowded Cities Throb to Supreme War Efforts**

Big cities everywhere now swing to the rhythm of war.

But the Pacific Northwest—so near new Alaskan Army and Navy bases, and with food, timber, many raw materials, and electric power so plentiful—hums now to a prodigious boom of unpredictable significance. Today this fairly new country that used to thrive on fish, fruit, and fresh-cut lumber sees its former ways of life utterly upset.

By tens of thousands, men have quit what they were doing yesterday and now hold jobs in the new mushroom wartime shops.

"What's going to happen," some ask, "when fighting stops? Can the Northwest go back to fish, fruit, and sawmills, or have these changes come to stay?"

Whatever the answer, sufficient unto the day is the adventure thereof.

For Seattle, the Klondike gold rush itself was a quiet, sleepy event compared with today's unparalleled excitement.

Workers pour in by scores of thousands.

"Where can we eat and sleep? What about laundry, and transportation to and from work? What makes food so high?"

New bombers, pursuit planes, merchant ships, long barges for landing invasion troops, welded tanks, mine sweepers and mine layers; destroyers, seaplane tenders, crash boats, carriers and transports made by converting freighters; uniforms, sleeping bags by the thousands, knockdown houses for use in Alaska; skis, dog sleds, and dog harness; gas-mask fillers, incendiary-bomb casings; cartridge clips, preserved foods, propellers; marine steering engines by hundreds for ships being built all over the United States—these are but a few of the things now made here.

At one city are ocean piers two and a half miles long, among the world's longest.

Graving docks are the largest in Allied hands on the whole Pacific.

No housewife is astonished if, rising some morning to get breakfast, she finds Army tents in her back yard and soldiers setting up anti-aircraft guns or inflating a barrage balloon.

"My jittery hens quit laying," said one woman, "when soldiers turned on that searchlight; it kept the chickens awake all night . . . And that balloon! Our calf took one look



at it, then stuck up its tail and ran clear away!"

Traffic arteries are blocked off to divert travel streams around some vast new Army installation. Parks, playgrounds, and open fields turn into ammunition dumps, fuel-oil bases, airfields, sites for radio stations, training schools, or hospitals, or into areas marked off with red flags for artillery, machine gun, or bombing practice.

Behind frantic transitions of war, forces more abiding are also at work. Some of these, such as monumental new aluminum, magnesium, and alloy plants, may in part answer the worker who asks, "Where can I get a job when the fighting stops?"

Colossal fresh hydroelectric power from Grand Coulee and Bonneville Dams in Columbia River may help change many of these wartime mushroom plants into permanent industries.

#### Power Spawns New Industries

Like magic now, giant new industries rise, making aluminum, magnesium, and ferrosilicon, all critical necessities in war. Other new industries rising because of ample low-cost power include the first sodium chlorate plant on the Pacific coast and the first calcium carbide plant west of the Mississippi.

Without electric power they could not exist. Without Bonneville and Coulee Dams, that power wouldn't exist.

Suddenly, realizing the Nation's urgent need for more power, all former debate over private as against public ownership of hydroelectric utilities has ceased. One of the Northwest's aluminum plants alone now uses as much current as it takes to light and move the whole cities of Portland and Spokane.

Of course, when Columbia River's Bonneville and Coulee Dams were conceived, few people foresaw their possible wartime importance.

Yet today, thanks to energy these dams supply, Uncle Sam is able to speed up his war work. Said Dr. Paul Raver, Administrator of the Bonneville Power Administration: "To a large degree the shipbuilding industry around Portland and Vancouver, now employing nearly 100,000 workers, depends on Columbia River electric power.

"Aluminum, magnesium, chlorate, and calcium carbide industries depend entirely on this new source of power, and 90 percent of all ferroalloy factories depend on it."

"What share of Columbia River power now serves our war needs?" I asked.

"Fully 85 percent of it," said Dr. Raver, "and the demand grows. We even 'borrowed'

the new generators intended for Shasta Dam, in California, and installed them here.

"Columbia River is now America's greatest power stream.\* So the Pacific Northwest becomes the logical location for an expanding electrochemical and electrometallurgical industry" (page 430).

Aluminum is of tremendous importance, especially to local airplane works. At present aluminum is being made here from Arkansas and South American ores. However, aluminous clay is found in the State of Washington, and this may eventually be developed on a large scale.

Most costly single item in making aluminum is electric power. This year new factories here, using Columbia River power, will turn out 600,000,000 pounds of aluminum.

Because Japanese labor is now interned, local whites must dig their own potatoes, pick fruit, mow lawns, and cook. A plan is afoot to import Mexicans to help save crops. Swept clean from the Pacific coast by Army orders, some 112,000 Japanese are now interned or working under surveillance on West and Midwest farms; at least 10,000 are in Arkansas alone.

We visited 4,000 of these internees, sheltered behind barbed wire in a big coliseum long used for livestock shows. Besides farmers, fishermen, and gardeners, here also were rich bankers, shipping barons, lawyers, famous doctors, college students, prize chefs from swanky clubs, many women, and school-girls and boys (pages 428, 429).

Soldiers guard these camps, but inside the stockade the actual administration is done by a civilian force known as the Wartime Civilian Control Administration.

#### Interned Japanese Dance and Play American Games

Compare the safe, pleasant life of these internees with the cruelty and privations which, we read, are imposed on some American and British prisoners in Japanese custody.

In the big kitchen here I saw piles of flour, vegetables, fresh meat and fruits, canned goods, tea, coffee, sugar, ham, bacon, eggs, cereals—everything you might find in first-class restaurants. Joe Roberts made a picture showing the vast dining room and all its guests at lunch.

By day these "prisoners" play games, go to school, read or write. I saw many sending 25-word messages, through the Red Cross, via Geneva, to friends or relatives in Japan.

\* See "The Columbia Turns on the Power," by Maynard Owen Williams, NATIONAL GEOGRAPHIC MAGAZINE, June, 1941.

## Where Fog and Sun Paint the Pacific



With Eternal Vigilance Grim Men Guard Pacific Northwest Coasts. Their machine gun is for action against enemy prowlers or small landing parties on Puget Sound.



© National Geographic Society

Illustrations by J. Bayler Roberts

### "Look, Men. Here's the Route for Our Ten-hour Flight Today"

A dawn patrol crew of the Army Air Forces studies map details of the day's hunt. Taking a big bomber hundreds of miles out over misty seas and back to base calls for precise navigation.



© National Geographic Society

Illustration by J. Hughes Roberts

Boeing Workers Hear Air Hero Capt. Hewitt T. Wheeler Tell How His Big Flying Fortress Fought Off 18 Jap Zeros



© National Geographic Society

### Girls Hold Vital Jobs in Airplane Factories

This nimble-fingered worker, helping to build a Boeing Flying Fortress, is an expert at wiring. She assembles radio and other wires on panels, to be installed as complete units, thus saving much time.



Illustrations by J. Clayton Roberts

### He Colors Cartridge Tips for Use Against Tow Targets

Made of fine aluminum mesh and painted with Japanese colors, a flaglike target is towed far behind a plane. Fighter pilots shoot at it with colored bullets. Judges determine hits by the color of holes.



© National Geographic Society

Kodachrome by J. Baylor Roberts

### The Skill and Patriotism of American Shipbuilders Spell Magic in Production

This vessel is among many being built in the big Willamette Iron and Steel Corporation's yards, one of six shipyards within the area of Portland, Oregon. Scaffolding and boardwalk all about are for use of workers. Here the hull is seen complete and the deck almost laid.

Where Fog and Sun Paint the Pacific



Thirsty Welders Call for the Milkman Instead of the Water Boy!

No boss is this welder—look at his leather gloves and can of electrodes that emit tremendous heat when he puts one in his welding rod and turns on the “juice.” Welders find milk offsets effects of acid fumes.



© National Geographic Society

Illustration by J. Taylor Roberts

On This “Filter Board” Lettered Blocks Show Movements of Planes in a Sector

Volunteer aircraft watchers, posted on beaches, hilltops, and roofs, telephone in their reports. Trained girls—in this case Chinese—push the blocks about, showing where each plane is reported on the map.



© National Geographic Society

Illustration by J. Baylin Roberts

**Like Masked Demons, with Bayonets Fixed, Soldiers Plunge through a Gas Cloud in Combat Training**



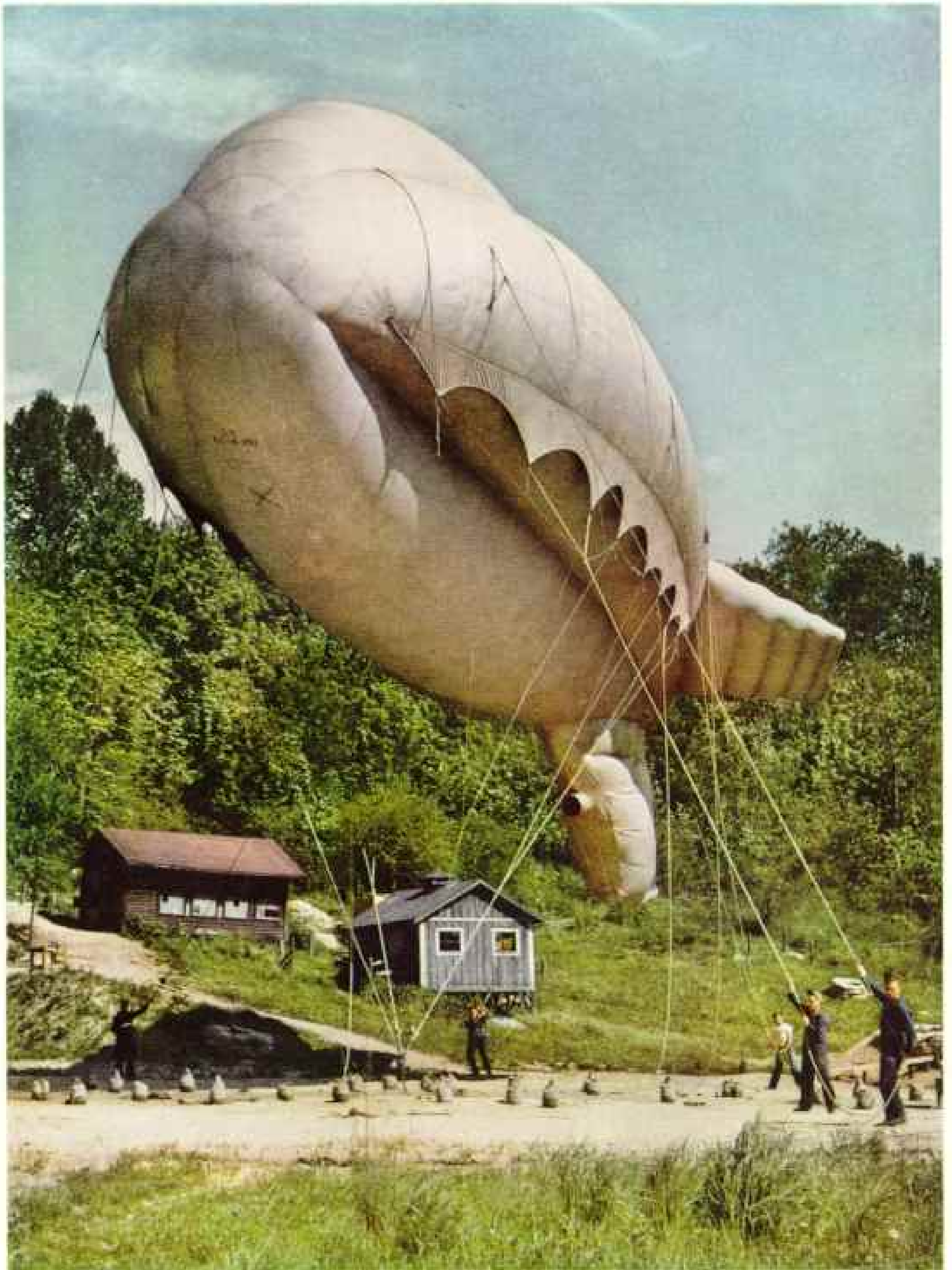
© Melvin Gumpshole Society

**Winds and Heavy Surf Pound the Weary Sea to Foam on the Rock-strewn Oregon Coast**

Reproduction by J. Hatcher Roberts

Because storms brew off the coast of Japan and travel eastward, weather men predict that enemy Japs may someday attack our Northwest under cover of clouds and fog. Growing here, within sound of ceaseless waves, are vast patches of furze, a spiny evergreen with yellow flowers.





© National Geographic Society

Kodachrome by J. Taylor Roberts

### Fleets of Barrage Balloons Protect Shipyards and Factories against Enemy Planes

They rise half a mile or more; dangling cables will cut the wings off any invading plane that hits them. Catenary bands, for holding cables to balloon sides, were utilized by Captains Albert W. Stevens and Orvil A. Anderson for the National Geographic Society-U. S. Army Air Corps Stratosphere flights.

Their own camp newspaper is issued, in English. Their Boy Scouts drill to their own brass-band music, and with appropriate ceremony they raise and lower—the American flag! Each night a dance is held or indoor tennis is played.

Doctors, nurses, and a well-equipped hospital care for the sick, and if a Buddhist dies they give him a Buddhist funeral; but most, I am told, are Christians.

We walked out, past a baseball game where most shouting was in English. . . . Up and down, outside the barbed wire, American soldiers with rifles on shoulders strolled back and forth. Now and then a soldier would wink, and get back answering grins from a group of sport-clad Jap maidens who were flapping their skirts and flashing bare legs as they practiced jitterbugging.

#### Battleships That Fly Six Miles High

Today long-range American bombers appear with spectacular effect over Germany, the Mediterranean, Tokyo, the Near East, the South Sea. More blows will be struck as fighting spreads.

From enormous plants in this Pacific Northwest come ever-increasing numbers of this flying artillery, shuttling quickly away to distant battlefields.

Up above the world so high we saw strange white streaks move mysteriously across the firmament, like league-long tails of invisible comets.

"Sky writing?"

"No, high-altitude tests of Boeing Flying Fortresses. They're so high you can't see the bombers. All you see is their white wake, left when exhausts vaporize from intense cold in certain atmospheric conditions."

"How high are they?"

"We're not saying—but well over 30,000 feet. That's practical only with a turbo-supercharger."

"What's that?"

"It's a turbine wheel driven by the exhaust gases of the engine. This turbine turns an air compressor which feeds the engine air compressed to sea-level density."

"Over there I see another curious object, like a Jules Verne gadget from *20,000 Leagues under the Sea*. It has funny portholes and icebox doors."

"Our latest model Strato-Chamber. Inside of it, by reducing temperature to, say, 65 below zero and pumping out air, we create, here at ground level, the same sub-stratospheric conditions that bomber crews will meet at very high altitudes (page 433).

"Inside this chamber we test men and ma-

terials and train men to endure the mental and bodily punishment they must take 'upstairs.'"

Beside me at lunch sat Boeing's chief engineer, Wellwood Beall. He has a great shaggy, beautifully shaped head like a sculptor's and wears gorgeous neckties. His hands are small, with quick, flexible fingers. As he talks—not gravely as a brain specialist making a diagnosis, but with a fiction writer's flashing imagination—you see him use these fingers as a clay modeler at work, gesturing to show the shape of things yet to come in the upper air.

#### Cold Makes Tires Shatter Like Glass

"What's your chief pain-in-the-neck," I asked, "when you push your big animals up above 30,000 feet?"

"Cold, of course," said Beall, "and lack of oxygen."

"This high-flying Boeing Fortress, as you know, is taking a lot of fighting clear off the face of the earth and shoving it up into high heavens that we as yet don't know too much about. Perpetual winter in the stratosphere brings us new problems. Up there oils turn to mush. Metal shrinks. The higher you go, the less pressure you meet; so strange things happen to materials and equipment, as well as to men's minds and bodies.\*

"A British pilot bringing his Boeing back from a bout with the Nazis found that bullets had hit the tire of his tail wheel. But the tire wasn't punctured, it was *shattered*, like a clay pigeon. At several miles 'upstairs' the rubber tires had frozen hard as rock."

"Could any average man simply step into your flying battleship as a guest and go up to 30,000 feet or beyond?" I queried.

"Absolutely not," said Mr. Beall. "Too dangerous. Nobody, not even one of our own men, can go up till our doctor has examined him. Chief use of our Strato-Chamber is to test men's reactions and also to train them how to use their gear and the flying instruments at extra high levels."

Three men were dancing, wearing flying suits, parachutes, and oxygen masks, just outside the Strato-Chamber.

"What's that for?" I asked.

"They are exercising," said Mr. Beall, "to

\* Valuable scientific data on conditions in the stratosphere were obtained by the National Geographic Society-United States Army Air Corps Stratosphere Balloon Expeditions of 1934 and 1935, which successfully reached the record height of 72,395 feet. See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Exploring the Stratosphere," by Capt. Albert W. Stevens, October, 1934; "Man's Farthest Afloat," January, 1936; "Scientific Results of the World-Record Stratosphere Flight," May, 1936.



Off Duty, This Sentry Built a Fire and Climbed into His Homemade Hammock for a Short Nap

Except for his foghorn snores, not a sound broke the deep silence of this Olympian forest primeval. Though they spend long hours at such lonely outposts, even city-bred soldiers soon learn to make themselves comfortable.

reduce the amount of nitrogen in their blood. Otherwise, gas bubbles would escape from their blood solution at high altitudes and bring on aeroembolism, which is the aerial equivalent of a diver's bends (page 465).

"Once inside the Strato-Chamber, with all their flying gear on, the air crew in training go through all the motions and emotions they would in actual flight. We watch through the window and telephone orders to them. To test mental reactions of an oxygen-mask wearer at simulated high altitude, for example, we telephone him an arithmetic or navigation problem and let him work it out—at, say, 67 degrees below zero.

"Even the kind of food a man eats may affect him adversely at high altitudes. Foods that cause gas will expand and bring great discomfort.

"Sugar and plain chocolate bars require the least oxygen for digestion. When coming down, men must 'pop' their ears by yawning or chewing. If a man has a cold or sinus trouble, he suffers. It's harder to talk at high levels, and voices sound thin. It's an odd fact, too, that up there you can't even whistle. There's no back pressure against the lips, so

breath escapes too easily to make any sound."

I said, "Your magnificent animal, the Flying Fortress, is sinking ships and demolishing enemy towns from the South Sea clear over to Germany. It must be the last word in aerial battleships!"

"Not at all," objected Mr. Beall. "Nothing, in this business, is the last word. Day and night we experiment. In another year or so, we may have an even better animal. It may not even look like this one."

#### Japs May Ride Storms Made in Japan

Weather, of course, remains the unknown quantity in all war plans for bombers. It can help or hinder them.

Jungle drums and smoke signals—with them savages talk over distant miles. Now, from plane to plane, through leagues of fog, you hear the hoarse, hollow voice of two-way radio-phones.

Storms brew in oriental seas and travel over the wide Pacific, to reach their peak along the lanes to Alaska and this Northwest. Japanese, watching these storms gather and move eastward, know when bad weather is due in Puget Sound—and they know it long before we can.



**"It May Make Sense to Another Deer, but I Don't Know What He's Whispering"**

For mascots, naval air station sailors in Oregon tamed this fawn and tried to calm the bear cub. But baby Bruin is unruly, emitting shrill cries when restrained and smacking back with all the might of his little paws.

They may actually ride this storm across the Pacific and attack us under its cover. Watchful Navy men expect that.

So the Navy's trained aerologists, intent on their maps and mysterious instruments, make forecasts for the use of planes, submarines, and surface ships.

"Predicting Pacific weather is even harder now," said an officer, "because we no longer get local reports from liners and certain oriental ports on which to base our figures."

**The Meaning of Weather in War**

"What does weather mean in war?" I asked.

"History answers that," they pointed out. "The wreck of the Spanish Armada and the disaster to Napoleon's Army in Russia in 1812 are good historic examples.

"News headlines today read: 'Bad Weather Grounds R. A. F.'; 'Dust Storms Slow African Operations'; 'Spring Offensive Awaits Thaw.'

"Napoleon III, after storms hit his fleet in the Crimean War, at once ordered his scientists to work on a better forecasting system."

How to locate storms and follow their progress was a job that took on new impetus after World War I; today's global conflict is

making daily forecasts more accurate and hastening the growth of long-range forecasting. New aids in waging war now make weather even a stronger factor.

A bomber may have a 5,000-mile range, but look how that range is cut down by a 30-mile head wind! Hence, accurate data on upper winds to be met may help utilize a bomber's maximum range. Likewise, surface winds and turbulence affect the value of smoke screens and determine the line along which they should be laid.

Slow planes, if favored by cloud conditions that offer cover and good chances for evasion, may attack stronger forces.

Clear weather the pilots must have, for high-altitude photography and reconnaissance.

Weather prediction now serves two purposes: it reveals what we can or cannot do, and it shows our fighters what harm, or good, the same winds, fogs, or storms may do to the enemy's operations.

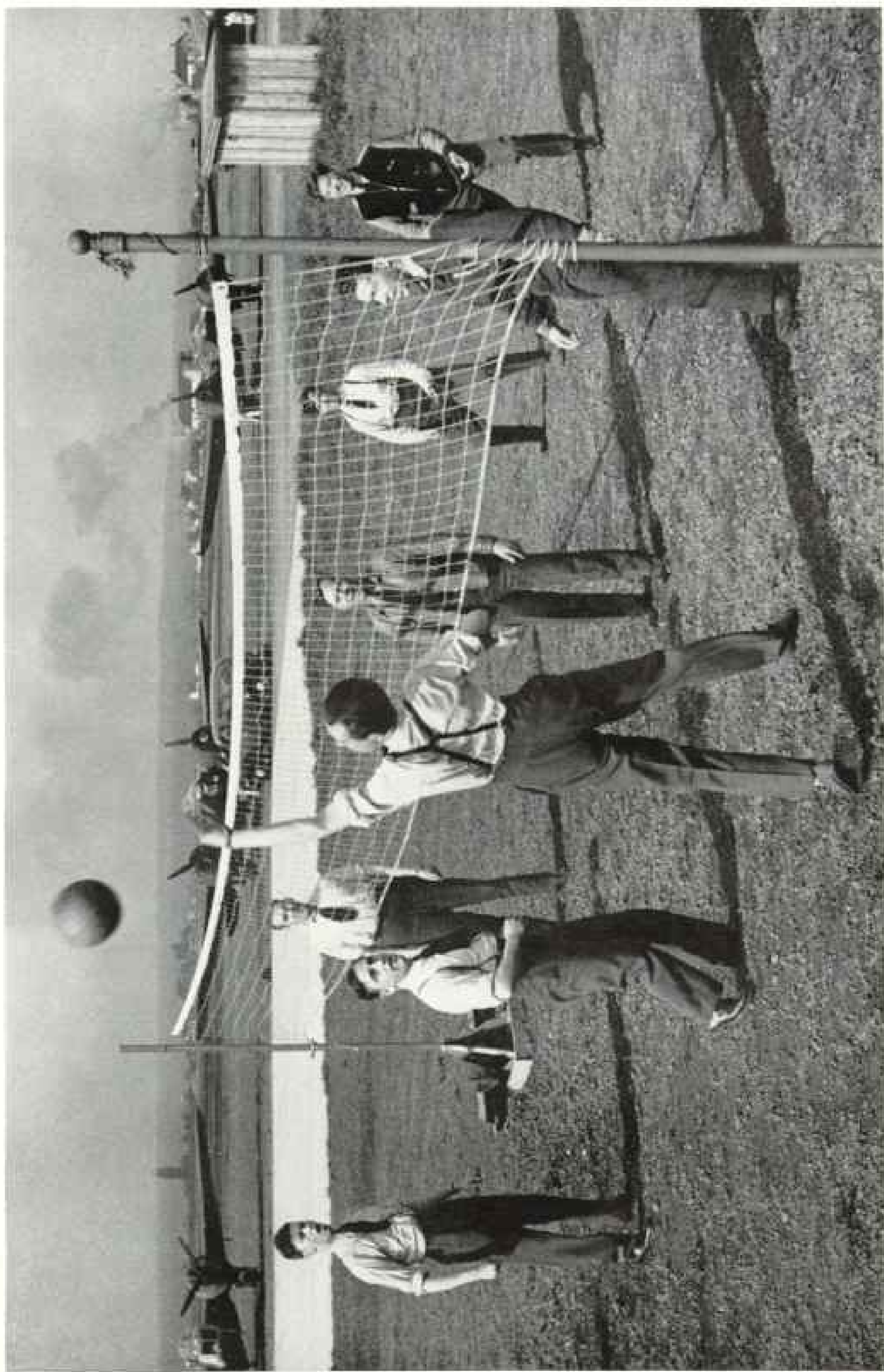
Specially chosen officers, from both Army and Navy, have for years been on duty at leading schools here and abroad, studying meteorology. Many of these are now assigned to duty in the Pacific Northwest.

Though not allowed to talk about the de-



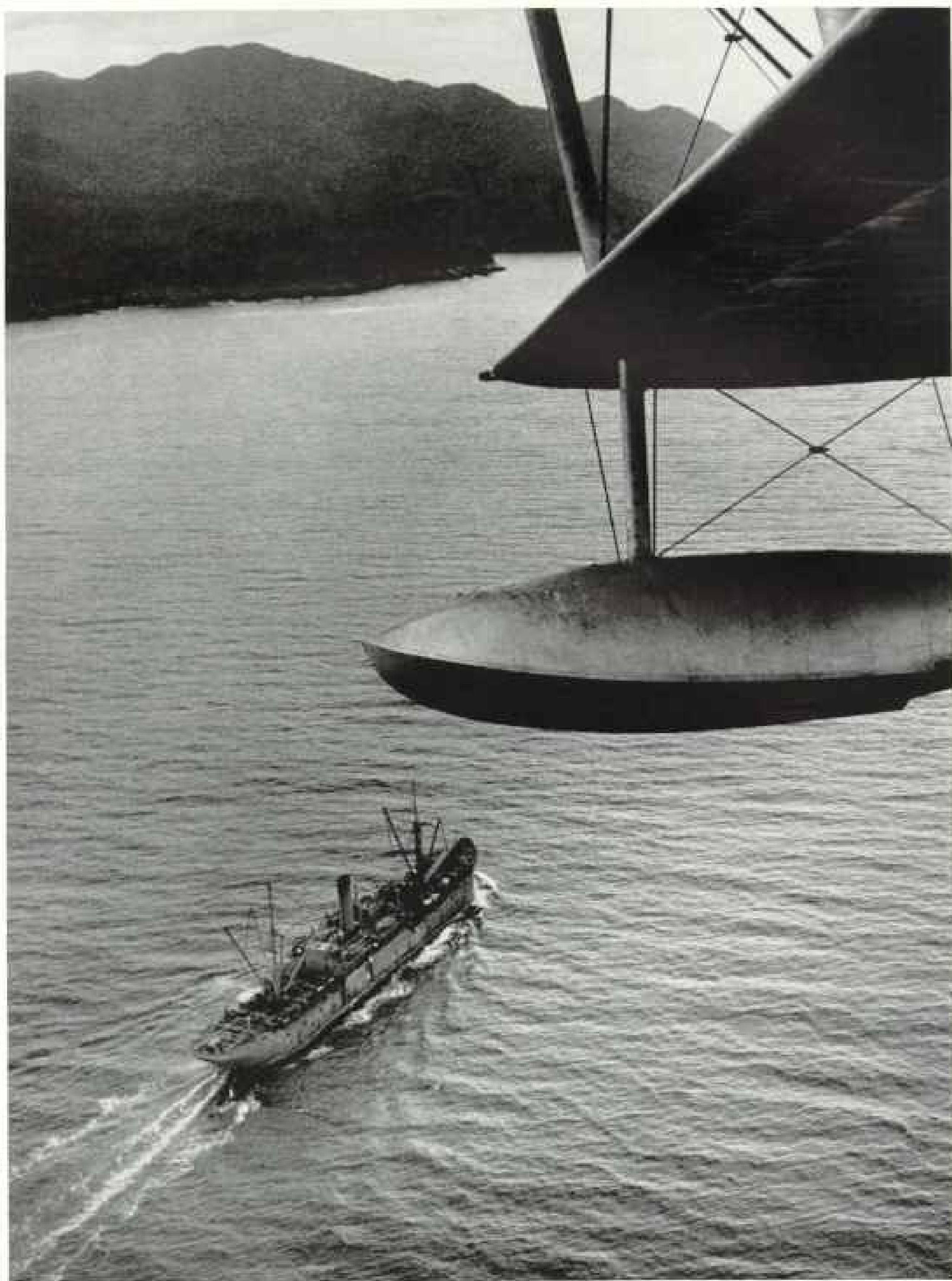
**Japanese Invaders Would Pick a Lonely Flat Beach Like This One, Should They Attempt a Landing on Our West Coast**

All such beaches, from San Diego to Seattle, are carefully guarded and protected. This view shows the Oregon coast, as seen from U. S. Highway 101, where it winds through Cape Sebastian State Park. The promontory here rises 700 feet above the sea.



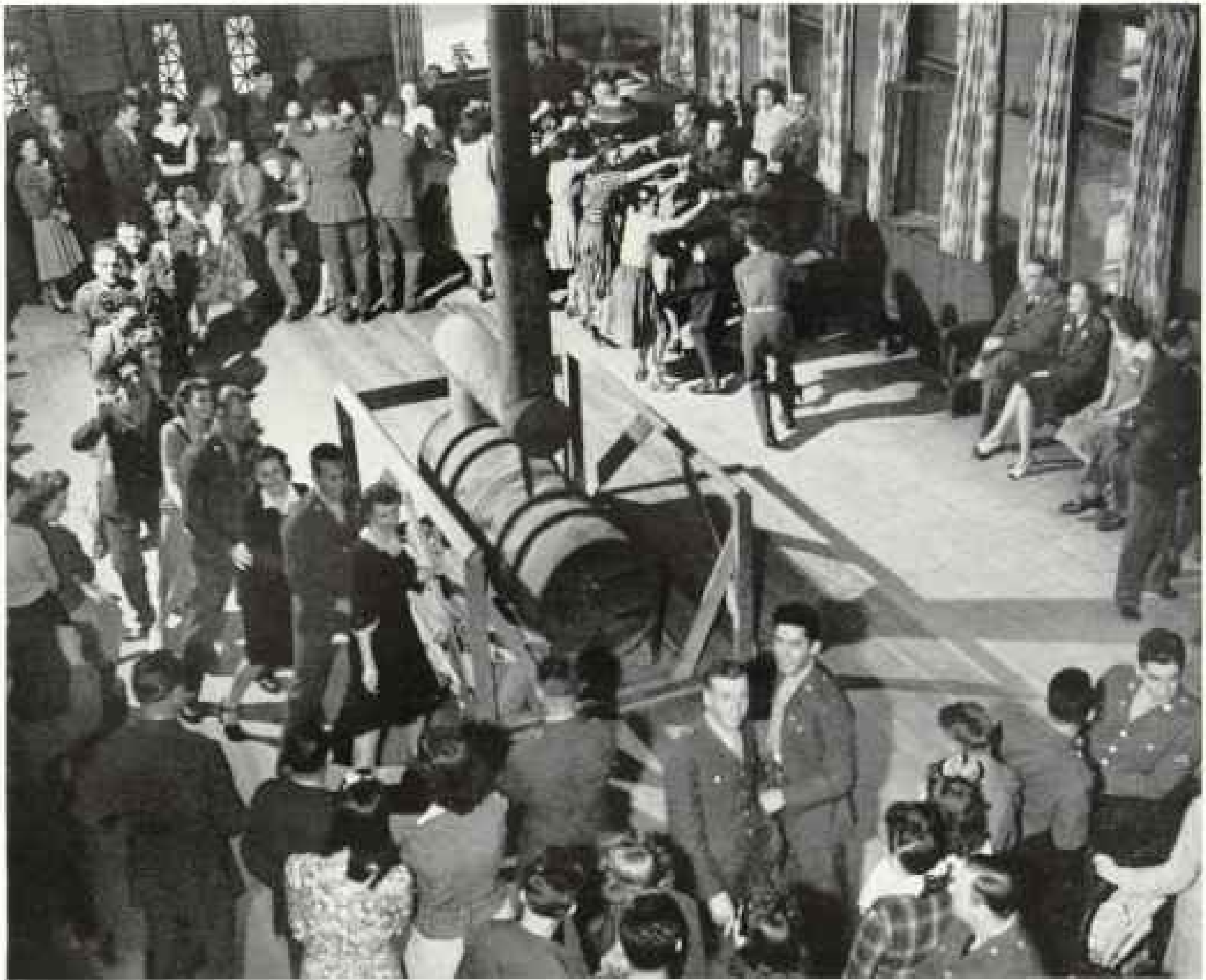
A Royal Canadian Air Force Bomber Crew Plays Volley Ball to "Loosen Up" after Long, Cold Hours in the Air

Many Americans serve with this famous force, already distinguished in air attacks on Germany. A few Australians are also on duty here, likewise veterans English flyers as instructors. At this far-north post it was 8 p. m. when this picture was made. Average age of some Canadian bomber crews is about 20 years (page 452).



**Up Alaska Way, the Author's Aerial Hosts Swooped Low to Look at a Passing Ship**

It was an American Army transport, decks packed with military trucks and other vehicles. Flying with the Canadian bomber patrol, the writer watched signals flashed to strange planes and ships for identification. To signal, the plane's navigator-observer used a winking electric torch known as an Aldis lamp (page 452).



### Sunday Night Dances Give Visiting Soldiers a Few Hours of Wholesome Diversion

This Seattle PX Service Club, set up in an old brewery, was organized by soldiers as an informal social center. Here they enjoy reading and writing rooms, or bring their girl friends to do the conga or jitterbug. Observe the huge, homemade wood stove.

tails of their work, they are unanimous in saying it is most effective.

No flight is made, no sea or land movement begun, without a weather report. Almost regardless of its location, a naval unit can now be guided by weather predictions.

In this Northland, aurora borealis can also play havoc with radio and teletype.

#### Air-Combed for Enemy Voices

Go out to a lonely old farmhouse in the outskirts of a certain Northwest city, and you may see how Uncle Sam keeps track of what his enemies are saying over the air.

This monitor station is operated by the Federal Communications Commission.

It employs Far Eastern specialists who understand Japanese, Chinese, Mandarin, Cantonese, etc. They edit Tokyo radio news and comment for immediate relay to Washington headquarters. They are on 24-hour duty, working in shifts.

Every speech or message that is heard coming from enemy-controlled radio stations in Japan, Thailand, Malaya, the Philippines, etc., is recorded on phonographic disks.

Not only Axis propoganda but other broadcasts are taken down, including those from Allied countries.

Such messages are transmitted to Washington for use in the Army, Navy, and State Departments, as well as in such war agencies as BEW, OWI, etc. News picked up here has been put in official hands in Washington before the Axis radio speaker has finished talking.

#### Mine Sweepers and Patrol Bombers Scour the Seas

As the Army patrols the coast, so the Navy covers the sea—thousands of square miles offshore. On the north, American patrols dovetail with those of Canada.



If sweepers fish up any mines, they're destroyed by gunfire.

"This business gets monotonous," said a skipper. . . . "To keep on our toes, we sometimes plant a dummy, sweep it up, and let the men shoot at it."

"My men may fly 12,000 miles or more in a day," said the commanding officer at one United States naval patrol base. "Since November 1 of last year we have patrolled every day except two, when icing conditions slowed us down."

Often a bombing patrol may be out 12 to 15 hours. Always reserve bombers are kept warmed up, their racks full of bombs and their cannon and machine guns all set, their crews in flying suits standing ready to take off in a few seconds.

"Suppose one of our big PBY's found itself 1,000 miles out to sea and should spot a Jap carrier. What would it do?"

"Flash a warning of the carrier's position and then attack it, single-handed," said the commanding officer.

Besides these far-sweeping offshore aerial patrols, the Navy also maintains inshore patrols by surface vessels. Many are converted fishing boats and private yachts.

#### With the Canadians on Coast Patrol

Flying with Canadians, Roberts and I visited many British Columbia coastal points and islands where air bases, defense posts, and lookout stations exist.

So well hidden with camouflage are most defense guns that you hardly see them from the air. I realized we were passing some of them only when we exchanged signals with our blinking lamp.

We can't reveal exactly where we went or at what bases we landed.

Whenever we sighted a ship we'd approach it warily; then with his Aldis light the observer would blink out a query which friendly craft were supposed to answer. Often we'd circle over and the observer with his pistol-like camera would shoot a picture of the passing boat (page 450).

Freighters, tankers, and some American transports passed beneath.

Unexpectedly, up in these wilds, we'd come upon some newly built encampment, complete with barracks, hangars, and shops.

Bagpipes woke us one night. A Scot was playing "The Campbells Are Coming." Almost till dawn the whole mess hall rocked to stamps and shouts as men weary from weeks of long, cold patrols joined in the noisy Highland fling.

Fog! I never knew it could be so thick or

hang so low. It lay flat on the surface of the sea like a great wave of bean soup a half-mile deep.

I sat with the navigator at his table and watched him work with his instruments and with his code machine, which looked like a Chinese abacus. Now and then he traded words with the pilot or peered under the fog as we flew barely over the wave-washed rocks, trying to make out some known headland or familiar island. Blindman's buff!

Some days we sighted and signaled American fighting planes, northbound. Twice, when we were fogbound, American planes crawled into the same bases to await better weather.

#### To Youth It's All Good Clean Fun

Then there was that old gull. Target practice must have frightened her, a gunner related. Anyway, she lost control and laid an egg in the air as she flew over camp. Falling, it hit smack on a sailor's new cap. "Strike me pink," he grumbled. "What won't gulls do next! They've played me many bad tricks, but that's the first one that ever threw eggs at me!"

Among their believe-it-or-nots is this. One subchaser heard a strange underwater sound coming nearer and nearer.

"That's a pigboat's motors!" they decided. "He's coming closer . . . . Now, let him have it!" And they dropped their depth charge. . . . Then up with the geysering sea water flew thousands of dead fish. It was the noise of the rushing fish school that had been heard over the delicate listening device!

From a pilot on patrol came an excited radio message that he was following *two* submarines. "Now they've headed west. . . . One has pulled up beside the other" . . . Then—"They're only whales!"

But they're not always whales. "Right about here," said a Navy captain, pointing with his pencil, "something that was not a whale but 'Made in Japan' is now lying very still, on the bottom, in about 135 fathoms of cold salt water."

At one time about 8 percent of the R. C. A. F. men were American-born. Some are officers and instructors, others enlisted men. Canadians call them all "Yanks."

Sprinkled through Canadian camps were veterans who had fought from Ypres to Gallipoli. At one repair base were 14 chief petty officers who represented over 500 years of combined service.

Yet most R. C. A. F. men are young. The average age of the boys in one bomber crew that flew us was 20 years (page 449).

Brimful of good nature, they never miss a

## Where Fog and Sun Paint the Pacific



**This Speedboat Took the Author on a Trial Trip at (Censored) Miles Per Hour**

The fast craft, flying the R. C. A. F. flag, is built like a torpedo boat. It carries hospital equipment for first-aid treatment should crashes occur. It also transports men quickly from one coast point to another.



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Kobukhimes to J. Taylor Roberts

**Camouflaged in White, a U. S. Mountain Trooper Peers from His Lookout**

Beside him are his snowshoes. He is trained to use them or skis for deep snow duty. Goggles protect his eyes. Even mountain guns are mounted on sleds; in summer mules pack them.



© National Geographic Society

Illustration by J. Taylor Roberts

**Canadian Volunteers, Veterans of Other Wars, Guard the Long, Wild Coastline that Stretches from Vancouver North to Alaska**

Similar companies protect new air bases hidden here and there on wooded islands off the coast. Civilian groups known as Rangers, made up of farmers, woodsmen, and trappers who know all the trails, share coast-defense patrols. Bears often venture into lonely camps, trying to steal food. Scotch broom in background.



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**Canadian Army and Air Force Auxiliaries Chat Before  
a Vancouver Recruiting Station**

Thousands of women are signing up for special work and donning uniforms.



Reproduction by J. Bayler Hubert

**An R. C. A. F. Hero Displays His Squadron's Emblem, a  
Totem Thunderbird**

Under his wings he wears the Distinguished Flying Cross "Strip Medal."

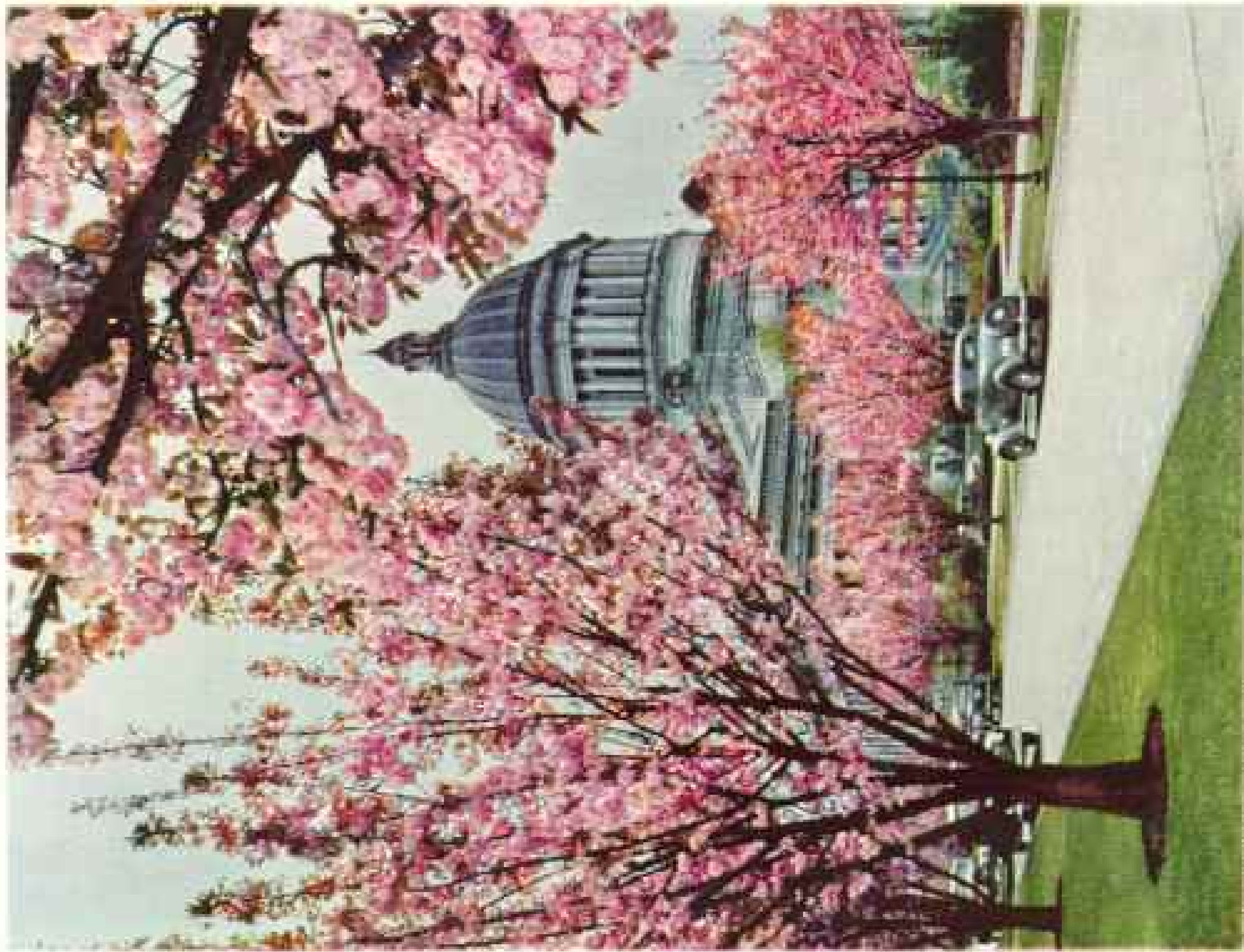


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Illustration by J. Hayler Roberts

### A Gilded Figure, the Pioneer, Surmounts Oregon's Magnificent New State Capitol at Salem

Lumber, fish, and fruit earned good livings and some big fortunes in earlier Oregon and Washington decades. Now, with the advent of hydroelectric power and war's impetus, many new industries arise, especially shipyards, aluminum, chemical, and magnesium works.



© National Geographic Society

### Cherry Trees Frame Washington's Capitol at Olympia

With snow-capped ranges, vast forests, and wild rhododendrons, Washington State's Olympic Peninsula remains one of America's finest examples of Nature's landscape gardening.



Illustration by J. Arthur Roberts

### Lucky Dog! He Keeps Warm in a Snowdrift

At Mount Hood's Timberline Lodge, in north Oregon, "Brueel," a thick-haired St. Bernard, is the pet of week-end thousands who flock here each year for snow sports.



© National Geographic Society

Illustration by J. Edgar Hoover

### Despite War's Alarms the Peace of God that Passeth Understanding Rests Gently on Washington's Flower-painted Valleys

Leagues to the west, along lonely coasts, enemy submarines may lurk and growl, but here in sheltered Puget Sound Valley Karl Koehler works undisturbed among his 800 varieties of tulip bulbs. He calls this multicolored field his "outdoor catalogue."



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Reprinted by J. Taylor Roberts

### Nodding Daffodils Bloom by Merry Millions in the Shadow of the Eternal Snows of Majestic Mount Rainier

Bulbs grown here in Puyallup Valley, between Tacoma and Mount Rainier, are sold by carloads to the florist trade. Puyallup High School girls, picking blossoms, took part in Washington State's annual Daffodil Festival.





"Don't Be Bashful, Sailor! Take a Bigger Piece!"

Friendly girls of Astoria, Oregon, provide at the service men's U. S. O. Hospitality House.



© National Geographic Society

Illustrations by J. Barlow Roberts

After a Day of Sport, Snowbirds Make Nocturnal Whoopee at a Mount Hood Lodge  
Timberline Lodge, in a U. S. Forest Service playground, welcomes skier hosts from November to April.

trick. If there's an all-night squaw dance miles up some lonely river, they'll paddle up, no matter how weary from long, hard patrol. And they like to spoof Yankee tenderfeet with tall tales of the Canadian wilds.

"Salmon are so thick in that creek they jump into your arms. . . . Those Indians distill a deadly drink from tanbark and old socks! . . ."

One day I said, "Drop a bomb, and let Joe photograph it."

"Yes," grunted the pilot, "and get me in a jam for wasting a \$200 bomb!" But they opened a window—which blew all the papers off the navigator's table—and let go a smoke bomb. "Canned smoke," they call these. Anyway, Joe got his picture.

"Wily Jap subs, trying to fool us, launch fake periscopes," said one officer. "They set out bamboo logs, weighted to stick up, resembling periscopes."

American soldiers on overseas duty now get their mail through three main ports of embarkation: New York, San Francisco, and Seattle. To these may soon be added a great Canadian port, which must be nameless.

Already, through this port, tremendous quantities of road-building material—35,000 tons in one week—are being shipped.

New docks and barracks are being built, a long stretch of railroad improved, barges brought in, and all steps taken to make this also a great shipping point for Army goods from all over the Great Lakes and Middle West States.

When the air-raid alarm sounded here, all school children were sent to the woods. It's blackout every night!

#### Rope Tied to Gunner's Trigger Foot

Always the unexpected. Beside a Bofors antiaircraft gun that shoots 120 times a minute stands a gunner, his foot on a treadle to work the trigger. But about his trigger foot a rope is tied, the loose end held by another gunner (page 429).

Why is that?

"So we can jerk his foot off the trigger if he gets excited and shoots too long, wasting ammunition."

Like a postman on his bicycle, a soldier makes the camp rounds to look at oddly painted disks set on posts. Under each one hangs a watchman's big wooden rattle.

Paint on that disk is sensitive; it changes color at the least presence of gas in the air. If the patrol man sees the color changing, he grabs the wooden rattle and gives the gas alarm.

Emblem of one Canadian flying squadron is

the Indian Thunderbird (Plate XI). Legend says that the big bird caught whales and flew with them up to its nest on a traditional Thunder Mountain near Victoria.

One big Canadian shop repairs wrecked planes. "This shop," said the foreman, a veteran of Gallipoli, "is highly important. All our plants are so busy making complete planes they have no time to make spare parts. So from wrecks we salvage all the spare parts we can."

All about were men prying wrecks apart, cleaning and repairing the pieces.

"How many pieces in that old Shark?" I asked.

"About 29,000," answered Sergeant Novaksky, of Winnipeg.

"How many parts can you identify?"

"About 14,500—but only when I look at them. I couldn't shut my eyes and name that many."

#### Canadian Planes Use Carrier Pigeons

Carrier-pigeon-keeper Sergeant Andy Moore proudly showed us his birds. Some wag gave him a comic owl picture, hinting that Andy might train owls to carry night letters.

"They're always razzing me," Andy complained. "Be careful what you write; don't call me a poultryman."

All types of Canadian patrol planes may carry pigeons. They may be released safely at altitudes up to 5,000 feet or more. If pilots are forced to kill their radio because of enemies near, or if forced down, they send their bird home with a message. Over and over, lost flyers have been saved by pigeons.

About a graphoscope in a Canadian Army radio school eager-eyed boys were grouped. On a glass plate crawled and squirmed long red worms, revealing the force, speed, and pattern of electric currents.

"We are learning here," said the instructor, "how the detector, or localizer, works. It sends a beam to a distant point and that beam bounces back from its target and tells us where our enemy may be."

#### These Fair Lands We Fight For

How some memories persist! What an unforgettable experience to fly down that Alaska Inland Passage—say from Prince Rupert and Bella Bella south—with afternoon sunshine and then pink dusk breaking against the snow-clad green ranges of British Columbia!\*

No sunset flight over Alps, no Pyramids

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Nakwadinu Goes North," by Jack Calvin, July, 1933, and "Washington, the Evergreen State," by Leo A. Borah, February, 1933.



### From Hidden Outposts Canada's Volunteers Protect Her Scattered Air Bases

On the Pacific coast her defense line not only stretches from Vancouver north to Prince Rupert, but also involves certain offshore islands. Among the volunteers are many battle-scarred veterans of World War I.

at dawn, no Panama Canal or Andes or Baghdad mosques, or domes of Rome or Jerusalem, or Grand Canyon storms seen from a plane can surpass this sky-high view of Canada's west coast when lights and visibility are just right (page 432).

Bays, lakes, straits, inland seas, open seas, and islands interminable. There's one of muskeg that looks like a giant floating sponge. Another islet here, stuck thick with tall trees that crowd its very edges, is like a big bunch of asparagus.

#### Sighting Transports and Strange Planes

One by one, islands of variegated form and color slip past, till you begin a guessing game all your own. What will the next one be shaped like? A tapir, a camel, a monk in a cowl, an elephant's head? Here it comes—a tiny bare one, all stone, like a snapping turtle.

As you fly over one island, a signal light winks from some hidden lookout post and your navigator winks back.

Now we sight a transport, northbound, its decks crowded with army trucks. Then suddenly appears a strange plane, speeding straight in from the open sea.

Gunners, ready at their posts, watch our observer. He winks a query with his Aldis light—and gets a reassuring answer. A friendly plane!

Lonely coasts these, mostly empty, known only to wandering trappers. There's not a hut or even a small fishing boat for scores of miles. Nearing Vancouver, you see more signs of human life—little farms, private piers, lumber, cattle.

Remote from his kind, in one lonely island cabin, lives an old man who years ago won a fortune in the Irish Sweepstakes.

Great fan-shaped clearings on mountain slopes show where cables have swung in an arc, dragging logs down to a heap at the fan's handle. Over other hills wind the loggers' roads, like crooked yellow snakes. Scars, too, stretch for miles, showing where forest fires



Breathing Aircraft Flying

### Running Nowhere, to Work Free Nitrogen from Blood Streams before High Flights

Through small hose pipes they breathe oxygen from the flasks before them. Should they go up, say, six miles without ridding themselves of nitrogen, they would suffer acroembolism, airman's equivalent of a diver's bends (page 445).

have swept these Matto Grossos of virgin timber.

Flying high, now and then you glimpse a lake set away up in the mountains, its very presence unsuspected by people passing on surface ships.

Log rafts, towed by tugs, lie far below you, in form and pattern like Chinese straw mats. Motionless they seem; yet behind trails a wake, showing they're under way.

Our patrol plane climbed powerfully, rising to cross high snow-clad ridges. East, at our left, last rays of sunset hit a mountain shower and make a rainbow, its circle almost complete.

### Victoria, More English Than England

Then darkness. In a quick squall the heavy plane tosses roughly. Then she descends. Ears pop. . . . Letting her wheels down, just as a goose lets down her feet to light, our amphibian settles gently on a long

cement runway, "somewhere" on Vancouver Island.

Rumbling past lighted farm homes, an army station wagon hurried us to Victoria, to the Empress Hotel, very stately, so very English. "The world's only hotel," Will Rogers said, "where you feel like taking off your hat when you enter the lobby."

Air-raid warning sirens whined and lights went out. Whispers and giggles floated over the great lounge—the way of people nervous in the dark.

More English than England is Victoria, with tearooms, clubs, and woolen shops. Many retired British Army and Navy men and civil servants have settled here. They tend their orchards and gardens, feed the poker kitty and their chickens, and milk their cows; they sail boats; they fish and shoot and ride their bicycles to golf—ideal life, after retirement, that Englishmen dream of.

Crowded steamers ply daily, linking Vic-



**"Alibi Hound, That's You! Out Again All Night, but Always Here for Mess Call!"**

Look at the sergeant's face—and the dog's—and you see who's bawling out whom, in good old Army style! Widely traveled "Bozo" has been 11 years with one antiaircraft outfit.

toria with Seattle, which has similar close ties with Vancouver, on the Canadian mainland.

On lower decks of these ferries Indian families may swarm; their young children eat candy, drink pop, or soon go to sleep. Older Indian and half-breed boys and girls, in cheap sports clothes, venture to the upper deck to play a juke box. They talk English.

Canadian or American honeymoon couples wave to friends on the dock who come to see them off and then stand awkwardly, with nothing more to say, when the ship is detained another five minutes. Traveling salesmen with their briefcases look on and smile.

\* See "Canada's War Effort," by Bruce Hutchison, NATIONAL GEOGRAPHIC MAGAZINE, November, 1941.

American officers are going to Canada for conference with their military colleagues, or the general who commands the coast-defense guns at Victoria is going across to talk with his American vis-à-vis who points similar guns out from the Olympic Peninsula. . . . Everybody—because we're at war—looks with new interest at every passing plane or ship, and stares at military works rising on distant shores. . . . "No cameras allowed". . . . "No binoculars."

Violet, from Vancouver, is going to visit cousin Susie in Seattle, who married an American who runs a drugstore.

How close the ties between these two lands of common heritage and common destiny—closer than ever now that we're set to whip a common enemy.\*

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*Notice of change of address of your NATIONAL GEOGRAPHIC MAGAZINE should be received in the offices of the National Geographic Society by the first of the month to affect the following month's issue. For instance, if you desire the address changed for your December number, The Society should be notified of your new address not later than November first.*

# New Delhi Goes Full Time

BY MAYNARD OWEN WILLIAMS

*With Illustrations from Photographs by the Author*

NEW DELHI, unofficial capital of the United Nations in Asia, has just finished its first full summer of toil, sweat, and prickly heat. Now it welcomes cool October.

Japanese victories, the Cripps offer of eventual independence, and American participation in a global war in which India is a land base against both Germany and Japan have put the winter capital on full time.

This is usually the season when the Government reluctantly moves down to the plains from its summer capital in the Himalayas.

Bullock carts, piled high with Government records, pull up to the impressive Secretariat. Messengers hide their brown skins under scarlet and gold.

The European shopping center, snail-like during months of estivation, stirs with new life. Furniture for newly opened homes weaves through the street traffic on the heads of porters. The native bazaar begins to sleep at night instead of by day.

In this moving-day atmosphere I returned to Delhi after 21 years, this time to get a visa for Afghanistan, from which so many of Delhi's rulers came.

Going to the bright new villa of the Afghan Consul General, I passed through miles of monuments erected by Afghans, Turks, or other invaders from beyond Khyber Pass.

Mine had been a routine flight from Washington, D. C., to Calcutta by way of Pearl Harbor, Midway, Manila, Hong Kong, Chungking, and Rangoon—romantic names then, fighting names as I returned to the United States.

## New Delhi Is the Eighth Delhi

Home again in Washington, I found the New Delhi date line on the front page.

"Why *Naze* Delhi?" asked a friend.

"Because Lord Halifax, then Viceroy of India, didn't move into the present capital until Christmas, 1929, whereas the sovereign site of all eight Delhis is as old as the hills."

Kipling's "hills" were the Himalayas. Delhi's Ridge was there millions of years before Mount Everest wrinkled the face of Mother Earth. But we needn't go back farther than two pillars, dating from about 243 B. C. Imported relics of the kindly age of Asoka, they are twice as old as Old Delhi itself.

As far as native monuments go, our farthest back is A. D. 1193, when Moslems were fighting

Christians in Galilee and Hindus in Hindustan. This is the famous Kutb Minar (Plate VIII and pages 474, 475).

Everything has happened to Delhi. Now inhabitants of the oft-resurrected capital wonder "What next?"

To India's aspiring millions, neither Gandhi's spinning wheel nor the Japanese loudspeaker promises enough.

A few ascetics may still hope to turn back the clock, and leaders who have long fought for independence think chances are exceptionally good now; but 50,000 Indians a month are volunteering to fight for the United Nations. Two hundred thousand of them have already seen action, and thousands of their fellow farmers are turning from plowshares and pruning hooks to making guns and munitions.

Only yesterday, liberty was something toward which India, under British tutelage, was slowly evolving. The Indian National Congress was founded in 1885 by Allan Octavian Hume, an Englishman.

Now that liberty must be fought for, New Delhi's air-conditioned hotel is the center for American participation in Asia's struggle.

## General Mitchell's Prophecy Realized

American flyers are carrying out the dreams expressed by Brig. Gen. William L. Mitchell in the NATIONAL GEOGRAPHIC eighteen years ago.\* The American champion of air power wrote:

"How easily I could equip one of our airplanes to fly to Mount Everest (and) photograph the whole peak!

"Lhasa, across the Himalayas, is only about as far from Darjeeling as Washington, D. C., is from New York, and I thought of how, with any one of our supercharged planes, we could cross the mountains, land, and call on the Dalai Lama within a couple of hours."

The aerial conquest of Everest is a matter of record,† and big planes, flying between Calcutta and Chungking, China, are turning "Billy" Mitchell's air castles into solid strategy, affecting Asia's more than a billion men.

India's war-boomed capital, like Washington, D. C., is a city of magnificent distances.

\* See "Tiger-Hunting in India," by Brig. Gen. William Mitchell, NATIONAL GEOGRAPHIC MAGAZINE, November, 1914.

† "Aerial Conquest of Everest," by Lieut. Col. L. V. S. Blacker, NATIONAL GEOGRAPHIC MAGAZINE, August, 1933.



Infantry Officer.

### India's Viceroy, H. E. the 2d Marquess of Linlithgow, Visits a Training Center in Delhi

Agitation for self-government in India dates back more than 50 years, but has sped up since 1919. Now military defense bulks larger in most minds than theoretical liberties. India has an army of more than a million soldiers, many of them of proved courage. In May, 1942, 70,000 volunteers were recruited. Ninety percent of the equipment for India's fighting men is produced in India, which has become the United Nations' arsenal in Asia and a supply center for China's defense.

In ground plan, shape, and size, custom-designed New Delhi, with its diagonal streets and circles, closely resembles the well-planned Washington of 150 years ago (map, page 469).

Raisina Hill, with its twin Secretariats and Viceroy's House, is a bit closer to the All-India War Memorial than Washington's Capitol Hill is to the Lincoln Memorial. New Delhi's 1,175-foot-wide parkway, the Kingsway, matches our verdant Mall, and India's canal-shrunken Jumna the more decorative Potomac.

#### A View Across the Centuries and Bygone Capitals

When New Delhi was in prospect, one problem was how to build another capital without destroying too many medieval monuments in this cemetery of cities.

From New Delhi's War Memorial I saw the 12th-century Kutb Minar spearing the southern horizon and Shah Jahan's 17th-century fort-palace to the north, with scores of the 900 listed monuments plainly visible.

The War Memorial stands between the legendary city of Indrapat and New Delhi.

Towers and domes at the west end of Kingsway rise above the massive Secretariat, beside which is the many-columned colonnade of Parliament (pages 470, 472).

#### A Triangle of Great Ports

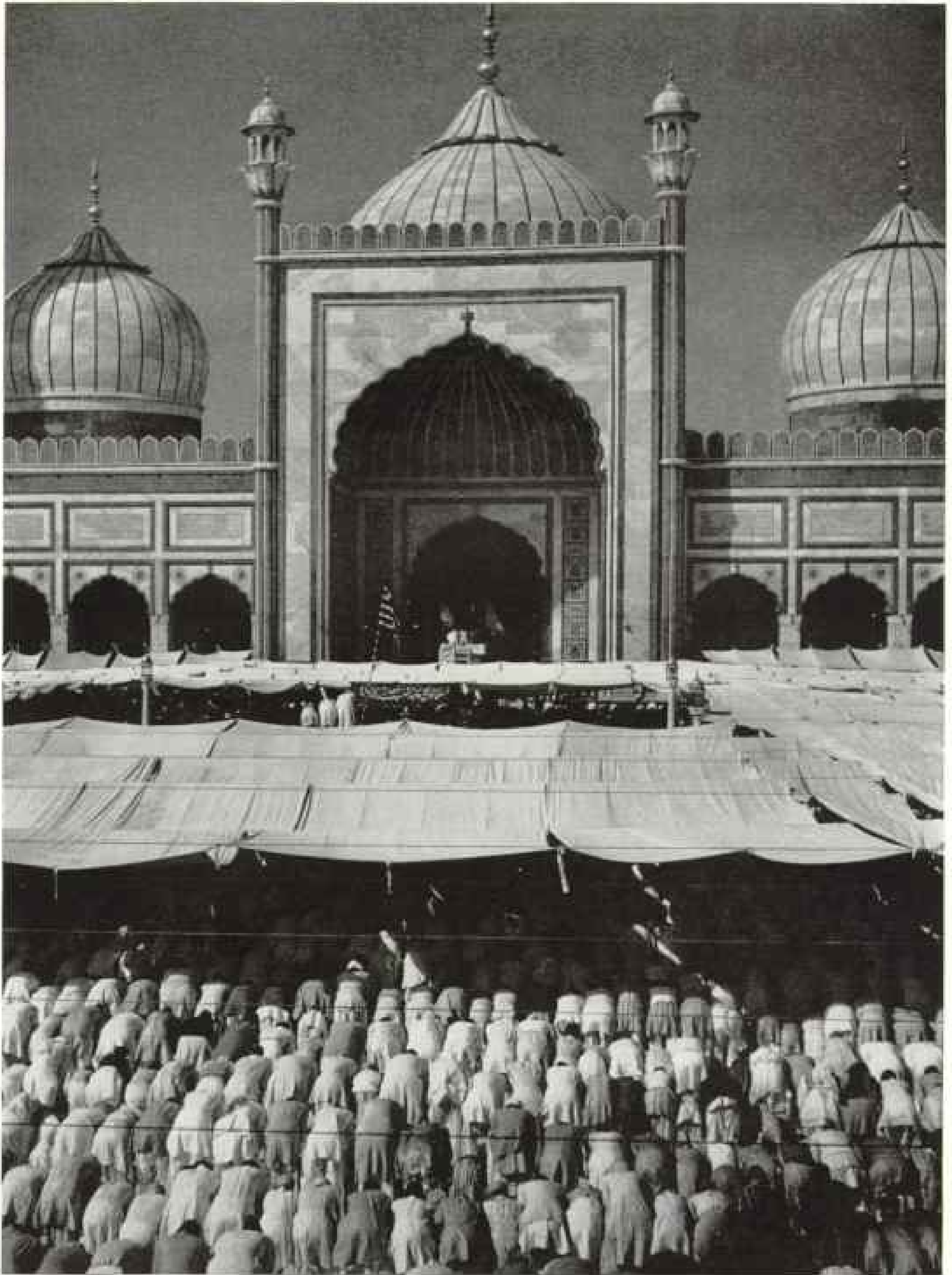
Musing over the city that is to be, surrounded by the ruins of cities that were, I was about equidistant from India's great ports of Calcutta, Karachi, and Bombay.

Delhi's Great Mosque is closer to the Moslem shrines of Meshed and Samarkand than it is to Madura's god-covered temples, whose loot enriched the second Delhi. Even Lhasa, its mysteries veiled by Tibetan mists, is nearer than Madras, where the English got their first foothold in India.

Moslem Asia has colored British India's capital, where the fez is as common as the turban, and those who bow before one god outnumber those who worship many.

Why has one Delhi after another occupied the historic triangle between arid Rajputana and the Himalayan wall?

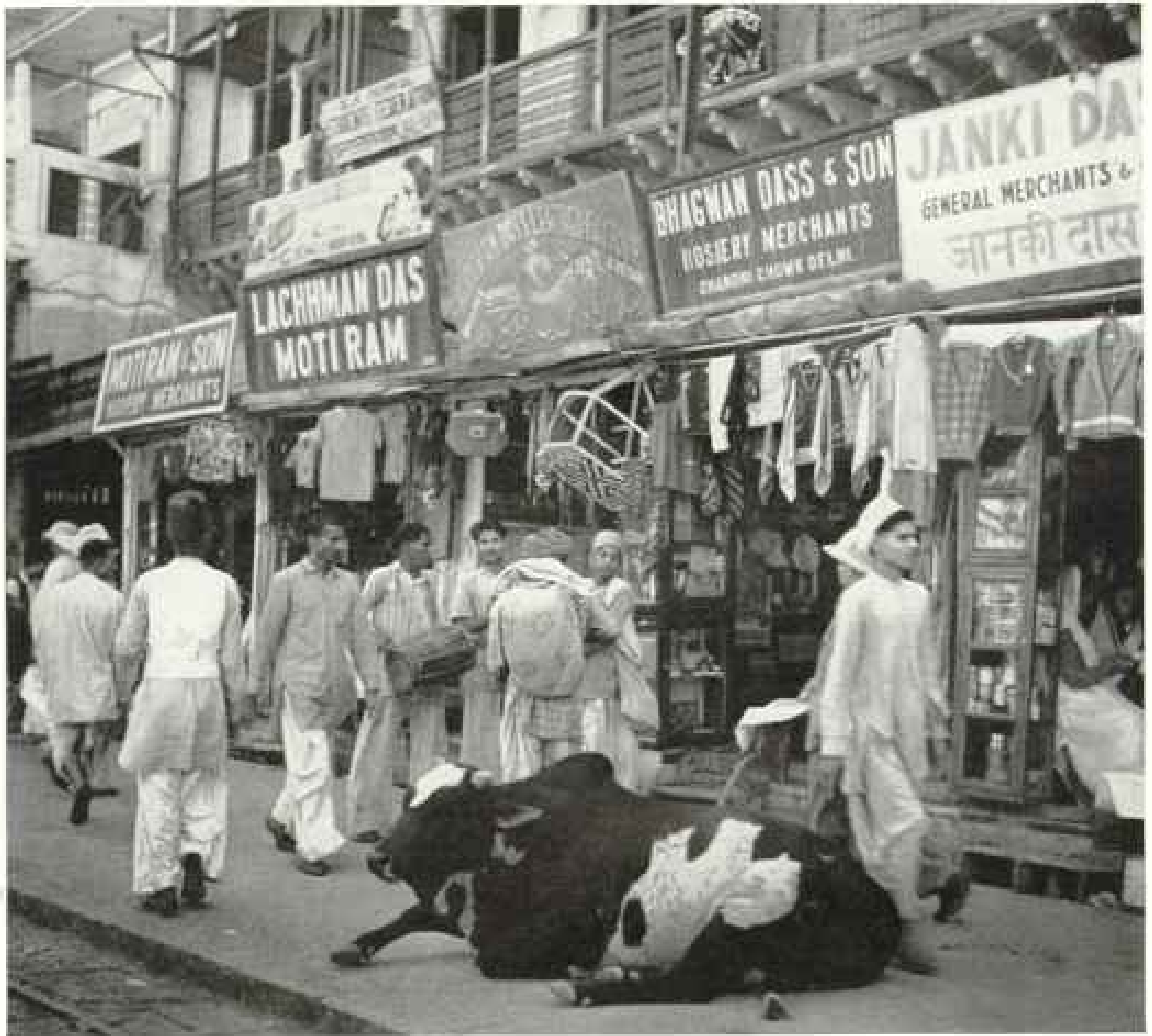
The sandstone Ridge (in later history the British base when Delhi was besieged during



**Like Human Compass Needles, Delhi Moslems Bow toward the West at Id Prayers**

The canvas awning protects worshipers in the Great Mosque from the hot October sun. Eastward from Morocco, westward from Mindanao, southward from Baku, and northward from Zanzibar, faithful millions "orient" their prayers and travel plans toward Mecca's Kaaba, which Mohammed purged of its idols about 1,300 years ago.





### A Sacred Bull Relaxes; a Bazaar Boy Drums up Trade

Stabled on the sidewalk of Delhi's Chandni Chauk (Silver Street), the creature is not molested, although India's capital city is more Moslem than Hindu. Signs in English, in curving Urdu, and in angular Hindi advertise notions (pages 485-6). Ninety million Moslems and 260,000,000 Hindus complicate India's problems.

the Mutiny of 1857) helped defend the rich alluvial plain, but the battlefield of Baber and his grandson Akbar was at Panipat, 50 miles upstream.

Five kingly Delhis (rhyme with jellies) had been built before Baber, the first of the six Great Moguls, charged down this corridor of conquerors between desert and mountain, A. D. 1526.

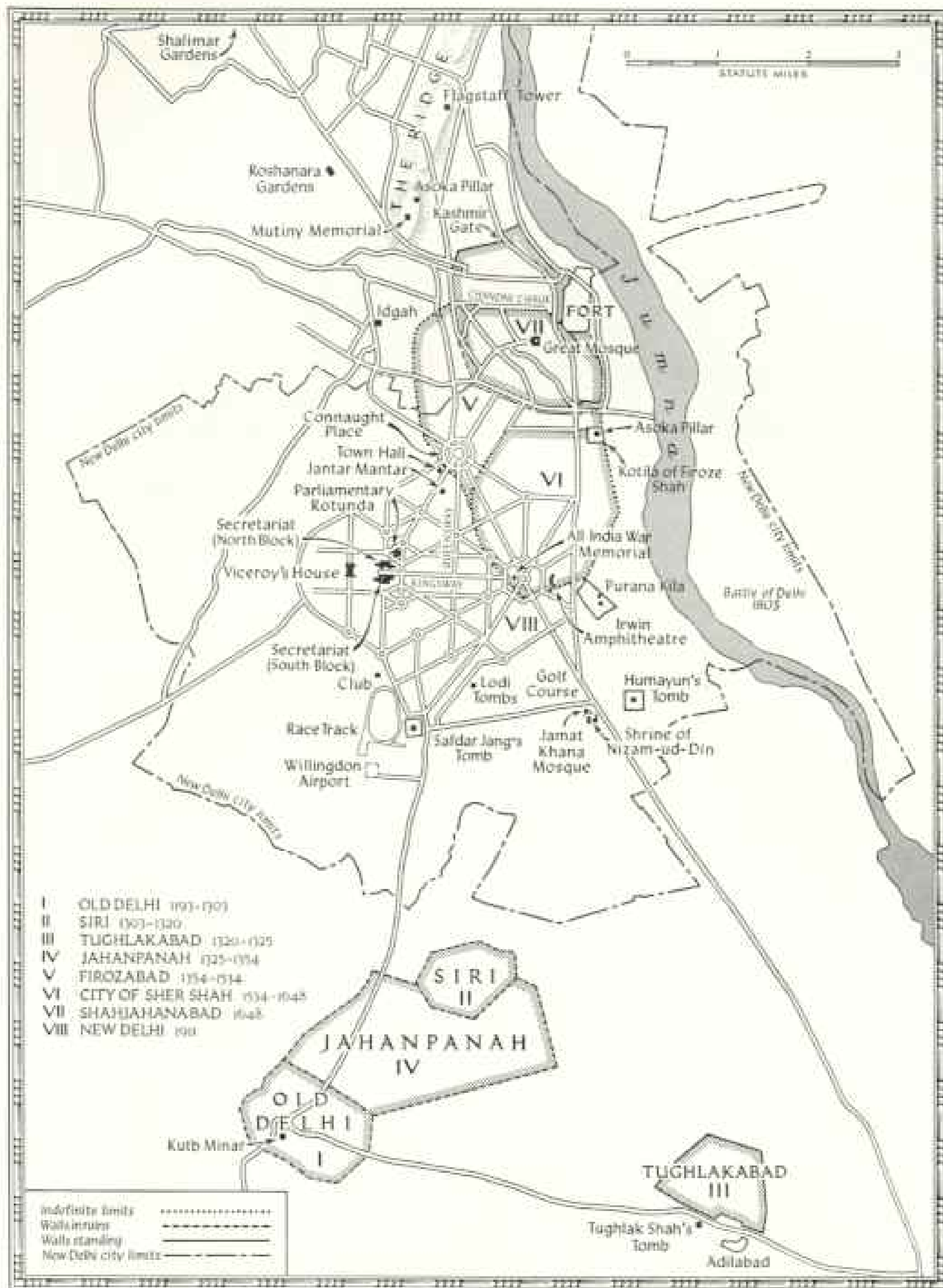
#### When Calcutta Was Capital

Seeing the name "Panipat" on a tumble-down motorbus as I arrived added a sense of the past to Delhi's colorful crowd. It was at Panipat that Baber's newfangled artillery boomed at Indian war elephants until his Central Asian cavalry could do its deadly work. Delhi's most illustrious line, the Moguls, was founded on horsemanship and gunpowder.

While Mogul armies were consolidating their power in India, Drake and Elizabeth's other sailormen were imposing their rule on the waves. Sea power outflanked central Asia's mighty hordes. Port outranked fort. The East India Company increased its political power. By almost imperceptible degrees, commercial Calcutta became India's capital.

In 1858, when Queen Victoria officially inherited Clive's unofficial winnings, Viscount Canning, Governor General of India, became its first Viceroy at Government House, Calcutta.

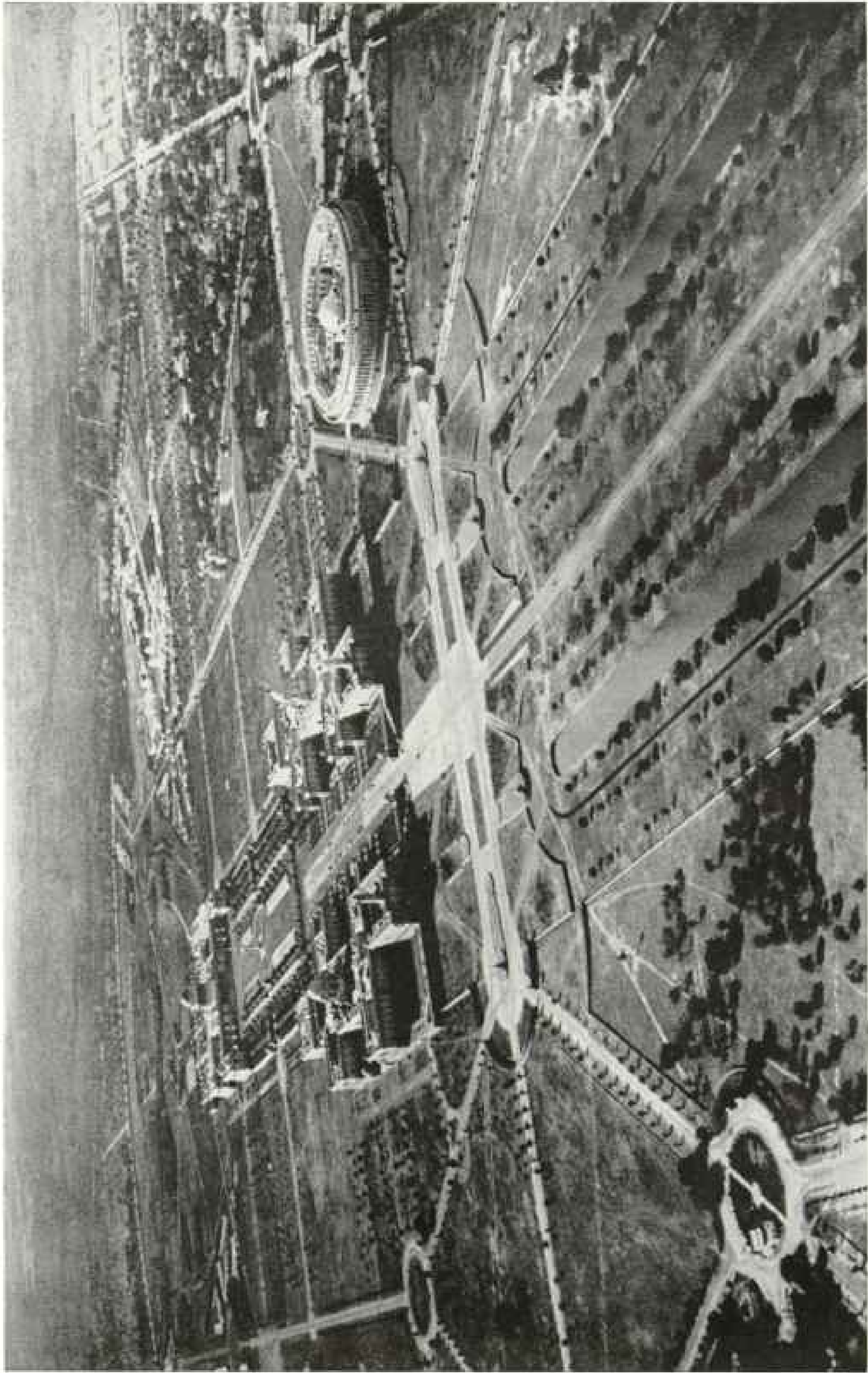
In 1911 Delhi staged an Imperial Durbar for the King-Emperor and Queen Mary, who entered Delhi on a now-more-fateful day—December 7. His Majesty then announced Delhi's nominal come-back as winter capital, confirmed by occupation in 1924-29.



Drawn by Herbert E. Fairbank

**In This 135-square-mile Graveyard of Cities Lies New Delhi, Now Unofficial Capital of the United Nations in Asia**

No one knows when this storied plain between the Ridge and the Jumna River was first settled. Razed by conquerors and used as quarries by later builders, the first six of eight Delhis are ruins. The seventh teeming city of half a million is the Delhi of the Postal Guide. Eighth is New Delhi of the daily news. Walls of the third and seventh cities are visible. Limits of the fifth and sixth cities are indefinite.



Imperial Airways, Ltd.

### New Delhi Stands in the Center of a Site on Which Seven Earlier Delhis Have Stood

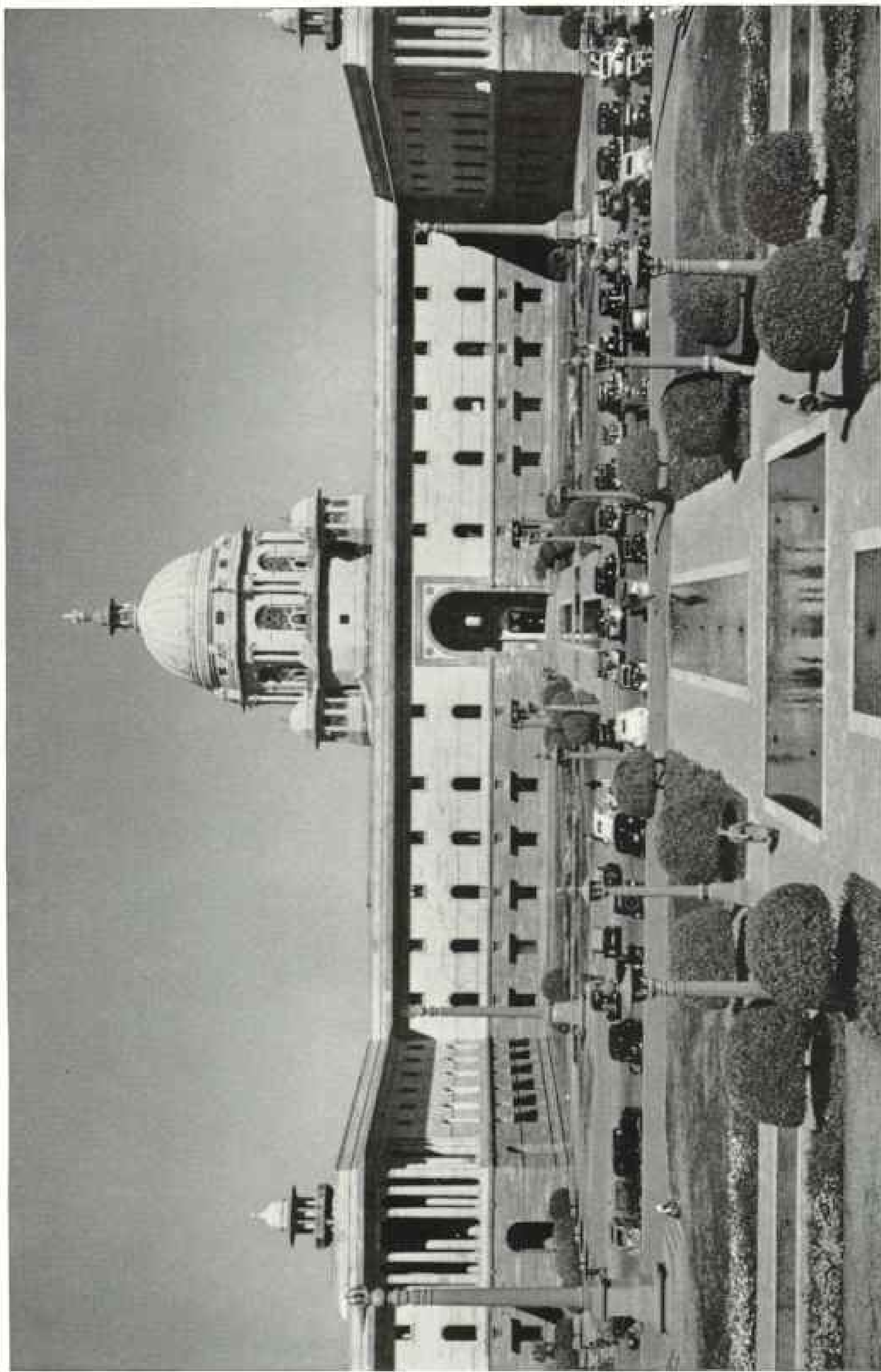
In upper left is the domed Viceroy's House, with the Jaipur Commemorative Column near the center of the Viceroy's Court. Two giant Secretariats face each other on Government Square, from which a sloping ramp descends to Prince Edward Place (center), across the end of Kingsway, with its long reflecting pools. In right center is the Parliamentary Rotunda, with a library under its central dome (pages 488, 493). Circles and diagonal roads suggest the plan of Washington, D. C.



REUTERS-UNION

### Crowds Follow Gandhi Everywhere—Even to Jail

Mohandas Karamchand Gandhi, son of the Prime Minister of Kathiawar, was born at Porbandar, October 2, 1869. At eighteen he left for London, where he was called to the Bar in 1891. During the Boer War he was in charge of an Indian Ambulance Corps. He conducted a recruiting campaign for World War I. After the armistice he organized and led the nonviolent noncooperation movement. Thousands of his followers have been jailed.



Twin Secretariats Are New Delhi's Most Imposing Structures

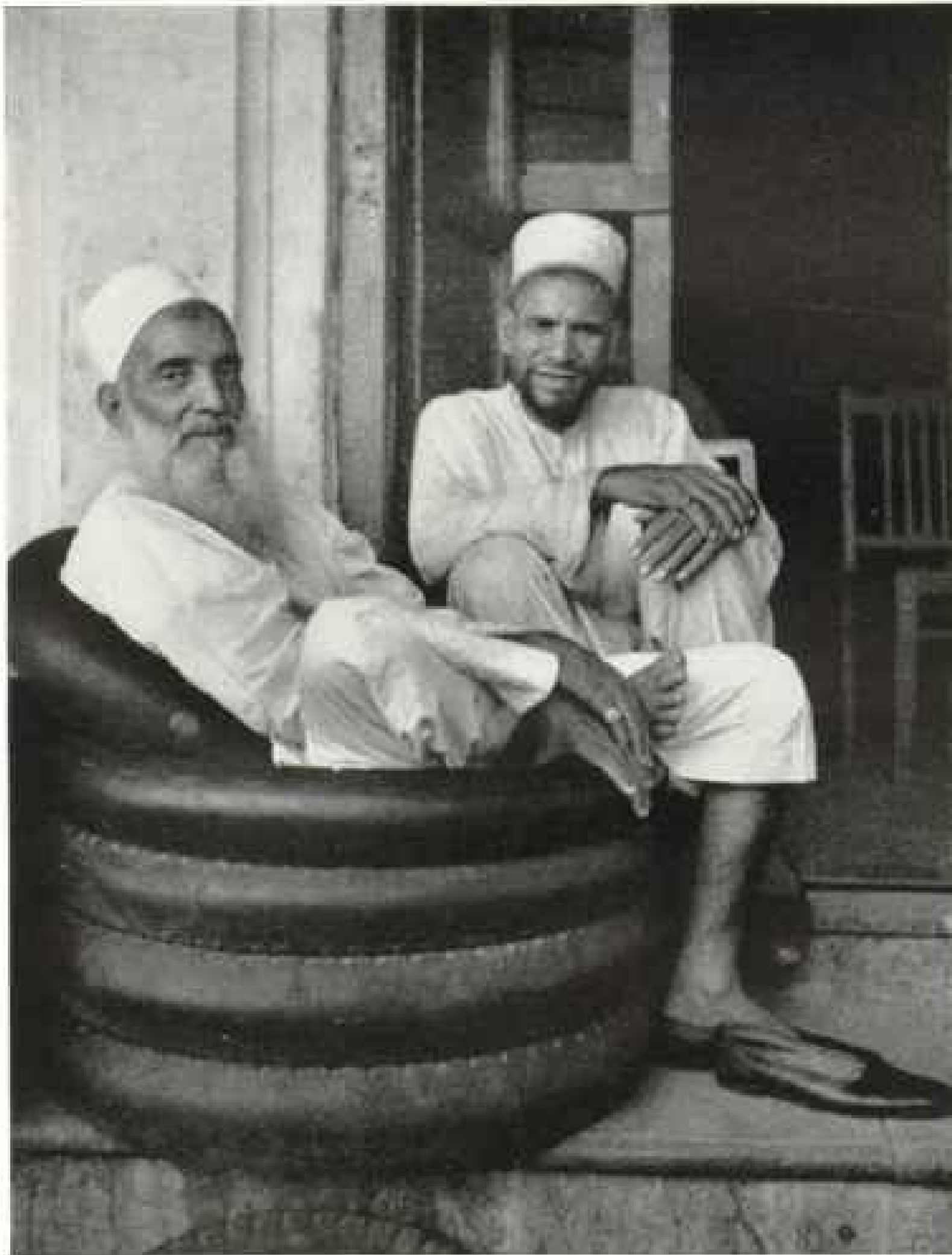
Standing high on Raisina Hill, the two office buildings, designed by Sir Herbert Baker, house hundreds of English and Indian administrators. This view shows the North Block, across Government Square. Automobiles are few, but the courtyards are cluttered with bicycles of Government workers (page 470).



Moqueem

### Doubly Veiled Are Moslem Women during Id Prayers in Delhi's Great Mosque

This extraordinary scene, photographed from the mosque wall, contrasts with that of the praying men (page 467). A canvas curtain protects the women from view, and each woman is ready to veil her face. Moslems brought the custom of veiling the face to India; now Hindu women also live in purdah (behind the curtain).



### This Delhi Moslem Is "Sitting Pretty" on a Store of Tires

Behind the Great Mosque, built by Shah Jahan in 1644-58, there are many shops specializing in second-hand tires and motor parts. So comfortable was this old-tire merchant that he readily cooperated in the photographer's request: "Hold it! Don't change a thing."

Cold-weather residences, designed to catch the heat of the sun, were scattered across the vast open spaces. Sandstone terraces squared off the hilltop where stand the Secretariats and Viceroy's House.

### A Timeless Antique

Old Delhi's timeless antique is the six-ton Iron Pillar, smooth as plastic and rustless after 16 centuries of rain. It was unalloyed with manganese and probably forged over a charcoal fire.

Close to the Iron Pillar and more than ten times as high is the Kutb Minar. Lacking the stark simplicity of the Washington Monument, Delhi's 750-year-old Tower of Victory

is Oriental architecture's finest exclamation point. "What an era I ushered in!" it seems to shout (Plate VIII).

Past this lofty landmark, Parsi planes and American bombers slant down to the Willingdon Airport, as modern as aviation but on a historic plain. Here, in 1398, the terrible Timur (Tamerlane) made himself master of five Delhis and laid three of them in waste before carrying away Hindu stonemasons to glorify Samarkand.

I arrived by train. From the aluminum-colored, air-conditioned coach privileged passengers stepped down to buy the latest Statesman or Civil and Military Gazette. Under pictorial signs showing how tea should be made, humble folk huffed and puffed in haste over their scalding drink.

Anglo-Indian train guards in white helmets crowded insistent travelers into compartments already full. Banners gathered to welcome a native politician.

Jat women gripped the ground with prehensile toes below their wide skirts. Hindu ladies, with red beauty spots between their eyebrows, were spirited away through the crowd. Baggage seemed to progress on a moving platform of heads, while bulging bedding rolls, hung from straining elbows, made their bearers squirm their way.

Outside the station, bullock carts and motorbuses mingled.

### The Delhi of Shah Jahan

While awaiting a visa for Kabul, I visited half-forgotten streets of the still-familiar Delhi of Shah Jahan.

Shahjahanabad remains a wondrous place of ivory carver and silversmith; of movie

posters and festive-colored sheep; of cows that wear peacock feathers and of thin brown hands that fashion fine birds from beads of gold; of creaking camel carts and rushing motors.

The Fort had lost none of its appeal nor the bazaars their liveliness, but I felt the urge to go back to the Kuth and start again where Delhi started.

I took a *tonga*, whose single pony set the leisurely pace for once more enjoying a well-remembered scene. With my guide of years ago by my side, I rode south for 11 miles toward the sandstone-and-marble Kuth Minar, between piles of unbaked bricks.

War demands are turning on the heat at brick kilns. The method is simple. Beyond a leveled space where unbaked bricks can dry, an earthen wall furnishes more raw material. On an upper level, white bullocks tramp down a long incline, hauling a bulbous leather sack of water out of a well.

Diverted to half a dozen levels, the water is mixed with clay. The earth wall, spaded away, recedes (page 487).

Thus the man riding the bullock rope, the man with the hoe, and the hanged Jat woman with the brassiere dress and bare brown midriff continue to make bricks of historic dust but without straw.

For the charm of present-day ruin-browsing, one owes much to the Archeological Department.

When first I visited Old Delhi in 1914, monuments were neglected. Now the well-kept ruins are surrounded by velvet sward, across which super-sized bullocks draw light lawn mowers. Golf balls bound amid the tombs of long-forgotten kings.



#### A Toy Balloon Headdress Almost Doubles His Height

During the Id festival, Moslems put on new clothes for a sort of Moham-medan Easter parade after a month of Ramadan fasting (page 490). This lad's festival decoration is a triumph of the art of toy balloons, which the United States used to export all over the world.

With stops at all four intermediate balconies, I climbed the Kuth Minar, its three lower stories of red sandstone from Bharatpur, its top sheathed in the same white Makrana marble as that of Agra's Taj Mahal and Calcutta's Victoria Memorial.

#### A Panorama of Ghost Capitals

Looking down from its 238-foot height on the foreshortened iron pillar in its stone-paved court, I was near the center of Old Delhi, the first of eight cities. Eight is an arbitrary number, since different cities overlapped, both in space and time (map, page 469).

Of Delhi's imperial cities, the first, second, and fourth lay below, their walls long since



razed by Timur and later quarried away to provide materials for the sixth Delhi.

Four miles away, toward the retreating Jumna River, I could see the third Delhi, Tughlakabad, its crumbling walls still reflecting the martial character of their builder, Tughlak Shah.

Later, here lived for several years Ibn Batuta, greatest of Moslem travelers, who spread the fame of India's post runners. They could relay official messages across India at 200 miles in 24 hours.

Ibn Batuta saw the courtiers of the builder's son, Mohammed Tughlak, catapulting gold coins from elephant-back onto the eager crowds. But ruined Tughlakabad suggests no such wanton display.

Look as I would across the hazy plain, I could not see the Asoka Pillar which spikes down the largely vanished fifth Delhi of Firoz Shah, but it loomed large in my mind's eye.

Asoka's edict-carved monolith makes one think twice about the word "modern." Twenty-two centuries ago he planted shade trees, dug roadside wells, prevented cruelty to animals, and denounced war.

Today Nipponese war lords are using the kindly Buddhism disseminated by Asoka to betray Burma and India into their crafty hands.

#### World Spread of Buddhism

Japan's Daibutsu, Tibet's Potala, Java's Boroboedoer, Cambodia's Angkor Vat, Ceylon's Temple of the Tooth, and even New York's little Buddhist temple in 94th Street attest his success in expanding a local faith into one of the world's great religions.

Firoz Shah went to infinite pains to transport the already antique Asoka Pillar from Topra to his now largely vanished fifth Delhi. Its edicts, still legible after 2,200 years, enjoined Asoka's officers to promote "compassion, liberality, truth, purity, and gentleness."

The sixth city, now ruined, was symbolized by the graceful dome of Humayun's splendid tomb. But a dozen miles away, and easily visible, was Shahjahanabad, the seventh Delhi and most populous area in the whole expanse.

Closer and to the left, I could see the bright new Government buildings of Sir Edwin Lutyens and Sir Herbert Baker, the well-spaced palaces and tree-hidden homes of New Delhi.

By shifting my gaze a bit I could overlook the whole 155-square-mile area shown in the map on page 469.

Delhi Province, the 575-square-mile enclave which corresponds to our District of Columbia, includes scores of villages as well as all the Delhis, living and dead.

Spacious New Delhi was planned for some 70,000 princes, civil servants, secretaries, jazz-band leaders, shoe salesmen, and checkroom attendants who watch over the forbidden cow-hide shoes of visitors to the Hindu temple. It covers more ground than that on which half a million inhabitants of Shah Jahan's still-teeming Delhi are massed.

#### Who's Who Names of India's History

I had brought a cold lunch to the Kutb Minar. On a breezy porch I conjured up spirit figures from the past.

Kutb-ud-Din Aibak brought a success-story touch. A slave in his youth, he became first Sultan of Delhi. He met death playing polo, when his horse fell on him and the high pommel of the saddle pierced his breast.

His granddaughter, Raziya, India's first empress and female sultan, brave in battle and skilled in intrigue, went unveiled and dressed in male attire.

Sultan Ala-ud-Din (1296-1316), the third great Mohammedan conqueror of India, was a looter—more than 24 *tons* of pearls in one rich haul—who built the bones and blood of his enemies into his excellent masonry. But, more than six centuries ago, he established price ceilings on almost everything from slaves to silks.

Tughlak Shah (1320-1325) stood not for price ceilings but for priorities. Determined to build the first wholly new Delhi, he forbade the available masons to work for a local saint. When Tughlak's day laborers did overtime for Nizam-ud-Din Aulia, the Sultan rationed the holy man's oil. The saint, conjuring up ghost flames, finally completed his dwelling despite the oil embargo, but cursed Tughlak Shah's new Delhi.

"May Gujars inhabit it!" he cried, six centuries ago. And these wild descendants of the Huns still do.

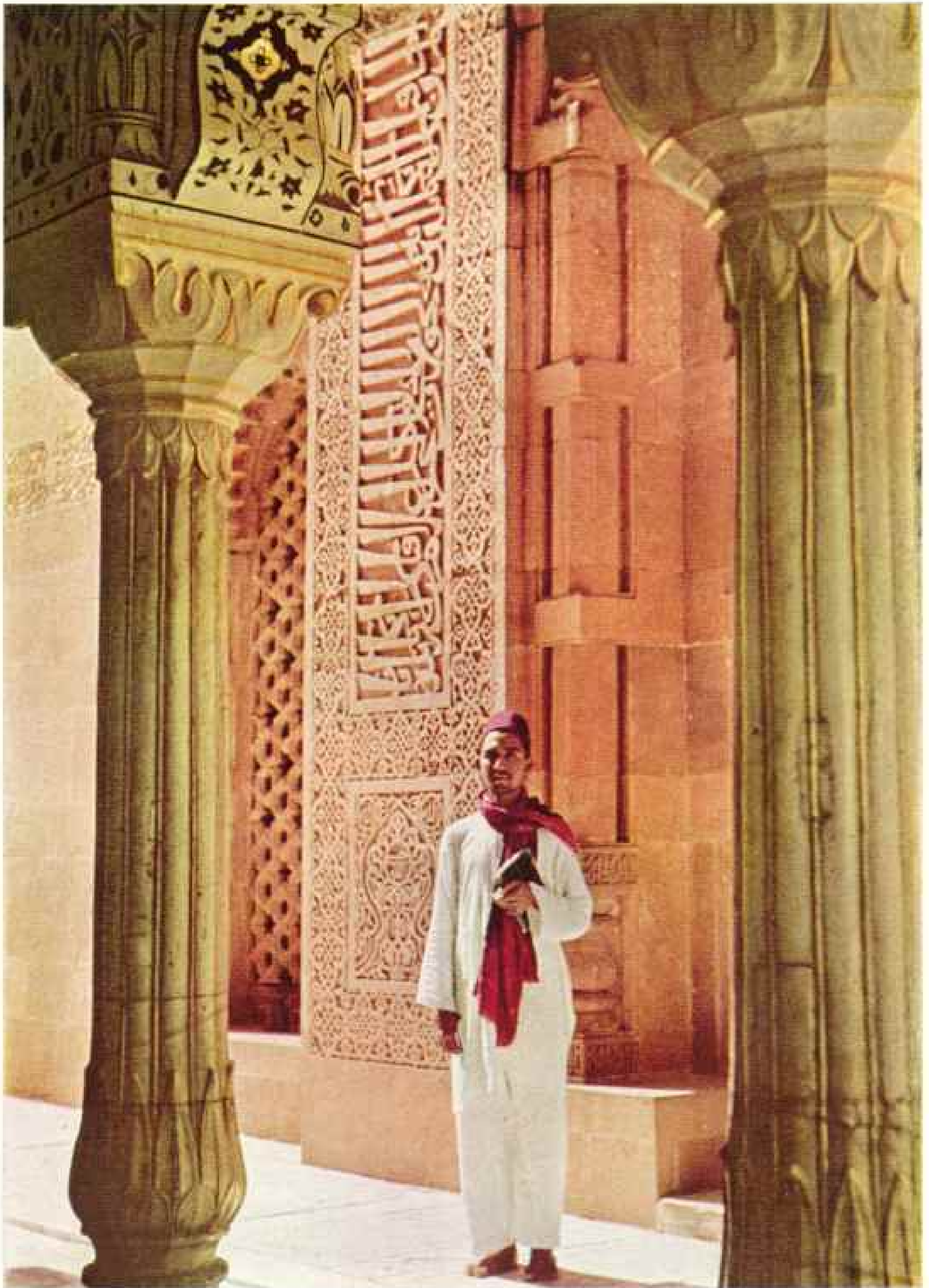
My favorite imaginary guest was the kingly Baber, but the head of the table was undoubtedly Akbar, greatest of the Moguls, lover of opium, who married many wives to strengthen his political position, and almost became a convert to Christianity.

Probably the greatest ruler India ever had, fit contemporary of England's Elizabeth, Akbar was as complex as India itself.

Akbar built a wide empire, fostered art and architecture, invented a luminous ball for night polo, preached tolerance, indulged an insatiable intellectual curiosity on three hours' sleep a night, lost two sons from drunkenness, and died partly from the shock of his eldest son's waywardness and ingratitude.

Soon after Akbar's death, England's East

Behind New Delhi's News



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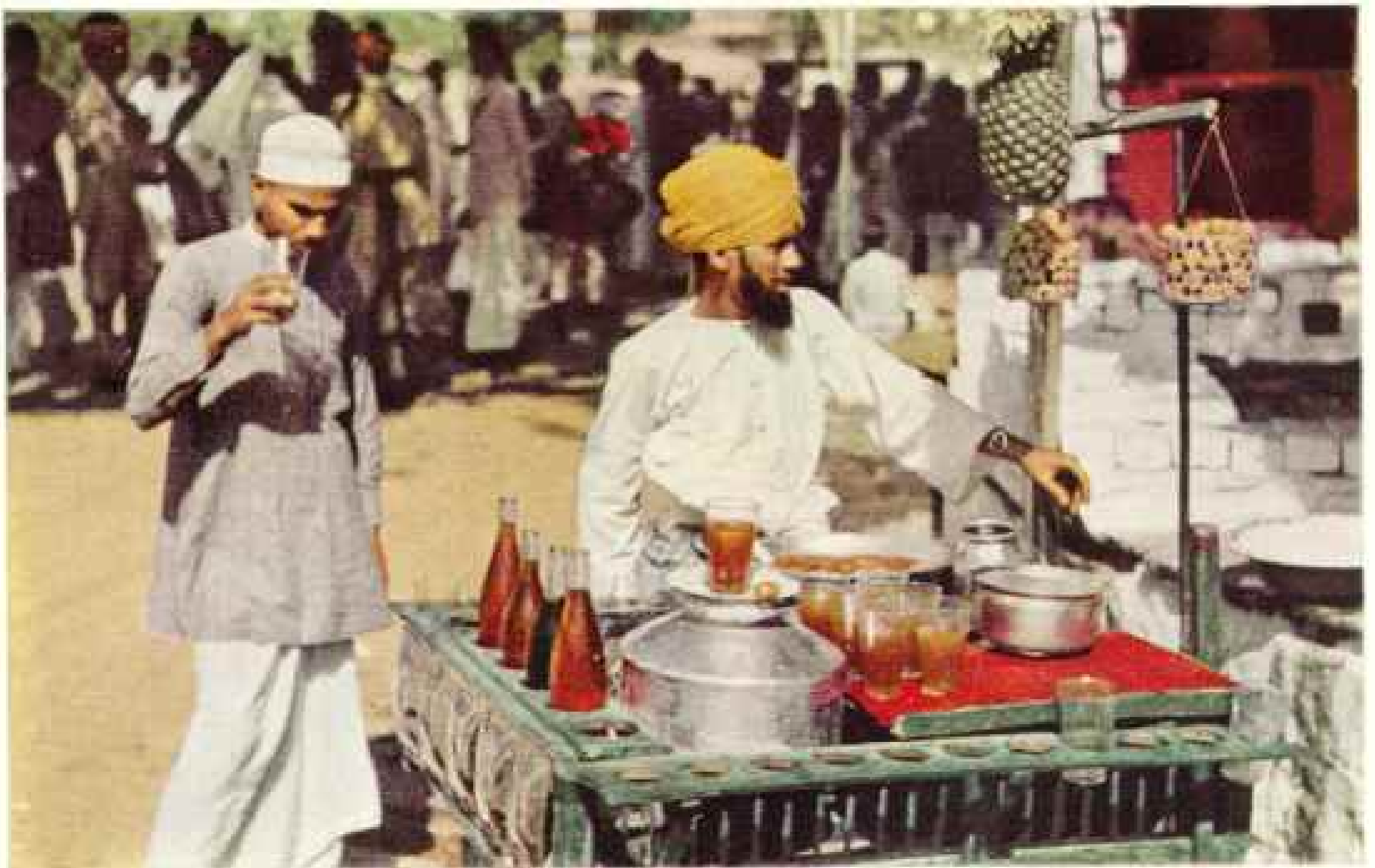
Restoration by Mirza Owen Williams

Hallowed Words from the Koran Decorate the Mosques of India's 90 Million Moslems—  
This 600-year-old Jamat Khana Mosque Was Hindustan's First



**Sky Thrills Add to Festival Fun**

Following Id prayers in Delhi's Great Mosque, after a month of family fasting, Moslem youngsters celebrate. Here they ride in a carnival Ferris wheel turned by hand.



© National Geographic Society

Illustration by Margaret Owen Williams

**Refreshing, but Nonalcoholic, Are Moslem Beverages**

Mohammedan teetotalers, children of the dusty desert, crave cooling drinks of many colors and flavors. One syrupy favorite tastes of roses, others of orange blossoms or almonds.

## Behind New Delhi's News



### Once a Year Moslem Picnickers Gather in Delhi's "Abode of Joy"

In the ruined Shalimar Gardens, where Aurangzeb, last of the six Great Moguls, was crowned, festival crowds eat, sip soft drinks, watch snake charmers, and enjoy a holiday promenade.



© National Geographic Society

Photographs by Margaret Owen Williams

### No Moslem Bride Thus Plays at Peekaboo

The young unmarried daughter of the author's Mohammedan guide makes unaccustomed use of the peephole in the curtains of a bridal chair.



© National Geographic Society

Photograph by Leonard Green Williams

### Moslems Celebrate the End of Their Yearly Month of Fasting with Incribed and Living Sheepskins

Rejoicing over the completion of Ramadan and the learning to follow, Moslem children hold their pet sheep still for the color camera. This pavilion stands in the gardens designed by Koshnara, daughter of Shah Jahan, who built the Taj Mahal.



© National Geographic Society

Imnocent Youth Lifts the All-concealing Moslem Veil



Illustration by Margaret Owen Williams

An Indian Nautch Girl Spreads Her Veil Like a Web



**Pots Proclaim the Vanished Feasts of Charity**

To this unusual shrine in Delhi pilgrims bring pots of rice. When the food is eaten, the pots are placed on poles to commemorate and advertise the gift.



© National Geographic Society

Illustration by Margaret Owen Williams

**A Delhi Peep Show Gets Close Attention**

Lacking comic strips, these red-topped Mohammedan lads, heads together, gaze at an Oriental substitute. For a *piee* (half a cent) a look, they see Churchill, Gandhi, or the supermen of Indian mythology.

## Behind New Delhi's News



### Indian "Sinkers" Boiled in Oil Are Extravagant Delicencies

Ever-hungry millions cook their simple food over outdoor fires of brushwood. A bountiful meal includes bread, *ghre* (melted butter), a gob of vegetable curry, perhaps some mutton, and a crumb of brown sugar for dessert.



© National Geographic Society

Reproduction by Margaret Owen Williams

### Proud as a Peacock Is Delhi Embroidery

With golden beads, skillful thin brown hands develop ornate designs on fine fabrics. In Mogul days such birds, composed of jewels, adorned the Peacock Throne.





© National Geographic Society

Enslaved by Edward Owen Williams

The Tower of Victory, Kutub Minar, Tops All the Monuments of the Eight Delhis  
This 238-foot sandstone shaft, built in the 13th century, marks the Moslem conquest of Hindustan.

India Company cautiously sought trading privileges in India. While Captain John Smith colonized one side of the world, Captain William Hawkins, on the other side, was talking and drinking his way into the favor of Jahangir, the fourth of the six Great Moguls. Britannia was already plowing the waves.

Under his successor, Shah Jahan, Mogul power passed its zenith, and when the last of the Mogul line—not at all great—became the tool of mutineers, India's government passed in 1858 to the British Crown, then worn by Queen Victoria.

As the afternoon shadow of the Iron Pillar lengthened in the paved court of Kutb-ud-Din, I crossed toward such arches as Moslem invaders brought, along with the dome, to Delhi.

Returning from the Kutb, we watched a Parsi plane come in and then turned east to the Purana Kila, a courtly site, where Humayun stumbled to his death on his way to prayers. Mosque and library pavilion have such a setting as the Moguls loved—a wide expanse of grass, broken by warm-red monuments.

#### A Hindu Advises Using Kodachrome

Near the Kila Kona mosque, a Hindu gentleman was walking with his wife. Studying the rich moldings and exquisite inlays, they stopped to admire the excellence of the architecture.

My candid camera caught their eye. There was no denying the filip her graceful red sari added to the formal façade.

"My wife will act as model if you like. She does for me," said the Hindu stranger.

"I was about to ask if she would. Conventions have changed since 1921. I wouldn't have dared ask you then."

"I don't see why not. We appreciate your interest, and more of us now take photographs ourselves. I hope you're using Kodachrome, though goodness knows how you'll get it processed, what with censorship and wartime delays."

Another day I was in that self-proclaimed paradise, Shah Jahan's garden and pavilions in the Fort. Removing my shoes, I had entered the tiny Pearl Mosque, a sort of marble confessional booth, half open to all-seeing Heaven. A Mohammedan with his female relatives sat on the cool white floor.

"If we are in your way, we'll move," he said. I thanked him but asked if I might photograph the group, without, of course, the faces of the women.

"What's wrong with their faces?" he asked. So here they are (page 492).

The wonders of the Halls of Audience and Royal Baths; the marble, inlaid with precious stones in *pietra dura* work, a method borrowed from Florence; the famous inscription, "If a Paradise on earth there be, it is this"—all these are famous far beyond the limits of India.

While I sat in the garden, a visiting polo team, with matching turbans, trooped past. Peasant women, herded by a trusted male, clinked heavy anklets as they swished their wide skirts past carnelian flowers set in marble.

#### Golden Peacocks with Sapphire Tails

There in the beauty spot he created I tried to evoke a picture of Shah Jahan, with a diamond-mounted aigrette on his golden turban, and necklaced with pearls. In Tehran I had seen and color-photographed what is supposed to be the remnant of his bed-shaped throne, on which golden peacocks strutted their sapphire tails.

The Peacock Throne must have seemed garish to Mumtaz-i-Mahal, "the ornament of the palace." The Taj Mahal, known by a nickname shortened from her own, is the ornament of the world.

Akbar was a Mogul monument. Shah Jahan only *built* one, but it is the wonder of the earth, the ten-million-dollar bargain of a man who squandered half as much on the gaudy Peacock Throne.

In 1648 Shah Jahan moved the capital back to Delhi, where fort and mosque had become the nucleus for a seventh city. His Red Palace, now the Fort, shelters the British Tommy.

As I went to the quiet gardens I passed soccer and hockey games with which young soldiers of the King were keeping fit.

Outside the high-walled Fort is Silver Street, the Chandni Chauk, once beloved by foreign shoppers but now serving residents with flashlight batteries, toothpaste, soft drinks, native sweets, tennis rackets, and betel leaf for chewing.

Natives have their favorite shops for chewing *pan*, the Oriental counterpart for chewing gum. A water-cooled leaf from the betel vine is sprinkled with lime powder or spread with lime paste, onto which an astringent coating of catechu is spread. Chopped betel nut from the areca palm is added and possibly some cardamom before the green leaf is folded to mouth size and fastened with a spicy clove nail.

Pan lovers prepare their cud with all the care Westerners devote to tea or cocktails and carry the makings in richly engraved brass vessels. I found the taste of betel refreshing,



Calendar, Map, Illustrated Alphabet, Pantheon of Hindu Gods—All Are Offered by This Sidewalk Salesman

The shop is closed temporarily as a protest against a sales tax. Hindustani, printed in different alphabets on the map and alphabet chart, is the product of Delhi bazaars.

but did not like its red stain on lips and teeth.

Up and down the Chandni Chauk roam sacred bulls (page 468). Parenthood, not toil, is their lot. Sidewalk salesmen spread their wares and one sees how the secularization of Indian life is reflected in its popular art. It used to be many-armed Brahmas, monkey-faced Hanumans, the elephant-headed gods of good luck, or gay Krishna, playing the flute amid his adoring milkmaids.

Now the chromos have a political or pretty-girl aspect. Roosevelt and Churchill are seen at times, but more common are King George or Gandhi. Alphabet charts and ever-changing war maps hold places on walls once decorated with gods.

Today, despite the imminence of war in Assam or along the North West Frontier, there

is little about Chandni Chauk to suggest tragedy. Yet in this crowded concourse Nadir Shah, two centuries ago, casually started and stopped a massacre.

When snipers littered the streets with 900 of his Persians, and a hurled stone menaced his royal head, the Persian invader ordered the slaughter. After 30,000 inhabitants had been killed, Delhi's emperor begged that the killing and plundering cease.

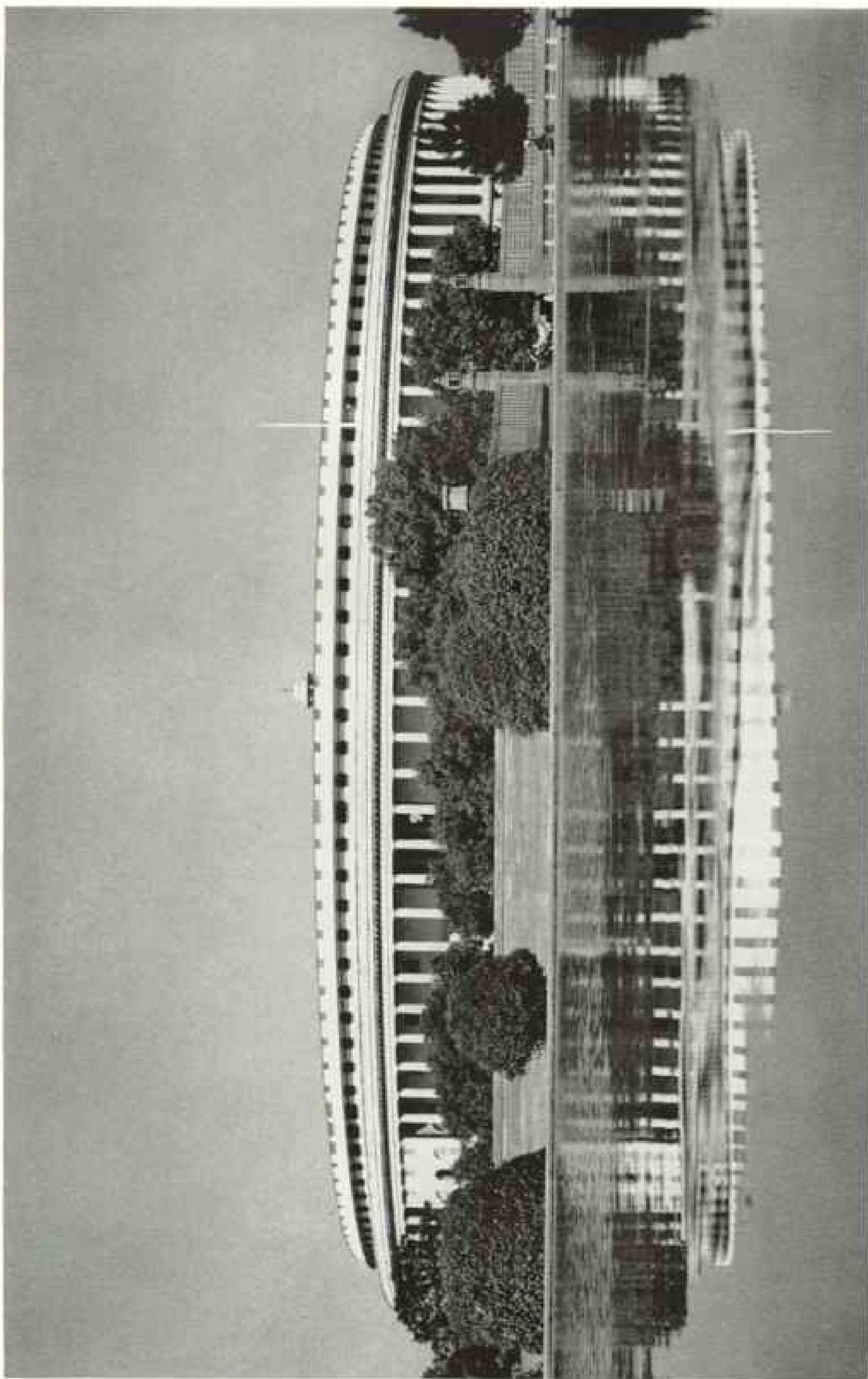
#### Where All Believers Are Equals

The grain and cotton bazaar is parking place for workaday bullocks and camel carts and al-fresco camping place for rustics visiting the great city. While small boys feed cattle, with horns like giant handle bars, camels ruminant beside high-gabled country wagons.



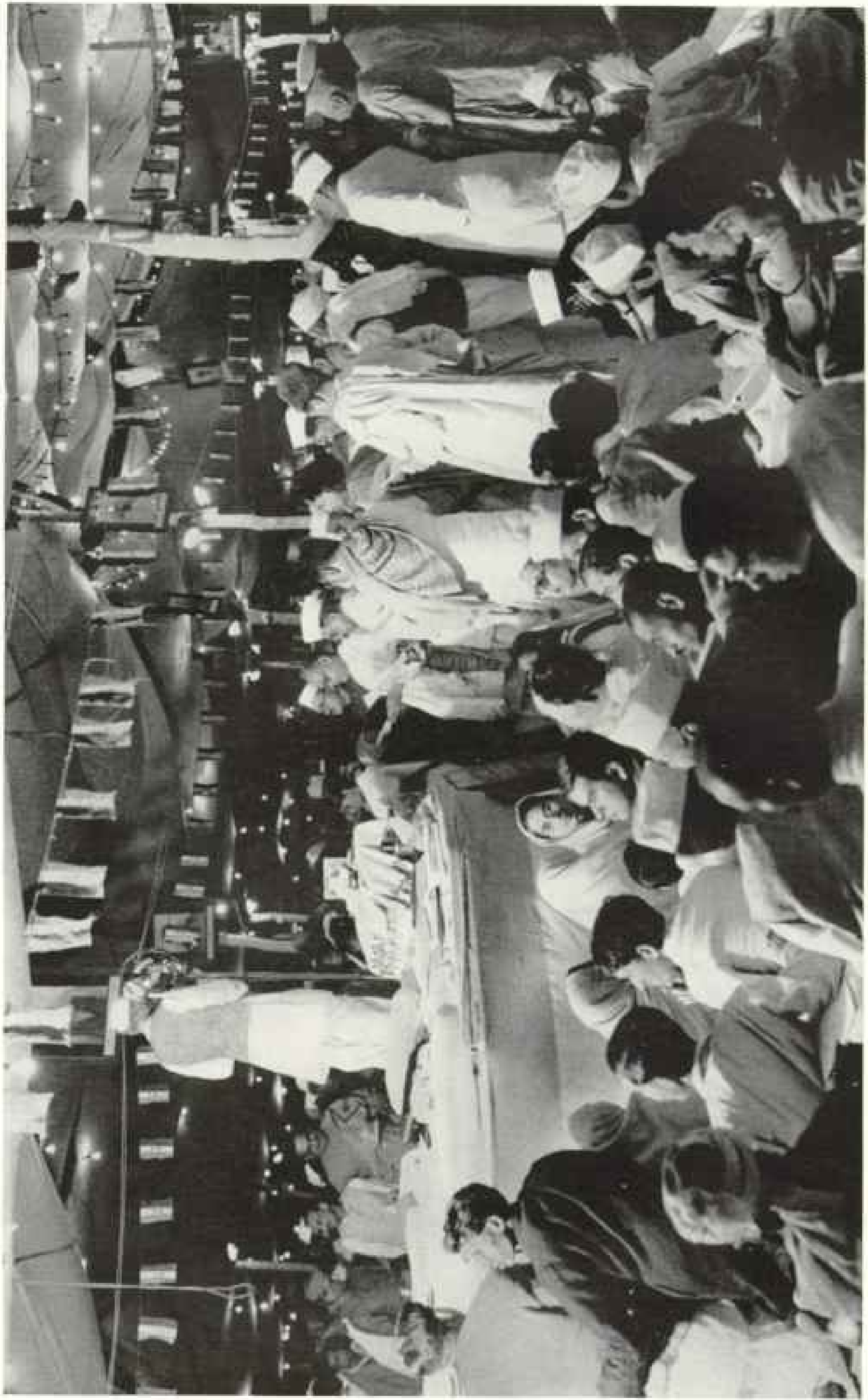
### New Bricks Are Made of Delhi's Historic Dust on Which Eight Cities Have Risen

Along a road to the Kuth Minar (page 475) there are many brick kilns, reworking the oft-turned material. As the bank is carved away and its earth molded, the brick piles advance until they are carried away to the ovens. Not far from this spot lay Sirl, the second Delhi, which was razed by Timur in 1508.



#### Encircled by Massive Columns Is New Delhi's Parliamentary Rotunda

Within the circular Legislative Buildings are three halls—one for the Chamber of Princes, another for the Council of State of 50 members, and a third for the Legislative Assembly of 141 members. In the center is a splendid library. In gardens messengers sleep on the grass or play games of chance during the heat of day. This unusual view is reflected in a basin in Prince Edward Place, scene of recent riots (pages 470, 493).



White World

**With President Nehru at the Microphone, the Indian National Congress Discussed Self-government in 1937**

A graduate of Harrow and Cambridge, Pandit Jawaharlal Nehru is widely known for his political activities and his books. The Congress was founded by an Englishman in 1885 (page 465). In 1907, "a system of government similar to that enjoyed by the self-governing members of the British Empire, and a participation in the rights of the Empire" were its objects. In 1927, independence was adopted as its goal. Today this uncompromising aim threatens the United Nations. "Gandhi caps," which look like American overseas caps, are numerous among this group in an electric-lighted tent.



**"His Master's Voice," a Historic Trade-mark, Is the "Sky Writing" on an Indian Kite**

In Delhi workshops such scenes are hand-painted on the kites. Above the group of curious Indians are the reels on which kite strings are rolled.

Soon after my return to Delhi, Ramazan, the month of fasting, ended and the people celebrated the Id holiday. From a balcony of the Great Mosque I looked down on the vast expanse of canvas awnings, broken in the center by an emerald pool of water for ceremonial ablutions (page 467).

People of all classes, dressed in their best, slowly formed in rows for genuflections and prayer. From above we saw rows of red fezzes, then deep-bowed backs, then bare feet of the prayer's third movement.

It was "First come, first served." In the great court, 325 feet square, men grouped themselves with no evident clue to their rank or worth, for in the mosques all Believers are equal. Heads covered and feet bared in the presence of Allah, they moved as one, free from caste and proud of the bright-eyed chil-

dren beside them. In a secluded corner were a few veiled women. They, too, prayed to Allah, but from behind the curtain of purdah (page 473).

Just before the well-ordered lines of worshippers broke up, I wanted to leave and watch the rainbow throng cascade down the red sandstone steps to the street. But even I, a Christian, could not turn my back on Allah until the prayers were over.

I felt like saying, as Nanak, founder of the Sikhs, once did, "Show me a direction where God is not."

**Ferris Wheels and Sacrificial Sheep**

Gaudy side shows and a Ferris wheel were lined up below the mosque. Stands of gew-gaws and perfumed soft drinks and fried cakes circled the steps. A flock of sheep stood ready



**Signs of Changing Times Span India's Annals, from Ancient Sanskrit to Passive Resistance, Motorcycles, and Glamour Girls**

The alphabet in upper right is similar to Sanskrit, language of India's classics. Below it is a religious chromo and one of Mohandas Gandhi, whose followers call him Mahatma, "the Great Souled" (page 471). The pretty-girl type of calendar "art" is Chinese, not Hindu.

for those who desired to begin their feast with a blood sacrifice (Plates II and IV).

One feature of the Id festival—which the more orthodox begin in the Idgah instead of in the Great Mosque—is a picnic in the Shallmar Gardens. A boisterous group adopted me and we tramped along together.

Delhi's Shallmar has fallen into disrepair. But during the Id festival sweetmeat sellers line the ruined pools, photographers set up unnatural backgrounds, and snake charmers hold their wide-eyed audiences for many hours (Plate III).

When I visited the Idgah, where prayers are held at the end of the Ramazan fast and on the anniversary of Abraham's interrupted human sacrifice, the walled enclosure was

empty, but flocks of crows were dropping bones on the pavement.

The slaughterhouse is close by and the prayer platforms are handy for cracking open the bones and getting at the marrow. Kites and vultures joined in this ingenious way of getting food from heaven.

One day my guide arranged for me to take pictures of his young daughter in a bridal chair borne by chairmen wearing turbans in his own pattern (Plate III).

Then we went to his home, a clean haven in the crowded native quarter. Even when the temperature becomes chilly, he sleeps in a room of only three walls.

Unlike his merry-eyed little daughter, whose face I could enjoy seeing, his wife remained





On Marble Slabs that Look Like Prayer Rugs, a Calcutta Lawyer and His Family Sit in the Pearl Mosque

Because he knew the NATIONAL GEOGRAPHIC MAGAZINE, Mr. M. Ashraf Ali let the author take this photograph, in which the younger women are unveiled. "What's wrong with their faces?" he asked. The tiny Pearl Mosque is a favorite with visitors to the Mogul gardens and pavilions in the Fort at Shahjahanabad, the seventh Delhi (page 485).

behind the veil, even within the walls of her own home, while I was there.

Delhi, like Benares, has its burning ghats, not on stone platforms washed by the holy Ganges but in a broad lot near the also sacred Jumna.

#### Irrigation As Vital As Victories

In a land where water made the difference between famine and feast, and irrigation was as important as military victories, life-giving streams were held sacred.

The Western Jumna Canal, first opened in 1356 and improved by Akbar, carries more water than the Thames, so it is no wonder that the canal-shrunken Jumna no longer runs riot across the Delhi plain. Mark Twain said its bed "did not seem to have been slept in."

Close to Delhi's burning ghat, the city's washermen toil along the river bank for a mile or more. From home and hotel the laundry

is brought on bullock-back by young drivers, who are dwarfed by bundles of raiment. Slapped, trodden upon, and twisted clean, the laundry is spread on the stones to dry.

Returning from the laundry ghats, I watched a funeral party sink a small shrouded corpse in the Jumna and saw other bodies reduced to ashes under a fire of dung. A near-by wood yard deals in fuel for cremation, but the poor bring dung cakes, pile them around the dead body, and fan them to flame with a scarf.

Near the burning ghat some dust-covered ascetics looked askance at me and my camera.

#### Alexander's Search for Philosophy

When Alexander the Great was fighting in India, the naked ascetics so aroused his interest that he sent his philosophers to talk with them. The ascetic who guided me among hundreds of his fellows during the Kumbh

Mela (fair) at Allahabad had been a traveling salesman in Europe, spoke several languages well, and got little sleep beside his smoldering log fire on the pilgrim sands; yet he was content.

I never did pass the well-mounted Horse Guards and see the interior of the Viceroy's House with its Durbar Hall circled by yellow-marble pillars; its state dining room hung with the portraits of former governors general and viceroys, and its 54 bedrooms.

However, I spent revealing hours in the Secretariat Buildings, outwardly ostentatious but with their lesser offices provided with cheap wooden desks, bad lighting, and dog-eared case histories tied in white tape.

In this beehive of administration there is an almost insectlike cooperation between fellow workers—some British, some Indian—in the common task of building a future for a population three times that of the United States; roughly, two-thirds Hindu, one-third Moslem, Untouchables, Sikhs, Christians, Jains, and many others.

The 1941 census shows India's population to be almost 389,000,000—an increase of 15 percent in the last decade. War-boomed Delhi Province has increased 44 percent, to nearly a million inhabitants.

#### Problem of a Moslem State

Recent political developments have emphasized the possibility of a Moslem state, Pakistan, which would extend a bulwark of martial Mohammedans the length of the North West Frontier and have 34 millions more in Bengal.

India has more Moslems than any other land, and Moslems may demand their own State as the price of defense, although only 35 percent of India's armed fighters are Moslems.

India's army is 52 percent Hindu, with caste a factor; but in certain regiments Hindus, Moslems, Buddhists, and Christians eat from the same kitchen.

In the wheel-like Parliament Building, the Chamber of Princes, the Council of State, and the Legislative Assembly meet in three semi-circular halls. At its hub, oil paintings overlook a sort of Library of Congress rotunda.

Just outside this splendidly kept reading room, public servants, stripped to the waist, were sunning themselves. India wouldn't be India if naked poverty could not rest in the shade of marble halls (pages 470, 488).

At the other end of Kingsway, New Delhi's version of Soldier Field, the Irwin Amphitheatre, perpetuates the name of the first Viceroy to establish residence in today's New Delhi. In moving from the Viceroy's House

on Raisina Hill to the British Embassy on Washington's Massachusetts Avenue, Lord Irwin, now Lord Halifax, did not change architects. Sir Edwin Lutyens, R.A., designed both buildings.

#### The Clock Face of Delhi's Life

Of the twelve roads radiating from the new monument to King-Emperor George V, the five-o'clock direction leads toward Humayun's tomb, seven to the tomb of Safdar Jang, nine to the Viceroy's House, and eleven to Connaught Place, another clock face of New Delhi's commercial life.

Here the residents go to the cinema, drink tea, dance to American swing performed by Anglo-Indian artists, buy cosmetics or serious books, jewelry, or newspapers from home, pose for portraits, or are fitted for suits.

Cream-colored buildings arranged in crescents are covered with such signboards as only the Chinese could make attractive.

This circular commercial area is strictly zoned and the palaces of maharajas and the spacious homes of British officials are set in lovely gardens along shady streets.

Letters for the American Commissioner go to Cochin House, Jantar Mantar Road. His headquarters belong to the progressive State of Cochin, and the stately avenue takes its name, which may mean "magic instruments," from an old observatory devised by Jai Singh II, the founder of Jaipur.

Jai Singh erected similar observatories at Jaipur, Benares, Ujjain, and Muttra and, by combining the results of their observations, compiled excellent astronomical tables.

By climbing the steep stairway to the top of the equatorial dial, the visitor can measure the swing of the spheres by his own shadow on the grass, 56 feet below.

Above it waves the Jaipur banner, for the observatory grounds are held by the polo-champion Maharaja of that Rajput State.

Modern airmen depend on India's 34 pilot-balloon stations for knowledge of the upper air above Hindustan.

An Indian aviator visited the old observatory while I was there, and neither of us 20th-century citizens could understand the archaic instruments through which Jai Singh learned so much, centuries ago.

Having weathered its first wide-open summer, New Delhi now faces the winter campaign. American airmen fly overhead and American machinery is transforming farm lads into mechanics.

In 1941 several thousand nomadic Kazaks arrived in Kashmir after a five-year migration from the land of Genghis Khan.



#### Same Guide, Same Stone—Two Religions

Until the Moslems came to Old Delhi, A. D. 1193, the idol-carved face of this block served Hindu worshippers. Mohammedan image breakers first chipped off the head of the seated figure. When the Hindu temple was transformed into a mosque, an Islamic inscription was added to the same stone.

Their name, transformed to Cossack, has won fame in the Caucasus and along the Don, but never before had any considerable group crossed the supposedly impassable Himalayas, along whose deadly edge air transport has developed amid protecting monsoon mists.

Along the North West Frontier, gun stealers have settled down to defense construction. With Axis agents banished from the Afghan frontier, even Waziristan is comparatively quiet.

While refugees from Rangoon and runaway jeeps, fleeing the Japs, were slogging through the impenetrable jungles of Assam and hilly Manipur, Indian forces moved down from

Rawalpindi and Naushahra. For the first time, Hindustan faces attack from the east, where there remain only a few gaps in the Japanese-controlled land route from Chosen (Korea) to Calcutta.

Under Akbar, first of the Moguls to envision a united India, the Mogul Empire was "the best organized and most prosperous in the world." Hindustan is still a much-coveted prize; India now fights for life itself.

In that struggle New Delhi is general headquarters for a battle front reaching from the Aleutian Islands to Australia, and from Calcutta to Detroit—either way around the madly spinning globe.



# Rehearsal at Dieppe

By W. ROBERT MOORE

**I**N THE early morning hours of August 19, thinning darkness and a light English Channel mist blurred the white chalk cliffs of the French coast. Dieppe still dozed, while German patrols kept routine guard.

Suddenly its silence was shattered. Hell broke loose. The Commandos had struck.

Invasion barges emerged from the gray dawn to debouch men and tanks on the shingle beaches for several miles on either side of the port (page 498 and 500). British naval units cruising offshore sent salvos of shells crashing into the town. Bombers joined in dumping explosive destruction over the area. Hundreds of fighters swarmed overhead to provide a protective umbrella.

For nine hours United Nations forces—British, Canadian, American “Rangers,” and Fighting French—battled furiously, wrecked military installations, grabbed luckless Germans, and then withdrew. Dieppe had had a dramatic full-dress rehearsal of invasion.

In this action American ground troops first went into action on continental Europe, only 65 miles from Cantigny, where doughboys, in May, 1918, made their first divisional attack in World War I. The large force of Canadians gained a foretaste of potential full-scale invasion. Some Fighting French also had a chance to engage the enemy occupying their homeland. It was “reconnaissance in force” here at ancient Dieppe.

## Why Strike Dieppe?

Much of the French coastline facing England, like that of England itself, is a series of high chalk cliffs which rise almost vertically from the sea. They are a formidable wall against attack.

At several places rivers and valleys break through this barrier to the Channel. The River Arques, flowing northwestward to the coast, has cut one of these gaps. At its mouth the valley is only about a mile wide, but in this constricted area is Dieppe, protected by two ranges of chalk cliffs.

Easily fortified, the Germans had made it a bastion against frontal attack and strewn its hills with heavy anti-aircraft batteries. It was a tough nut to crack. The Commandos did not seek—or find—an easy target for their rehearsal assault.

With a good harbor, too, having an outer and inner port and several docking basins, Dieppe also was doing signal service as a haven for German naval craft. As such, it was an excellent objective for destruction.

War is not new to Dieppe. Norse adventurers colonized it back in the 10th century and used it as a base for their forays. In allusion to the depth of its harbor they called it Diep, meaning “deep”; hence its present name.

Here, as at St. Malo in Brittany, corsairs once anchored their boats when home from pillaging expeditions. On one of their sallies, in 1539, they crossed the Channel to capture Southampton, whence some of the Commandos may have embarked for this recent raid.

In the early part of the sixteenth century Francis I utilized Dieppe as a base for the French fleet. At that time the town expanded into a flourishing center of some 60,000 people. Some of the handicrafts, such as ivory carving and lace making, established then have continued until now.

During the religious upheaval in France, following the revocation of the Edict of Nantes, its Protestant population suffered severely. Even greater disaster descended on the town when, in 1694, the English fleet, returning from an unsuccessful attack against Brest, turned its guns on the port and almost completely demolished the city.

Though Dieppe never regained its onetime importance, it has achieved moderate prosperity as a fishing port, commercial center, and popular holiday resort.

Particularly during the last war its harbor was expanded. Even so, its berthing and unloading facilities might be too limited to handle the tremendous bulk of heavy military equipment required in full-scale invasion.

Before the Germans made their spectacular break-through in the summer of 1940 and crushed France's armies, Dieppe had a population of about 25,000. The Dieppoise were engaged in porcelain making, carving, and in the manufacture of tobacco and *briquettes*—those little oblong cakes of pressed coal, mixed with tar, used so extensively in France for firing boilers.

## The Smell of Fish and Tar

And fishing! Throughout the Le Pollet section of the port there were small sail and motorboats, and the smell of fish and tar. Nets, lobster pots, coils of rope, oilskins, and all the other odds and ends of equipment needed by the hardy, salt-seasoned fishermen cluttered shops and water front.

The white chalk cliffs above the right side of the channel exit from the port are tunneled with numerous caves. For centuries people

have dwelled in these grottoes that have been carved into the walls. Across the city, on the western flank of cliffs, are still others of these old cave dwellings.

On the brow of this latter hill stands the hoary castle dating from 1435. Through the years it has been considerably restored. Before Dieppe has seen the last of the present conflict, the castle may be due for still more extensive reconstruction. It commands a view over the whole town. Extending from its very base is the Plage, or beach area, frequented in prewar days by summer vacationists.

In peacetime the British came here in large numbers. Crossing from Newhaven, a 75-mile trip by Channel steamer, they thronged its beaches, played their money in its Casino, and strolled on the open Plage.

Many of the hotels that lined the Boulevard de Verdun and looked out across the Boulevard Maritime to the open sea are no more. British naval units, supporting the Commando landing, hurled shells into them and reduced them to rubble. Gay Dieppe isn't so gay now.

At the time when Dieppe got its punishing attack, other towns in northern France were being blasted by air. Two days prior to the Commando landing, American Flying Fortress bombers struck at historic Rouen on the Seine, blasting its communications (pp. 497, 499).

Others, supporting the giant aerial battle that developed unexpectedly during the raid, hammered at a German air base near Abbeville, on the Somme. In a massive daylight sweep next day they laid deadly eggs in the railway yards at Amiens, on the Paris-Abbeville-Boulogne railway line.

These towns tie into the communications network that helps to protect the French coast. The historic museum town of Rouen, inland up the Seine from Le Havre, was the port to Paris, and, like many ports of France, was studded with industries which partially processed many imported raw materials before shipping them farther inland by river barge.

Factories are strung for several miles along the water front and on islands in the river. Now the machines have been converted to war use by the Axis.

Two railways leading from the city fork northward to the coast—one to Dieppe, the other to St. Valéry-en-Caux.

In the grim reality of war, bomber crews can't concern themselves with the charming historical spots of old Rouen, nor with the patina of age on the old gabled houses and the graceful spired churches.

On a peacetime visit I calculated that the single hour hand on the Great Clock, arching

over one of the old streets, had measured some 3,775,000 hours since its elaborate Renaissance dial was first installed. Now flyers are counting split seconds and adjusting their bomb sights for military targets.

Neither are the air armadas in their sweeps over the countryside interested in the peaceful pastures or mellow Old World villages of half-timbered cottages unless they are quartering Axis troops.

### Le Havre in Peace and War

Ports large and small punctuate the whole coastline of northern France from the Seine to the border of Belgium. The largest is Le Havre. Calais, Boulogne, Dieppe, and Dunkirk are considerably smaller.

Some of the others are so small that they are hardly more than a short band of shingle, or pebble, beach where the hills slope down to the sea. They are mainly havens for small fleets of colorful fishing craft.

To former trans-Atlantic travelers Le Havre conjures memories of customs, much baggage, boat trains, and tired feet. The lure of Paris lay just ahead, or the last heavy night in France just behind.

At such times the giant Meccano Land about the big artificial docking basins, the clattering cranes, shunting trains, and steamers loading and unloading strange cargoes had little appeal. Yet it was France's second largest port.

The Germans bombed Le Havre before they occupied it in June, 1940. The British have since flown over many times to blast at new enemy installations.

Its docks lie behind bold cliff headlands, facing upon the wide mouth of the Seine. The depth of the water in some of the large docking basins was controlled by tidal gates. Much of the elaborate dock gear no doubt has been destroyed. More of it may soon be blasted into twisted wreckage. Le Havre may become another and greater Dieppe at the hands of the United Nations.

Every port along this northern coast, in fact all occupied France, is a military area. Railroads, rivers, roads, and factories are all strategic assets of the enemy. They must be broken or controlled if invasion comes in this region.

To Germans, perched on the cliffs with their guns trained on the beaches, the coming months will hold little comfort, even though they have the advantage of position.

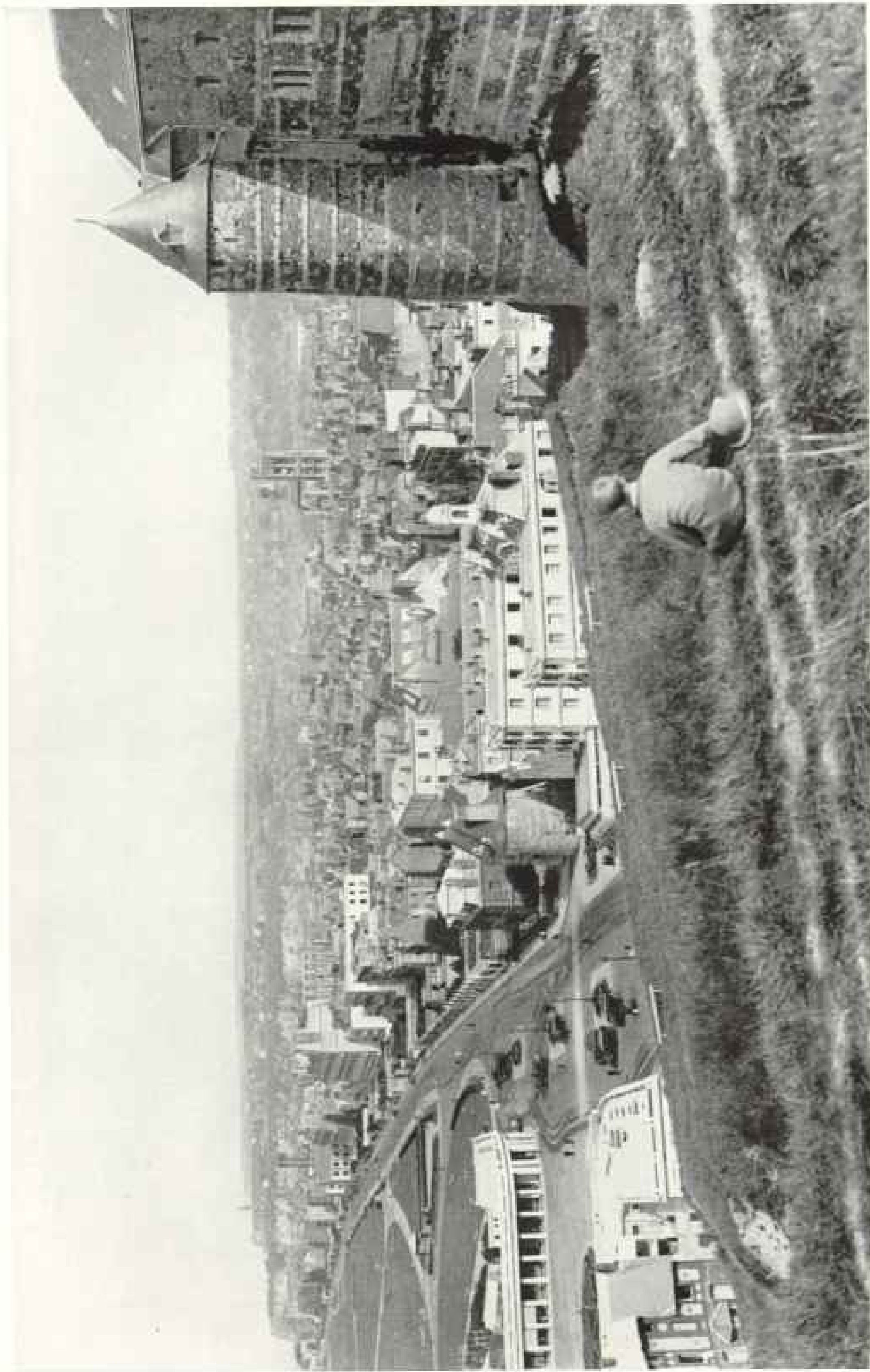
Any of the ports here—ports such as Dieppe—may feel the crushing impact of diversion operations or perhaps the weight of full invasion. The United Nations forces proved their offensive spirit in the rehearsal at Dieppe.



Staff Photographer W. Robert Moore

### Did American Bombers Stop Rouen's Clock, Four-century-old Town Timekeeper?

Other famous Renaissance landmarks also were endangered in the August 17 raid, first all-United States bombing foray against the Nazis. The spire of the celebrated Gothic Cathedral rises at the end of the narrow street. The city's chief avenue is named for Joan of Arc, who was burned at the stake in Rouen in 1431.



© United States Army

**Dieppe, on the French Normandy Coast, Where United Nations Commandos Staged Their Daring "Rehearsal" Raid on August 19**

Canadian troops, aided by men of the United States Ranger Battalion, British, and Free French, landed from invasion barges on six beaches. One contingent stormed the historic town from the Esplanade (left). Shellfire damaged the long row of tourist hotels on Boulevard de Verdun, facing the Esplanade. Bombs from planes wrecked factories and warehouses (background).



© Composite Airplane Enterprise

**Rouen's Industrial Area was Daylight Target for the United States Bombing Raid against the Nazis**

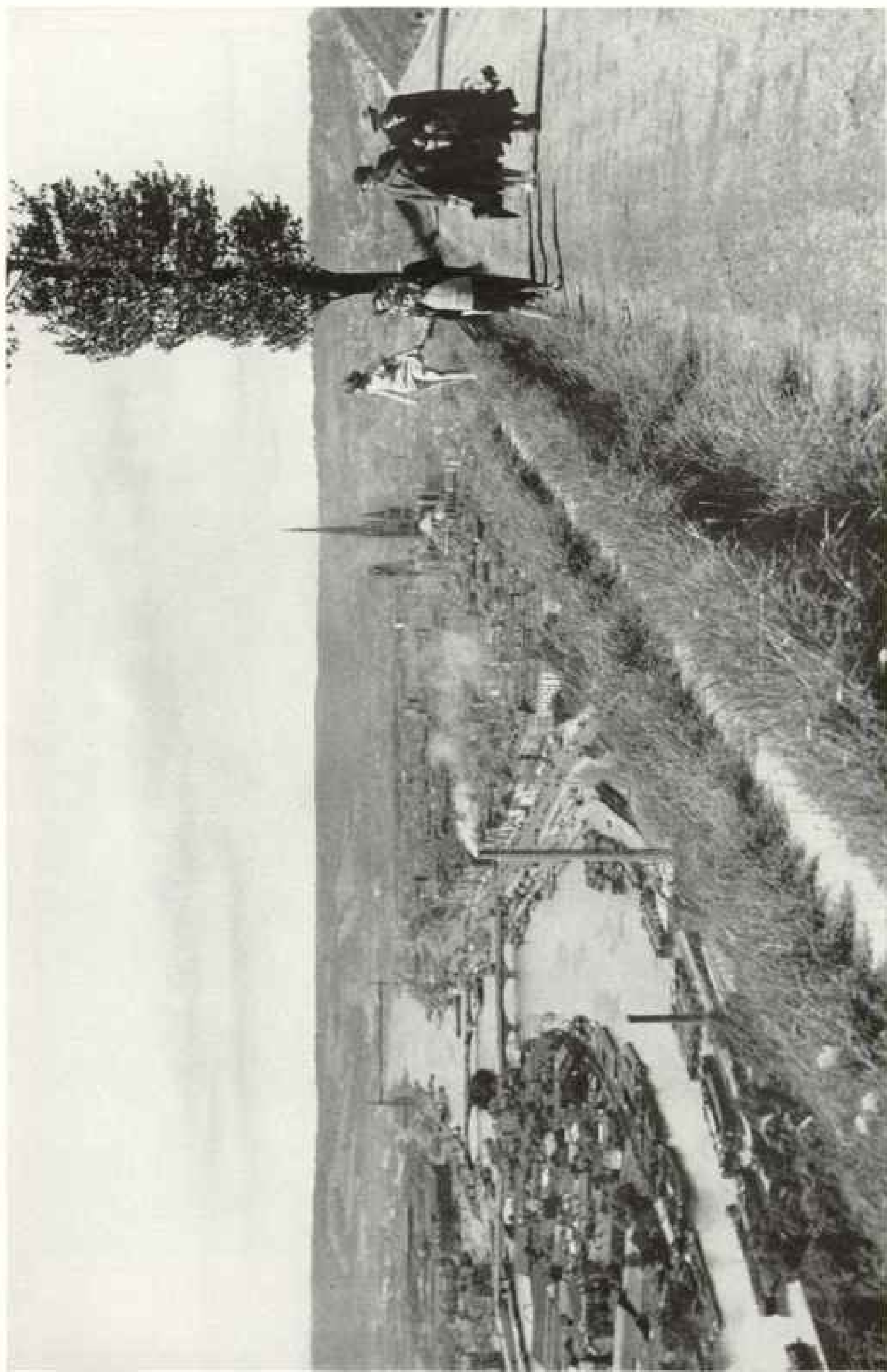
Led by Brig. Gen. Ira C. Eaker, chief of the United States Bomber Command in Britain, pilots of Flying Fortresses dropped tons of explosives on railroad yards and factories of this old Normandy city on August 17. (page 497). Brilliant sunlight outlined the objectives. "They carried out their mission nonchalantly and coolly," General Eaker reported. All returned safely.





From Photograph by W. Robert Meigs

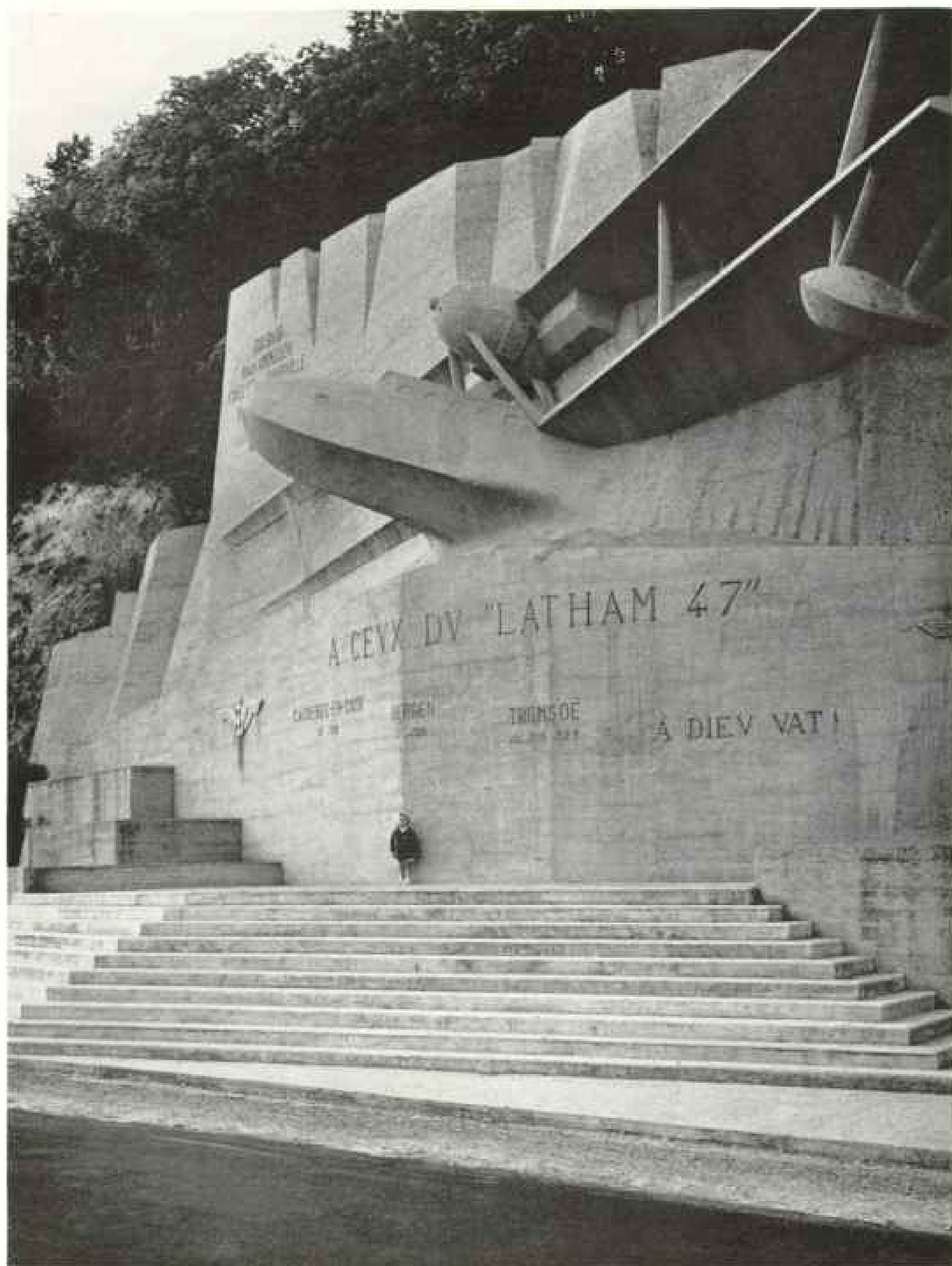
**United States Rangers, First Yanks to Set Foot on French Soil in World War II, Landed on a "Shingle" Beach Like This One at Etretat**  
When they swarmed ashore at Dieppe, they were 65 miles from Cantigny, scene of the first United States offensive in World War I. There the First Division went over the top on May 28, 1918. Sheer, white cliffs wall in Normandy's coast, but river valleys cut through them, forming pebble beaches on which the Commandos landed.



Staff Photographer W. Robert Moore

### Heavily Laden Barges Ply the Factory-lined Seine in Rouen, Bombed by United States Flying Fortresses

Normandy's ancient capital, 70 miles from Paris, is a big cotton manufacturing center. Ocean freighters come up the river nearly 80 miles to its wharves. "A great pall of smoke and sand was left over the railroad tracks," said General Eaker, reporting on the August 17 raid.



Melville Bell Grosvenor

#### France's Memorial to a Norwegian's Tragic Attempt to Rescue an Italian

The structure stands in Caudebec-en-Caux, Normandy. Here Roald Amundsen set out with a companion in June, 1925, to fly to the aid of Umberto Nobile. The dirigible *Italia*, in which Nobile flew over the North Pole, had been wrecked in the Arctic a month before. Refueling at Tromsø, Norway, Amundsen flew northward and was lost. Later Nobile was rescued.

# Air Cruising Through New Brazil

A National Geographic Reporter Spots Vast Resources Which the Republic's War Declaration Adds to Strength of United Nations

BY HENRY ALBERT PHILLIPS

THE geographical immensity of my proposed circuit of Brazil did not strike home to me until I called on the Ford Rubber Plantation people in Rio in quest of information.

"You would like to visit the Ford Plantation, eh?" they said, in an ominous way. "Have you any idea where it is and how far?"

I confessed my knowledge was hazy.

"For the first 2,500 miles you follow the coastline north, around the hump of Brazil, to Belém, capital of the State of Pará. At Belém you turn left and go up the Amazon for another 500 or 600 miles—to Santarem. There you turn off into the Tapajóz River and proceed for nearly another hundred miles. Traffic on the Tapajóz is by native trading boats, which are few and far between, or by a steam launch once a month—maybe."

With a healthy respect for my undertaking, I set out by air from Rio de Janeiro at 6 o'clock one morning on the first leg of my 10,000-mile circuit.\*

Exactly 6 hours and 15 minutes after leaving the capital, we taxied down into an arm of the sea at Salvador, also called Bahia. Both titles are derived from an early designation: Bahia de São Salvador de Todos os Santos, or Bay of the Holy Saviour of All Saints.

## Bahia "Capital" of Many Things Brazilian

Salvador must be considered as much for what it was as for what it is today. Its rich history came back to me gradually as I strolled through the Lower Town and gazed toward the Upper Town. That skyline nearly 300 feet above me had changed little since the days of the 16th-century building boom. I could count at least threescore of its hundred or so churches.

For two and a half centuries Bahia, first capital of Brazil, remained the capital. It has been the "capital" of many things Brazilian. I was reminded that it once was the slave capital of the continent when I saw all about me black burden-bearers "toting" everything on their heads, from newspapers to pianos.

A distinguished marker of the time when it was the ecclesiastical capital is the old Cathedral, which still stands in majesty around the corner from my up-to-the-minute hotel—

with its too-active radio, its bootblack stand, and trolley cars almost cutting off my toes at the door.

Unfortunately, the district of onetime religious processions has sunk into disrepair. A street altar with a cross of iron is half lost amidst profane surroundings.

On evening strolls my appreciation was centered on Salvador as the tobacco capital as I smoked one of the famous Bahian cigars.

The city is most active today perhaps as the cacao capital. The modernistic Cacao Institute building illustrates the story of cacao like a world's fair exhibit, with thousands of bags of cacao going through the adjoining works on their way around the world.

Walking up Salvador's steep cliff was difficult. Along the way, however, were sights and sounds and smells I shall long remember: perfumed gardens, historical bastion walls, sacred shrines, mango trees, and mysterious walls over which floated snatches of song in the words and rhythm of Africa.

Salvador citizens seemed to work all day in the Lower Town and play nearly all night in the Upper. Mornings I would go down to the warehouses, wharves, alleyways, and markets and enjoy all the atmospheric clutter that goes with a tropical seaport.

Sometimes I used the glorified electric elevator plying between the Upper and Lower Towns (page 504).

Then again I would board the rickety tram to go up and down. It had the eccentric movement of a balky mule, plus shuddering brakes that almost shook my head off my body.

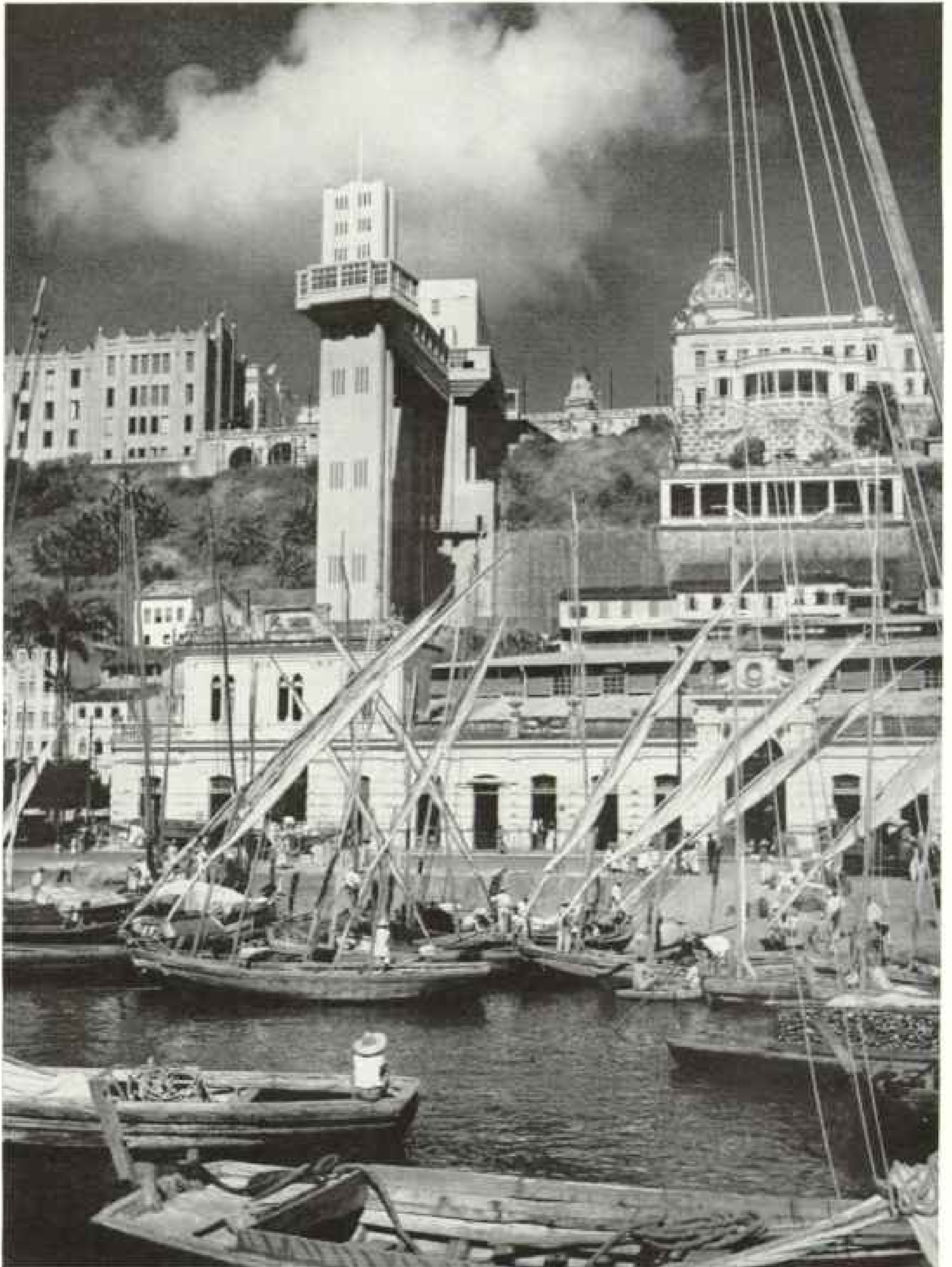
## Attending the "Barefoot Mass"

An outstanding experience was my visit to the "barefoot Mass" at the celebrated church in the Bonfim suburb overlooking the bend in the bay.

I went by a bus which took on passengers at every stop sign until we were packed in like anchovies. There were numerous old mummies in stiffly starched white frills, and younger women arrayed in fiesta finery.

At the end of the line the motley crowd milled up a broad, palm-lined avenue walled with rich balustrades and overhung with gardens. We could look down into the sea and into the gardened estates of potentates of church and commerce of bygone days.

\* See Map Supplement, South America, with this issue of the NATIONAL GEOGRAPHIC MAGAZINE.



Reynolds Government Trade Bureau

### Salvador, the City of Churches, Rides on Elevators

Citizens work in the Lower Town and live on the upper level. Lacerda Elevator, the tall structure in the center, is one of four lifts linking the harbor with the cliff top. The 100-foot ride costs a cent. Sailing craft through the Bay of All Saints. The city is sometimes called Bahia, or Baia, after its State (page 505).

The baroque jewel of a church was crowded with suppliants from every part of Brazil. Seven Masses were in progress. Besides scores of expectant mothers and young parents who had brought their babies for baptism, many cripples came to visit the Lourdeslike chapel of Our Lady of Healing. There hundreds of crutches, and thank tokens for miraculous cures were stacked from floor to ceiling.

The New Brazil in Recife (Pernambuco), my next airport of call, began in my ultra-modern Grande Hotel. From my room a balcony looked over a city of 550,000, pierced on all sides by arms of the sea. Recife is called "the Venice of Brazil." However, when I walked over the many substantial bridges I fancied myself in the Netherlands. This impression is enhanced by remains of the Dutch occupation, 1630-1654 (page 509).

Before my window lay a sheltered port of many harbors, protected by a reef. The intricate shoreline was almost a solid façade of stately warehouses and maritime office buildings. Lines of high-powered winches and cranes were constantly loading huge steamers with sugar, cotton, and coffee from plantations near by.

In the depths of the old city the laying out of avenues obliterated many landmarks. Among numerous modern buildings are up-to-date movie houses.

Leaving Main Street, I ran into the older Palace of Justice of neoclassic design. The Governor's Palace, the Public Library, the Chamber of Commerce, and monumental banks—all showed Recife to be running abreast of modern times.



Getulio D. Vargas, Founder of the New Brazil.

The President, an enthusiastic air traveler, has flown to all corners of his huge domain to observe conditions personally. Here he is seen (behind the child) at Ford's Belterra plantation after an aerial trip across the wilderness. The Vargas Government broke off diplomatic relations with the Axis powers on January 28, 1942, and declared war on Germany and Italy, August 22, 1942.

The well-to-do suburb of Olinda, reached by a drive along the broad residential avenue fronting the sea, reminded me of an Atlantic coast resort in my own country. Each cottage had perfect bathing facilities in the calm waters inside the reef.

#### A Primitive Fishing Craft

While I drank the contents of two fresh coconuts, I saw the shore-coming of a *jangada*, one of the most primitive craft that sail these seas (page 508). It was a crude raft of several floating logs. Power was provided by a triangular sail. The pantry was a hand-woven round straw basket containing a few handfuls



Decor. Kaban from *Harbo Pictures*

### Rubber Built This Opera Palace and Memorial in the Jungle City of Manaus

This fabulous Amazon Valley town boomed overnight when rubber sold at \$2 a pound. That industry collapsed like a rubber balloon when East Indies plantations captured the world market three decades ago. Since that time Manaus has kept its Grand Opera House ready for the day when black gold from the forests would bring back the golden voices of Europe. The monument marks the opening of Amazon River ports to foreign trade (page 522).

of manioc flour and a jug of fresh water, on which the four fishermen had subsisted for three days while they made their catch!

The jangada looked like a homemade ice-boat, and it rode on top of the surf like a sea spider. A heavy stone tied with seaweed served as anchor.

Through the years the grasping fingers of the sea that penetrated deep into the land for miles around had created a pernicious marsh. Thousands of the very poor had built their makeshift houses on the banks of this worthless swampland. For centuries nothing had been done to improve it.

Then President Vargas (page 505) appointed his former minister of labor to the post of governor of the State of Pernambuco, with

orders to clean up. I was guided through these swamp inlets by one of the Governor's lieutenants. Everywhere swampland was being drained or filled in. Some member of nearly every family was working in the little flower gardens they had planted by themselves.

Whole communities had been removed into dry and fertile points outside the city. Already several thousand new 4-room homes of brick, with tile roofs, hardwood floors, and modern sanitary features were occupied. Each center had its school and its clinic, with a call on visiting nurses and doctors. This kind of welfare work I found being carried on in nearly every town of Brazil.

Modernism had not ironed out all the nat-



Boyer Kalan from Maplo Pictures

### Solar Helmet and Parasol Ward off Belém's Equatorial Sun

Pottery for transshipment crowds the docks of this busy river port at the 160-mile-wide mouth of the Amazon. Masts of river boats rise in background. Rubber once promised to make Belém rich, but the dream faded. Today, aviation may bring a comeback, for the city is an airline junction (page 512). From here planes go north to Cuba, Miami, and New York; south to Rio, Buenos Aires, and Montevideo; west to Peru and Colombia; northeast to Europe.

ural wrinkles in Recife's physiognomy, I was happy to learn. An occasional oxcart with wooden wheels from a neighboring sugar plantation tangled up the traffic on busy Main Street.

One evening I ran squarely into the Middle Ages among the few narrow old streets that were left. I found a near-by square ablaze with light and ablaze with noise.

It turned out to be the feast day of Our Lady of Carmel, and the great baroque temple built in her honor was the scene of her annual monster fiesta.

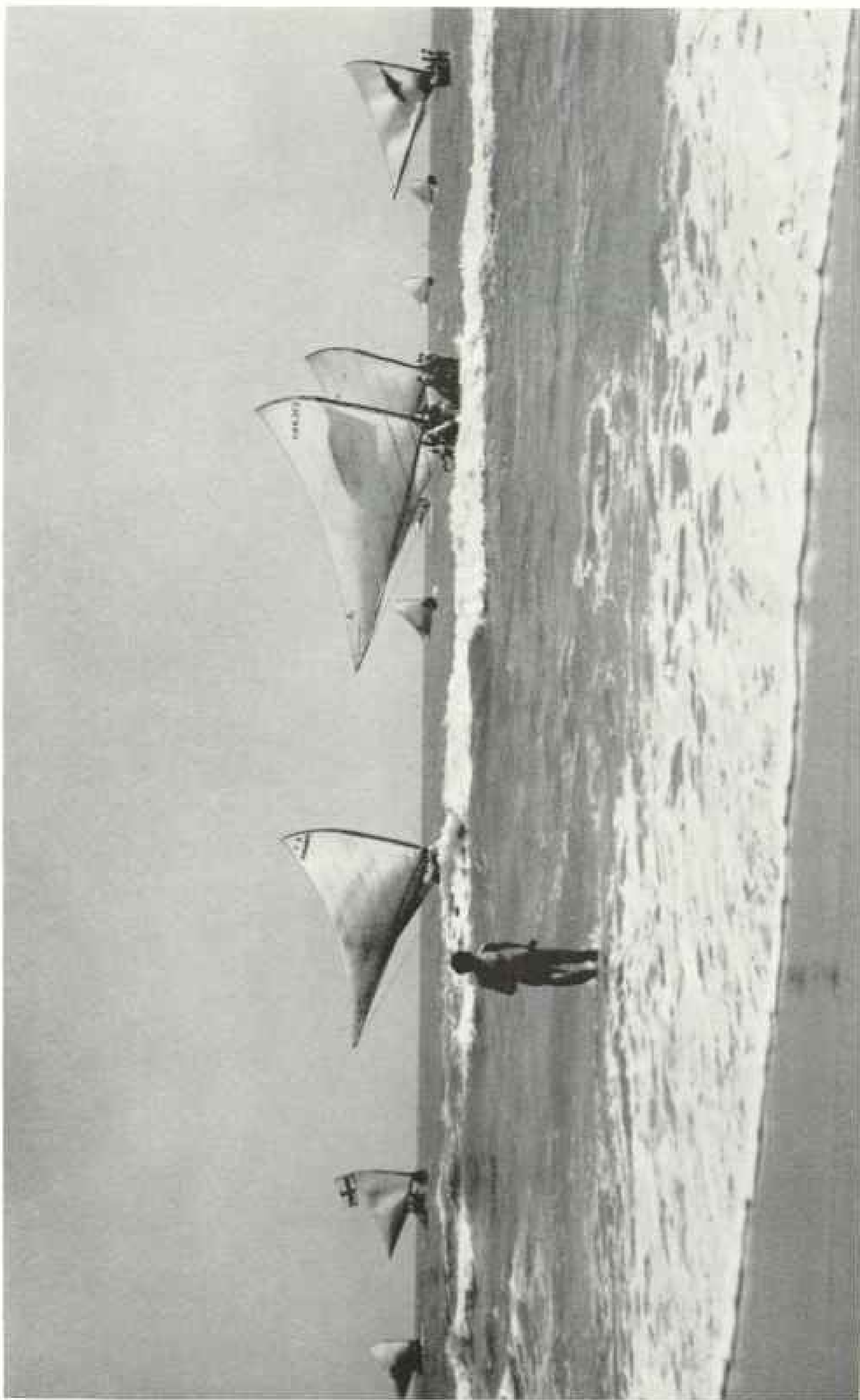
I elbowed my way into the crowded church. It was like reversing the sands of time at least three centuries. The vast congregation was singing to the strains of medieval music from

a great pipe organ, an expression of exaltation on their faces. The altar space gleamed with the light of a thousand candles.

The service over, the congregation burst out into the square in a buoyant spirit of carnival. Carrousels, ranging from native hand-propelled contrivances to gaudy electric Luna Park devices, began to revolve with a whine and roar. Barkers of a hundred "take a chance" gadgets, from spinning roulette wheels to a small pond where a bottle of "monkey rum" was the prize for dropping a ring on the neck of a live duck, cajoled the throng at the top of their lungs.

There were prizes for everything! Dueling singers improvised barbed epithets in song aimed at one another, collecting from the

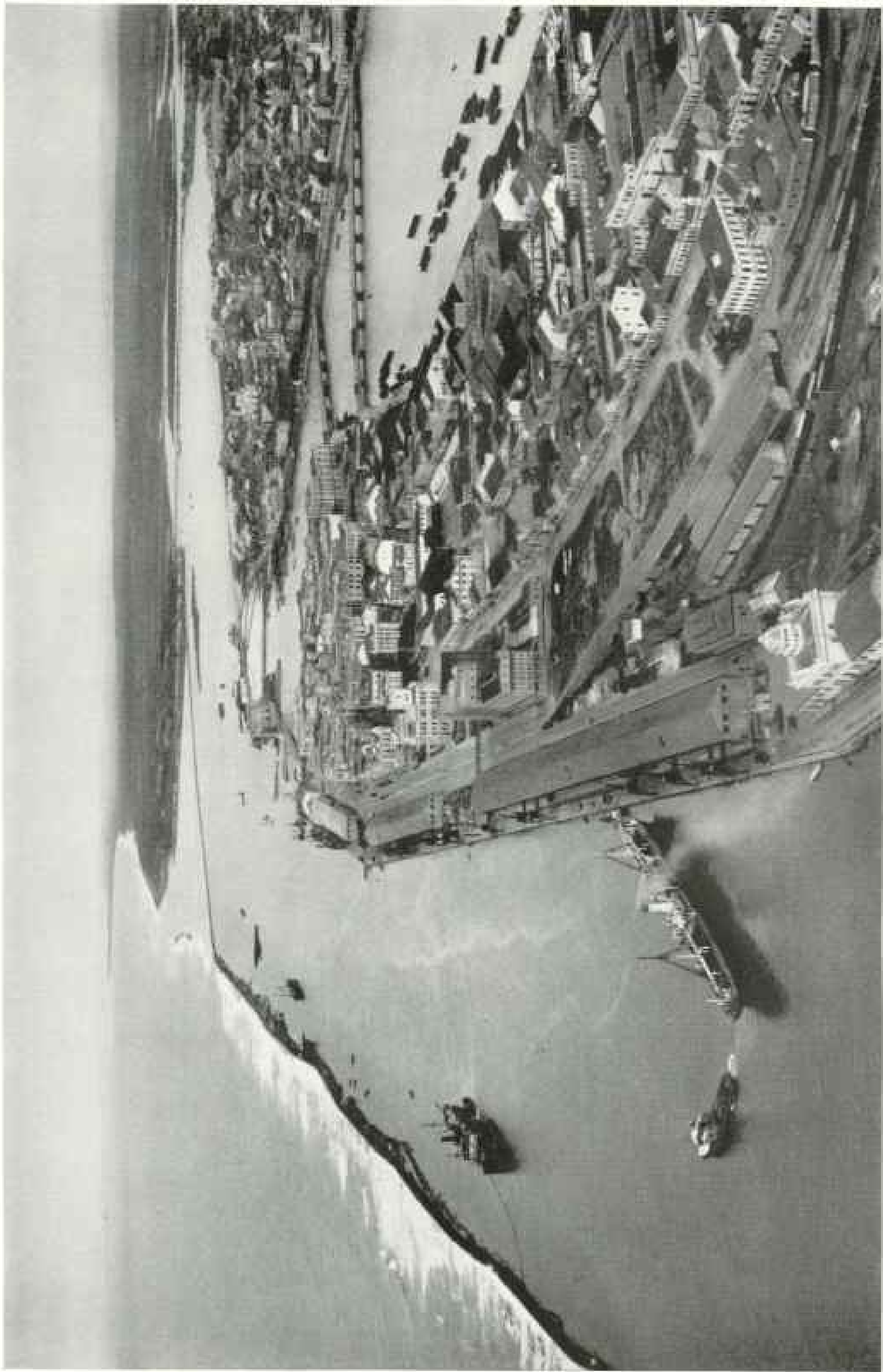




Brazilian Government Trade Bureau

### Under Triangular Sails, Fishing Rafts Skim over the Sea Like Iceboats, in a Race off Fortaleza

These North Brazil *jangadas* are made of light logs cut from the *boa jangada*, or "rallywood" tree. Six logs, about 24 feet long, are fastened with wooden pegs and tapered at the end to form a prow. A wooden *boque*, set well forward, supports the single sail, usually a piece of well-patched cotton, controlled by a single rope. Heavy stones tied with seaweed serve as anchors. Fishermen often take their crude craft out of sight of land for several days (page 505).



Recife, the Venice of Brazil, Where Centuries-old Slums of the Marshlands Are Giving Way to Spick-and-Span Homes

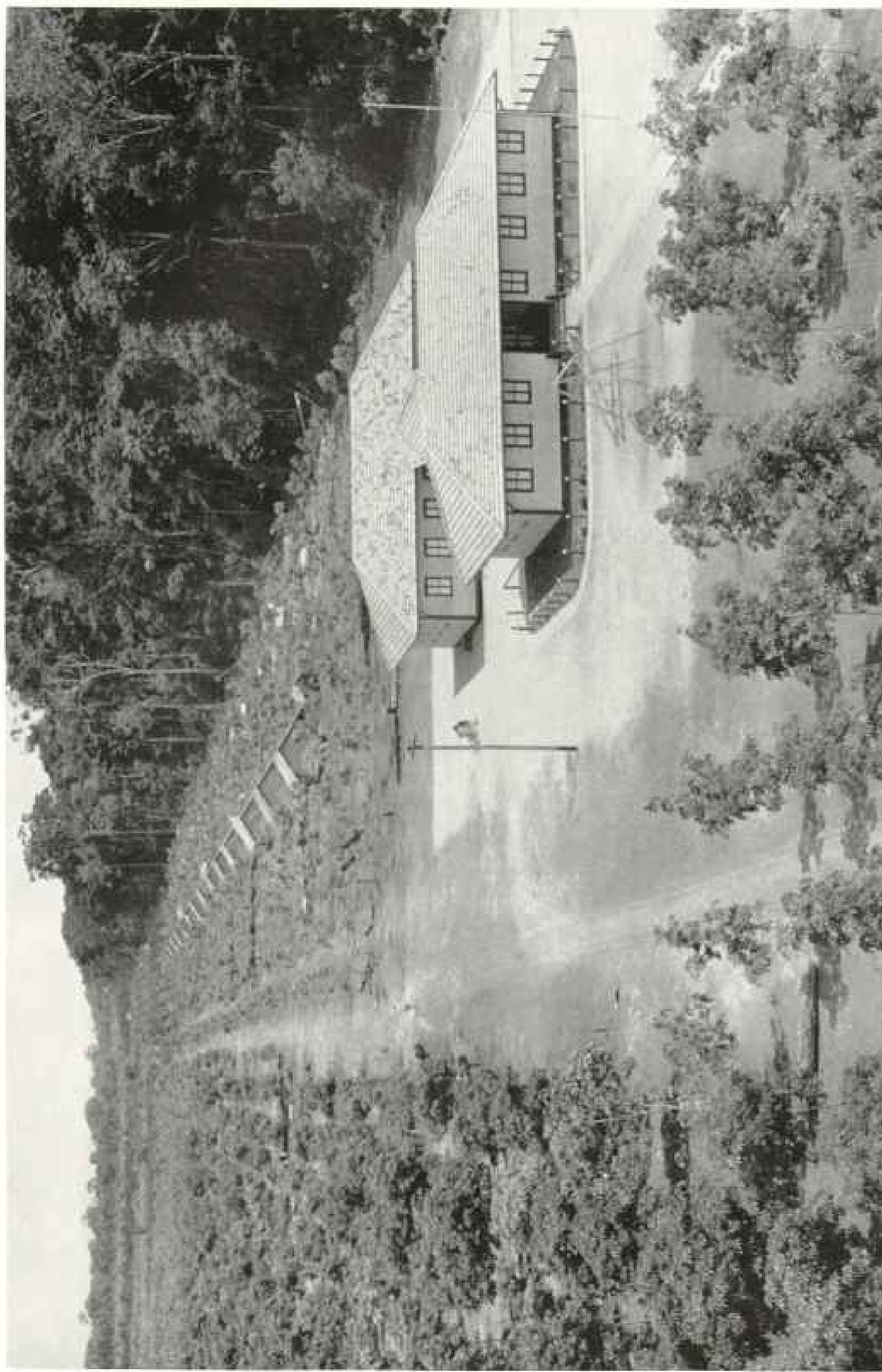
This ambitious port, capital of the State of Pernambuco, calls itself "First City in North Brazil." It takes its name from the reef (*recife*) sheltering the harbor. The Dutch occupied the town during the 17th century; hence the many reminders of the Netherlands (page 505).



Joelle Marmis

**Bello Horizonte, Built by Diamonds and Gold, Now Thrives on Its Iron and Manganese**

"Beautiful Horizon" was so named because of the soft afterglow which rings the horizon at sundown. The mountain-girt capital of the State of Minas Gerais (General Mitter) was founded only 45 years ago and was completely planned before a single building was erected (page 535).



James Gardner

**Henry Ford Carved a Rubber Plantation out of Some 700,000 Acres of Brazilian Jungle**

Here at Belterra millions of sturdy, disease-resisting rubber trees have been planted. Scientific methods with which the East Indies burst the Amazon wild-rubber bubble and captured world markets have been introduced. In foreground stands the modern hospital for workers, with a row of their cottages directly behind (pages 513, 517).

crowd for the fun. There was everything to eat "red hot," and everybody was eating Brazilian crullers in snakelike coils, fried fish, manioc cakes, shrimps, popcorn. In a scene gay with balloons, confetti, ticklers, and horns everybody had a grand time, myself included.

In the air development of New Brazil, Belém, my next stop (page 507), has become one of the major crossroads of the world—certainly one of the busiest air corners in the Southern Hemisphere. The first person I met was Norman Armour, United States Ambassador to Argentina, a friend I had last seen in Haiti years earlier.

"When I was down this way years ago, it took me three weeks to get here," he said as we sat under the mango trees in front of the Grande Hotel. "Now it takes me just three days. I left the States yesterday morning. Tomorrow afternoon I'll be in Rio."

Three nights out of seven Belém stages a homecoming for Americans, when all airlines, north and south, east and west, rest their wings and their passengers for the night.

As yet there is no night air travel in South America. In the morning one can hear attendants calling in the hallway: "All aboard for Miami! New York! Habana! Puerto Rico! Curaçao! Trinidad! Colombia! Mexico!"

#### City of Mangoes, Tiles, Orchids

I shall always think of Belém as a city of mangoes, tiles, and orchids. Mango trees form arcades in almost every street, with hybrid parasite plants in their branches. A half dozen orchids bloomed in the crotch of a tree almost within reach outside my hotel window. All the older residences were sheathed in tiles giving a pastel shade to their faded beauty.

At nightfall I loved to take a Nazareth Belt Line bus. Then a drowsy equatorial dusk overhangs like a veil Belém's fine squares and broad and shady boulevards, her once gaudy buildings and lovely parks, reinvesting them with much of the grandeur and charm of rubber-boom days.

Rubber built and long sustained the Grand Opera House just over the way from the hotel, an edifice with a rich portico, colonnades, and balustrades all painted over with pink, light blue, and yellow, like the houses.

Surrounding it was the Parque Republica, with its pavilions dedicated to all the revolutions fought hereabouts.

After all, Belém is the great port of the Amazon Valley and the pivotal point of the rubber trade and the transshipment of rubber. The Nation has ambitiously taken over the entire Amazon Basin in a gigantic scheme of development and commerce.

The whole project has lately been favored by the United Nations' greatest misfortune—the almost total loss of rubber.

#### Here the Amazon Is 160 Miles Wide

As my tiny six-seater plane took off from Belém, I looked down upon what I thought was the sea, roiled and muddy as far as the eye could see.

"But that isn't the sea, sir," my steward informed me. "It's all the Amazon—160 miles wide out there at its mouth. It discolors the ocean with its mud a hundred miles out."

I recalled that the Amazon drains an area of jungle wilderness about the size of non-Russian Europe.

From our plane it was easy to see that the Amazon was a world of rivers, rather than a single stream, especially in the wet season when it overflowed its banks for thousands of square miles. No wonder the people of Belém called it the "Mediterranean of Brazil"!

The river banks were solidly walled with black-green jungle, save where we came down at a few settlements hewn out of the wilderness.

This jungle monotony was broken at just one point several hundred miles upriver. We suddenly descended at a port not on the itinerary and tied up to a raft in midstream. Out of my tiny window I saw a typical Amazonian village of thatched huts, with several important houses tinted pink, green, and blue.

It was a beehive. Attention was focused on a large canoe heading our way. The excitement penetrated our cozy interior as an elderly gentleman from the back seat was tenderly escorted to the three-step gangway leading up to the trap-door exit. He paused midway and turned, bowing to us, announcing that our company had been a pleasure.

Tipping his broad-brimmed straw hat, smoothing his striped seersucker suit, and grasping his gold-headed cane, he brought to view a huge emerald on the forefinger of his plump hand. He was reverentially transferred to the canoe, where several official-looking persons rose and bowed solemnly. The paddlers kissed his hand before taking on the several English traveling bags covered with European labels.

"That gentleman," explained our steward as we left the water, frightening a flock of long-legged rich-plumaged birds into the palm groves, "is one of the last potentates of rubber. They were all like him in the old days."

"This little town is the capital of his estate, which is said to be half as big as the whole State of Pará. It yields rubber, timber, nuts, and animal and snakeskins. He ships his



James Hawbert

### Belterra's Tangled Jungle Growth Disappears, Making Way for Rubber Trees

Here on Henry Ford's vast Amazon Valley plantation, a network of good motor roads connects the clearings where the young rubber trees are planted. With Far East markets cut off, rubber is making a comeback in South America (pages 511 and 517).

goods to market in his own steamer, which is also his private yacht."

A couple of hours later, our midget aircraft slid down into the mirrorlike black waters of the Tapajós River where they joined and cut a straight line across the broad, yellow tide of the Amazon.

#### David the Baptist in Santarem

"Santarem!" called the steward, meaning my stop.

I passed my first hour in Santarem asking everybody I met if they could tell me how to get up to Ford's Rubber Plantation.

Finally, in the general store, a voice in English spoke up. "I reckon I could help you."

That was how I met David Riker, one of the few living survivors of the families of Confederate exiles who had fled from South Carolina 75 years before to escape the carpet-baggers. The upshot of this meeting was my becoming the house guest of the Rikers.

I exchanged the excellent Panair lunch, which I had carried ashore in its box, for the Rikers' Brazilian dinner of fresh fish, chicken killed only an hour before, palm hearts, jungle fruit conserve, and manioc, a national food stand-by.\*

We were served by a small Indian boy from the jungle, "bound out" to the Rikers by his parents until he should grow up. During the meal the little Indian rested both elbows on the table and stared at me, the strangest human being he had ever seen, from the jungles of North America!

Riker told me he had found the design for his bungalow in an old American newspaper

\* The manioc root, like beans and rice, is a staple food in Brazil; in fact, the three are often eaten together. Some varieties of manioc can be boiled and eaten like potatoes. Manioc meal keeps well and frequently substitutes for bread and potatoes, especially in the interior. In addition, manioc furnishes laundry starch, tapioca, alcohol, and a liquid sauce for foods. It also is known as "cassava."



K. D. Butler

### Out of the Jungle Glides a Load of Pará Nuts and Rubber Balls

The Christmas delicacies, known in England and the United States as Brazil nuts, grow in trees so high the pickers wait for them to ripen and fall. The black rubber balls weigh from 30 to 80 pounds. They are made up of layers of latex, tapped from wild rubber trees and then smoked over small, hooded fires. Rubber hunters, who usually travel in pairs, must cut paths from tree to tree through the tangled Amazon jungle. Their primitive methods of tapping and smoking have changed little in five centuries.

wrapped around gadgets sent him from "home."

"That's the way I kept up my English," he told me, "principally from old newspapers and some religious books which my father had brought over. My family were strict Baptists. Ever since I can remember, I had an ambition someday to build a Baptist meeting house in the jungle. Finally, I did it!"

That night we went to a Baptist Young People's Union prayer meeting in a little church exactly like the one his father before him had once erected in South Carolina. At

the end of 40 years he and the visiting missionary had built up a multicolored congregation of 70 members, all of whom he had helped baptize in the alligator-infested waters of the Tapajós, which flowed past the door.

I am afraid I led David Riker somewhat astray. We left Senhora Riker, a Brazilian, in the vestibule, where young and old people trooped in, and I took David off to the once-a-week movies.

Arriving too early for the show, we sat for a while in a cafe which combined a general store, ice-cream parlor, and a tiny bar for dispensing colored sugar-water drinks. At 8 o'clock many customers drifted in from the neighborhood to listen to the war news on the radio.

Later, we went over to the public square, where the whole town was indulging in the pastime of evening promenading, the unmarried males strolling around the square in one direction, the opposite sex in beavies going around the other under the watchful eyes of their elders on the side lines.

Finally a small brown boy came running through the park ringing a bell. The movie was about to begin! We paid eight cents each for a first-class ticket and were then sealed up in a musty hall for two hours.

Santarem consisted chiefly of a main street that faced and followed the devious course of the river. There was a church at one end and courthouse and town hall in a grove at the other. The "palace" of Baron Santarem, who had been governor under Dom Pedro, was caught in the center of the continuous business block and was now used for commercial

purposes. David Riker and I had visited many of the stores with the important purpose of selecting a suitable hammock in preparation for my journey up the Tapajóz.

"Everybody in the Amazon country owns a hammock," he told me. "It is the Amazonian's bed. He carries it with him on every journey. Since no beds are provided, guests must bring their own. But there are hooks in every house. The traveler carries his bed just in case a siesta should overtake him, for he can hang it up between trees in the jungle. It is sanitary and safe from vermin, ground animals, and snakes."

Riker had his finger in every pie in Santarem. He had told me when we met, "I have a son-in-law who owns a boat. I will ask him to make a special trip upriver for you amanhã." (*Amanhã* is Portuguese for *mañana*, tomorrow. It means, "Sometime—maybe never!")

I had been waiting three days for amanhã when one afternoon a small black boy appeared, saying my expected boat was waiting for me at the town dock.

"It leaves at 5," he added.

"But it is 5:30 now," I cried, grabbing my bed and baggage.

"*Paciência!*" said Riker sibilantly, as if he were currying a balky horse.

"The boat will leave at 7," we were told at the dock.

We went back at 7, and the son-in-law said it would leave at 10. So Riker and I went down at 9:30. The boat was gone—with all my possessions, including the precious bed! A fisherman said he had seen the boat at anchor a couple of miles upriver.



R. D. Butler

#### Rubber Boots "Grow" on these Shoe Trees

The rubber prospector makes his own footgear. Here he has poured a layer of latex over the wooden molds. After he has smoked it, to make the liquid coagulate, he will put on another layer, and perhaps a third. Then he will sundry the new sneakers and they will be ready to put on. The old pair he is wearing have lasted about six months.

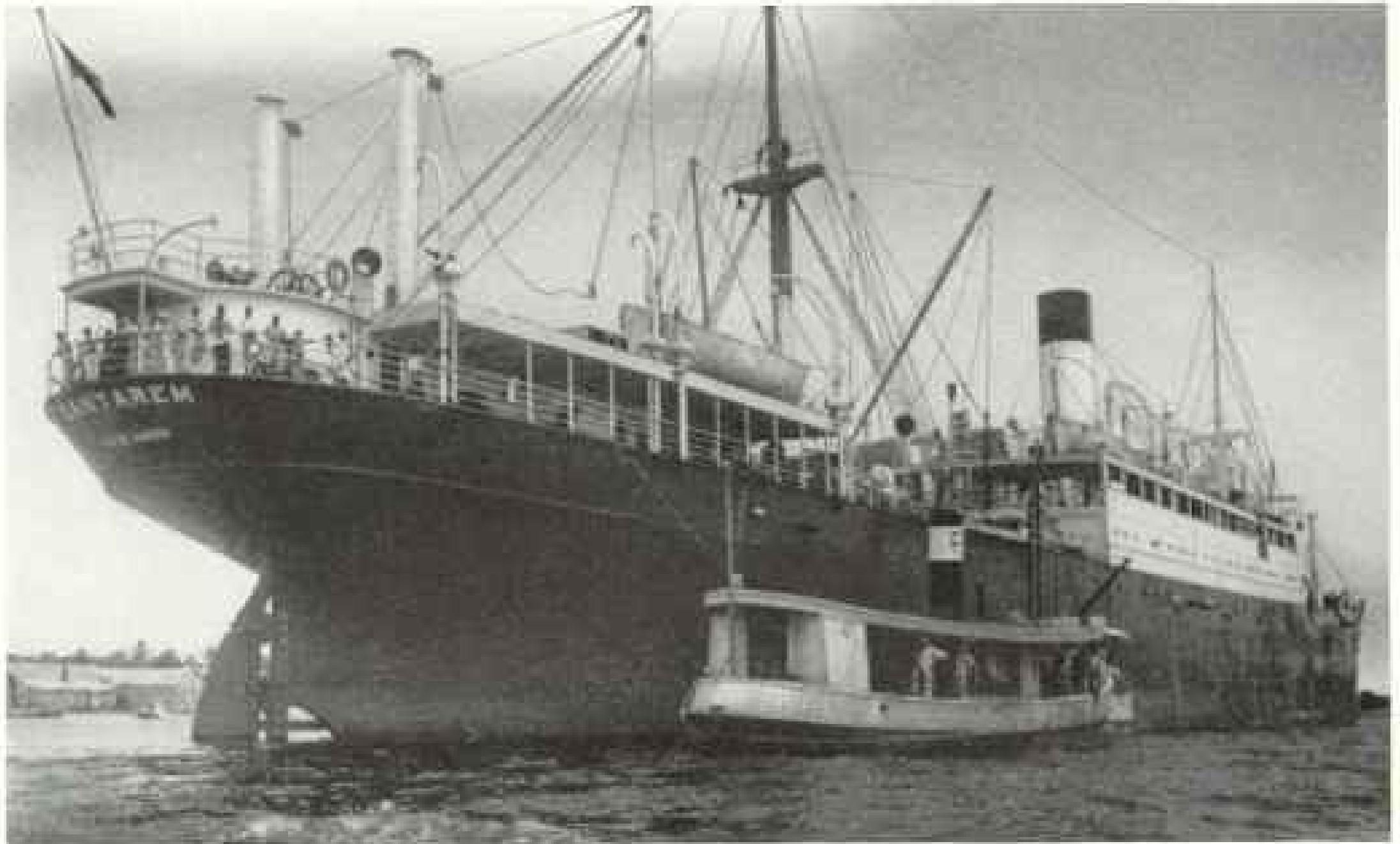
The hour was late for Santarem, and no one was about except some traders in snakeskins and alligator (cayman) hides from up the two rivers. These men had drawn their boats ashore, waiting for the market to open in the morning. By the light of their smoking coal-oil lamps we could make them out, cooking supper on their gasoline-can charcoal stoves.

Riker persuaded one of them to row me up to the son-in-law's boat.

A half hour later I climbed on board, inquiring of a sleepy deck hand where my bed was.

"If you find one empty—that's yours," he replied with a shrug.

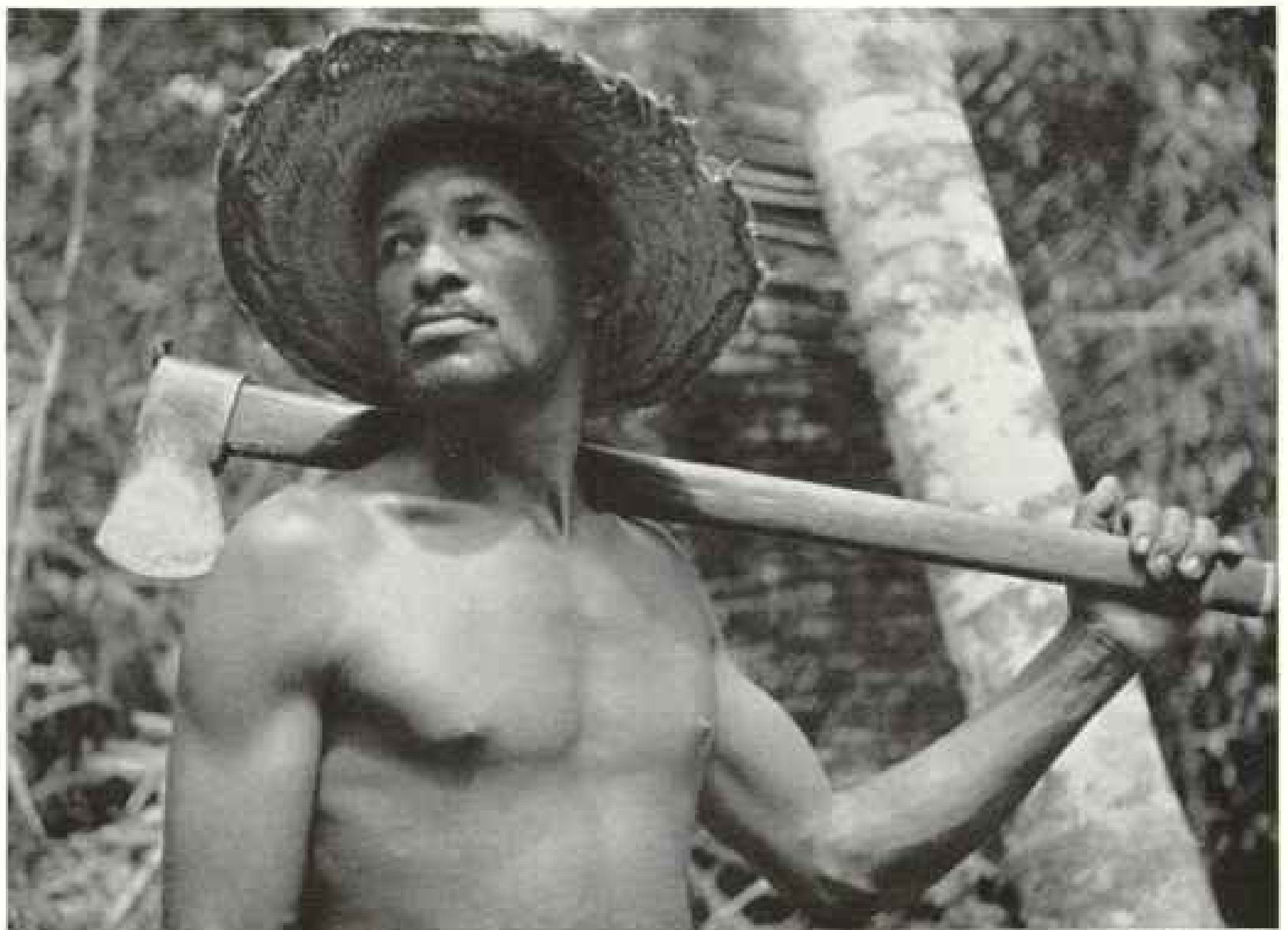




Maxwell Lee Rice

### Ocean Steamers Can Ply to Iquitos, Peru, 2,000 Miles Up the Amazon

If the United States had a similar east-west waterway, freighters from New York could sail beyond Denver.



© Kurt Beerin

### Carefree Rover Is the *Caboclo*, Child of the Wilderness

He wrests a living from the Amazon jungle by gathering nuts, rubber, and other tropical products, and by fishing. *Caboclos* are descendants of Indians and Portuguese who intermarried in pioneer days.

The entire deck space of the boat that was going to "make a special trip for me" was filled with hammocks—28 of them. Of these, 27 were filled with sleeping humanity, sometimes two persons to a hammock. Eventually I found the only empty hammock and climbed into it.

### Rubber Plantation in the Jungle

At break of day I sat up with a start. An unbroken wall of jungle seemed to be moving slowly downstream. All the folding beds except mine had been put away. Passengers were either eating or washing up around a tap drawing water from the river. From the son-in-law-skipper's cabin came an inviting odor of Brazilian coffee.

Three hours later we came in sight of a shed built on a cleared point of land. A sign-board announced in familiar script lettering: "Ford—Belterra."

In less than a half hour I was whizzing along a perfect motor road for 10 miles or more. At length we drove into Belterra, the 703,700-acre tract cleared from the jungle. Henry Ford obtained this tract by a trade with the Brazilian Government for part of Fordlandia, 80 miles farther up the river.

During the next few days I rode over many miles of good roads, and through cleared jungle land now planted with millions of sturdy, disease-resisting rubber trees.

Henry Ford has planted more than rubber in Brazil. In building Belterra, he has transplanted a spick-and-span Michigan town to the center of one of the deepest jungles in the world (pages 511 and 513).

There is accommodation for 10,000 persons, with street after street of little sanitary cottages for native workmen and their families; an up-to-the-minute hospital, graded schools, electric-lighted streets, churches, recreation centers, football fields, playgrounds, and movie theaters.

### Up for 30 Cents; Back for \$10

I was having serious travel troubles, however. I was off the main line. How was I to get back to Santarem? The superintendent finally promised to make a special trip with me, using the big Ford motorship, if I was willing to pay \$50 for precious gas and oil consumed. The price sounded a little exorbitant, after the 30 cents disbursed for my trip up with the son-in-law.

Next morning, before daybreak, I was awakened by the assistant superintendent. "You're in luck," he called. "Three boats are in the harbor ready to take you to Santarem!"

I had to catch the once-a-week plane for

Manaos at 12:15. The Ford motorship could make it in 4 hours.

"But there's a fast little launch waiting, too," I was advised. "The owner says he can do it in 7 hours. You could just catch the plane. He wants \$10."

The third conveyer was the son-in-law's boat, which I found anchored in deep slumber. Its price was still 30 cents, but I knew it would not reach Santarem until tomorrow.

I stepped aboard the \$10-fare *Reina* whose skipper insisted upon collecting his money before he would shove off into the blue depths of the starlit night.

When day broke, I found the *Queen* to be a 20-footer in fit condition for the boneyard. The mulatto skipper sat haughtily at the wheel atop two gasoline cans. He was assisted by two other mulattoes. They lit his cigarettes and did other personal things for him, but nothing for the \$10 passenger.

As I sat on the razor edge of the cockpit, wondering how many hours I could stand the agony, a sudden storm rose. Within ten minutes it had become a tempest churning the velvety surge of the 10-mile-wide river into a sea of five-foot whitecaps.

Somehow I managed to edge my way around the side into the tiny cabin, hang my hammock on the ubiquitous hooks, and climb in just as we began to ship the heavy sea that was dashing over our bow. The helpers were bailing out the cabin with all their might, for it was rapidly accumulating water to the sinking point.

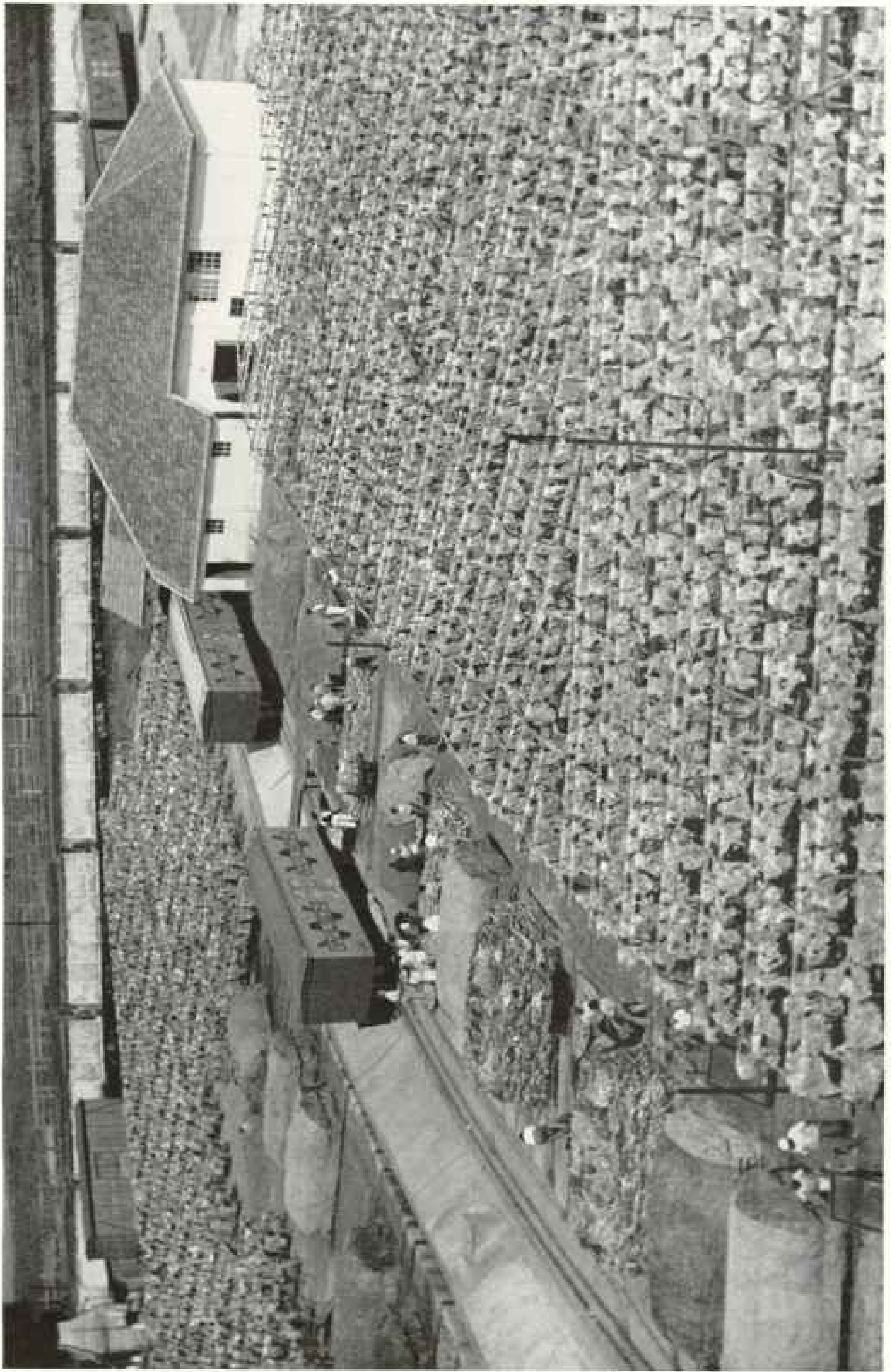
Meanwhile, I had all I could do to hold fast to the sidewalls to keep my head and other parts of my anatomy from being bashed.

The skipper, too, was having serious trouble trying to keep the wheel in his grasp. We were all soaked and at the point of exhaustion, convinced that our minutes were numbered. Suddenly the storm cleared up as nicely as you please. Such is the way of tropical storms.

As the tumult of weather came to an abrupt end, I heard the whir of my plane overhead. I stuck my head out a porthole and saw Santarem in the distance. Only a miracle could get me there in time. I pepped up the bedraggled skipper by waving a dollar bill under his nose. Then I grabbed the white shirt he had cast on the floor, climbed out on the bow, and waved it for the next half hour like a shipwrecked sailor.

We were three-quarters of an hour making port. Faithful David Riker had seen the distress signal, however, and held the plane.

Manaos today proved just as fabulous as in the heyday of the rubber boom at the beginning of the century.



Charles Pratt Wilson Feins Photo Library

**Sun-dried Beef Lures the American Dollar into a Venerable Brazilian Industry**

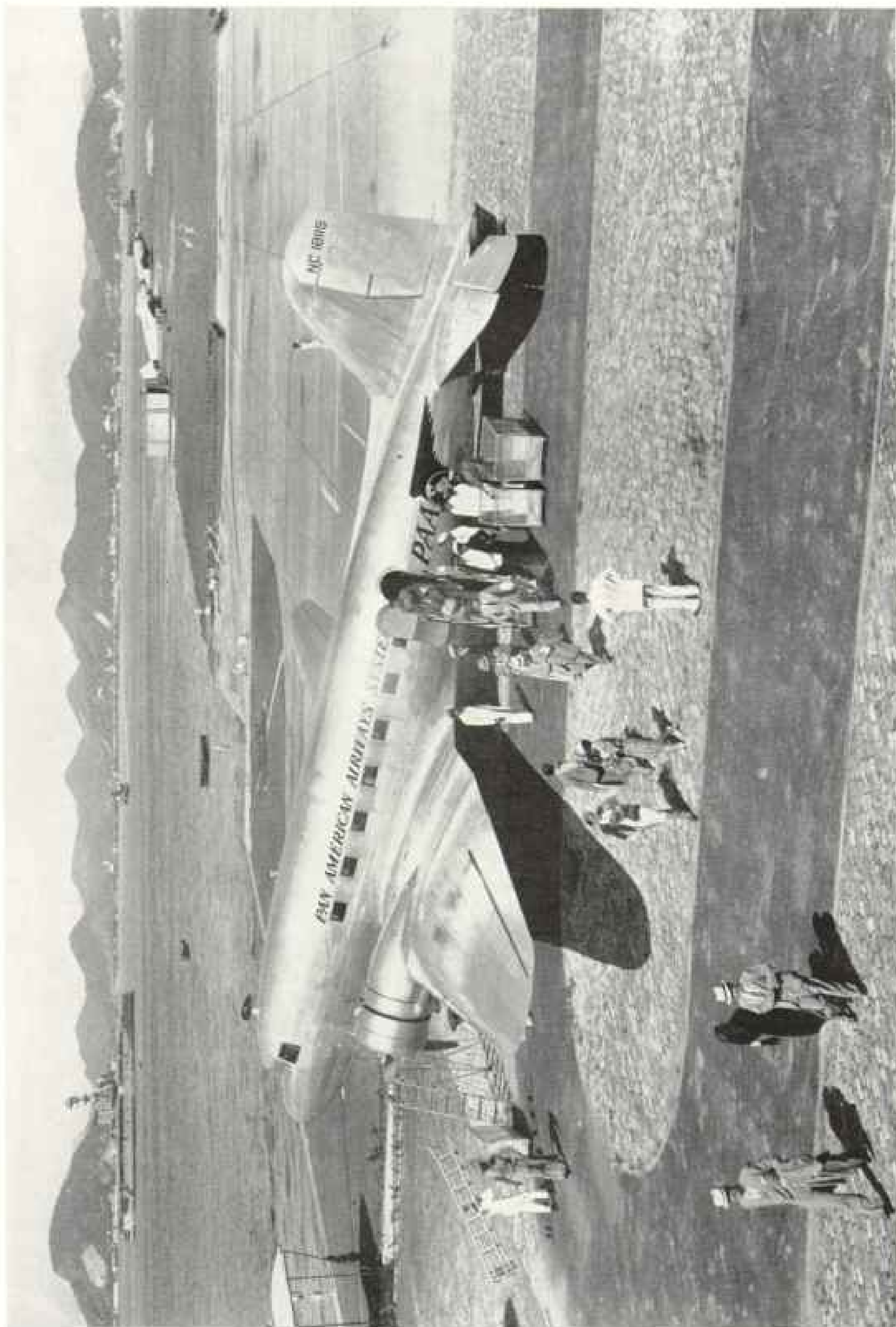
The packing plant of Wilson and Co., Inc., near São Paulo, applies wholesale methods to a curing process whose origin has been traced to the Indians. Such meat, like our own Southwest's jerked beef, could be carried on the pioneers' long expeditions.



Proctor-Bentley from Black River

### You Can Pick Your Own "Queen Coffee" from This Line-up of Athletic Beauties at São Paulo

Freed from the traditional chaperon of Latin countries is the maid of modern Brazil. Where formerly she sat at home with her needlework, she now goes in for sports in a big way. Thousands of such shorts-clad girls drilled at the inauguration of São Paulo's stadium in 1940.



Staff Photographer W. Robert Moore

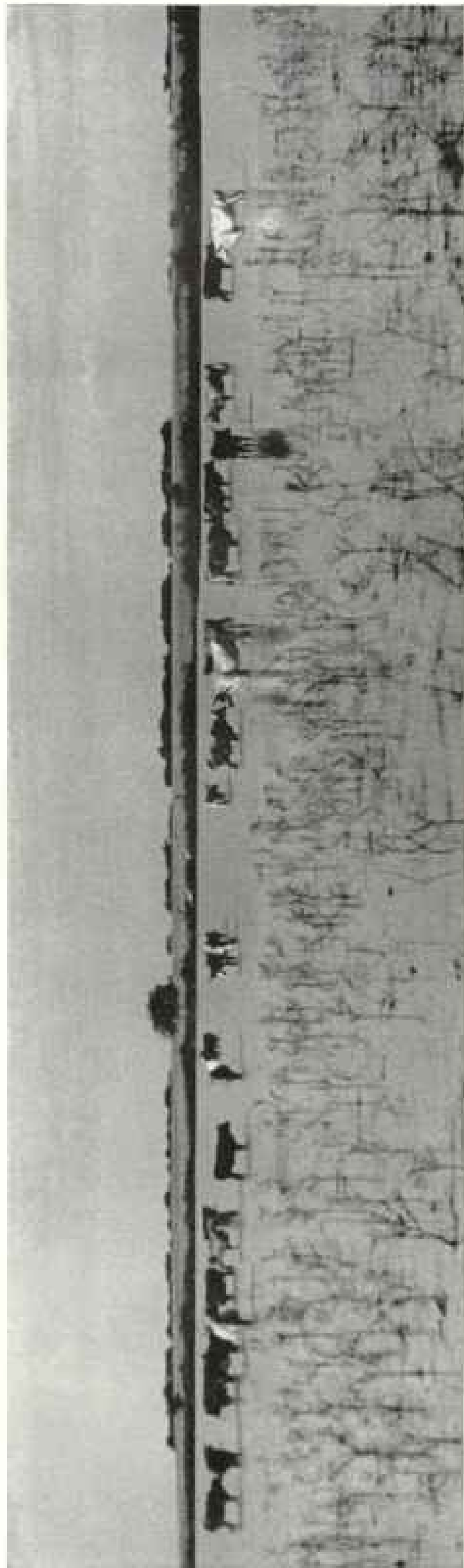
Passengers from Buenos Aires and Miami Arrive Daily at Santos-Dumont Airport, in Downtown Rio, by Pan American Airways



Stewart Jay Hillis

**Hitchhiking on the Amazon—a Train of Dugout Canoes Gets a Tow Upstream**

The skipper of the wood-burning tug collects a towing fee from owners of the small craft. They usually pay in crude rubber, fish, or firewood.



John Atkinson

**Knee-deep in Water, These Southern Brazil Cattle Are Contented, Anyhow—They Swam for Their Lives a Few Days Before**

Here the flood is subsiding. Severest inundation in 65 years caused \$5,000,000 damage in the State of Rio Grande do Sul in 1941, leaving 60,000 homeless and destroying most of the rice crop. Porto Alegre, the capital, not far from this lagoon, suffered heavy damage.



Charles Perry Webster from *Three Lions*

### Mr. Cowboy, Meet Senhor Vaqueiro, Your Brazilian Counterpart

Ranch house and windmill would be familiar to the cowpuncher, but the palms give an exotic touch. Deep in the heart of Matto Grosso, Dom Francisco (foreground) poses with his vaqueiros.

The Grande Hotel had been left high and dry by the rapidly receding tide of civilization, the original cell-like rooms with hooks for hanging hammocks still remaining, together with spacious upstairs parlors full of musty, dusty furniture.

After descending the grandish staircase of golden days, I was brought with a flourish into the great hall of a dining room and seated at the far end. There old-time waiters served me eight courses in Paris-Amazon style of the period.

My bus boy, José, doubled as night boy. He slept upstairs in a hammock hung in the grandest parlor. He had rigged a string that connected with the front-door latch, which he pulled when I came in later than the prescribed 9 o'clock closing-up time.

### Grand Opera House Recalls the Grandeur of Manaus

Of course I visited the costly and spectacular Grand Opera House that had scarcely been

used enough to rub the thick gilt off it when the rubber mart was whisked away to the East Indies, and Manaus collapsed like a rubber balloon (page 506).

"Planters in the jungle lived like Indian princes," the scholarly caretaker told me. He lived in a deserted wing of the domed theater.

"They dined with French vintage champagnes; they tried to outdo the rest of the continent in every luxury. That is why they built the Opera House."

We climbed the many grand staircases to balustraded terraces and porticoes—all of Carrara marble! Finally we came to a standstill beside the towering bronze fountain nobly depicting the Amazon and her tributaries. The fountain is now dry, battered by time and looted by vandals.

Manaus, capital of Amazonas, is one of the strangest cities in the world. It lies on the Negro River, a thousand miles up the Amazon system. This city of sudden wealth in the



Staff Photographer W. Robert Moore

### In São Paulo, Brazil's Industrial Metropolis, Rises the 26-story Martinelli Building

Booming São Paulo has passed the million mark and still is growing. Big rayon mills, automobile tire plants, and a host of other factories give employment to thousands. Here, too, are coffee and cotton exchanges. Electric signs advertising soap, dental cream, beer, sweets, preserves, and tires add a North American flavor (page 535).



Julian Bryan from *Estados*

### Not "Heil Hitler!" but "I Know, Teacher!" at a German School in Porto Alegre

Teaching of Portuguese is obligatory in the large German community in the State of Rio Grande do Sul. On the blackboard is a picture of President Vargas.

jungle is a monument to the evanescence of a boom. Its rubber aristocracy snapped back into the wilderness. Everything in the whole city—Grande Hotel, Grand Opera House, grand mansions and cafes, and grand streetcar system—evokes memories of better days.

One of the most substantial scenes I observed was the clutter of thousands of river folk trading in balls of smoked rubber, Brazil nuts, cacao, dried fish, and piassava fiber. The picture resembled the Yangtze crowded with sampans and junks. Already Manaus was beginning to feel the come-back of rubber.

At no time has Manaus been a dead city, for it collects the produce of a vast area served by the tributaries of the mighty Amazon, and also figures importantly as a distribution center.

#### To the Hotel in a Rowboat; to the Movies on a Raft

My next air jump was to Porto Alegre, almost 2,000 miles southward, with a brief stop-off en route at Rio.

Beginning with the novel experience of arriving at the door of my very up-to-date hotel in a rowboat, my entire visit in Porto Alegre was a succession of surprises. Late in the day I went to a modern movie palace on a raft!

From the airplane the whole city had appeared as if afloat. The usual Panair landing field was somewhere under a lake. Fortunately, the main road into town had been built at an elevation, so that we could look down into the surrounding meadows where herds of cattle, up to their necks in water, were nibbling floating tufts of grass.

A week later when the flood waters receded, a teeming city of more than 385,000 was revealed standing on the edge of a vast freshwater lake at the confluence of five navigable rivers.

Every few years these rivers gang up on Porto Alegre, causing enormous destruction of property and loss of life. The harbor city was built largely on land reclaimed from the menacing waters.

Rio Grande do Sul—of which Porto Alegre is the capital—is the southernmost State in the Union and, with Uruguay and Argentina, shares the broad central pampas. It is grazing country, supporting with its immense herds of cattle the Gaucho,\* to which clan President Vargas, and his father before him, belonged.

\* See "Pioneer Gaucho Days," 8 illustrations in color from paintings by Cesáreo Bernaldo de Quirós, NATIONAL GEOGRAPHIC MAGAZINE, October, 1933.



Julien Braun from Kumpoin.

Keeping Up with the News—American Sailors “Read” a Paper at Rio

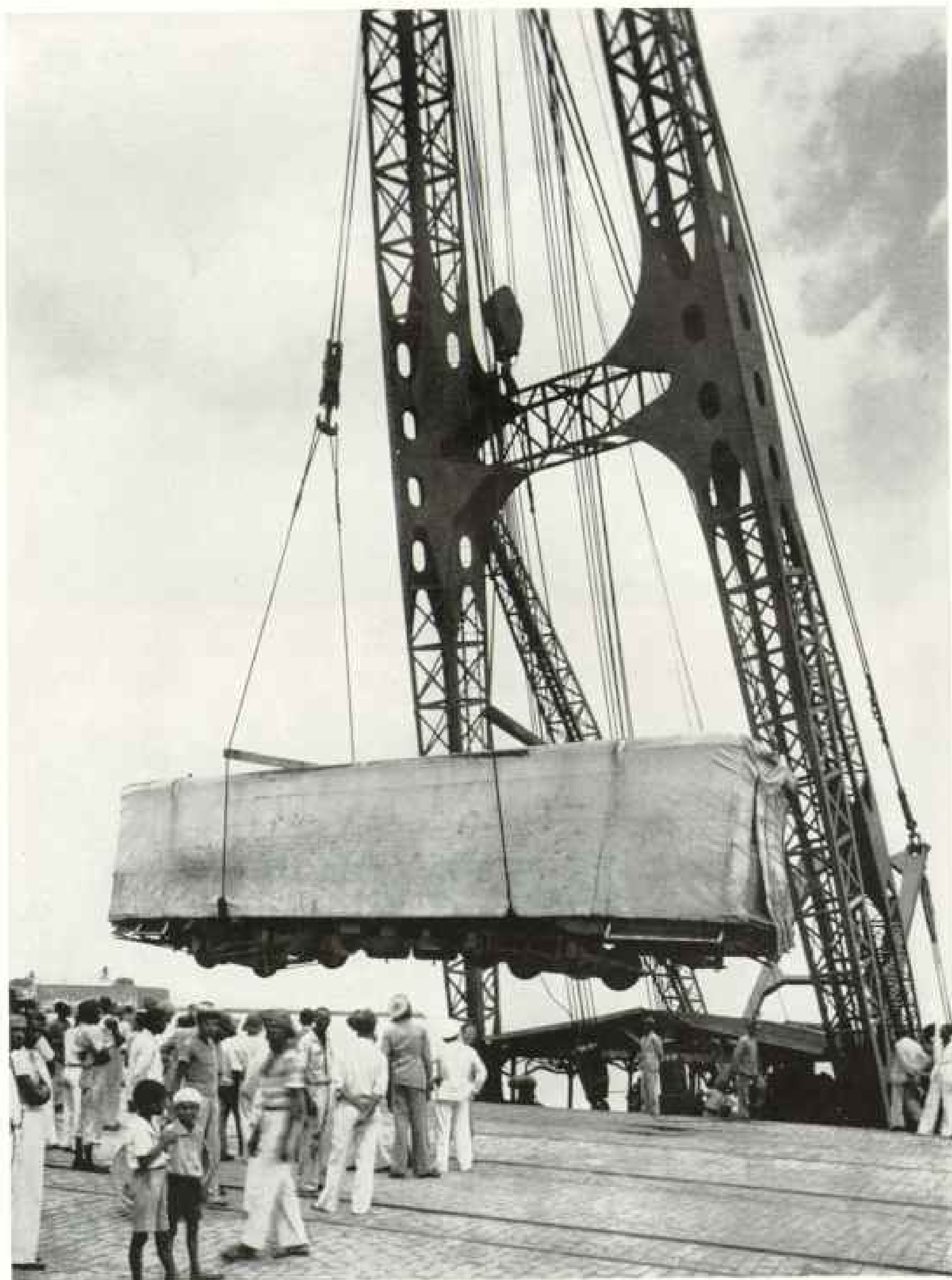
“Will It Be Today—the Attack on England?” asks the headline, which plainly baffles the visitor at right. The year was 1940.



© Timoteo Pretorius

“Way Down South in the Land of Cotton”—South Brazil

Here laborers on a former coffee plantation are drying the white fiber in the sun. São Paulo's cotton, grown for centuries, has gained commercial importance three times—during the North American Civil War, the first World War, and the Brazilian coffee crisis from 1930 to the present day. When coffee markets were glutted twelve years ago, South Brazil growers planted thousands of acres in cotton.



**A Trolley Car, Made in U. S. A., Arrives in Salvador**

Brazil's large cities have their own rush-hour problems. Salvador's streetcars carry 42 million passengers annually (pages 503-4). Rio has nearly 1,500 trolleys and some 300 miles of tracks. Her straphangers call their cars *bondes* in memory of a transportation bond issue (page 534).

Much of the recent phenomenal progress of Porto Alegre stems from the President's progressive policies when he was governor of the State.

Progress of Porto Alegre—700 miles southwest of the sophisticated Rio—was immediately evident in two 16-story buildings of ultramodern cut which faced me when I strolled around the corner from my hotel. They stand fronting on an oblong "square." Its recent creation performed a major operation on a congested old part of the city.

Near by is a grand gesture of traffic management. A special policeman stands on a high iron-railed platform which looks like a super-tank, stopping or starting the motion of the town by pulling a lever.

Not far away is the Club de Comercial; I know none in New York or London which surpasses it. Four duplex floors of a 12-story apartment building are occupied by the club's luxurious quarters.

Often I walked up to the upper town, which had been spared from the flood, to browse among the gigantic fragments of the handsome cathedral in course of construction. It was an Old World church which could have been inspired only by a community with the Old World spirit that had builded an empire.

At the close of day people joined in the customary get-together hour of promenade and conversation.

Just around the corner from the aloof skyscrapers and within sight of huge foreign ships taking away beef, maize, tobacco, rice, beans, and wool, a portion of Main Street was shut off to vehicular traffic to let the people talk and walk up and down the middle of the way.

Somehow I felt that these simple traits of such a robust and energetic people were contributing much to the remarkable renaissance of Brazil.

#### Curityba—Village to Metropolis Overnight

"Whoever heard of Curityba?" an American visitor in Rio once asked me.

Curityba was just a small village half a century ago. On a mud street had stood perhaps twoscore poorly built colonial buildings. Its only glories were the surrounding hills and its elevation of 5,000 feet that gave it a salubrious climate. A negligible river traffic gave it commercial diversion and contact with the outside world. Such, within the memory of young men, was the capital of the State of Paraná.

The modern metropolis I saw of about 140,000 people was booming. Curityba is now a mart for *herba maté*, the South Americans'

"tea," just as neighboring Santos was the world's coffeepot. A large part of Brazil's 80,000-90,000-ton production of maté passes through Curityba.

I saw Main Street being hewn through anything that stood in its way, reaching for a greater city. An entirely new suburban section was being finished off with five broad parallel avenues.

All this large-scale city planning was not accidental. I went to Curityba with a letter of introduction to the human dynamo largely responsible for it. His name is Dr. Manoel Ribas. For 10 years he had been *interventor* (governor) of the State.

"He came from the North," explained his military aide as he fetched me from the airport. "His work in the cooperative movement was so outstanding that it attracted the attention of President Vargas, who appointed him Governor of Paraná. From sun to sun his one thought is improvement, improvement, improvement—of Paraná and of the people who live in it."

#### Human Geography of a New City

I did not comprehend the full meaning of this statement until I got it first-hand from the Governor on a tour of inspection. Manoel Ribas was laying part of the foundation for New Brazil that did not appear to the casual observer.

We drove directly into the parklike grounds of a city mansion.

"This house had long been unoccupied by the family. I gave the order for the State to take it over," he said.

We could hear the voices of children. At least 25 were in the patio. Half a dozen were playing; the remainder were in cribs, in rolling chairs, and in plaster casts.

"When our institutions say, 'We can do nothing for them,' we bring them here."

Governor Ribas was familiar with every case history. He walked ahead of the nurse and me, examining charts, asking questions, caressing patients.

Leaving the Children's Refuge, we drove on to what he called "The Human Halfway House."

"You will see why I call them 'halfways,'" he said, as we stood on the threshold of a huge building which he said had been the State asylum until a new modern building had been provided.

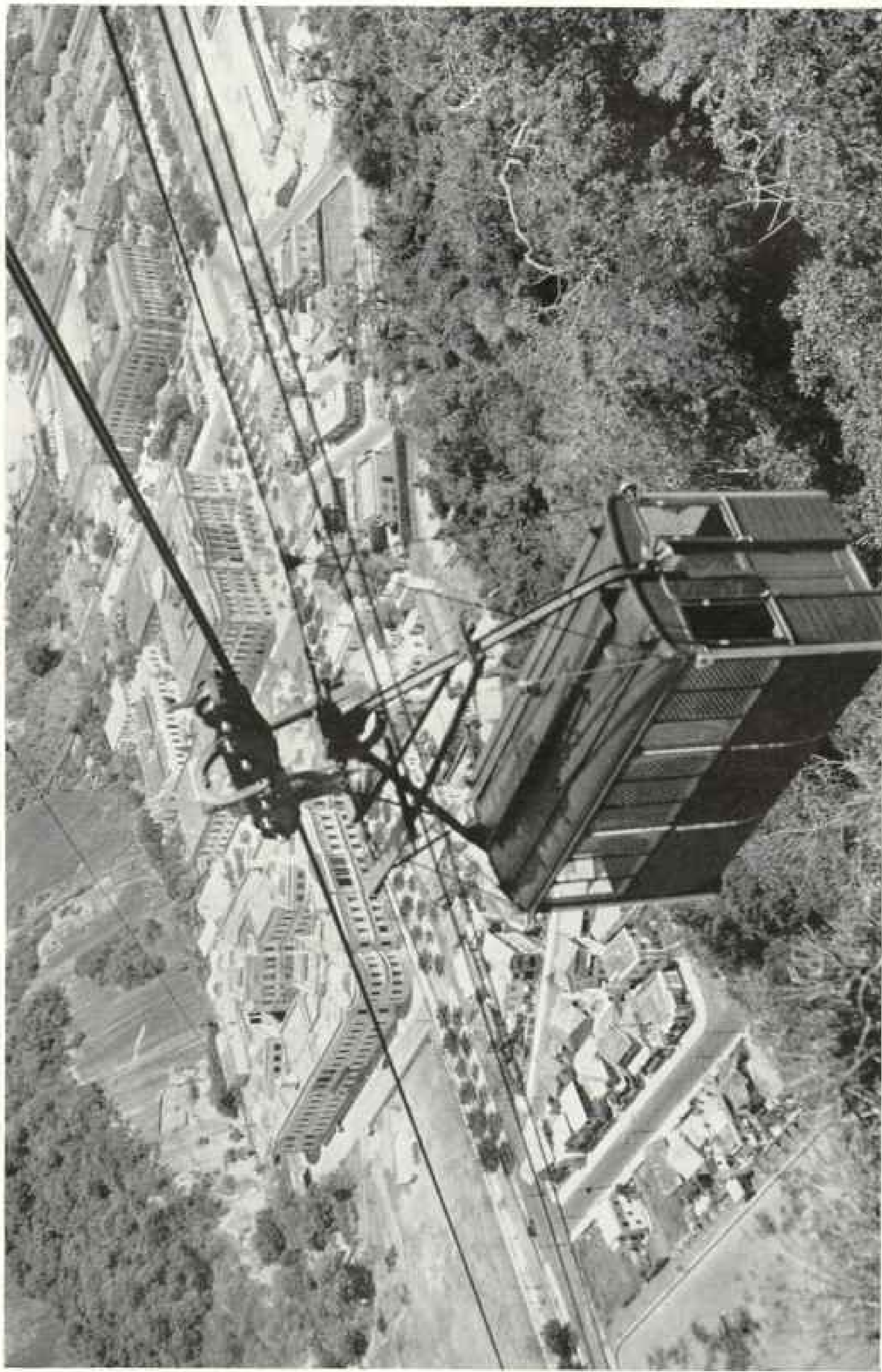
"We are well equipped with hospitals, clinics, and other institutions. But they are all too crowded or too busy to bother with poor adult creatures like these, who seem either too ill or not sick enough to do anything



© Charles D. East

**Clouds Weave a Shadow Pattern Across the City of Light—a View of Rio de Janeiro from Corcovado, the "Hunchback"**

This study, made possible by infrared photographic plates, shows two broad avenues streaking down to Botafogo Bay. To the right is Sugar Loaf. Jutting into the bay at left is the Mount of the Widow.



Alfred T. Palmer

### Rolling Down to Rio from Sugar Loaf, the Cable Car Affords a Dizzy View of the City

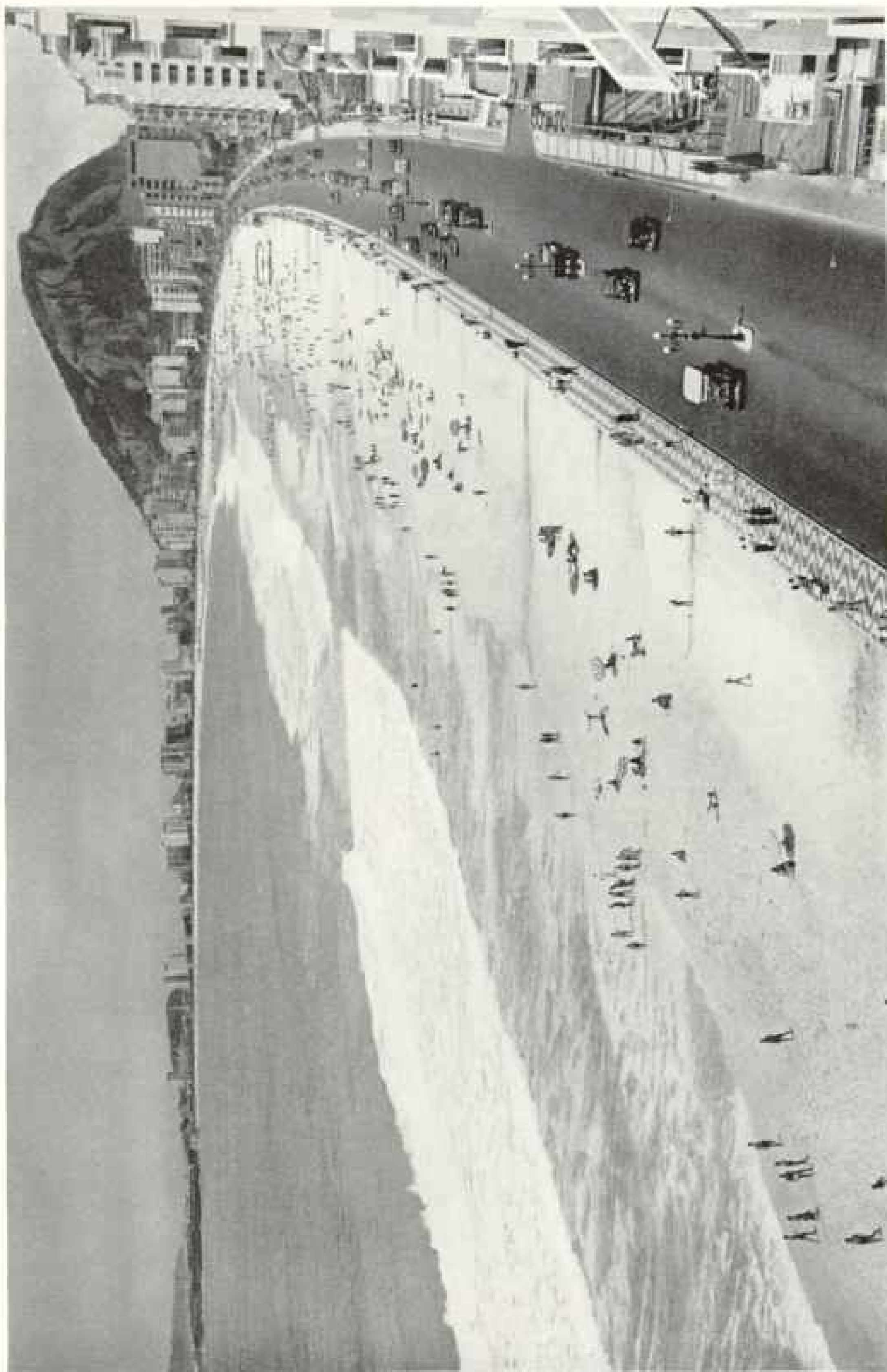
The timid passenger need not worry; the car can carry 150 times as much weight as safety laws permit. The top of Sugar Loaf, mountain landmark jutting into Rio's harbor, is 1,500 feet above the water. The big Government buildings resemble new Federal structures along Constitution Avenue in Washington, D. C.



© Charles F. Brown

**2,300-foot "Hunchback" Mountain, Pedestal for a 130-foot Figure of Christ, Towers over Rio's Botafogo Bay**

The infrared plate, exposed at the top of Sugar Loaf, reveals the peak and the "tiny" statue in the distance. Anyone lost in Rio de Janeiro need only look for the statue to get his bearings. The crescent-shaped bay is the playground of water-sports enthusiasts with sailboats, speedboats, and seaplanes.

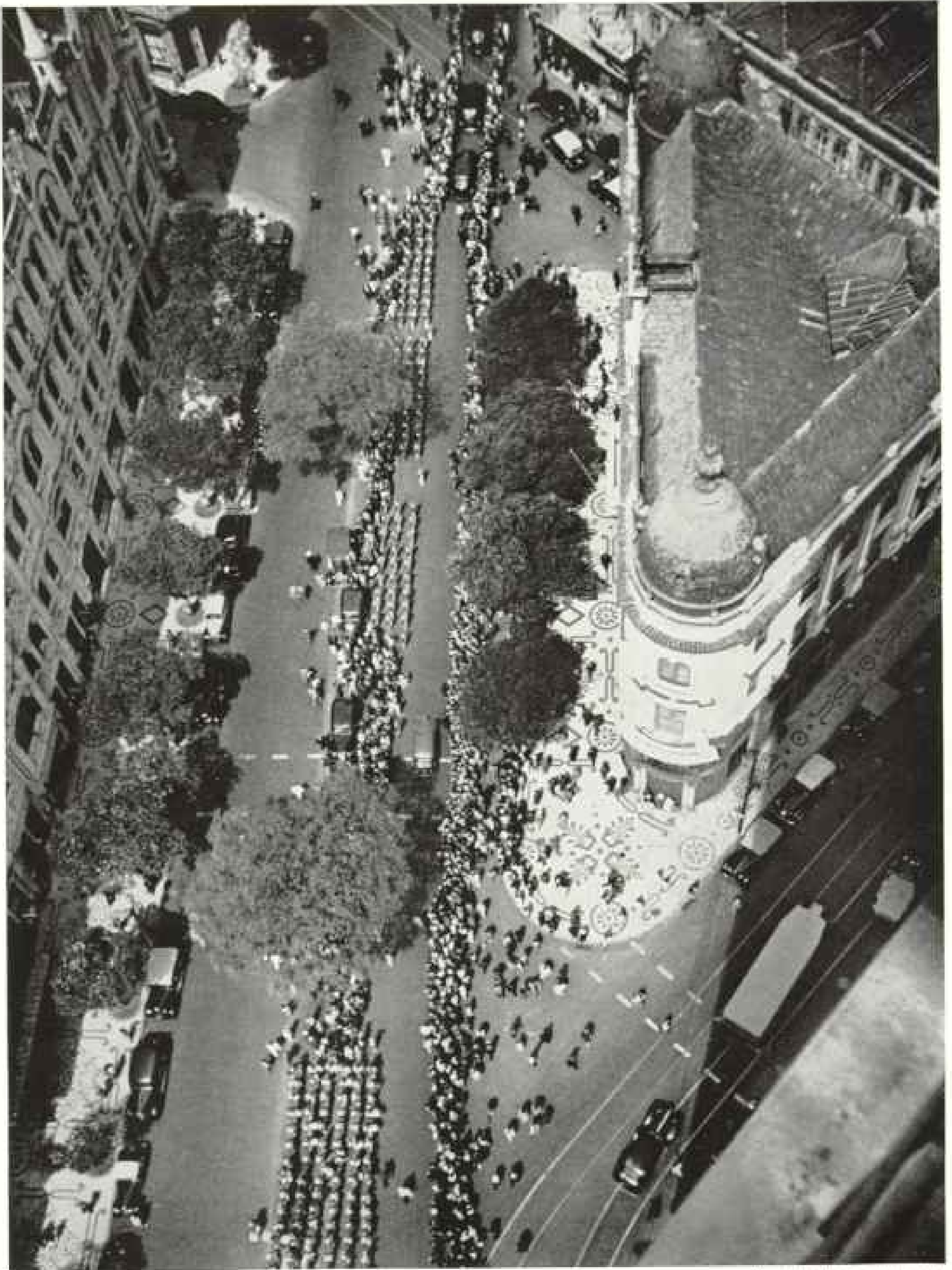


Teale Hillier

**Rio Takes a Dip in Its Front Yard—a Crescent of Modern Buildings Lines Copacabana Drive and Its Three-mile Beach**

Like the Chicago apartment dweller who can step out to the Lake Shore Drive and its beach only a few moments from his downtown office, Rio can take a lunch-hour swim almost any day of the year. Virtually every one of the apartment buildings and hotels was put up within the last 15 years.





Proctor Bambo from Black Boat

### Visiting Argentine Naval Cadets Parade down Rio's Avenida Rio Branco

All travelers to Rio eventually reach this gay avenue, which engineers cut through the heart of the city in six months. Restaurants and sidewalk cafes, shops, and newspaper, steamship, and airline ticket offices line the street. To strollers' eyes, mosaic sidewalks seem to swim and dance in the blazing sun (opposite, and page 536).

for. "There is no place elsewhere in this world for 'halfways,' these pitiful victims of circumstances."

We went through the big building filled with all manner of unfortunates. They all knew him.

Next time we drove completely out of town to a group of attractive new buildings crowning a hill. It was a State agricultural college in the making.

"Our great farming State of Paraná has been running down," he told me. "We have always had a small experimental laboratory. But we needed an army to carry on the fight against enemies of the soil and diseases of plant and animal life.

"Here you see our army," he continued, turning to the groups of youths. "In the main, they are young men taken from institutions—orphans, sons of beggars, children of little chance."

Of all the skyscrapers, modernistic buildings, new boulevards, modern factories, and miscellaneous "improvements" that I saw going into the composition of New Brazil, I could not help feeling that this largely intangible work in Paraná was outstanding.

#### São Paulo, Fastest-growing City

In any circuit of New Brazil, I could not pass over much-publicized São Paulo without mention.\* For one thing, I was a witness to its claim to being "the fastest-growing city in the world." The provincial São Paulo that I had visited a few years before had actually doubled in size and, with its estimated population of 1,500,000, was fast overtaking Rio.

I went to the top of São Paulo's oldest skyscraper, the justly famous 26-story Martinelli Building (page 523). My companion was a full-fledged Paulista, bursting with boontown steam that sounded familiar to my Yankee ears.

"The city is changing so rapidly we can't control the direction of its growth!" He pointed hither and thither. "It may break through anywhere.

"Look at our Cathedral, which will take another 25 years to complete. We started it in almost open country in order to display its lovely Gothic façade. Now it is pinched and crowded amidst a welter of polyglot buildings.

"Just behold the top of even distant hills. Nearly every summit is marked by an impressive new building. Out-of-town planners know the city will soon be coming out to meet them!

"We're the commercial center of Brazil, also the largest manufacturing city on the continent—1,200 factories! We finish 16 new buildings every day."

Already São Paulo is suffering from severe growing pains because of a shortage, almost a stoppage, of American copper, brass, and fittings, so essential to the functioning of the modern building.

The real foundation of the city was coffee, São Paulo State producing more than half the total of the entire Brazilian crop. In addition to Brazilians, the population includes some 90,000 Italians; 80,000 Portuguese; 30,000 Spanish; upward of 20,000 Germans; and Lithuanians, Japanese, British, North Americans, and others.

#### Back to Magic Rio

The conclusion of my aerial swing found me where I began it, in the modern Mecca of New and Old Brazil, Rio de Janeiro.†

I had been in Rio more than once years before, but it was by no means then the city that I saw today. The new city rising was not emerging from ruins or ashes. It was an emanation. Rio will always retain its native charm and beauty, together with a certain majesty, possibly inherited from the Empire days of the Dom Pedros.

Grand old Avenida Rio Branco—so familiar to visitors on the way to and from their ocean liners lying at its foot—had lost its pre-eminence, but not its personality (pages 532, 536). The old Palace Hotel—on the balconies of which so many world celebrities, rich Yankee visitors, and Amazonian rubber magnates had sat and watched the gay Carnival—was now a commercial hotel, with its former clientele moved out Copacabana way.

I could never imagine Carnival crowds surging with the same blithe spirits and carefree gaiety up the fairly new Avenida Presidente Wilson, its successor.

Avenida Wilson, the gateway to the new city, is surrounded by North American associations. At its beginning, on Rio Branco, stands the Monroe Palace. It housed the Brazilian exhibit at the St. Louis Exposition of 1904.

Halfway along the Avenida stands our colonial-style Embassy office structure, which served as our building at Brazil's Centennial Exposition in Rio in 1922.

Beyond and behind Avenida Wilson stretch acres of the old city leveled to the ground by progress. Crisscrossing at right angles, solid blocks of massive skyscrapers have already risen, making the most impressive show of massed ultramodernistic architecture I have

\* See "As São Paulo Grows," by W. Robert Moore, NATIONAL GEOGRAPHIC MAGAZINE, May, 1939.

† See "Rio Panorama," by W. Robert Moore, NATIONAL GEOGRAPHIC MAGAZINE, September, 1939.

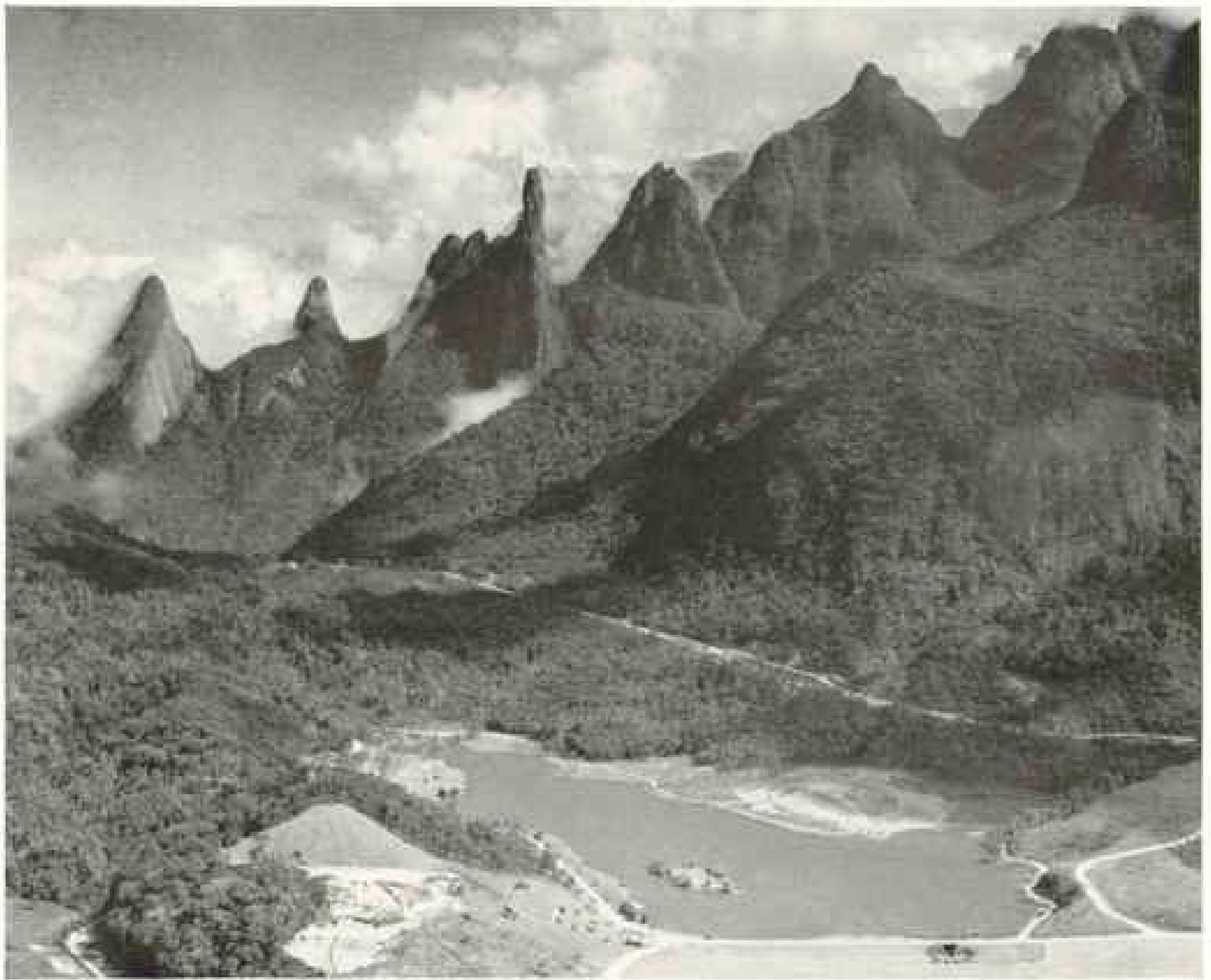


FIG.

### The Finger of God Points Heavenward from the Organ Mountains Near Terezopolis

The sharp peak in the center thrusts up like an index finger, while the crags beneath seem to be knuckles of a fist. Other summits resemble the pipes of an organ. Below is the road to near-by Rio de Janeiro.

seen anywhere in the world. A single example is the Press Club's A. B. I. building, constructed of glass walls without windows.

I could best get the full sweep of it all when I climbed high up to my domicile just back of, and above, Rua Russell. An armchair on my balcony was a ringside seat to the nearly complete Rio spectacle. I could even fancy the dauntless navigator who first sailed into the Bay of Guanabara, which lay like a sheet of lapis flecked with a hundred fantastic islands. The explorer arrived one January morning and thought he was in the mouth of a great river; hence Rio de Janeiro.

How the scene has changed! Darkness spans several centuries. Now it is pre-eminently the "City of Light."

Aerial beacons intermittently reveal the towering skyline of the commercial city, shoved off on its little peninsula and put to bed for the night. The cryptic story of its commerce continues to flash throughout the night: *Mesbla—A Noite—Standard—Metro*

—and all the other attractions of Cinelandia.

I ride for one cent on the *bonde*, as the citizens term the tramways because of the bond issue to which nearly everybody subscribed. It whisks me away from business to where the throngs spend their nights in sleeping or in frolicking and gaming, or their days in sports and bathing.

Day or night one rolls along through one park after another—Gavea, Ipanema, Copacabana, Vermelha, Botafogo Bay, Urca—the Sugar Loaf with the hanging car darting back and forth like a giant firefly (page 529).

I am reminded of Naples, of Sydney, of Istanbul, of San Francisco (pp. 528, 531).

But no. The white figure of the Redeemer standing in effulgent light on the Hunchback (page 530); the jagged outline of the Organ Mountains; the famous peak of the Finger of God; the island of Cobras reflected in the "river"; distant glimpses of the blinking lights along Tijuca Drive, with its orchids and gorgeous Brazilian butterflies; and the



Arquivo Fotográfico Acemola Nacional

### For Five Cents a Brazilian Industrial Worker Eats a Balanced Lunch

To improve the diet of factory employees, President Vargas has set up restaurants in São Paulo and Rio de Janeiro within the last two years. Some are large enough to seat 6,000 persons.

dark wall of deep jungle hills just beyond the city—those things belong to Rio de Janeiro alone!

#### Boom City of "Beautiful Horizon"

Some 375 miles north of Rio lies the boom city of Bello Horizonte, capital of the State of Minas Geraes (meaning General Mines). This is Brazil's most populous State, with eight million inhabitants.

Bello Horizonte is a headline of New Brazil and a portent of the future Brazil. Its phenomenal growth sprouts from rich raw materials. It wears around its shoulder a collar of manganese, iron, gold, and some diamonds. It is capital of the mineral deposits of Brazil. Near it are some of the richest iron-ore fields in the world (page 510).

The largest piece of rock crystal ever found, weighing about four and three-quarters tons, is on exhibition there. Silver and zinc are found. Mercury was discovered not long ago. The region is so favored by Nature that the

name of the city, Bello Horizonte (Beautiful Horizon), has a singular aptitude.

This new and fast-growing city is well planned and soundly built. Already its people number 217,000, and it has attained second place after São Paulo among the inland cities.

In the State of Minas Geraes are already more than 5,000 miles of railway, and a good highway leads direct to Rio de Janeiro.

New Brazil is not built merely of such externals as striking monumental buildings with walls of glass, towering apartment houses in the vanguard of the world's new architecture, or flowering juggernaut boulevards springing from the heart of nearly every town square. Rio, Santarem, Curitiba, and others of its cities have a people blessed with gayety and spirituality, and inhabit a land of fabulous resources. In many ways Brazil retains the character of a one-piece empire still.

Brazil had and still has many handicaps. For one thing, it is handicapped by its great



James Gardner

### Motorists Park Their Cars Beneath the Shade Trees of Avenida Rio Branco

Looking toward Marechal Floriano Peixoto Square, the Rio de Janeiro visitor sees (immediate right) the Municipal Theater; next, Cinelandia, a group of buildings housing motion-picture shows; and, at the end of the avenue, the circular Monroe Palace, which adorned the St. Louis (U. S. A.) Exposition of 1904. A statue to the Marshal is in the center of the square (pages 532, 533).

size. It covers almost half of the whole South American Continent. Its terrain is made up of contrasting extremes. There are various foreign strains in its population, and hordes of aborigines. Peruvians, for example, are very much alike. But in Brazil there often has been disunion, with but the vaguest sense of obedience to a central authority.

New Brazil has been quickened by President Vargas. As their ruler, he at once became also their leader. He traveled all over the country and saw everything, good and bad,

for himself. The people recognized him as one of themselves—a democratic, fearless Gaucho from the plains of Rio Grande do Sul, with a grand idea for a New Brazil that fired their imaginations. His words epitomize the New Brazil:

"My children, this Brazil is yours! When you work for Brazil, you are working for yourselves. We are proud of Old Brazil, which was the grand work of your fathers and mine. But we shall build a New Brazil! That job is yours and mine!"



# New National Geographic Society Map Charts South America's Wartime Importance

**W**ITH this issue of *THE GEOGRAPHIC*, the National Geographic Society distributes to its 1,165,000 member-families an up-to-1943 map supplement of South America, which charts our neighbor continent's progress, vast resources, and wartime development.

What can South America's republics contribute to the United Nations' war effort?

How may their natural resources be developed, moved, and utilized in the Western Hemisphere's struggle for survival?

What tropical products do they offer to replace those cut off by war's closure of Far East markets?

Printed in 10 colors, on a sheet  $26\frac{1}{2} \times 37\frac{1}{4}$  inches, and scaled to one inch for each 134.2 miles, the NATIONAL GEOGRAPHIC'S new wall map shows the continent's rich natural resources, political and geographic boundaries, temperatures, and transportation routes by sea, air, rail, and vehicular highway.\*

A special aerial timetable gives distances and flying time between strategic points. From Dakar, West Africa, to Natal, Brazil, for example, requires an 8-hour flight; from Natal to the Panama Canal, 14 hours; from the Panama Canal to Miami, 5 hours.

Members familiar with their Society's December, 1937, map supplement of South America will note two changes in the new map.

Gone are the words, "Disputed Territory."

For the first time, National Geographic Society cartographers can mark definite boundary lines between Ecuador and Peru, and between Bolivia and Paraguay. Arbitration finally solved these longstanding problems. A new boundary is marked between Brazil and Colombia, the fruit of completed surveys and peaceful agreement.

More important economically is the addition to the new map of highway markings. In 1937 good motor roads in South America were negligible; even fair-weather roads were not vitally important.

## The Battle of Transport

The map reveals the continent's geographic handicaps to road building. Vast distances separate big cities. Spacious deserts and swamps, flooded river valleys, waterfalls, and sparsely populated jungles bar the way. In the west, the Andes chain lifts a barrier more than 4,000 miles long, rising 23,081 feet high at Aconcagua, its tallest peak.

Railway builders have conquered some obstacles. Black lines on the map show that they

have laid down nearly 83,000 miles of rails. But many of these tracks center in a few localities—in the meat and wheat country of east-central Argentina, in Uruguay, in the eastern coffee and cotton regions of Brazil, and in the Chilean nitrate and copper areas.

One railroad between Valparaiso and Buenos Aires climbs the lofty passes of the Andes. To the north another, now under construction, will link Arica, Chile, with Santos, Brazil, 1,850 miles away. Fewer than 700 miles through landlocked Bolivia remain to be built.

Red lines on the new map show another and even bigger program. In many sections Latin America is bypassing railroad construction to build for the Motor Age. Hundreds of thousands of miles of roads stretch long fingers up into the mountains and probe deep into jungles to pull out hidden natural wealth.

Most roads are of gravel or graded earth; many are mud-clogged in the rainy season, but their value is incalculable. A boulevard highway is better than a mule track, but a mule trail is vastly better than uncharted jungle or mountain wildness.

## Builders Rush Pan-American Highway

Goal of Pan-American Highway builders is a system of motor roads linking all the Americas. Shown on the new map in a heavy red line, this system someday will reach every capital in South America, traversing over 13,000 miles. About 10,200 miles are now graded as all-weather road, about 2,000 miles are dry-weather road, much is under construction, only about 800 miles remain impassable.

No longer is the prospect of a motor trip from the Panama border to Buenos Aires a wishful dream. More than 5,100 miles of this long route are all-weather road, passing through Colombia, Ecuador, Peru, Chile, and Argentina. Only missing stretches still under construction are about 200 miles in Colombia and 140 miles in Ecuador.

The Pan-American Highway branch which passes through Bolivia and continues to Buenos Aires is now passable, although a 400-mile stretch is rough going.

In the north, the Simón Bolívar branch from Caracas, Venezuela, to Guayaquil, Ecu-

\* Members wishing additional copies of the new Map of South America may obtain them by writing the National Geographic Society, Washington, D. C. Prices, in United States and Possessions, 50¢ on paper (unfolded); \$1 on linen; Index, 25¢. Outside of United States and Possessions, 75¢ on paper; \$1.25 on linen; Index, 50¢. All remittances payable in U. S. funds. Postage prepaid.



From Jantón from Three Lines

### *Maté* by the Bargeload Floats to Market down the Paraguay River

Tea brewed from the leaves of the *maté* tree is a popular home and picnic drink in Brazil, Argentina, Paraguay, and Uruguay. Usually it is served in a gourd, also known as a *maté*, and sipped through a tube called a *bombilla*. Many of the gourds are elaborately decorated and costly; some tubes are silver.

dor, is open. Three-quarters of the Rio de Janeiro-Montevideo-Buenos Aires branch is now fit for all-weather traffic.

The map's inset on airways reports how aviation in South America has come of age. Former lack of railroads and highways stimulated swift spread of commercial airlines. Transport planes carried tons of freight from jungle and mountain to supply centers. In 10 years the airplane became a major transport of the continent.

At the outbreak of war in Europe, Germany controlled airlines operating over some 21,000 miles, competing with the 28,500-mile system of Pan American Airways.

Piece by piece, the network controlled by Berlin and Rome has been broken up. No longer do Axis planes fly to any part of the Western Hemisphere.

Another inset on the new map shows concisely the vital war materials South America is moving to market over new routes.

Important among these are rubber, cinchona (for quinine), and tin—three essential products whose major world sources Japan cut off from the West. A complete list would include many minerals used in war industry: copper, antimony, tungsten, manganese, bauxite, mica, lead, chrome, mercury, and lesser-known key substances such as molybdenum, titanium, beryllium, and zirconium.

In recent years South America,\* home of rubber and quinine, has produced both in limited quantities. At the outbreak of the war the rubber yield of South America was only about two percent of the world output.

Now Brazil, especially, is trying to reinstate rubber and quinine. Return of these profitable natives is a story that remains to be told as the plantations prosper.

Although Bolivia holds about 60 percent of the world's tin ore, development of Far East tin mines was so much more profitable in prewar days that there was not a tin smelter in the Western Hemisphere. Today Bolivia's tin mines are being developed.

Of vital importance is Brazil's supply of carbonado. These industrial diamonds, essentially pure carbon and the toughest substance known, have many important uses. With a carbonado die more than 300 tons of hot copper can be drawn into fine wire; the hardest steel die would have to be replaced before five tons had passed through it. Carbonado is especially valuable in certain difficult kinds of drilling. Airplane fac-

tories in the United States are large consumers.

Brazil also has a virtual monopoly in high-grade quartz crystal, essential in radio and television, in depth-sounding and iceberg-detection devices, and in prisms, lenses, and laboratory apparatus.

#### Brazil Supplies Oil Substitutes

South America has forest, farm, and ranch products which have suddenly acquired new value in wartime. For example, there is the oiticica tree, which grows in Brazil. Oil expressed from its seeds is a substitute for Chinese tung oils in paints and varnishes.

In the manufacture of soaps, oil from Brazil's babassu nuts helps replace copra, lost with the Philippines and Netherlands Indies.

The babassu tree grows wild in Brazil's tropical forests. Women and children crack the nuts and pick out the kernels. A pile of 10 to 20 pounds represents a good day's work.

Like rubber and quinine, cashew-nut oil is native to South America, but it was displaced in the world market by India's supplies. The oil is important in manufacturing plastics, electrical insulation, and insecticides. Because it resists heat, it is one of the best lubricants for magneto armatures in airplanes.

The United States Army is ordering buttons made from Ecuador's tagua nuts. A single contract called for 2,592,000 "vegetable ivory" buttons for soldiers' shirts, trousers, and mackinaws. In tests they stood up under pressure of powerful crushing machines, held their color fast in electric steaming devices, and sewing machines handled them easily.

The tagua trees look like stunted palm ferns. Thousands of rural Ecuadorians gather the nuts in heavy rainfall jungle areas.

The "button nuts," hard and durable as ivory, grow in clusters, somewhat larger than a man's head, which weigh about 20 pounds. A woody, wart-covered sac encases each cluster, which may range from 15 to 100 nuts. The hard white kernels are slightly smaller than a hen's egg.

Manufacturers in the United States slice the kernels on automatic machines. They discard the cores, which usually are hollow, and retain the side pieces. Each piece becomes hard and dry as a bone and pure ivory in color, after moisture has been evaporated in a drying room.

For 10 years preceding the war, Axis nations bought 22,000 tons of tagua nuts annually from Ecuador. Italy was the best customer. Thus United States Army button orders not only solved a uniform-manufacturing problem here, but are helping Ecuador avoid a disastrous tagua glut.

\* See "Metal Sinews of Strength," by Frederick G. Vordburch, in the NATIONAL GEOGRAPHIC MAGAZINE, April, 1942, and "Our Most Versatile Vegetable Product" (Rubber), by J. R. Hildebrand, February, 1940.





From Logs to Their Uses

#### Extract from Quebracho Logs Tans Sole Leather for Your Shoes

The shipment is on its way into this mill at Puerto Pinasco, Paraguay. Northern Argentina and Paraguay forests yield nearly all the world's supply of this extremely hard wood, the name of which means "ax-breaker." The extract, quick vegetable tanning material, comes from the heart of the tree.

Northern Argentina and Paraguay produce most of the world's quebracho extract from the heartwood of the quebracho (ax-breaker) tree. The extract is used for tanning, particularly for heavy leathers. Shoe manufacturers in the United States use vast quantities.

#### Argentina Flaxseed for Paint

Argentina produces half of the world's flaxseed, source of linseed oil, essential ingredient of paints, varnishes, and printers' ink. Linseed cake and meal are valuable cattle feeds. Uruguay also ships out some flaxseed.

Many drugs, in addition to quinine, come to the United States from South America. Brazil sends pilocarpine to contract the pupil of the eye, ipecac for emetics, chrysarobin to treat skin diseases, caffeine for a cardiac stimulant, and senna leaves for laxatives.

Copaiba, used to treat venereal diseases, comes from Venezuela and Brazil. Chile supplies soapbark, a mild emetic to expel excessive mucus in acute bronchitis, and rhatany root, an astringent.

Peru now is growing on a small scale the nerve-quieting asafetida, and the tragacanth

thorn tree, which yields gum for cough drops.

Other outstanding products are flax, hemp, and jute fiber; coconuts and coconut oil; unmanufactured cork; kapok and palm oil.

Wartime has increased commerce among the South American republics themselves. In the days of Spanish rule, the colonies were forbidden to trade with one another. After they gained their independence, almost exclusive overseas trade continued because of poor land communications.

Now, with more and better roads and with European markets cut off, the Latin American nations are working out trade agreements, abolishing tariff walls, and helping one another develop manufacturing.

Argentina buys textiles and coal from Brazil; Chile buys henequen sacks from El Salvador, and light manufactures from Argentina and Brazil. Venezuela buys cotton from Peru; Ecuador gets it from Brazil. Venezuela exports oil to many Latin American countries.

The Society's Map of South America thus serves as a preface to the beginning of a new era in Western Hemisphere cooperation.

# Life on the Hawaii "Front"

All-out Defense and Belt Tightening of Pacific Outpost Foreshadow the Things to Come on Mainland

By LIEUT. FREDERICK SIMPICH, JR.

FLOWER leis have been rare in Hawaii since fateful December 7. The nimble fingers of the lei women have been turned to weaving camouflage nets for gun emplacements (page 552).

So, too, war has changed much else in the islands' way of life.\*

Waikiki Beach, as a possible enemy landing point, is laced with barbed wire which persistent sunbathers use for a towel rack!

Few surfboards or outriggers ride the offshore rollers. Submerged barbed wire and sporadic practice firing by mortars from the hills are hazards to discourage all but the most venturesome beach boys (page 546).

Travel continues. Now more than ever, Hawaii is the crossroads of the Pacific. But it is a grim kind of travel, contrasting sharply with the gay tourism Hawaii used to know.

Diplomats, plane crews of the Ferry Command, survivors of torpedoed merchantmen, and mainland-bound evacuees have replaced visitors' names on hotel registers.

## "They Say," and "I Just Heard"

Conversations no longer turn on suntan and curios. Talk is of the latest act of heroism or the latest invasion rumor. War stories, true or false, which, because of censorship or lack of official confirmation never reach the mainland, gain rapid circulation.

One hears how the Marines at Midway manned their guns and started shelling a marauding sub within 30 seconds after its periscope broke water. Or how the master of one sunken freighter became so accustomed to rationing his surviving boat crew that he can tell from memory just how many cherries are packed to a tin.

Beach hotels are background for such night life as survives the complete blackout. To find relief from the dark and the curfew, many island residents take a room overnight, then dance or play cards in the blacked-out lobbies, returning home in the morning.

Behind these vignettes of life in our Pacific outpost is a typically American community struggling to continue to work, go to school, and keep house under the constant threat of attack.

All business, from the great pineapple and sugar plantations which form the backbone of Hawaiian economy, to the drive-in restaurants

and beauty parlors which dot palm-lined Kalakaua Avenue, faces a battle for survival.

Fancy the effect of a blackout on the operations of the world's largest fruit cannery. It must run 24 hours a day in some seasons, else pineapple will rot in the fields.

Visualize what a 7:45 curfew means to the proprietor of a drive-in accustomed to doing most of his business after midnight.

Pity the schoolteacher who must compete for the attention of a class of ten-year-olds with destroyers depth-charging right outside the window.

## Ships Are Life Lines of Island Life

The islands' big problem is, however, supply. Hawaii is more dependent on ships for its existence than any other community of equal size. Virtually everything the islanders use, eat, or wear must come by ship.

The fertile soil, best suited to pineapple and sugar, will not grow certain crops. Others die from insects, or, surviving, cost more because of high rents and wages than California-grown imports.

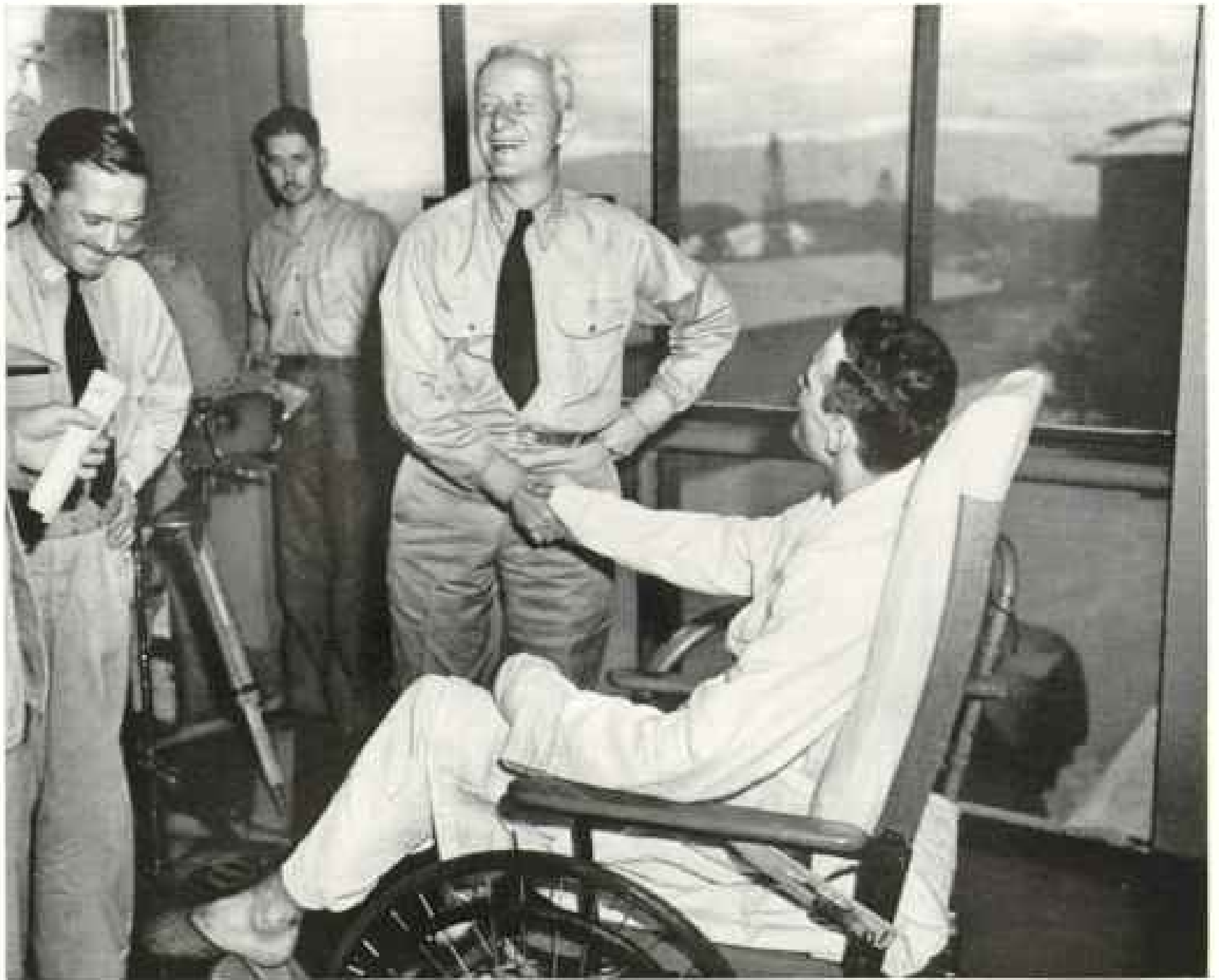
So, traditionally, food for Hawaii comes from the mainland in the very ships which carry its sugar and pineapples back.

Likewise, lacking power and minerals in paying quantities, the islands depend on the mainland for everything manufactured, from toothbrushes to tin plate.

Annually, Hawaii spends a hundred million dollars or more with mainland States on food, clothes, and the things men use. This is divided about equally between east- and west-coast ports. Were Hawaii a foreign nation, this trade would put it ahead of any South American country, Cuba, Mexico, or China as one of the United States' best customers in normal times.

This lack of self-sufficiency has long been hotly debated between those who look at the islands as a fortress for the defense of the American west coast, and no more, and those who, led by the sugar and pineapple planters,

\* See "Hawaiian Islands: America's Strongest Outpost of Defense," by Gilbert Grosvenor, NATIONAL GEOGRAPHIC MAGAZINE, February, 1924; "Hawaii, Then and Now," by William R. Castle, October, 1938; and "Bird Life Among Lava Rock and Coral Sand: The Chronicle of a Scientific Expedition to Little-Known Islands of Hawaii," by Alexander Wetmore, July, 1925.



Official Photograph U. S. Navy

**Ensign G. H. Gay, a Hero of the Pacific War, Greeted by Admiral Chester W. Nimitz**

In the air battle of Midway Ensign Gay's plane was shot down near a Japanese carrier. Crawling from the wreckage, Gay clung for hours to a life raft and was finally rescued by a destroyer.

see it as an integral part of the United States and maintain that the country is best served if Hawaii sticks to its last and does those things which it can do best.

Be that as it may, Hawaii's dependence on overseas supply, aggravated by the demands of the Army and Navy for such space as is available, has been noted in every island home since December 7.

One Government official said, on returning from the islands, "I expected everyone to be concerned about the military situation, but the one thing they wanted to discuss was shipping."

**A Foretaste of Mainland Shortages**

Shortages range from gasoline—the ration is ten to fifteen gallons a month—through green foodstuffs, butter and eggs, to phonograph records and magazines.

Here is a foretaste for mainland America of the future—the belt tightening we must all expect.

Sugar mills and pineapple canneries, once paragons of efficiency, operate doggedly despite shortages of sugar bags and fiber boxes, repair parts, and tin plate. The war effort has first call on all ships, and Uncle Sam has been pouring men, materials, and supplies into Hawaii since December 7.

To make most effective use of the limited ship space left to island civilians, the Commander of the Hawaiian Department, Lieut. Gen. Delos C. Emmons, exercising his authority under martial law, now prohibits importations except when authorized by his staff. Thus supply is regularized, food given priority, and essential industrial supplies granted precedence over luxuries.

Of the five major islands that form the Hawaiian group, Oahu, seat of Honolulu and Pearl Harbor, is the most important militarily and is the focal point of all shipping (map, page 545). As a result, outside island residents, even more than those on Oahu, feel the pinch of ship shortage.



Press Association

**"I Can't Even Whisper, Much Less Study, with One of These Things on"**

Public school children are taught how to put on and wear gas masks. The teacher has her back to the camera as she demonstrates to a girl how the mask should be adjusted.

On outside islands the shortage cuts two ways. Truck farmers and ranchers, whose produce is customarily sold on Oahu, have lost their market. Few ships move between the islands any more.

**Meat Delivery by Planes**

True, planes still fly, and one enterprising rancher delivers three planeloads of beef to Oahu daily in this fashion, but interisland ships have been diverted to more important purposes.

Within the limitations of the ship shortage, Hawaii has accomplished marvels in recent months to adjust itself to life at the "front."

Government by martial law has met ready acceptance. In peace Hawaii's Governor is named by the President from some civilian resident of the Territory. The newest occupant of the Governor's Mansion is Ingram M. Stainback, who succeeds Joseph B. Poindexter. Island laws are regularly made by the island legislature.

Now under military rule the will of the Military Governor is law and published as edict. From among the hundred or more orders so far issued the people learn that:

No alien Japanese may have possession of firearms, cameras, explosives, short-wave radios, or other gear of the saboteur.

Certain strategic districts, such as Iwilei which abuts the harbor, must be evacuated.

Dogs must be confined during blackouts.

Unemployed men must register for employment.

Owners of pigeons must register them with the military.

One must obtain a permit to buy his ration of one bottle of liquor a week.

Agents of the Military Governor fix prices, which have gone soaring in the face of shortages—56 cents per pound for butter, 65 cents for porterhouse steak, 5 cents a pound for potatoes—and prosecute the "black traders" who spring up as a consequence.

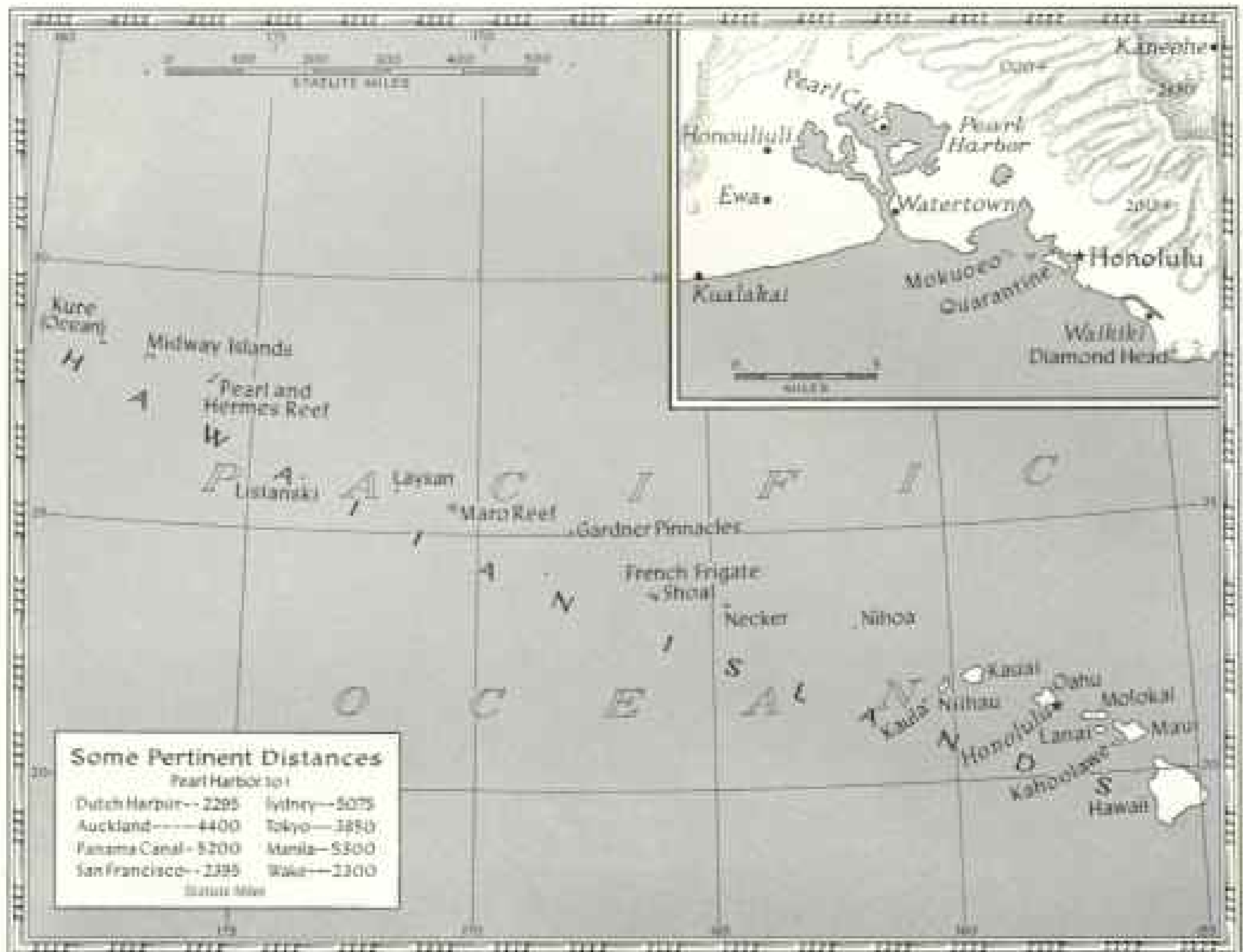
Regular courts are closed to criminal cases



Pan-Pacific Press

### Lieut. Gen. Delos C. Emmons Rules All Hawaii under Martial Law

Authority over business deals, labor disputes, police, transportation, daily movements of citizens, even their very lives, centers here in the General's office in the old royal Iolani Palace (pages 554, 556). His office was once the boudoir of Hawaiian queens. Beside the General stands his Executive Officer, Brig. Gen. Thomas H. Green.



**War with Japan Brought Home to Mainland Americans the Strategic Importance of the Hawaiian Islands**

This island group was ceded to the United States by the Hawaiian Republic in 1898 and made a Territory in 1900. It lies out in the Pacific 2,395 miles from San Francisco, 3,850 miles from Tokyo, and 5,300 miles from Manila. Largest island is Hawaii, famous for its volcanic mountains. On Oahu stands the island capital, Honolulu; here on Oahu are built the chief military defenses, the Navy basing at Pearl Harbor near the city. Years ago these islands were noted for their production of sandalwood. Today sugar cane and pineapples are the chief crops.

and such civil matters as involve trial by jury. The Provost Court, which enforces such civil law as well as the "Orders of the Military Governor," has given Honolulu pause and cause to respect military justice.

A liquor dealer caught in a mild violation of regulations was sentenced to five years at hard labor and had his \$20,000 stock confiscated. A fine of \$50 to \$100 or a 30-day jail sentence is customary for repeating blackout offenders.

Hoarders—there is an order prohibiting individuals from possession of more than \$200 in cash—have been directed to buy defense bonds with the hoarded amounts. Petty gamblers brought before the court find themselves sentenced to give blood to the Queen's Hospital blood bank.

Gay young things, when issued gas masks, are warned not to litter the containers with lipsticks and the trinkets customarily found

in a woman's purse. Children, too small to be fitted with the adult masks, are consoled with the promise of "bunny masks" fashioned from sacks whose corners form rabbitlike ears (page 543).

Primary purpose of martial law in Hawaii is security, and the Military Governor is most concerned with the administration of matters directly related to the defense of the islands.

**Problem of Japanese Residents**

Not the least of these is the question raised by the prominent Japanese element in the population. Of the 425,000 civilian residents of the Territory, some 35,000 are alien Japanese, owing allegiance, at least on paper, to the Emperor.

In addition, their children and children's children, 124,000 in all, though American citizens, are, in countenance and some customs, Japanese also.



Photo Courtesy: P. K. K.

**Barbed-wire Barricades End Leapfrog, Foot Races, and Handball Games for Playful Waikiki Beach Bathiers**

In the background rises one wing of the once luxurious Royal Hawaiian Hotel, now a wartime hospital with another name. At right, the Outrigger Canoe Club. Here Queen Liliuokalani used to come to swim, with children of the royal house. From here the sport of surfboating spread to southern California coasts.



Photo-Public Press

### Honolulu Is So Thoroughly Militarized That in This Picture One Finds Only Two Men Not in Uniform

One civilian, the bus driver, is loading a party of sailors and soldiers at the Army Y. M. C. A., focal point for men on "pass" or "liberty." From this bus and jitney station on crowded Hotel Street, servicemen scatter through Honolulu, on their rare days of leave, to find whatever meager amusement the grim, watchful city now affords. By nightfall every man must be back on post or aboard ship. The once sly every huse are now camouflaged a battleship gray.

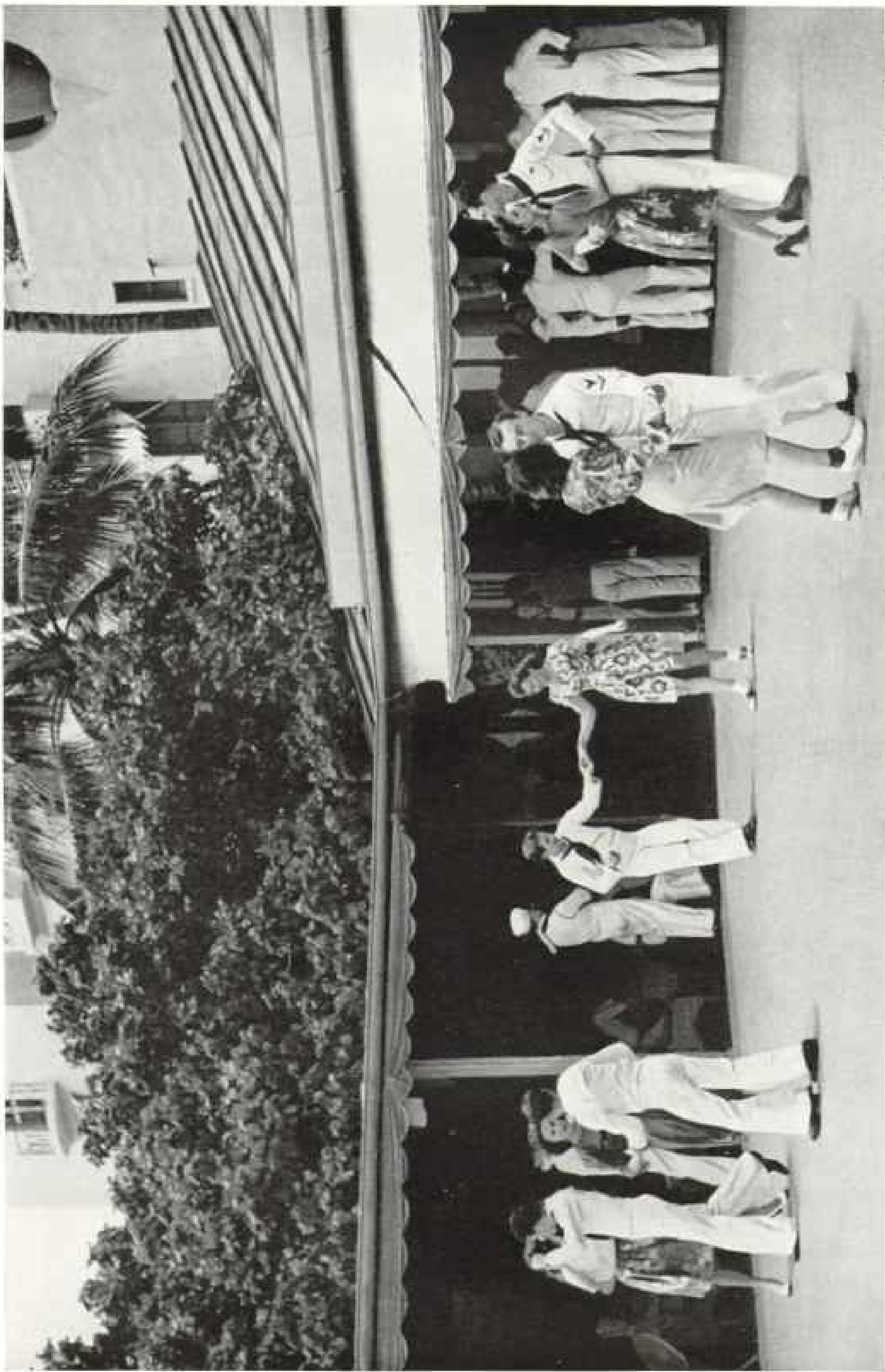




Official Photograph U. S. Navy

**One of the Navy's Big Carriers Moves out to Sea "Somewhere in the Pacific"**

Seeing her off are two PT boats, fastest craft in the Navy. These two carry machine guns and torpedoes; some carry depth charges. The British use these boats successfully in the Channel.



Official Photograph U. S. Navy

**Perils of the Sea Are Forgotten When Tropical Romance Blooms**

Sailors dance with their girls in the garden of the former Royal Hawaiian Hotel. Once the favorite and expensive playground of peacetime, this world-famous curavaportary is now used as a hospital and base for aircraft forces (page 559).



#### Solemn-faced Honolulu Boy Scouts Sing the "Star-Spangled Banner"

All carry gas masks. Some wear helmets. In a public ceremony these Scouts were commended by Lieut. Gen. Delos C. Emmons, Military Governor of Hawaii, for meritorious work on and after the raid of December 7.

What these 159,000 would do in the event of war with Japan and what we should do with them have long been vexatious problems not only to the military but to the remaining civilians of Hawaii, of whom some 100,000 are civilian Caucasians, 29,000 Chinese, 52,000 Filipinos, 21,000 relatively pure Hawaiian, and the remainder a mixture of the lot.

Today the answers to some of these questions are known. No sabotage occurred in Hawaii on December 7. On the other hand, extensive espionage had obviously taken place prior to the Japanese attack.

Conviction and suspicion have since led to the internment of some Japanese aliens. The remaining Japs are free, the citizens to come and go as any other citizen may do, and the aliens within limitations regarding travel and conduct which are most reasonable from any point of view.

Whether this lenient, but American policy is to continue remains unsettled at this writing. To go further in terms of concentration or evacuation is urgently advised in many quarters. But practical problems intervene.

The Japanese are so much a part of the community, contribute so much to the economy, that to evacuate them would have consequences relatively as serious to the defense

effort as removing every third man from Pittsburgh, for the largest employers in Hawaii today are the Army and Navy, their contractors and suppliers.

While the Government ponders this one, the Japanese, both citizen and alien, have continued about their permitted activities, quietly, on the surface at least, mindful of their difficult situation.

No friction appears between the Japanese and the other oriental races that throng Honolulu. Long before war broke out, the Chinese and Japanese lived and worked in amity. While the Japs were bombing Shanghai, Japanese and Chinese in Hawaii were working together to obtain contributions to the Honolulu Community Chest.

As papers foretold Manila's fall, I saw a Filipino, in from one of the plantations, giggling with a young Japanese girl as she sold and helped him wrap a Christmas gift.

One story is told of Filipinos who at that same time threatened to quit work on one plantation as a demonstration against the Japanese. A fast-talking *haole* (white) overseer suggested a hard day's work and purchase of defense stamps as a more effective means to slap the Jap. The Filipinos readily agreed.



Official Photograph U. S. Navy

### This Jeep, U.S.S. *Hush Hush*, Is the Land Flagship of Admiral Nimitz

It was presented to the Commander in Chief of the Pacific Fleet by the Army. The Admiral, at the driver's right, rides with his staff. The battleship-gray car is a familiar sight in Honolulu traffic.

Each of the different races which form Hawaii's population has brought customs to the islands, customs on which the war has left its mark.

The haoles had their Christmas, but the boat which was to bring the trees ran aground in a Seattle blackout.

Football, which reaches the peak of its Hawaiian season during Christmas week when mainland teams play island champions, was canceled with the war. One visiting squad ended up serving with the police reserves.

#### Barbed Wire Curbs Sport Fishing

Fishing, favorite custom of haole, Hawaiian, Japanese, Chinese, and Filipino alike, has suffered from the war. Islanders who complain that even in peacetime fresh fish costs more in Honolulu than in Kansas City now find this basic food cut off.

Commercial fishing, largely conducted by Japanese from sampans, has ended. Sport and surf fishing have been curbed by barbed wire and alert patrols given to shooting first and asking questions afterwards.

Many Japanese customs which added to the color of Hawaii have vanished since Pearl Harbor. Housemaids were once kimonoed while serving meals. Now, by tacit consent of

all concerned, they have laid away kimono, clogs, and all.

So, too, with Boys' Day. Annually the Japanese-American community celebrated this occasion by flying from the rooftops of homes blessed with sons paper balloons shaped like carp. Through the years many haoles adopted the custom, but not a carp flew over Honolulu this May 5.

In other respects Honolulu's reaction to the war is representative of what will occur to mainland cities if they are brought under fire.

Virtually everyone has a civilian wartime job to do. The doctors, whose performance on December 7 and thereafter saved hundreds of military as well as civilian lives; now instruct first-aid classes, lead emergency medical units, and study the latest medical lessons of the war from Europe.

Junior Leaguers wrap miles of bandages for the Red Cross, and many of their number have joined the "Army"—uniform and all—serving in air-raid detection centers.

#### "Tummy Army" Trains for Home Guard

In addition to service as air-raid wardens, Honolulu men have formed several volunteer groups of home guards. One of these units under Army sponsorship and training numbers



PHOTOGRAPH BY PROUD

### Women Who Wove Flowery Wreaths for Departing Islanders and Visitors Now Make Camouflage Nets

Every Honolulu visitor recalls the leis, wreaths of fragrant flowers, which on sailing day were hung about his neck by friends. On the docks were brown, smiling Kanaka women who wove and sold these garlands. Today they weave camouflage for gun positions and pillboxes so cleverly that such installations are often indistinguishable a few rods away. One may drive around Oahu, yet see little of the gun emplacements and air bases that ring the island.



Photo Pacific Photo

### So Many Martial Chariots Rumble through Honolulu Streets That a Recent Police Entry Read "Tank Hits 'Truck"

To reduce accidents tanks, guns, and all other mechanized Army equipment must observe special traffic rules in moving through downtown Honolulu. No tank may run faster than 15 miles an hour, unless Japs return for another crack at the town! Here a column of light tanks turns left off Bishop Street.



Official Photograph U. S. Navy

### Men of Navy's Medical Corps Carry a Patient into a Receiving Hospital

The stretcher has been taken from the field type of "blitz-buggy" ambulance. For use near fighting fields or a dangerous bombing zone, the Navy's Bureau of Medicine and Surgery has developed mobile hospital units staffed with doctors, nurses, and enlisted men trained as hospital aides.

several thousand men, most with World War training.

Nicknamed the "Opu Army"—*opu* means "tummy" in Hawaiian—these men drill three times weekly, and will some day soon relieve the Army and police of the necessity of patrolling residential districts and vital civilian installations.

One example of outstanding community service is being rendered by the emergency police reserves. Younger business men, some time before the war, volunteered for Honolulu's excellent police force in emergency (page 558). Training at night in all branches of police work, they served in the maelstrom that followed December 7 in a manner that won the commendation of General Emmons.

Working with F. B. I. agents and the Army, they gathered up suspects, investigated irregular lights and suspected signaling, and engaged in a score of essential activities which may in large part be responsible for the spotless record of the civilian community during and after the raid.

In such respects Honolulu has much to offer mainland cities from its experience.

Civilian defense, as with all other activity in the islands, heads up in the office of the

Military Governor. Situated in Iolani Palace, capitol building of the Territory, the office of the Military Governor is a small-scale version of Washington in wartime (pp. 544, 556).

Under Army officers and civilians impressed into service, all government and private life focuses. Working 24 hours a day, the office has long since overflowed into schoolhouses and adjacent buildings.

Here you see under martial law the Federal Surplus Commodities Corporation acting as agent to buy all basic food required by the Territory from a \$35,000,000 revolving fund specially provided for the purpose.

### A Hula Helps Morale in Former Home of a Native King

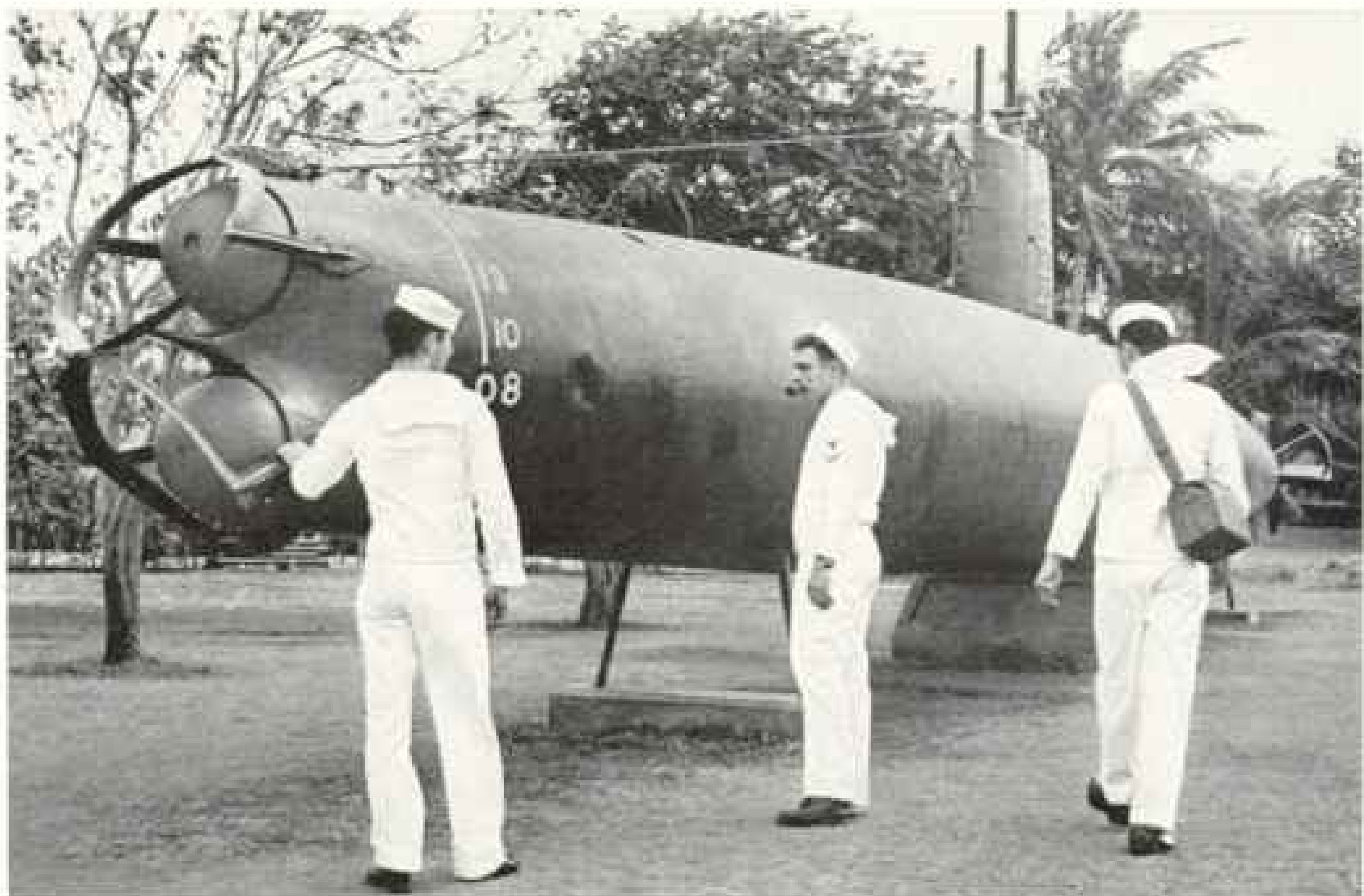
In this mirrored building, once home of the native kings, you may see, as I did one night shortly after December 7, native good humor overcome military dignity.

It was well after midnight in the blacked-out building. A high-ranking officer and I were talking. We came to the old throne room whose dais now serves the speaker of the legislature. Here we had expected to find clerks, mostly Hawaiians, hard at work. Instead, someone had smuggled in a guitar. To



Official Photograph U. S. Navy

Kaneohe Naval Air Station Men Decorate the Graves of Comrades Killed at Pearl Harbor



Wide World from Press Association

American Sailors at Pearl Harbor Inspect a Captured Japanese Midget Submarine

Since their radius is only 200 miles, such tiny two-man pigboats may have been launched from a mother ship not over 100 miles from Honolulu, before the Pearl Harbor raid. Two torpedoes are carried by these midgets, and some are known also to carry demolition charges. They have no cannon or other guns.





Mertha Homer

### Despite His High-powered Sheep's-eye Beam Aimed at This Passing Girl, This Sailor Fails to Score

This is a prewar picture of Iolani Palace grounds, long a rendezvous for sailors, visitors, and other tryst keepers. Now grim war needs compel exclusion of the public. Kalakaua, Hawaii's last king, built this palace, the only once-royal palace now standing on U. S. territory (page 554).

its accompaniment all were singing and one young girl was dancing an old Hawaiian hula.

The major, gas mask, tin hat, sidearms and all, eased himself into the throne, swung his feet up to the reading desk, and slapped his holster in time with the music. The Japanese were far away for that moment.

In the economic revolution which the war has brought to the islands, grave changes have been effected in the character of the work to be done and the way business is conducted.

Heretofore, primary sources of employment were the sugar and pineapple companies. Third industry was the tourist trade. Now the Government is the biggest employer.

Sugar companies at one point had surrendered 60 percent of their employees on Oahu to defense projects.

When the story of the work done in the islands since December 7 can be told, the accomplishment will rival in speed and scope the great military works of all time. Officers who will not talk details will tell you even now that much of this accomplishment was due to the cooperation of civilian Hawaii.

There is the case of the pineapple company whose men and equipment labored all day under fire to restore a ravaged airfield. Employees of sugar plantations, under Army direction, did much of the work whereby another field was extended thousands of feet in three short days so that it might accept large bombers flown in from the coast.

In the same spirit there is the case of the woman who called the Red Cross to apologize for failing to show up on the morning of December 8. She explained, "My husband was killed yesterday, but I'll be back tomorrow."

### Hawaii Becoming an Eveless Eden

Great population changes have been taking place in Hawaii since the war began. At the outset the population was predominantly masculine because of the military garrisons and the numbers of unmarried plantation workers who planned to return some day to the Philippines. Civilian women and children have been evacuated by the thousands to the mainland. More thousands await transportation.

Honolulu is rapidly becoming a town of men without women.

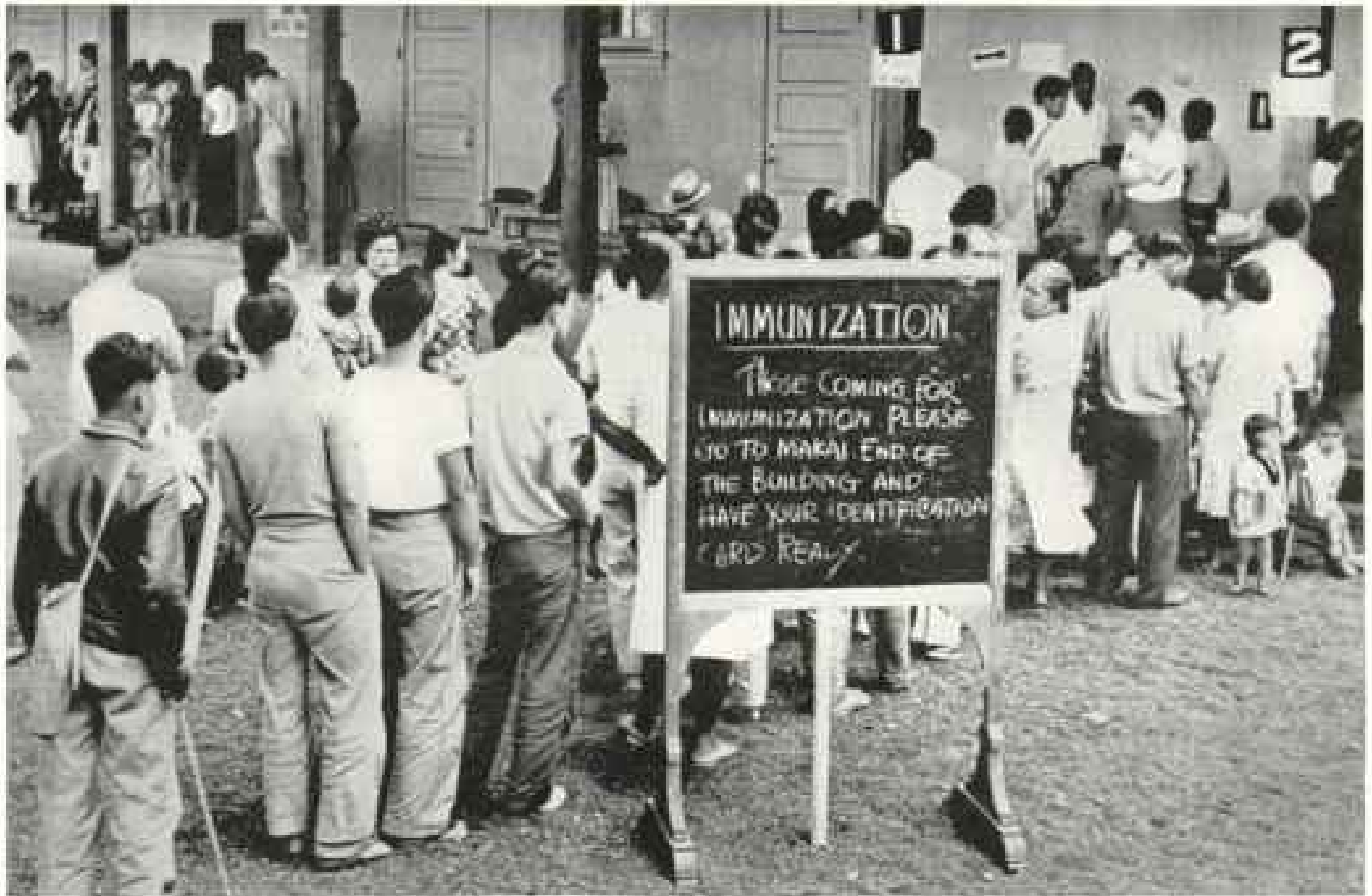
At the same time new troops have been



Pan-Pacific Press

#### Hawaii Is Our First State or Territory to Make a 100 Percent Fingerprint Catalogue

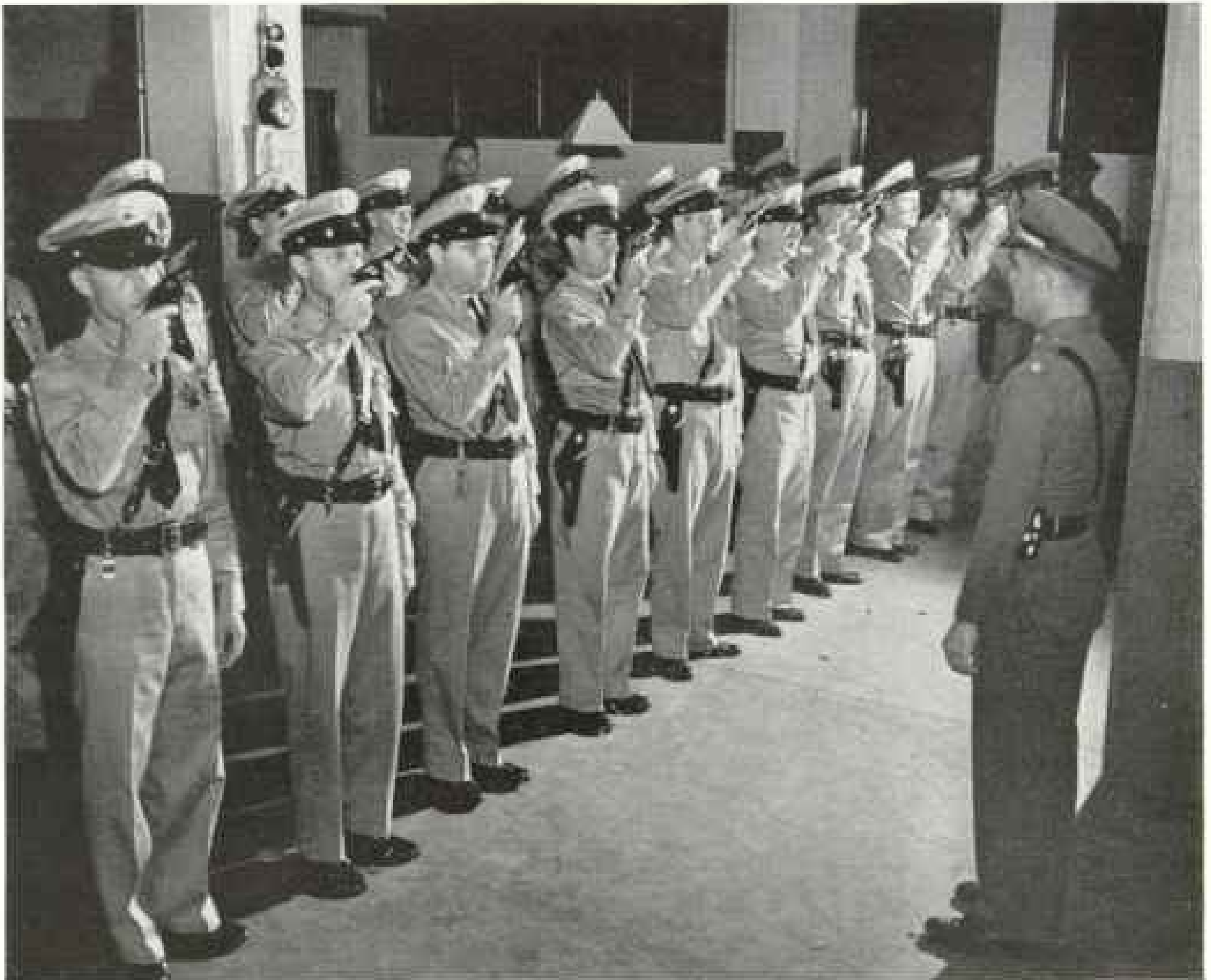
Girls of the Identification Bureau help handle some 400,000 fingerprint sets as every islander is recorded. They are working in the basement of pioneer Kawaiahae Church, one of the first Protestant places of worship west of the Rockies, where once the royal family attended.



AP from Press Association

#### Civilian Residents Are Immunized against Certain Diseases

Honolulu, now crowded with servicemen and imported war workers, guards against the dangers of an outbreak of disease. Under the Territorial Commissioner of Public Health, a program of mass immunization against typhoid fever, typhus, smallpox, and diphtheria has been started.



Pan-Pacific Press

### Fresh from Desks in Banks and Salesrooms, a Shift of Honolulu's Volunteer Police "Inspect Pistol" before Going on Patrol

Now supplemented with 275 such volunteers, who spend at least one day a week on active duty, the Honolulu Police join with the Army's Provost Marshal to enforce military orders governing blackout and curfew. Crime has declined sharply since December 7. Petty violations, however, engross the Provost Courts, which have supplanted the regular magistrates (page 545).

coming in, bringing with them traces of their mainland background. Over one tent in the outskirts of Honolulu is a sign, handpainted by some lonely New Yorker, "Bronx Ave. Station."

It was probably some Oklahoman who took the Hawaiian word for woman, *wahine*, and coined a new one in current use by both soldiers and sailors, "squawhine."

The change in the character of the population, along with the strict regulation of amusements and conduct, has resulted in a boom in some unexpected quarters.

#### Bows and Arrows in Shooting Galleries

Adjoining the ever-crowded Army and Navy Y. M. C. A. one photographer makes a small fortune. He has hired a pretty Hawaiian girl, decked her out in conventional hula trappings, and, as a part of the fee, poses her with

the soldier or sailor subject for a photograph that will knock their eyes out back home.

Orders of the Military Governor prevent the operation of shooting galleries, so they have substituted bows and arrows for the familiar .22. Crowds of uniformed men throng these places. One marvels at a bull-necked, be-medaled Marine who roars over a bull's-eye scored with a feathered shaft.

Jewelers flourish in wartime Honolulu. Defense workers, flush with big pay checks and nothing to spend them on, and men from the services on leave for a few days out of the month, make good customers.

You hear them come in and ask, "I have \$35. What can I get?" One large importer has sold 2,700 wrist watches in the last month.

Barber shops and drugstores are crowded with servicemen, as are the movies and bowling alleys.



Wide World from Press Association

### "If the Japs Ever Come Back, We'll Be Ready for Them"

The treacherous assault on Pearl Harbor taught then unprepared Honolulu a bitter lesson. Night and day now the city stands on constant guard. These men dig air-raid shelters on downtown lawns.

The U. S. O. is active here. In addition to maintaining centers in various sections of Honolulu, staging dances and vaudeville performances for the men on leave, groups of entertainers circle the islands, visiting canteens and posts in the field as a means of breaking the monotony of the constant alert.

At Waikiki, where the men flock on days in town, the Navy has taken over the Royal Hawaiian Hotel, famous tourist resort, as a rest center for submarine and plane crews returned from long Pacific patrols (page 549).

#### Seamen Relax Where Potentates Played

Here, in rooms once tenanted by maharajas and Hollywood stars, ordinary seamen relax for deserved rest. On the grounds existing athletic facilities have been expanded. Stroll through, if you can pass the guard, and you see heroes at play.

For heroism is evident in Honolulu these days. In any uniformed crowd you will find

one or more of the younger men with a trim ribbon over his breast pocket signifying performance "above and beyond the normal call of duty."

Also evident is an air of confidence on every hand. Few believe Hawaii will escape further attacks. But no one feels that Hawaii will fall before them. On every hand are evidences of the preparations being made.

For identification purposes every man, woman, and child in Hawaii has been fingerprinted and registered. This is said to be the largest job of its kind ever undertaken in this country (page 557).

To insure against epidemics, everyone on Oahu has been vaccinated for smallpox and inoculated for typhoid (page 557).

Bomb shelters dot downtown parks and school grounds throughout the suburbs.

Residential districts along the shoreline have been delineated as evacuation areas. Every one of the 60,000 residents of these

areas has been assigned a home or an evacuation center in the valleys, farther removed from military objectives, as his temporary home in the event of hostilities.

To warn against air raids, sirens have been installed all over Oahu, and in areas likely to be subjected to gas attack one sees gongs and noisemakers dangling from signposts at every street corner.

The golf courses are covered with obstructions to prevent their being used by the enemy as landing fields.

Sundays you may see the rector and vested choir marching up the aisle carrying gas masks along with their hymn books.

#### A "Defense Monetary System"

Even though well-defended Hawaii does not now feel the Japanese can ever seize and hold the islands, extreme precautions are taken, "just in case." These include a clever change in the local monetary system.

Normally, some 30 million dollars of American money circulate in the islands. About one-half of it is in the peoples' hands; the rest is in banks, trust companies, etc.

Now all this paper money is being taken up and in its place "scrip," or an equivalent amount of American money with the word "Hawaii" printed on it, is being substituted. This plan will prevent the Japanese, should they seize the islands, from taking American money found circulating here and spending it for their own good in "black markets."

The school system has contributed much to Hawaii's wartime preparations. Over 5,000 students have quit to work at defense jobs or join the home guards. The remainder have gone on a six-day week of shorter classes, doubling up in classrooms to permit use of many school buildings for defense purposes.

Several schools, after extensive alterations, now serve as hospitals. Others are headquarters for military and the civilian defense offices. Still others are used as dormitories for defense workers and troops stationed in the city proper.

All schools outside the evacuation area are preparing for service as emergency-feeding

stations in the event evacuation is necessary. They likewise serve as civilian defense headquarters for their neighborhood.

Here are emergency-aid stations where medical attention will be focused in the event of a raid.

Here, too, one gets his vaccination and shots, is fingerprinted and registered, draws his gasoline allotment, and transacts other personal business occasioned by the war.

These affairs all function under Frank H. Lacey, able Civilian Defense Director, with millions to spend in preparing Hawaii for any eventuality. He says, eyeing a hospital he has built in two months to house 500, "You know, I shouldn't wonder but after the war that will make a pretty good emergency hospital. I don't believe it will ever be a school again."

That is the way Hawaii's thoughts turn, to the time when it gets back to the business of growing sugarcane and pineapples and lulling visitors under its balmy skies.

#### Natural Beauty and Spirit of People Defy War's Rigors

Hawaii is still incomparably beautiful. The Japs can't change the weather or the spirit of its people, who are used to violence. The first Hawaiian kingdom of modern times was formed through bloodshed in 1843; an ambitious British captain once seized the islands by threatening to bombard Honolulu from his ship; and annexation by the United States followed a revolution which overthrew the native monarchy.

From December 7 Hawaii has emerged to act as a model to the mainland of civilian conduct under fire.

This story is being written on a troopship.

But the fabled charm of the islands is ahead. These boys from Iowa farms and Pennsylvania mines look forward to Hawaii as eagerly as wealthy visitors on this very ship in better days.

On deck an Army nurse plays Hawaiian records on a portable machine and calls to a passing marine, "Is it really as lovely as they say it is, Mac?"

"You won't be disappointed, lady."



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## ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

To carry out the purposes for which it was founded fifty-four years ago, the National Geographic Society publishes this Magazine monthly. All receipts are invested 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 researches 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, 291 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 72,095 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.

One of the world's largest icefields and glacial systems outside the polar regions was discovered in Alaska and Yukon by Bradford Washburn while exploring for The Society and the Harvard Institute of Exploration, 1938.

**America's Pacific Fleet,** America's Atlantic Fleet, America's fighting ships on the seven seas, depend for their navigation on the most precise portable timing device known—the ship's chronometer. From it the ship's officers and men set their watches —on it depends the accuracy of the ship's navigation. Before the war, chronometers were always built in Europe. Today Hamilton is proud it has been drafted to make chronometers of great precision for America's ships.



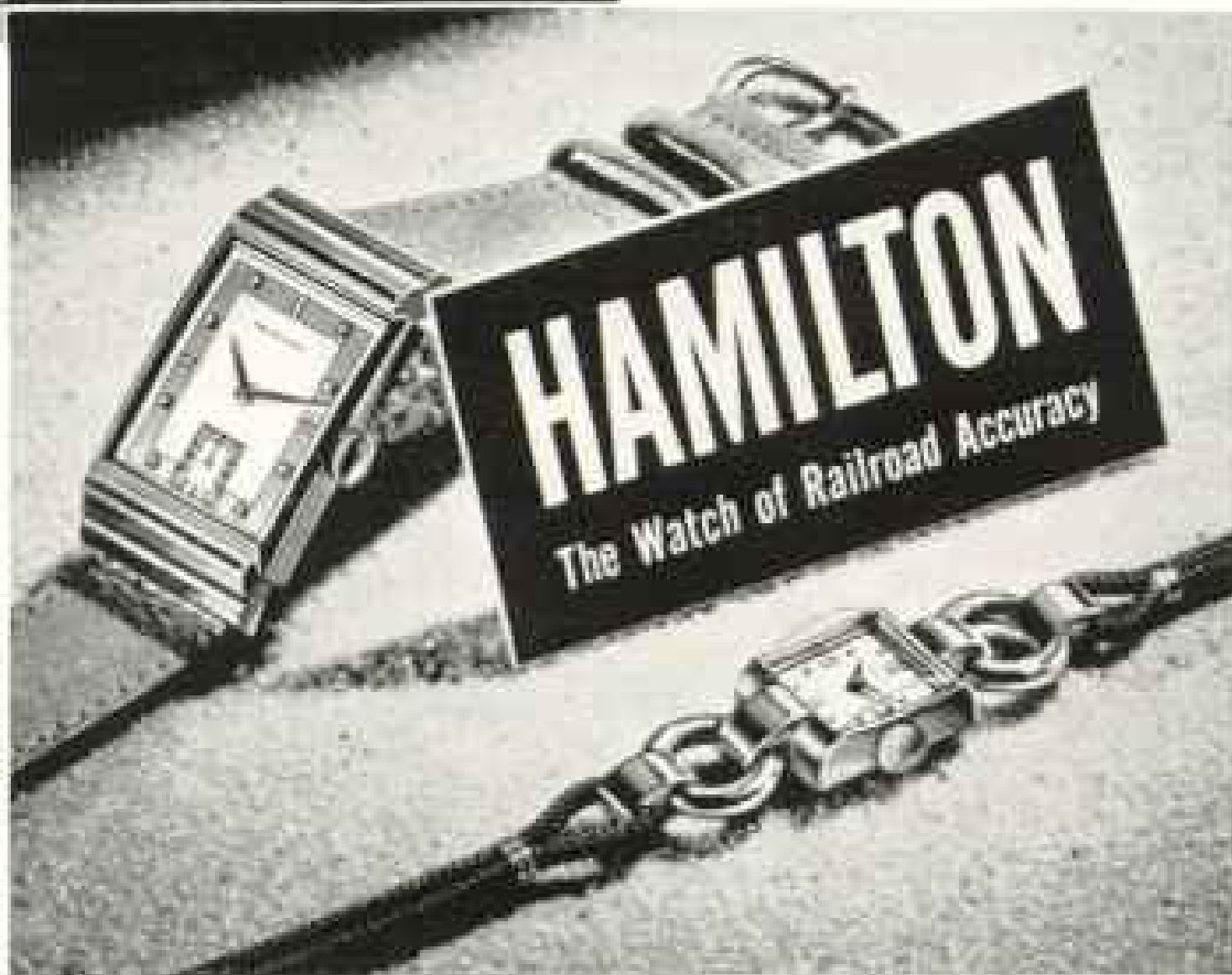
**ON THE WAR FRONT**



**ON THE HOME FRONT**

**Troops that pass in the night** are one reason for the tremendous speedup in activity on U. S. railroads. Railroads are shifting men from one road to another, sharing equipment, doing a magnificent job. More than ever, trains depend, *lives* depend on the accuracy of railroad watches. More than ever, railroads insist on constant time inspection. And more than ever, a railroad man likes to be ready for inspection with a precision-accurate, *rail-road-accurate* Hamilton!

**Hamilton's major effort** now is going into the war program. But there are Hamiltons still available. And Hamilton's long experience in building watches for railroad men and precision instruments for the government insures the greatest possible accuracy in every Hamilton Watch. Precious metal cases (except military watches), 17 jewels or more. Styles for men and women. Hamilton Watch Company, 2104 Columbia Avenue, Lancaster, Pa.





## "Bet your boots they're good!"

*We've told you, good people of America, something about how many Pratt & Whitney valve-in-head aircraft engines are rolling from Buick production lines to give spread to our airmen's wings.*

*Maybe now you want to know the other side of the story—maybe you're asking "How good are they?"*

*Well, here's an instance.*

**T**HEY were giving Buick engines a special shakeout test in the air.

They buttoned them into a plane, loaded the gas tanks, sent a test pilot up to normal flight level for testing altitude performance of this particular engine type.

There was nothing to it. Those power plants turned out their r.p.m.'s so smoothly and ably and coolly that the pilot could find nothing but a flock of okehs to put down on his flight record.

So he thought he'd try something. Deliberately he went up another 5,000 feet.

Another mile of height under the belt of those trojans didn't mean a thing. Still

able, smooth, cool — they did their stuff like the aces they are.

So they brought those engines down. But they didn't route them into service in the usual way.

The airmen wanted to fine-tooth-comb them on their own, to see if they could find out *why* they were so unusually able.

We think we might have given them one reason.

An engine isn't *only* what the blueprints make it out to be.

It's also what a lot of careful, uncompromising, proud-of-their-good-name workmen can put into it of themselves.

They had something swell to work on in the first place — and as Buick men they gave it the best they had.

So you can bet your boots those engines are good — the best there is. And the enemies of America are finding it out.

*war goods*  
**WHEN BETTER AUTOMOBILES ARE BUILT  
BUICK WILL BUILD THEM**

**BUICK** DIVISION OF **GENERAL MOTORS**

"Buy U. S. War Bonds—They Identify You"





Upside down or right side up . . .



at 20° below or 100° above

*Without electricity, no modern bomber could ever leave the ground.*

Electricity starts the motors, retracts the landing gear, changes the propeller pitch, works the wing flaps, opens the bomb doors, powers the radio and inter-communication system, operates the instruments, gives light for the crew to work by.

No ordinary electrical apparatus can handle these jobs in a bomber.

The whole complicated system must work as well upside down as right side up. It must function in a tropical thunderstorm and in 20° below zero altitudes. And it must be designed to save every precious fraction of an ounce and inch.

Developing electrical equipment for bombers—and producing that equipment in quantity—is a job made to order

for Westinghouse "know how."

Here are some of the Westinghouse products that are going into American bombers today:

- Instruments designed so one instrument does the work of two.
- Radio equipment and special blind-flying devices.
- Electric motors that develop more horsepower per pound than any other motors ever built.
- Instrument lights that cast invisible rays on dial markings.
- Electric generators which weigh only 42 pounds, yet produce as much electricity as 38 standard automobile generators weighing 23 pounds each.

*In making these things*, the long-range work of Westinghouse Research and Engineering Laboratories has played a significant part. Discoveries in many fields—in electronics, physics, chemistry, mechanical and electrical engineering—are now bearing fruit in the production of better and more powerful weapons of war.

Many of these discoveries, we believe, will someday help to make a better peacetime world.

★ ★ ★

**This advertisement has been reviewed by Government authorities, and contains no information of military value to the enemy.**



# Westinghouse

PLANTS IN 25 CITIES—OFFICES EVERYWHERE

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, PITTSBURGH, PA.

# WHAT TO DO ABOUT

## 1 IF YOU SAVED YOUR LAST WINTER'S ANTI-FREEZE...



Some of the ingredients of "Prestone" anti-freeze will last from one winter through the next—those, for example, which protect the car against freeze-up. But to give protection against freeze-up is only one function of a good anti-freeze. A good anti-freeze also performs other functions, just as important. One of these is to guard against rust and corrosion... which is why all good anti-freezes are "inhibited." These inhibitors do wear out; and when that happens the car is no longer protected against clogging and overheating caused by rust.

That is one of the reasons why you cannot use an anti-freeze indefinitely... why, for instance, we guarantee "Prestone" anti-freeze for "a full winter's use," and no more. *New, fresh anti-freeze is always to be preferred over anti-freeze which has gone beyond a single winter's driving.*

If, however, you decide to re-use your anti-freeze, take the following precautions:

If you stored your anti-freeze during the summer, take it to your dealer *before* putting it back in the car. There are 2 good reasons.

**A** *To make sure that no dirt or foreign matter has spoiled it. (Cans frequently rust through from the outside and from the bottom. Dirt and foreign matter will clog your cooling system badly.) If your solution is brown or rusty-looking, don't*

bother to take it to your dealer but discard it at once. Be extremely cautious in this regard. Your car is a valuable property: it is in the interest of sound conservation to take all reasonable precautions.

**B** *To have the strength checked... You don't know, definitely, what concentration you had at the end of the season. If your anti-freeze was "alcohol base," you almost certainly lost strength before you took it out last spring. Even if you used "Prestone" anti-freeze, which contains no boil-away alcohol, have the strength checked just the same. You may have lost protection through careless filling, slop-over at the over-flow pipe, and leaks caused by road-shock and wear-and-tear during driving.*

**if** you left your anti-freeze in your car, and have been driving with it all through the summer, point B (above) is even more important, for obvious reasons.

These precautions are the very least you can take to protect your car. Remember, none of them will put back into the anti-freeze the rust and corrosion inhibitors which were there when you bought it last fall, and which have since been used up. This is one of the sound technical reasons why manufacturers guarantee anti-freeze for only one winter's driving.

# ANTI-FREEZE THIS FALL

## 2 IF YOU DID NOT SAVE YOUR LAST WINTER'S ANTI-FREEZE...



See your dealer at once and get "Prestone" anti-freeze installed in your car. As of the date this advertisement goes to press (approximately July 15th) it appears that there will be enough "Prestone" anti-freeze this fall—after Army, Navy and lend-lease requirements have been met—to supply all regular users. We make this prediction because we have increased our manufacturing facilities and because there will be fewer cars on the road this coming winter.

HAVE YOUR DEALER CHECK YOUR CAR for leaks, rust, sediment, or loose connections which may have developed during summer driving. Make sure your "Prestone" anti-freeze is used in a clean, tight cooling system. Then you can *forget* the anti-freeze

problem for the rest of the winter. You will be protected completely—against freeze-up, boil-away, dangerous and obnoxious fumes, rust and corrosion. You can place complete confidence in new, fresh, full-strength "Prestone" anti-freeze. It is *guaranteed* for one full winter season.

Product of NATIONAL CARBON COMPANY, INC.  
Unit of Union Carbide and Carbon Corporation

UIC

General Offices: New York, N. Y.  
Branches: Chicago and San Francisco

The words "Eveready" and "Prestone" are registered trademarks of National Carbon Company, Inc.

D.P.A. RETAIL CEILING PRICE **\$2.65**  
GAL.

# PRESTONE

TRADE-MARK

# ANTI-FREEZE

*YOU'RE SAFE AND YOU KNOW IT  
...ONE SHOT LASTS ALL WINTER!*



IT'S THE SAME "PRESTONE" ANTI-FREEZE, no matter which container it comes in—metal can or glass jug. To conserve metals for wartime use, the familiar "Prestone" anti-freeze can was discontinued early this season, and the sturdy new glass jug was substituted. Your dealer may have cans or jugs or both. Buy either. No difference in the "Prestone" anti-freeze they contain.

# How Social Security Benefits

## MAY AFFECT YOUR LIFE INSURANCE PLANNING



ARE YOU ENROLLED under the Federal Social Security Act?

If so—have you arranged to have your life insurance money paid to your beneficiary in a way that will fit in with any Social Security benefits to which your family may be entitled under the present law?

You see, at the time of your death, members of your family may be entitled to Social Security benefits either in the form of monthly income or a lump sum payment. Or, if you and your wife reach age 65, you may be entitled to monthly incomes for life.

Here are three ways Social Security benefits can influence your decision on how to leave your life insurance money:



**1. If you have young children,** your wife at your death may receive a monthly income from Social Security until the youngest child is 18. You will want to consider this income if you plan to have your life insurance money paid her in regular installments, for it will help you determine the most effective amount, starting date, and duration of the insurance installments.



**2. If your children are grown,** your wife at your death will receive no monthly income benefits from Social Security until she reaches 65. Then she'll begin to receive a monthly income for the rest of her life. Therefore, you might want to fill in that gap by arranging to have all or most of your insurance paid to her as income until she reaches the age of 65.



**3. If you live to sixty-five and no longer need as much life insurance protection,** you can have the values of your policies paid to you. This money, plus your Social Security benefits and any investments, may enable you to retire.

If you would like to know more about how your life insurance can be tied in with your Social Security benefits, see your Prudential agent.

*The* **PRUDENTIAL**  
INSURANCE COMPANY OF AMERICA  
Home Office: Newark, New Jersey



**TUNE IN PRUDENTIAL FAMILY HOUR**  
SUNDAY AFTERNOON, CBS NETWORK



The world's greatest music—starring lovely Gladys Swarthout, Deems Taylor, Al Goodman's orchestra and chorus, and others.



## All set for an eighty-ton punch on the nose

IN A perfect three-point landing, the landing gear must resist a force equal to the full weight of the airplane. In a moderately bad landing, the impact may double the force to be resisted. On a very bad one the force may be more than tripled.

Try these figures on a 25-ton airplane—a Boeing Flying Fortress,\* for example—and you will see why the landing gear has to be able to take it, and take it, and take it.

The design and development of landing gear is part of Boeing engineering history. More than 18 years ago Boeing developed the

first oil-hydraulic airplane shock absorber. This type of shock absorber is now in use on all large commercial and military airplanes, including the Flying Fortress.

That the landing gear of the Fortress can take it has been proved many times in severe drop tests made by the Army Air Forces at Wright Field . . . and in landings, equally severe, made at other fields—from Hawaii to the British Isles.

This extra-strong, extra-light landing gear is one of the many reasons why the crews of the Flying Fortresses are so loyal to the mighty bombers they fly. It is

one of the extra margins of safety that make the Fortress such a rugged soldier in action. A pilot knows that, when necessary, he can ask a little more from this plane, and get it.

The success of the Boeing landing gear on the Flying Fortress is the result of years of research by Boeing structural engineers working to make stronger, lighter structures out of metal.

*The increase in the strength of metal structures . . . together with the decrease in weight . . . is only one of the many projects which form a constant part of the Boeing engineering schedule.*

DESIGNERS OF THE FLYING FORTRESS • THE STRATOLINER • PAN AMERICAN CLIPPERS

**BOEING**

\* THE TERMS "FLYING FORTRESS" AND "STRATOLINER" ARE REGISTERED BOEING TRADE-MARKS

# There are plenty of cylinders for the BATTLE OF BRAINS

Because they are made entirely of non-critical materials, Dictaphone cylinders for dictating machines will

continue to be available for the duration. There is no need to hoard them.

This is good news to executives who are using dictating machines to keep pace with the accelerated mental production required in today's battle of brains.

Dictaphone equipment likewise is still available. It has to be distributed with a greater sense of responsibility than formerly, but if you are a production executive trying to keep ahead of almost incredible volumes of work you owe it to yourself to get in touch with us.

In the Army, Navy and other vital war services Dictaphone equipment has shown itself indispensable to a variety of uses. Now, when all America is united in the greatest single task of all, the value of the Dictaphone Method is being proved as never before.

After the war is won we'll be ready to serve thousands of businessmen who by war necessity have learned the advantages of doing away with such handicapping habits as antiquated, time-wasting, two-person dictation.

DICTAPHONE CORPORATION  
420 Lexington Avenue, New York, N. Y.



★ HELPING TO WIN THE WAR IS DICTAPHONE'S NO. 1 JOB TODAY ★

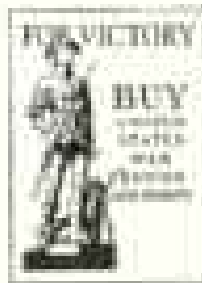


**ACCURATE AS A TARGET RIFLE . . .** fast-firing as a Garand . . . the U. S. Army's deadly new anti-aircraft guns are designed to take a terrible toll of enemy planes.

These guns are aimed and fired by remote control. The marksman simply sights and follows the target with a finder, and releases the trip mechanism which fires the gun. The gun barrel swings in unison with the aiming device.

To Dictaphone Corporation went the difficult task of making the precise and intricate control system—the brains of the mechanism. This device enables the guns to get into action with deadly accuracy and almost incredible speed, the instant the enemy is sighted.

Thus the skill and precision which have been developed in the manufacture of Dictaphone dictating machines have now been turned to make one of the Army's most complex mechanisms.



**ALL DICTAPHONE ELECTRICORD\* EQUIPMENT** is designed or reserved for the armed services and their direct suppliers.

Today in airplane control centers are batteries of Dictaphone Electricord Belt Recorders which make permanent records of all flight instructions. Continuous recording is done on small flexible belts

which are practically unbreakable, and which can be folded and filed away.

Another development is the Dictaphone Special Electricord recording-reproducing machine which records from electric communications equipment and is being made for the U. S. Army Signal Corps and other essential war services.

This special equipment for war use is typical of the developments of Dictaphone research which will be available for civilian use after the war is won.

*\*The name Electricord, formerly Telcord, is now applied to Dictaphone equipment which is electrically amplified.*

**DICTAPHONE** ACOUSTICORD DICTATING EQUIPMENT  
ELECTRICORD RECORDING EQUIPMENT

The word DICTAPHONE is the Registered Trademark of Dictaphone Corporation. Models of Dictating Machines and Accessories to which said Trade Mark is Applied.

# WHAT'S IN A NAME ?



**THOMAS** means "a twin"



**LAWRENCE**  
means "laurel crowned"



**ANN**  
means "grace"



**ETHYL**  
is a trade mark name

It stands for antiknock fluid made only by the Ethyl Corporation. Oil companies put Ethyl fluid into gasoline to prevent knocking.

The Ethyl trade mark emblem on a gasoline pump means that Ethyl fluid has been put into high quality gasoline and the gasoline sold from that pump can be called "Ethyl."

## What does your name mean?

The meanings and origins of over 700 masculine and feminine names are given in the fascinating illustrated booklet, "What's in a Name?" It's free—no obligation—just mail coupon.

**FREE ILLUSTRATED BOOK OF NAMES**



ETHYL CORPORATION  
Room 3309, Chrysler Building, New York City

Please send me a free copy of "What's in a Name?"

Name \_\_\_\_\_ (PLEASE PRINT)

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**I haven't any answer for the people  
who say, "Why put all that  
money in a radio?"**



• If you look at the chassis of a Scott you'll appreciate why it can never be mass-produced, and why it is not inexpensive. We put into a Scott all that 18 years of radio building have taught us, being content to sell fewer sets so long as they are all Scotts.

• Nothing is more gratifying to me than hearing from people who have *owned* to buy their Scott that it has made them happier than any other possession. They are grateful almost beyond measure for the Scott's ability to bring into their homes, as in a living performance, all the great artists of our day.

• If music has laid its charm on you, as it has on them, you will be led inescapably to the Scott . . . NOW while you can still obtain the radio that is the choice of Toscanini, Heifetz, Deems Taylor and a host of the musical great.



E. H. Scott Radio Laboratories, Inc., Dept. 1E42, 4444 Ravenswood Ave., Chicago, Ill.

Please send full information about the Scotts and details of your SPECIAL OFFER.

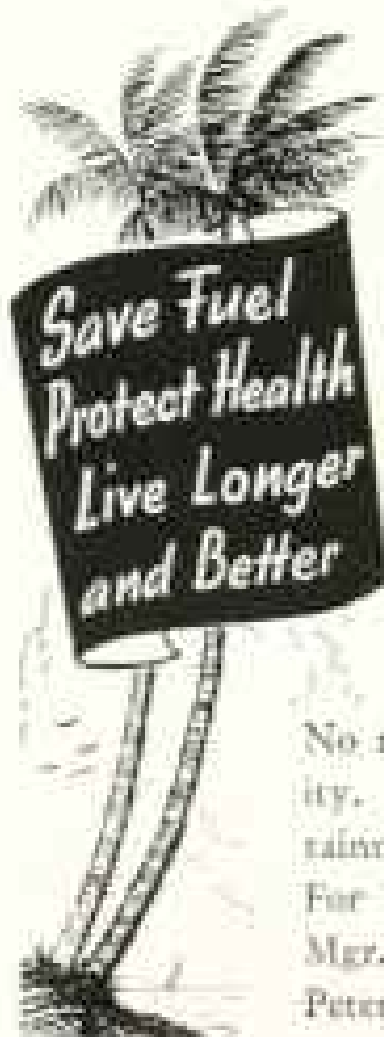
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— Studios in New York and Chicago —

## Plan to Live in ST. PETERSBURG This Winter



The Sunshine City is prepared to house and entertain 60,000 winter residents this year. Although the Government is using some of our hotels as a training center, approximately 80% of our tourist accommodations (apartments, smaller hotels, furnished homes, etc.) remain for civilian use. This is an ideal winter home for people not engaged in military service or war production work.

No rationing of sunshine or hospitality. Plenty of recreation and entertainment. Plan early—come early. For booklets write G. G. Davenport, Mgr., Chamber of Commerce, St. Petersburg, Florida.

**THE SUNSHINE CITY ~ ON THE GULF**

LETTERS ARE WEAPONS FOR VICTORY

Write often  
Write cheerfully  
Write!



USE  
**Eaton's**  
FINE LETTER  
PAPERS

TO GET A LETTER - WRITE A LETTER

## Heart Patients- Stair Climbing is Dangerous

Doctors recommend HomeLIFT for those with heart condition. HomeLIFT is the high quality automatic electric home elevator. Press button, you are upstairs or down without effort. It operates from lighting circuit for less than a cent a day. Quickly, inexpensively installed in old or new homes. Safe, fireproof. Hundreds in use. Do not be confined to one floor. Install a SHEPARD HomeLIFT and roam the whole house in a few days. Write for details.

The HomeLIFT is designed by experts who have been building commercial passenger elevators for years.

**THE SHEPARD ELEVATOR CO.**

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First Office and Hotel Elevators  
2432 Colerain Ave., Cincinnati, O.  
Representatives in Principal Cities

**SHEPARD  
HomeLIFT**



## HEAR a World of Sound Through This MAICO "ACE"



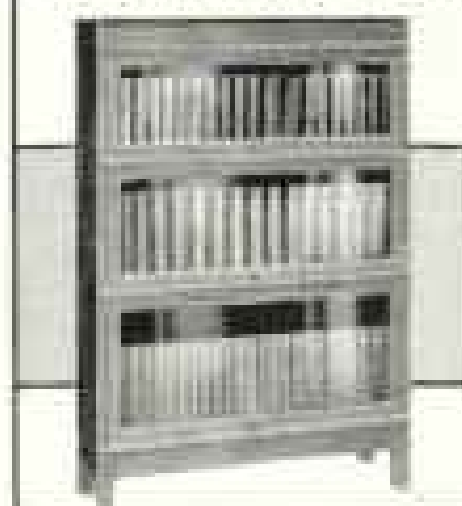
MAICO "ACE"  
Transmitter weighs  
only two ounces

Small as a pocket watch, yet enables hard of hearing person to carry on normal conversation at 20 feet — to hear even a whisper with loud noises cushioned.

FREE! Send name of relative, friend or your own name for a new experience in hearing. No obligation. Address: Maico Co., Inc., Dept. 30-A, 2632 Nicollet Avenue, Minneapolis, Minnesota.

A product of the Maico Company which provides 90% of America's precision hearing test equipment. Choice of our physicians, hospitals, universities, clinics, airlines, U. S. Army and Navy.

## THESE SECTIONAL BOOKCASES GROW AS YOUR LIBRARY GROWS



You can be proud of these sectional bookcases . . . beautiful examples of fine wood craftsmanship. They protect books from dust and damage . . . additional units may be added when needed . . . for home and office.

Free . . . Ask our dealer for 32-page booklet, "The World's Best Books" . . . or write to us.

Illustration shows the Economy style available in several attractive finishes.

**The Globe-Wernicke Co. . . CINCINNATI, O.**



# Tough Customer

*Concentrated* firepower... a smashing blast of machine gun bullets and cannon shells spitting from one point—and heading hell-bent for the target.

That's the kind of firepower that makes a warplane a tough customer. That's the kind of firepower a Lockheed P-38 "Lightning" has... concentrated firepower that's designed in—not added on.

And it's firepower that is *always* concentrated... from muzzles to target, at any range... because it comes slamming from the nose of that unobstructed center cockpit. It's a battle-axe of lead and explosives that can slice off a Messerschmitt wing, or blast a Jap Zero to bits... and it's another reason why a 'plane christened "Interceptor Pursuit" in defense-minded days fits so well its new official air force title, "Fighter"! Lockheed Aircraft Corporation... Vega Aircraft Corporation... Burbank, California

**for protection today, and  
progress tomorrow, look to**

## Lockheed

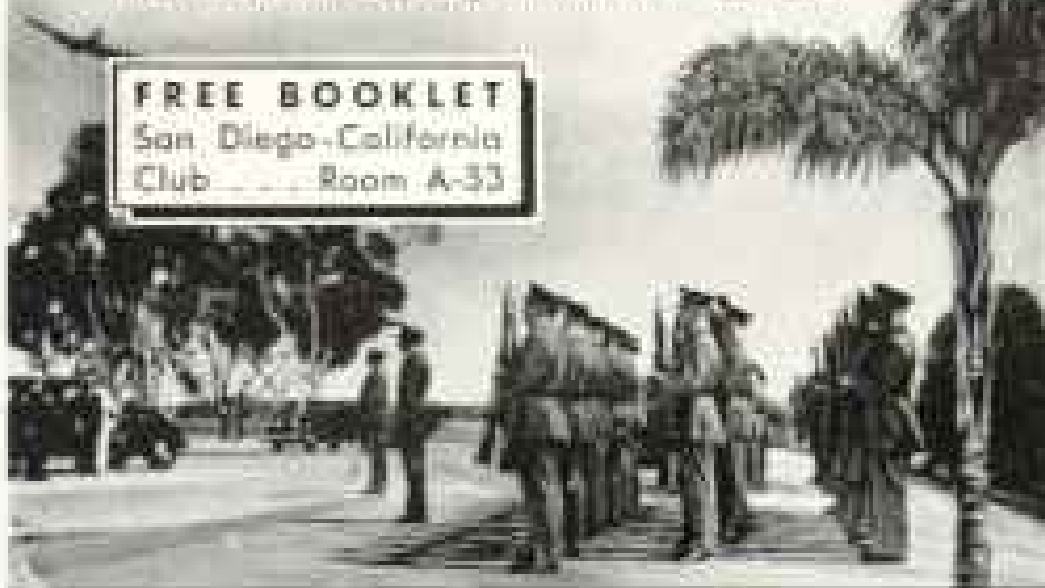
**FOR LEADERSHIP**



*San Diego* CLIMATE  
Serves Democracy

**TODAY** - the loveliest climate in all the land, helps fight the war for Democracy! The same mild climate that has made - and will continue to make - San Diego the perfect year-round vacation land, now provides ideal conditions for military training and production. San Diego is glad and proud that her natural resources can thus serve the Country in this time of need.

**FREE BOOKLET**  
San Diego-California  
Club Room A-33



**SAN \* DIEGO**  
SOUTHERN CALIFORNIA

EVERY WORD CONTAINS A HIDDEN STORY OF ITS ORIGIN

**Alert!** Once meant,  
*On the watch-tower!*

**A**LERT, now meaning "air raid alarm!", comes from early French *à l'erte*, "on the watch." This, in turn, came from Italian *all'erta*, "on a watchtower or height." Both you and your children will enjoy the hundreds of fascinating word origins in WEBSTER'S NEW INTERNATIONAL DICTIONARY, Second Edition. Its completeness makes it truly the *Foundation Book for Home Education!* It seems almost unbelievable that such a vast fund of knowledge could be packed into one volume! And, in addition, you learn everything you want to know about words, 600,000 of them, 121,000 more than in any other dictionary. Ask any bookseller to show you the MERRIAM-Webster, identified by the Circular Trade-Mark. Write for free illustrated booklet of interesting word origins to G. & C. Merriam Co., 117 Federal St., Springfield, Mass.

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**"LANGUAGE IS A WEAPON"**

Forge ahead, win special assignments, in global war and the ultimate peace, through ability to speak a foreign language.

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quickly, easily, correctly  
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Faster WITH S.V.E. SLIDE BINDERS**

Make 2" x 2" glass slides without tedious taping! Frame of S.V.E. Binder automatically centers film and glass. No buckling of film. No glass breakage. 100 binders with glass, for double frame 35 mm. film, \$3.75; for tantam size, \$4.50.

Edges is gummed for fast seating.

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OF 2" x 2" COLOR SLIDES**

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**NATIONAL GEOGRAPHIC SOCIETY, Dept. B-U, Washington, D. C.**

Photo courtesy U. S. Signal Corps, U. S. Army



*“What they see...  
they GET!”*

**“WHAT** you see—you get!”  
Movie makers the world over have come to rely on that familiar slogan—knowing that the advanced design and precision construction of their FILMO cameras are lifelong guarantees of surpassing performance.

Now—Uncle Sam faced with the need of training millions of men quickly is using Bell & Howell equipment in many cases to help in this great task. He knows that what his wards in khaki and blue see on the screen—*they get*. They get it thoroughly and in much less time.

The craftsmanship of Bell & Howell which provides professional results with amateur ease in peacetime is now furnishing our fighting men, in training and in combat, the finest motion picture equipment that American skill and ingenuity can devise.

*Filmo*

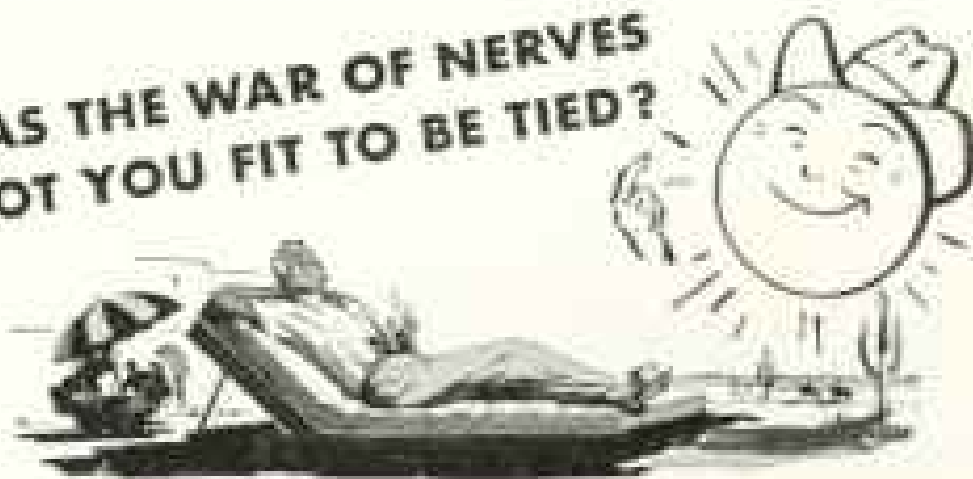
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Chicago; New York; Holly-  
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MOTION PICTURE CAMERAS AND PROJECTORS

PRECISION-MADE BY  
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HAS THE WAR OF NERVES  
GOT YOU FIT TO BE TIED?



Relax in Arizona's  
DRY Sunshine Shangri-La

# TUCSON

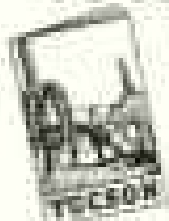
IN ALL AMERICA, there's nothing that compares with Tucson's health-giving, energy-restoring climate! Its tonic, *dry* desert air makes you feel like a new person. Rest or play. You'll be enchanted with Tucson! Write today.

University of Arizona • Fine private schools • 500 miles inland • All-glass golf courses • Finest medical facilities.



## TUCSON *Sunshine* CLIMATE CLUB

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\* Please send me your free descriptive booklet.



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## SUCH LOVELY THINGS . . .



—remember . . . the moon-path on the sea . . . our wedding in the old First church back home . . . the time you pressed my hand at Teddy's graduation and whispered in my ear: "Our job's finished now. We'll have some fun!" . . . No, darling, I won't forget . . . We laughed, and loved, and wept . . . together . . .

You can depend upon the experience and knowledge of the dealer who offers a monument inscribed with a Barre Guild Seal and backed by a Barre Guild Certificate. These are guarantees of quality issued by the Barre Granite Association — using the finest granite from the quarries of the J. K. Pirie Estate, Rock of Ages Corporation, E. L. Smith & Co., Wells-Lanson Quarry Co., and Wainwright and Morse Granite Co.



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National Geographic Society  
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1942

Please send me the items indicated below:

■ All Maps come on either paper or linen. *Indexes are available for Maps marked with asterisk*. All items are sent postage prepaid.	How Many Copies Desired		
	Paper Maps \$10 each in U.S. & Poss. Elsewhere \$12 each	Linen Maps \$15 each in U.S. & Poss. Elsewhere \$1.20 each	Indexes \$10 each in U.S. & Poss. Elsewhere \$10 each
The World 41 x 22 in.			
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## *Living a good life with a bad heart*

**THE HEART IS A MUSCLE** about the size of the clenched fist. It is perhaps the hardest-working muscle in the body, for it pumps some five hundred gallons of blood every day, and it never sleeps, never gets a complete rest.

Virtually all of us are born with hearts fully capable of doing this enormous amount of work. All too frequently, however, the heart may later suffer some form of damage. In childhood and in early adult life the damage may be caused by disease—usually acute rheumatic fever. After 40 or 45, the changes which come with age may affect the heart. Whatever the cause, the damage interferes with the normal functioning of the heart, and the condition is labeled "heart disease."

Fortunately—and contrary to widespread belief—most heart disease does *not* mean sudden death or even serious interference with normal activity. The best proof of this is the fact that there are in this country at least two million people who have some form of heart trouble. Many of them are living useful, virtually normal lives, because they know what their hearts can do and have adjusted their lives accordingly.

If the doctor says you have heart disease, you can follow no wiser course than to seek his regular guidance. Through periodic visits he can regulate so wisely the life you lead that many years may be added to your life. The doctor may not give medicine, but regular check-ups will enable him to correct faulty habits of living and to ob-

serve promptly any changes in the condition.

The family can usually do much to help carry out the doctor's instructions. A peaceful home atmosphere, regular hours of rest, and proper diet may be important parts of the care required. Family watchfulness is especially necessary when a child has heart disease.

To safeguard our hearts, it is important for those of us who are past 40 to avoid sudden, unusual exertions that might cause overstrain. Today, many of us are engaged in activities to which our bodies are not conditioned. The wise course is to undertake them gradually, much as an athlete goes into training. Annual medical check-ups are particularly advisable for *everyone* past 40.

Metropolitan will send you a free pamphlet, 102-N, "Protecting Your Heart," which contains interesting and valuable information about the various forms of heart disease.

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### **Metropolitan Life Insurance Company** (A MUTUAL COMPANY)

*Friedrich H. Ecker*, CHAIRMAN OF THE BOARD

*Lesley A. Lincoln*, PRESIDENT

1 MADISON AVENUE, NEW YORK, N. Y.





## The Beetle that can Crash Dive

**T**HIDINEUTES IMARGINATA, or Whirligig beetle, is the shiny black insect most of us have seen skimming madly around on the surface of ponds. But when necessary, he can give a pretty good imitation of a submarine going into a crash dive.

When danger appears, the whirligig beetle catches a bubble of air under his wing covers and quickly dives deep under the surface, where he can remain until the danger is past.

The means Nature has found to protect her children are as ingenious as they are varied. Unfortunately, they are not all uniformly effective. Not all beetles, like the whirligig, are able to take on a supply of air and retire to the bottom of a pond when danger threatens.

Not is man's ingenious method of protection, insurance, as uniformly effective as many of us would desire. Some people, quite naturally but mistakenly, insist on working out their insurance problems entirely by themselves, or depend on the advice of well-meaning friends.

As a result, they sometimes leave themselves and their families in a dangerously vulnerable position. It would occur to few men, for example, to

make provision in their insurance for the income tax payments which would fall due *after* their deaths. How much better off they would be if only they would rely on the guidance of a man whose lifework is the study of insurance!

The Travelers representative is such a man. And that is why so many thoughtful folks go to him when seeking advice on the protection of their families and their possessions. The Travelers representative recognizes your insurance problems as *individual* problems. The thorough training he has received and the wide experience he has gained, through The Travelers, have prepared him to see that you get the most effective and economical protection your circumstances demand.

The Travelers representative in your community has helped many of your friends and neighbors. Their satisfaction is his best recommendation. He may be able to give you some suggestions that will be of benefit to you.

Moral: Insure in The Travelers. All forms of insurance. The Travelers Insurance Company, The Travelers Indemnity Company, The Travelers Fire Insurance Company, Hartford, Connecticut.

Pause ...  
Go refreshed

**Coca-Cola**  
TRADE MARK REG. U. S. PAT. OFF.

Pause ...  
Go refreshed

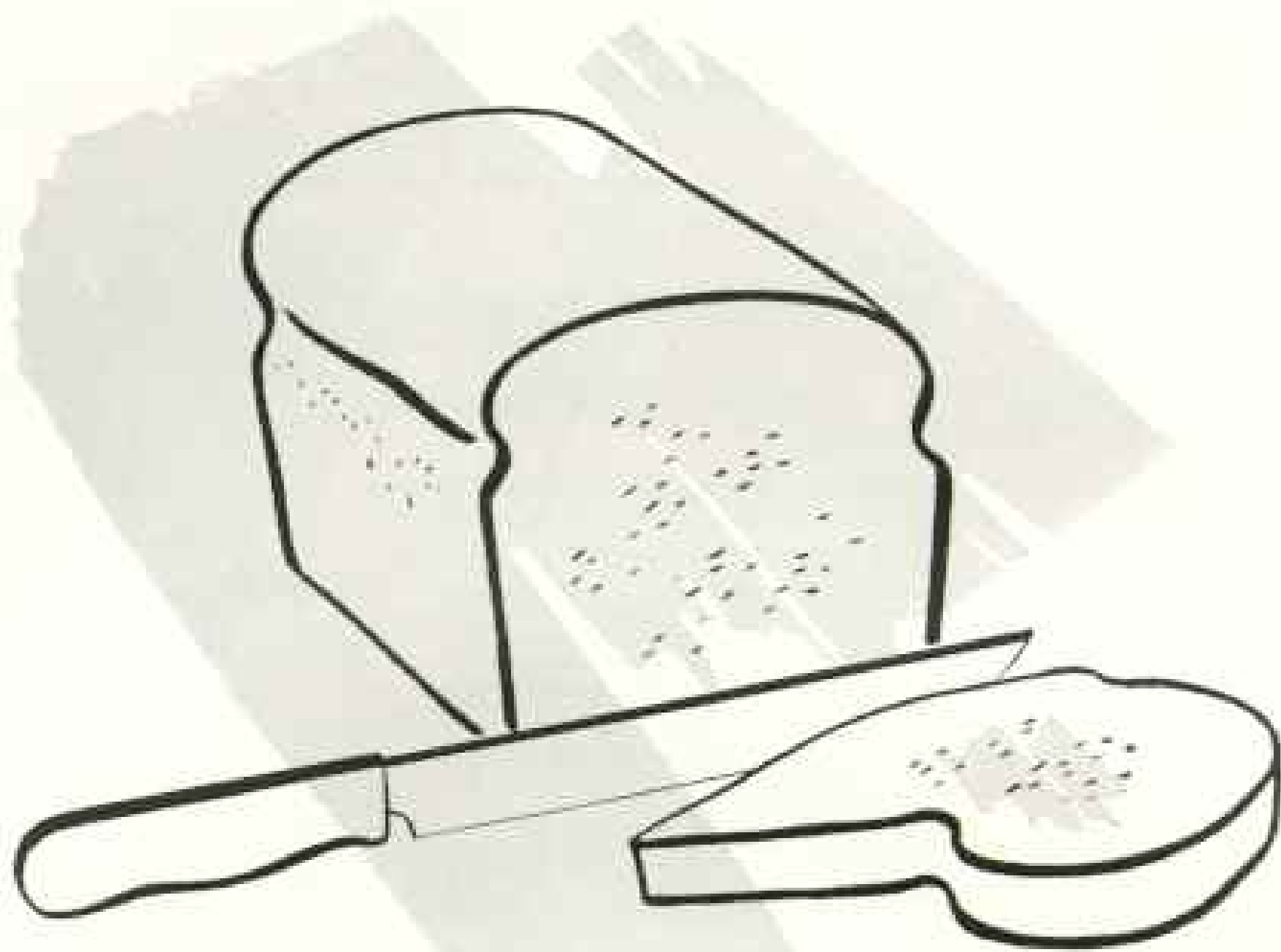
There's a refreshing little minute on the sunny side of things that awaits you . . . at the soda fountain. Especially when you can enjoy there the delicious taste and oh-so-welcome refreshment of ice-cold "Coca-Cola". There's all the quality of genuine goodness in ice-cold "Coca-Cola" . . . the taste and quality of *the real thing*.



"In war as in peace, I assure you quality . . . the quality of genuine goodness in refreshment. I'm "Coca-Cola", known, too, as "Coke". I speak for *the real thing*."

**5¢**

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## a slice of **SAWDUST**

Think of the ersatz food eaten by Axis-dominated people and thank Providence for our rolling fields of grain, our vitamin-rich bread that helps to keep us a healthy Nation; a Nation determined to remain strong and free.

Union Pacific plays its part in building a healthy America by hauling tons of grain and other western-grown products for our homes

and our men in service. It plays its part in maintaining American freedom by transporting huge shipments of armament, trainloads of troops over "the Strategic Middle Route" uniting the East with the West.

All Union Pacific employes realize that this is a job that must be done—and they're doing it. Day in and day out, they're "keeping 'em rolling" to back up Uncle Sam.



*The Progressive*  
**UNION PACIFIC RAILROAD**  
*The Strategic Middle Route*



# "Where shall we stay?"

NATIONAL GEOGRAPHIC MAGAZINE'S HOTEL SECTION

## ARIZONA

### Phoenix

**Hotel Westward Ho.** Premier Hotel of the Southwest, in world-famous Valley of the Sun. Midtown with desert resort atmosphere. European Plan. Hill-Tucson

**Pioneer Hotel.** Southern Arizona's Finest. 250 Rooms with bath. Europ. Coffee Shop. Dining Room. Roof Garden. Sun Deck. Reasonable Rates. Booklet.

## ARKANSAS

### Hot Springs National Park

**Arlington Hotel and Baths.** Arthritis, circulatory benefits. Waters owned and recommended by U. S. Govt. Golf. Hazyetank. Write for folder.

**Hotel Majestic.** Rooms, suites, apartments. Government supervised bath house in hotel. Also Lodge on Lake Hamilton. Write for booklet.

## COLORADO

### Colorado Springs

**Broadmoor Hotel.** In shadow of Pikes Peak, sports and social center of the Rockies. Metropolitan luxury, restful relaxation. Write for brochure.

## DISTRICT OF COLUMBIA

### Washington

**The Dodge Hotel.** On Capitol Hill opposite Union Station Plaza. Renowned cuisine. No tipping. Single from \$2.50, double from \$4.00. H. R. Williams, Mgr.

**Wardman Park Hotel.** Washington's Largest. 1000 outside rms. Surrounded by parks. Near everything. Regular prices in dining rms. Rates from \$2.50.

## MARYLAND

### Baltimore

**The Belvedere.** Baltimore's Finest Hotel acclaimed everywhere for its spacious rooms, excellent service and superb cuisine. Ideally located. \$12 up.

## MINNESOTA

### Rochester

**Hotel Arthur.** Fireproof. \$1.75 up. Only short block to Union. An Arthur L. Roberts Hotel. We operate a fine Northern Minn. Resort also.

## NEW YORK

### New York City

**The Barbizon.** Lexington Ave. 63rd St. New York's most exclusive hotel for young women. Cultural environment. Weekly \$12 up. Daily \$2. Bath. "NG."

**The Biltmore.** Madison Avenue at 42nd St. All that is best in atmosphere, appointments, service. Single, \$5.50 up; Double, \$7.50 up; Suites, \$12 up.

**The Commodore.** Right at Grand Central and Air Lines Terminal. Near all attractions. 300 comfortable, outside rooms all with private bath.

**Hotel Edison.** 40th to 47th Sts. at B'way. One of New York's Newest. 1000 Choice Outside Rooms, Bath, Radio, Circulating Ice Water. From \$1.00.

**Essex House.** Facing Central Park. Rooms and Suites with bath or "pantry"—from \$2.00. 100 Central Park So., Cable Address—Essex New York.

**The Gramercy Park.** Famed traditional hotel at legendary private park. Headquarters of nation's great. Single, \$2.50 up; Double, \$4.00 up; Suites, \$7.00 up. Weekly, monthly. Bath \$1.

**Hampshire House.** Central Park South. New York's most beautiful hotel. For transient visits or longer stays. Vincent J. Coyle, Manager.

**Hotel Lincoln.** 44th to 45th Sts. at 12th Ave. 1400 Rooms—\$1.00 Up. Four Fine Restaurants. Direct Subway Entrance to All Points of Interest.

**Park Lane Hotel.** Park Ave. at 45th. Convenient, distinguished. Single rooms from \$2; double from \$3; suites from \$12. Apartments, permanent occupancy.

**The Plaza.** New York City, facing Central Park. Traditional atmosphere in a modern setting. Rates are reasonable. Henry A. Root, President.

**Hotel Seymour.** 50 W. 40th St. Near Fifth Ave., theatres, shops, art galleries, Radio City. Quiet, refined surroundings. Single \$4; double \$5.50; suites \$7.

**The Waldorf-Astoria.** Park Ave., 48th to 50th St. At heart of New York business, social life... no car needed. Send for Bklt. "A Plan for Duration Living."

## PENNSYLVANIA

### Hershey

**Hotel Hershey.** One of America's Finest. Magnificent setting. Open year-around. Europe-an and American plans. Four Golf Courses. All outdoor sports.

### Philadelphia



### The Bellevue-Stratford

Famous among America's fine hotels is the Bellevue, in Philadelphia. Center of the social life of America's third largest city and meeting place of the leaders in every sphere of national activity. Today's visitor finds practically a new Bellevue ready to greet him. New in decorations, new in attractions. Claude H. Bennett, President.

## TENNESSEE

### Gatlinburg—Great Smoky Mountains

**Mountain View Hotel.** Open all year. On new route to Florida from Midwest. Stopover to see Smoky this winter. Special rates Dec. 1st to Mar. 1st.

## VIRGINIA

### Virginia Beach

**The Cavalier.** 20 acre seashore estate. Private Beach. Cabanas. Dancing. Two 18-hole golf courses. Tennis Courts. Salt Water Pool. Selected. \$12.50.

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## RECOMMENDATION FOR MEMBERSHIP

IN THE

# NATIONAL GEOGRAPHIC SOCIETY

\* The Membership Dues, Which Are for the Calendar Year, Include  
Subscription to the National Geographic Magazine

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1942

To the Secretary, National Geographic Society,  
Sixteenth and M Streets Northwest, Washington, D. C.:

I nominate \_\_\_\_\_

Occupation \_\_\_\_\_

(This information is important for the records)

Address \_\_\_\_\_

for membership in The Society.

# Discovered! How brushing can cause **LOOSE FALSE TEETH**

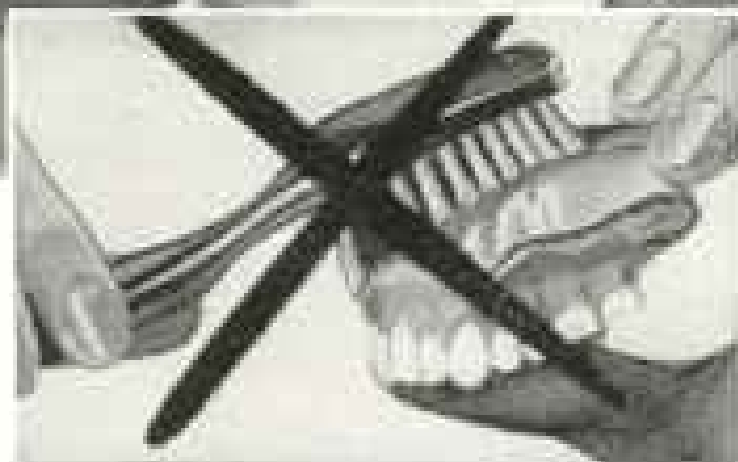


**BEFORE BRUSHING:** Note tiny ridges your dentist puts into plate to insure fit, hold it fast, prevent slipping.



**AFTER BRUSHING:** See how brushing with a common cleanser can wear down ridges, destroy action, ruin fit of costly plates.

Tests show why dentists say "USE **POLIDENT**—the brushless cleanser—**SOAKS** away stains, odor"



**BRUSHING** — even gently — with tooth pastes, powders, or household cleansers, *not designed to clean false teeth*, wears down surfaces vital for holding plates tight. This scratching may not be visible—at first. But it goes on—*taking out* the very ridges your dentist put in. *Repeated brushing* with these makeshift methods can actually ruin your plate.



**WORKS LIKE MAGIC!** That's why so many leading dentists recommend **POLIDENT**, the revolutionary cleanser that *dissolves* away film, stain, tarnish, odor without *brushing, acid or danger*. Just do this daily: put a little **POLIDENT** powder in  $\frac{1}{2}$  glass of water. Stir. Put in plate or bridge for 10 to 15 minutes. Rinse—and it's ready to use!



## Plate Wearers Often Worst Breath Offenders

The dark film that collects on plates, bridges, soaks up odors and impurities like a sponge. Almost always it results in "Denture Breath"—probably the most offensive breath odor. You won't know if you have it—but others will! Yet **POLIDENT** quickly dissolves film—leaves plates odor-free and sweet. Millions call it a blessing.

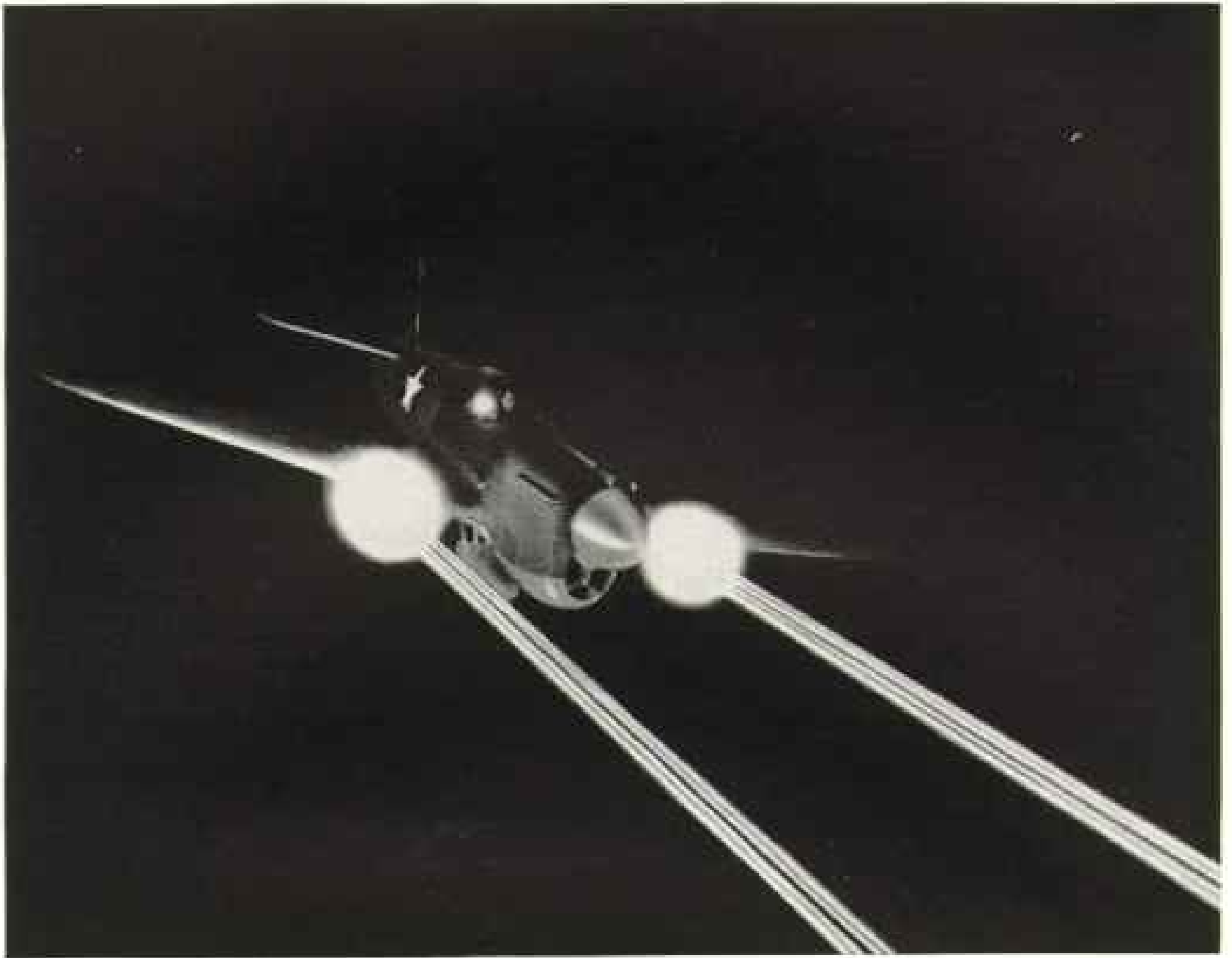
## Save Plates, Save Money this easy **POLIDENT** Way

No chance of scratching your expensive plate when **SOAKED** in **POLIDENT**. Plates and bridges emerge sparkling-pure. Teeth lose those tell-tale stains, gums look less false. Recommended by leading makers of denture material. Only 30¢, all drug stores. Get **POLIDENT**—today. Money back if not delighted.



# POLIDENT

The safe, modern way to clean plates and bridges



**He's firing  
telephone wire  
at a Zero!**

**T**HIS fighter plane, with its six wing guns spitting fire, uses up enough copper every minute to make several miles of telephone line.

That's the right use for copper now — and it's the reason why we can't continue to expand our facilities to take care of the expanding Long Distance telephone traffic.

Right now, our lines are flooded with Long Distance calls. Most of them have to do with the war — they must have the right of way.

Will you help us keep the wires clear for war calls — industrial calls that send a plane down the assembly line — military calls that send it into the air against the enemy?

You can do it by keeping your own calls as few and as brief as possible. And you'll be bringing Victory that much nearer.

**Bell Telephone System**



**UP WHERE MAN HAS NEVER  
FOUGHT BEFORE**



**NASH-BUILT ENGINES WILL BLAZE A ROAD TO VICTORY**

In the new battle-field of the sky—where war was never waged before—it's a freezing 50° below zero, and air is so thin ordinary engines starve and die.

Yet into these shuddering heights a plane is lifting—soaring up like a rocket. Through his oxygen mask the pilot is confidently smiling—and the roar of the engine never falters.

It's the U. S. Navy's Corsair—a ship designed to outclimb, overtake and outfight any known Nazi or Jap in the sky!

Its secret—a mighty 2,000 horsepower engine, super-charged for high-altitude combat—an engine that will be built *in quantity* by the men of Nash and Kelvinator.

Look again in the far-flung reaches of the sky—

Soon there will be fleets of great, four-engine flying boats carrying the Navy's men and cargo. They will come from Nash-Kelvinator.

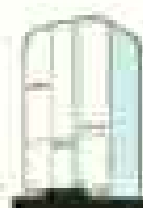
Look farther—thousands of planes are already flying to battle fronts on propellers from Nash-Kelvinator.

This is our job—and we are *in it to win*—with all the skill we can muster.

And when that great day finally comes—when the last Nazi swastika is shot out of the sky—then you will find that from the crucible of war we have brought new skill into building the automobiles and refrigerators for America at peace.

NASH-KELVINATOR CORPORATION

**NASH**



**KELVINATOR**



PRATT & WHITNEY  
HIGH-ALTITUDE  
ENGINES



NAVY'S GIANT  
VOUGHT-SIKORSKY  
FLYING BOATS

HAMILTON  
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PROPELLERS

