VOLUME LIX
NUMBER ONE

THE NATIONAL GEOGRAPHIC MAGAZINE

JANUARY, 1931

CONTENTS

TWENTY-FOUR PAGES OF ILLUSTRATIONS IN FULL COLOR

Skypaths Through Latin America
With 78 Illustrations FREDERICK SIMPICH

Hispaniola Rediscovered
With 12 Illustrations JACOB GAYER

Scenic Resources of the Dominican Republic
28 Natural Color Photographs

Color Contrasts in Northern Spain
14 Natural Color Photographs GERVAIS COURTELLEMONT

Pursuing Spanish Bypaths Northwest of Madrid
With 7 Illustrations HARRY A. McBRIDE

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
HUBBARD MEMORIAL HALL
WASHINGTON, D.C.

$3.50 A YEAR
50c THE COPY

VOL. LIX, No. 1 WASHINGTON JANUARY, 1931

THE NATIONAL GEOGRAPHIC MAGAZINE

COPYRIGHT, 1930, BY NATIONAL GEOGRAPHIC SOCIETY, WASHINGTON, D. C., IN THE UNITED STATES AND GREAT BRITAIN

SKYPATHS THROUGH LATIN AMERICA

Flying From Our Nation's Capital Southward Over Jungles, Remote Islands, and Great Cities on an Aërial Survey of the East Coast of South America

By FREDERICK SIMPICH

AUTHOR OF "MISSOURI, MOTHER OF THE WEST," "THE STORY OF THE RUHR," "SINGAPORE, CROSSROADS OF THE EAST," ETC., ETC., IN THE NATIONAL GEOGRAPHIC MAGAZINE

FORTY minutes out of Key West, just as we had cameras ready to film Havana harbor, a waterspout broke from clouds at our left.

We flew around it and made the first motion pictures of a spout ever taken from a plane. More than that, in both movies and stills we recorded its whole span of life. First, we saw its evil black ribbon, writhing and snakelike, drop from the sky. Then we watched it thicken and straighten into a whirling, 600-foot, chimneylike column that churned the ocean to spray where it poured down. Then it crooked slowly into a huge elbow, its lower end lifting from the sea and swaying leisurely, like the frayed tail of a superhorse waving in the wind. Finally, this great gray tail swung upward and faded into heavy rain.

It was pure luck. Think how long you might be gone, should you take a plane and a motion-picture crew and start out to *hunt* a waterspout! (See pages 8, 9.)

We were on a 10,000-mile exploration flight, from Washington to Buenos Aires, by way of the Caribbean—with all its interesting isles—the Orinoco and Amazon deltas, and the far-flung coasts of vast, beautiful Brazil.*

Ours was an expedition to find and tell, with words and pictures, a quick, graphic story of the places, peoples, and flying conditions along new-blazed seaplane paths down the Atlantic side of the Western Hemisphere. Jacob Gayer, of our Society's photographic staff, was with me; also Capt. Albert W. Stevens, of the United States Army. Stevens is the world's foremost aërial photographer and has a high parachute jump record of 24,206 feet.

The expedition was to fly around and over islands, up rivers, and as far into the jungles as safety would permit. We were to study the various races of mankind encountered, observe the wilderness, the farms, industries, and cities; land wherever we wished, make the best pictures ever taken along this route, and bring back an account of our experiences for educational purposes only.

As journalists say, here was the assignment of a lifetime. In years of travel, no other voyage ever promised so much. Cuba, Haiti, the Dominican Republic, Porto Rico, Virgin Islands, British and French West Indies, Trinidad, Venezuela, the three Guianas, Devil's Island, boundless Brazil, Uruguay, Argentina; thence across the towering Andes to Chile and Peru—with their various peoples, languages, history, customs, architecture, and

---

* See "Gigantic Brazil and Its Glittering Capital," in the NATIONAL GEOGRAPHIC MAGAZINE for December, 1930.

NATIONAL
GEOGRAPHIC
SOCIETY

Photograph by Richard H. Stewart

THE TRAVEL-STAINED FLAG OF THE NATIONAL GEOGRAPHIC SOCIETY GOES ON YET ANOTHER LONG, LONG JOURNEY

At the Naval Air Station, Washington, D. C., as the survey party prepares to start: standing, left to right, Dr. La Gorce, Vice-President of The Society; Jacob Gayer, staff photographer, and Frederick Simpich, assistant editor of the NATIONAL GEOGRAPHIC MAGAZINE. Seated: Capt. A. W. Stevens, U. S. Army, photographer, who made sky views on The Society's aërial survey around the West Indies, along the east coast of South America, and over the Andes.

scenery—all lay in our long, long path. And, by air, we were to see many places where no ships, trains, motor cars, or even men on foot ever can go.

THE START FROM WASHINGTON

On a bright May morning the expedition left Anacostia Naval Air Station, in Washington, D. C., taking off in the *Argentina*, of the great mail and passenger flying fleet of the New York, Rio, and Buenos Aires Lines, known briefly as "Nyrba," and subsequently purchased by Pan American Airways.

Down the tree-lined Potomac the ship flew, past Mount Vernon, basking in Sunday sun; above our battle fleet at Hampton Roads, past Norfolk, and out to sea, with Dismal Swamp stretching to the west, a vast, dark-blue, hazy waste.

Towns, lighthouses, islands, river mouths, and estuaries slipped before the eyes of leveled cameras. Wilmington, Charleston, Savannah, Jacksonville passed in review.

South of Miami came the flat, empty Florida coast, with its myriad mangrove keys and shallows, where water is by turn green, blue, and milky white. Below us

Photograph by Capt. A. W. Stevens

FORT MARION, AT ST. AUGUSTINE, FLORIDA, A MONUMENT TO THE GLORY THAT WAS SPAIN'S

Solidly built, with moats, drawbridges, and gun emplacements, this well-preserved structure was planned much like other old Spanish defense works still found in many parts of Latin America (see pages 12 and 25).

birds went busily about their fishing; porpoise schools broke water here and there. Looking closely, when the plane flew low, one could see fish feeding about the reefs.

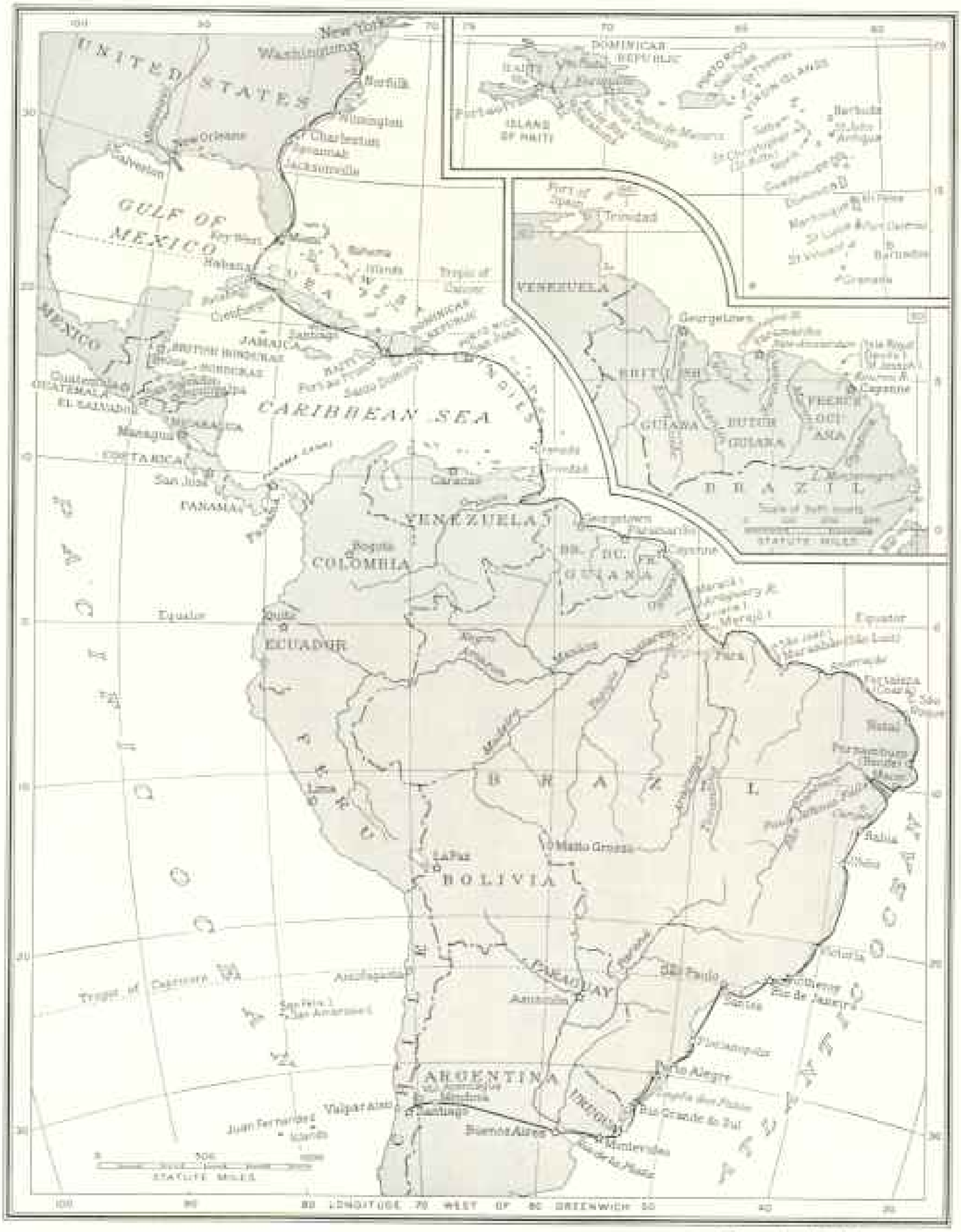
Following the overseas railway that spans the island bridge out to Key West, we banked and turned to "shoot" a passenger train. From open coach windows friendly people waved to us, and by jets of white steam we knew the engineer was whistling a salute.

Over Key West, southernmost city of the United States, we circled to let cameramen record the pictorial geography of this singular place. Then out to sea and around that twisting monster whose sinister contortions barred our path. Twenty years ago, in the China Sea, my tramp steamer ran away from a waterspout. But now, in a powerful plane, we not only chased one but played tag with it and took its picture!

Circling over Morro Castle, we landed in Havana harbor in a tropical downpour. In sheltered spots along the water front, groups of excited Cubans discussed the "cyclone," for the waterspout had been plainly visible from shore. "The only way to stop one," affirmed a customs guard, "is to shoot it."

Life in Cuba's capital is gay and blithe, and we were tempted to loiter; but a score of interesting lands lay ahead, and soon we flew on. Lifted from Havana harbor by mastodontic Hornet motors, we took a few wide turns, circled over the sumptuous palaces of sugar and tobacco kings, and then climbed high and headed due south across this beautiful island of fruits, flowers, green fields, and forests. Cuba is a Garden of Eden almost 1,000 miles long—a lush, luxuriant island anchored off the tip of Florida. We looked down on its busy network of rail and motor highways, on spacious plantation homes, on clean white-and-pink-walled towns with red-tiled roofs, on rows of feathery palms, on smoking sugar mills, and a vast checkerboard of cultivated fields.

Striking the sea near Batabano, we turned southeast, skirting the coast of that desolate, brush-grown marsh, the Ciénaga


UNITED STATES
New York
Washington
Norfolk
Wilmington
Charleston
Savannah
Jacksonville
New Orleans
Galveston
GULF OF MEXICO
Key West
Miami
Habana
Tropic of Cancer
MEXICO
Cienfuegos
JAMAICA
Santiago
BRITISH HONDURAS
HONDURAS
GUATEMALA
EL SALVADOR
NICARAGUA
Managua
COSTA RICA
San José
PANAMA
HAITI
Port au Prince
Santo Domingo
DOMINICAN REPUBLIC
PORTO RICO
San Juan
CARIBBEAN SEA
Grenada
Trinidad
Caracas
VENEZUELA
Bogota
COLOMBIA
Quito
Equator
ECUADOR
Georgetown
Paramaribo
Cayenne
BR. DU. FR. GUIANA
Pará
Manaos
Fortaleza (Ceará)
Natal
Pernambuco (Recife)
Maceió
Bahia
Ilhéos
Lima
PERU
B R A Z I L
Matto Grosso
La Paz
BOLIVIA
Victoria
Rio de Janeiro
São Paulo
Santos
Antofagasta
Tropic of Capricorn
PARAGUAY
Asunción
Florianopolis
Porto Alegre
ARGENTINA
Mendoza
Valparaiso
Santiago
Juan Fernandez Islands
URUGUAY
Rio Grande do Sul
Buenos Aires
Montevideo
Rio de la Plata
STATUTE MILES
LONGITUDE WEST OF GREENWICH
DOMINICAN REPUBLIC
HAITI
ISLAND OF HAITI
VIRGIN ISLANDS
St. Thomas
Barbuda
Antigua
Guadeloupe
Dominica
Martinique
St. Lucia
St. Vincent
Barbados
Grenada
Port of Spain
Trinidad
VENEZUELA
Georgetown
BRITISH GUIANA
DUTCH GUIANA
FRENCH GUIANA
Cayenne
B R A Z I L
STATUTE MILES

Drawn by A. H. Bumstead

THE ROUTE OF THE SOCIETY'S EXPEDITION OVER SEAPLANE PATHS TO SOUTH AMERICA

Starting from Washington, D. C., the aërial survey party, making various side trips, flew some 12,000 miles and landed finally at Buenos Aires; thence across the Andes to Santiago. From Miami, Florida, it flew over Cuba, Haiti, Porto Rico, Virgin Islands, French and British West Indies, including Trinidad; then it explored the Orinoco Delta, the three Guianas, the Amazon Delta, and thence flew around the Brazilian coast, up the Rio São Francisco to Paulo Affonso Falls, back to sea and south. In its weeks of work it made the first aërial photographic survey ever undertaken of this long, newly blazed seaplane path.

de Zapata. Long leagues of land and sea slipped under us.

At Cienfuegos, while men gassed our ship, we sat out on top of it and ate lunch. Seven hours from Havana and we were over Santiago's historic harbor. Down there, more than 30 years ago, audacious Lieut. Richmond P. Hobson sank the *Merrimac*, seeking to bottle up Cervera's fleet. Offshore growled the guns of Rear Adm. William T. Sampson's armada; there, to this day, rests the rusting hulk of the *Maria Teresa*. Looking inland, we could see San Juan Hill, famous in the annals of the Rough Riders. On its now quiet green slopes stands the "Peace Tree," a giant ceiba, under whose grotesquely fat limbs Gen. W. R. Shafter made surrender terms with the Spaniards.

Music and friendly chatter echoed about the hotel where we spent the night. Barring the American vice consul, a tobacco buyer, and the agent of a Chicago packing firm, we saw few fellow countrymen. Cuban cities are much Americanized, what with their adoption of our machines, dress, methods, and movies; but Americans here cannot compete with Cubans in the ordinary walks of life, and the few here usually hold only the higher-paid managerial positions.

Yet, between America and old Santiago de Cuba close ties abound. Some date far back. Here Hernando Cortez, once mayor of the city, recruited his fleet for the conquest of Mexico. Through four tempestuous centuries of earthquakes, disease, piracy, and war, this was one of Spain's chief bases in the Western World. It was one of her last. That fateful July day in 1898 when the Spaniards yielded to Shafter, Roosevelt, and Wood, under the ceiba tree, marked the end of Spanish rule in the whole Western Hemisphere.

San Juan Hill is a peaceful park now, with monuments to American, Cuban, and Spanish heroes who battled there. On bronze tablets you read the names of some Americans still living—young and unsung in 1898, but later well known in our military annals (see page 14).

It's 33 years since American youth rallied to the cry of "*Cuba Libre!*" To-day Cuba *is* free. Its children are well schooled. And, but for that cycle of economic recession which now and then smites every busy country, Cuba is substantial and highly productive. Most of its world-famed cigars go to Great Britain, the United States, and Spain. The United States and Spain buy much of its valuable tobacco leaf. And it is our largest sugar bowl.*

Crowds waiting in line at movies prove it has money to spend. One house billed "Uncle Tom's Cabin." At another, a Wild West picture, with Hollywood cowboys in conventional cosmetics.

Near our hotel was the Cathedral. "A priest there has a big book that tells you all about the pueblo," volunteered the ragged but bright-eyed street comedian who had shined my shoes twice in the hour simply because I couldn't refuse him. "If I give you fifty cents, will you buy a new shirt?" I asked him. "I've got a shirt," he affirmed. "But I haven't seen that cowboy film at the Rialto."

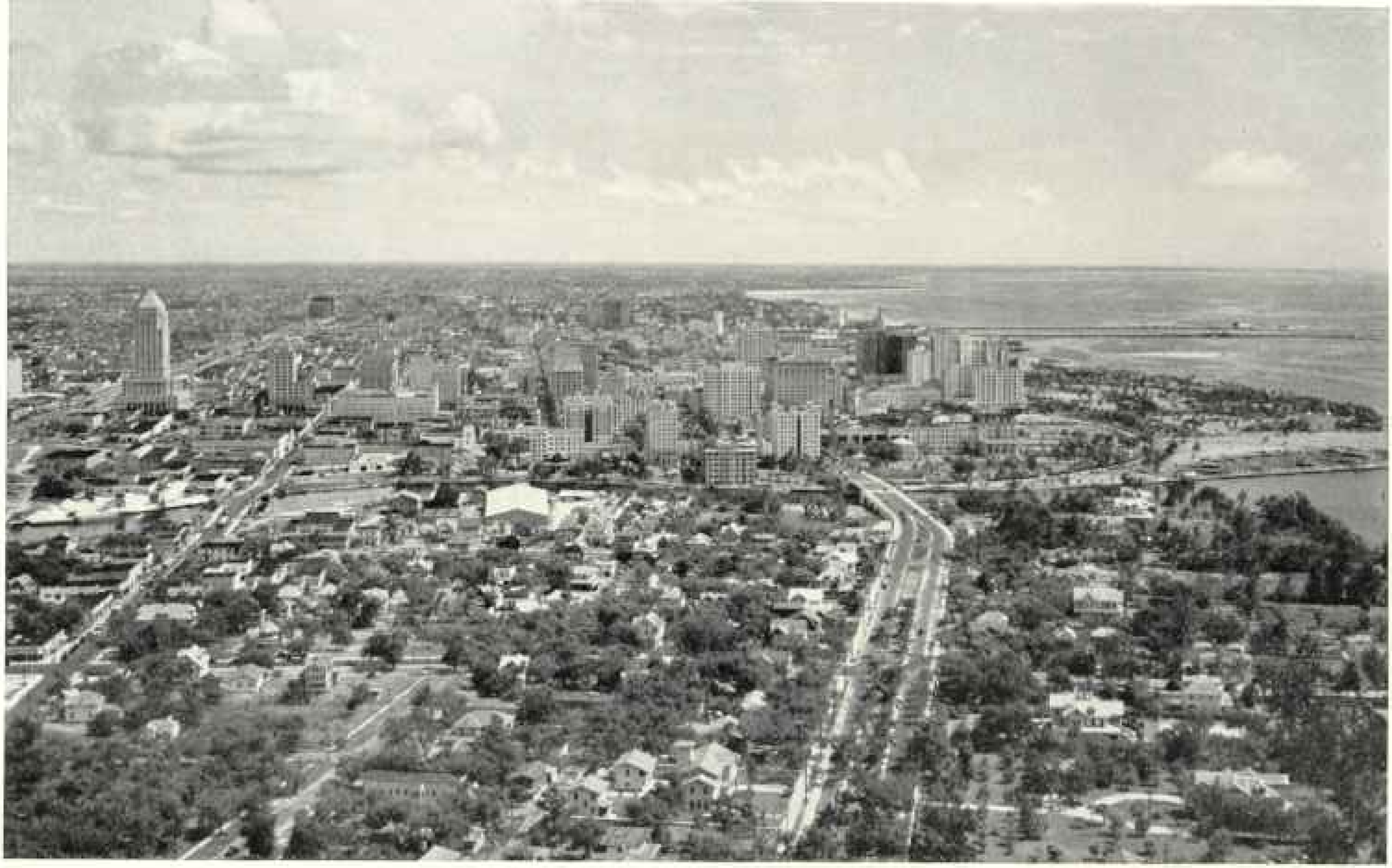
HOPPING OVER TO HAITI

In swift flight, towns, islands, rivers, all burst on you suddenly. Mountains seem to move toward you more leisurely. I went to sleep in the plane when we quit Cuba; when I awoke, there was Haiti, with its capital, Port au Prince, turning around under us as we circled.

You look down on green Haiti's glistening official palaces; on tree-fringed boulevards, flanked by fine homes, that run up the mountain slopes; on the common part of the city, whose flimsy, unpainted wooden houses sprawl along crooked water-front streets. You look and think. Islands differ, like people, in morals and manners. In general, all islands are alike physically—just land surrounded by water. But how different the story of Haiti from—well, from that of Long Island! Reams of fact and fiction are woven about Haiti's turbulent history. Toussaint L'Ouverture; mad Christophe, who died from a silver bullet; Leclerc, who married Napoleon's sister; and the serio-comic melodrama of black royalty in the days of the "Duke of Lemonade." Here, when the republic was in the making, was staged one of the starkest tragedies in the annals of the West Indies, as when old Dessalines gave the ghastly order, "Slay all whites."

---

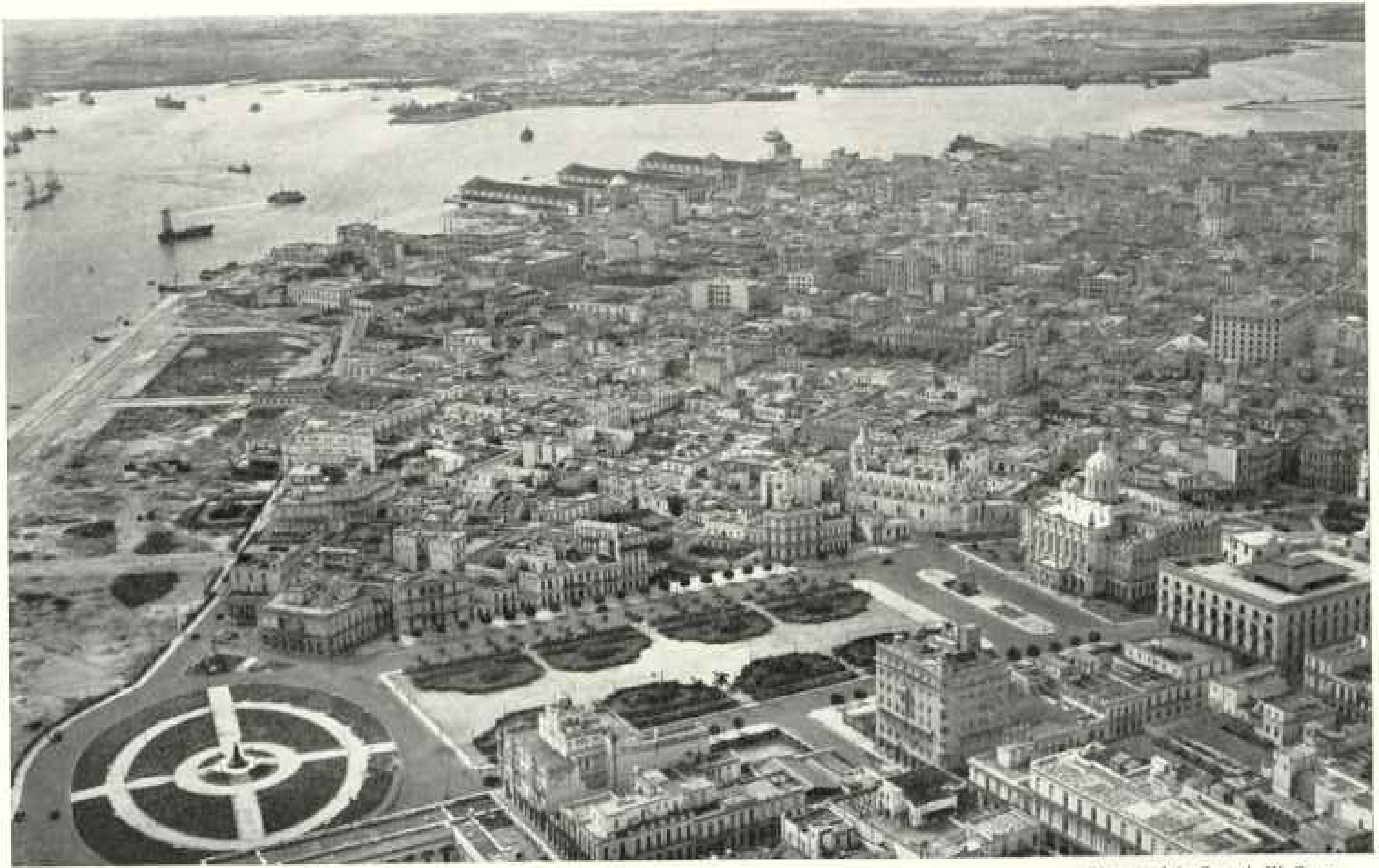
* See, also, "Cuba—The Sugar Mill of the Antilles," in the NATIONAL GEOGRAPHIC MAGAZINE for December, 1920.



Photograph by Capt. A. W. Stevens

CLIMATE AND HER PLACE ON THE MAP MAKE MIAMI AN IMPORTANT AIRLINE CENTER

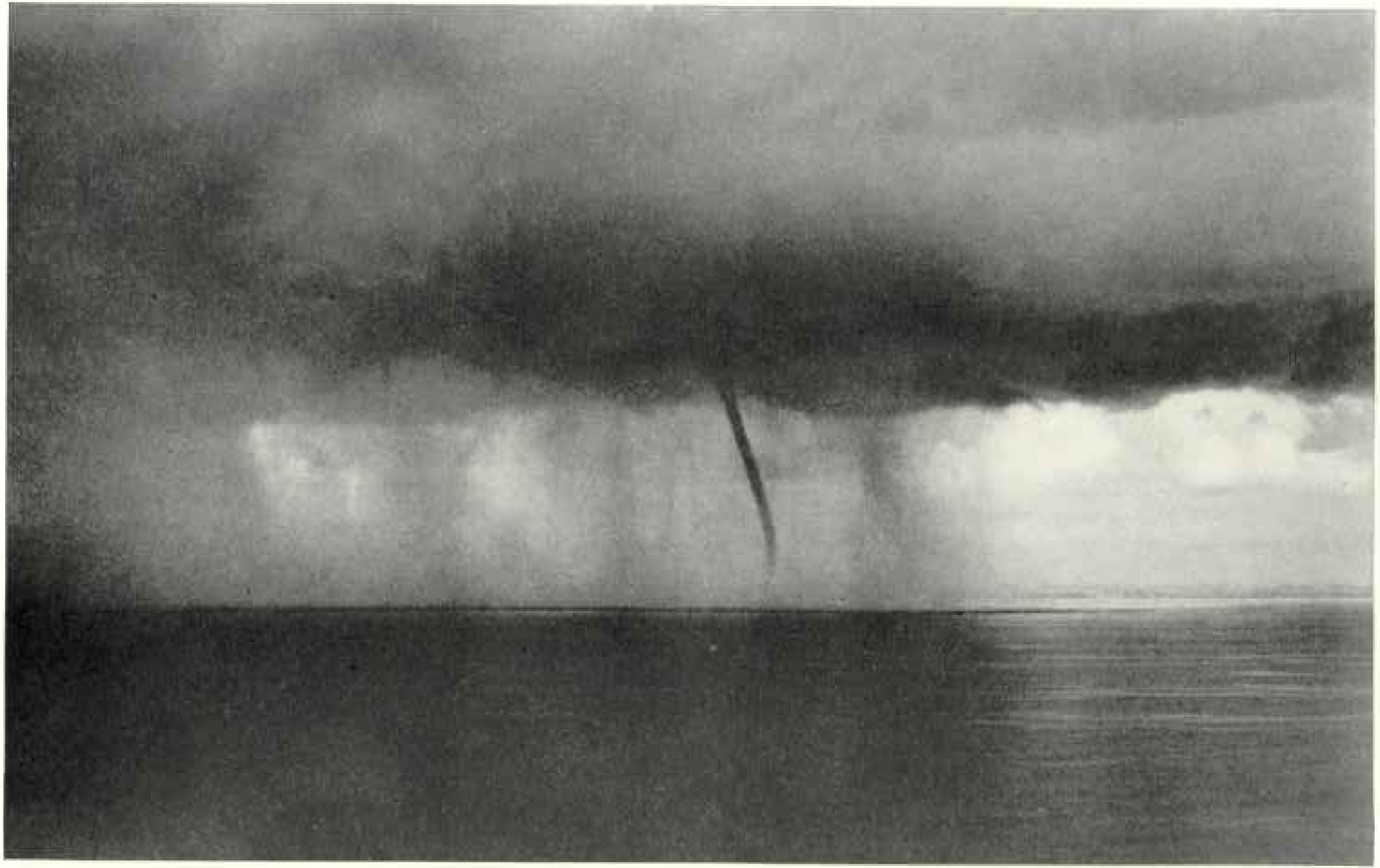
Air mail links Miami by land planes with many other cities in the United States, and from here seaplanes take off for Central America, as well as for the West Indies and South America. Between Miami and Havana flies a frequent seaplane shuttle service.



Photograph by Capt. A. W. Stevens

HAVANA, MAGNIFICENT AND IMPOSING, YET SOLID AND DIGNIFIED, GLITTERING BY DAY AND SEDUCTIVE BY NIGHT

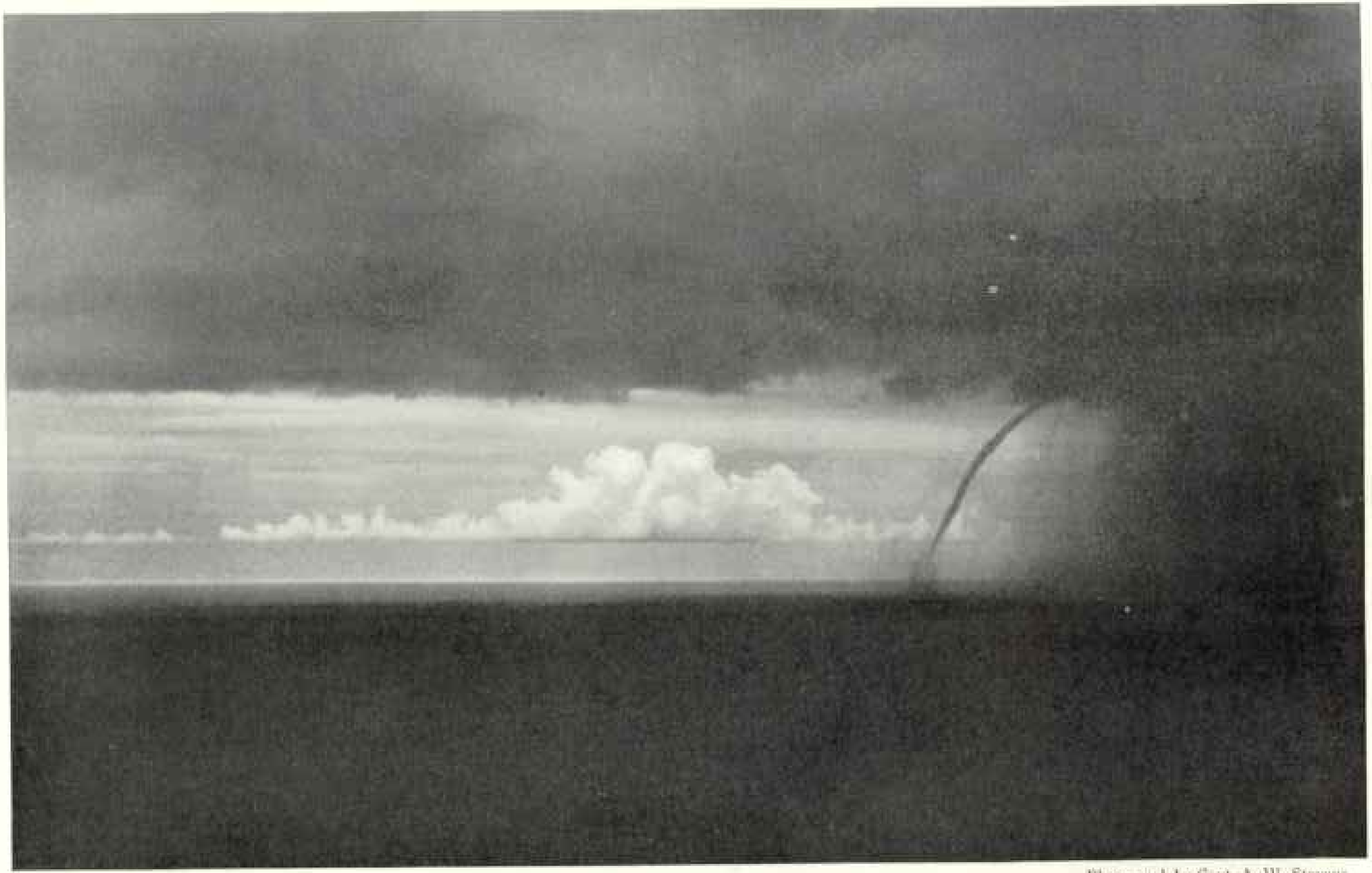
The domed building at the right is the Presidential Palace, immediately in front of which stands a watchtower, fragment of the old city walls. Just below it, and to its right, is a great factory where a famous Havana cigar is made. In the lower right corner is the old jail. The foreshore at the left is "made land," reclaimed and filled at great cost since 1926. The monument in the lower left corner commemorates the Nation's debt to the Cuban educator, José de la Luz y Caballero.



Photograph by Capt. A. W. Stevens

LIKE A BIG BLACK ROPE, A WATERSPOUT DROPPED FROM THE CLOUDS AND DANGLED OVER THE OILY SEA

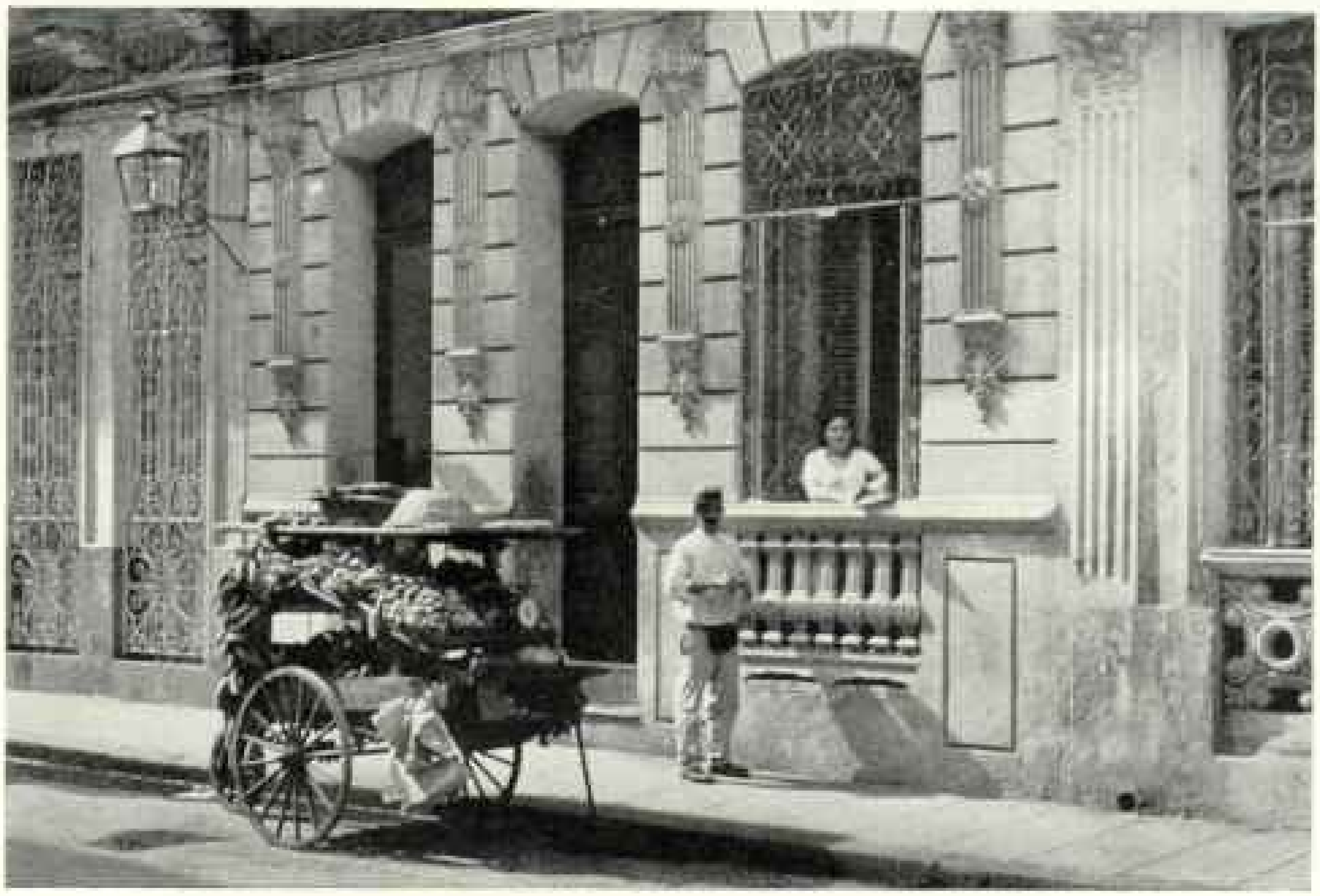
There had been no wind. The sky was overcast, the air surcharged with moisture. The sea ran in long, greasy swells. Suddenly, from a low, pitch-black cloud at the plane's left, the narrow ribbon of a waterspout ran down, writhing and twisting till it touched the ocean. Steering closer and closer to the fantastic phenomenon, Pilot Hawkins wheeled and banked his plane that these amazing photographs might be made. Taken at sea, between Key West and Havana, about 3:30 p. m., May 31, 1930 (see text, pages 1 and 3, and illustration on opposite page).



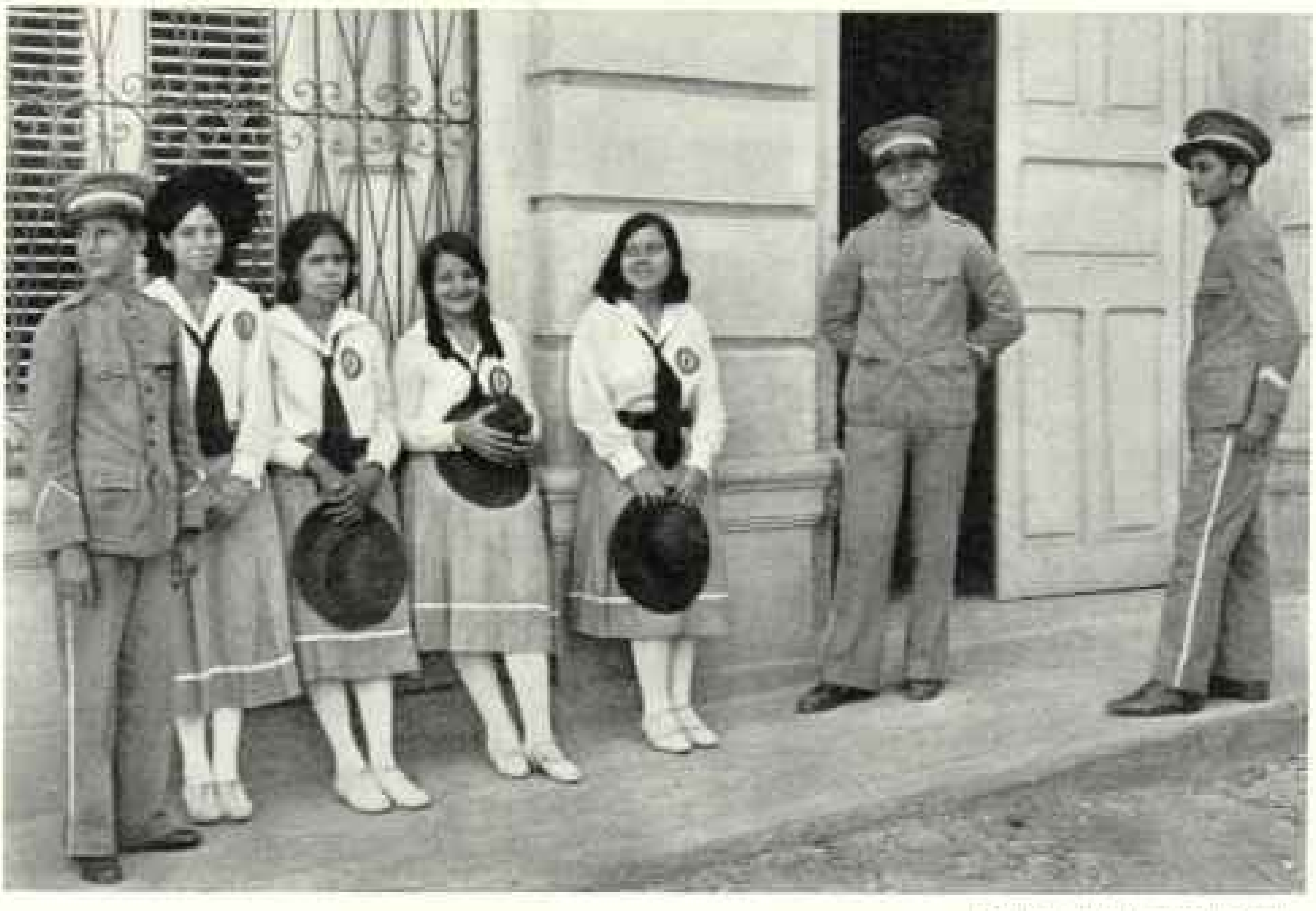
Photograph by Capt. A. W. Stevens

BENDING AND ARCHING, THE SPOUT SEEMED TO SPEED AHEAD OF THE RAINSTORM WHICH FOLLOWED IT

While Captain Stevens and Mr. Gayer hastily pictured its changing aspects, Mr. Simpich made notes and timed the spout. It lasted seven minutes. Its lower end is obscured here by the great cloud of spray which arose where, traveling in a lateral direction while swiftly whirling, it touched the sea. Soon after this picture was made, the spout's lower end broke loose from the sea. Growing thinner then, the twisting tube waved upward, like the gray tail of a great horse, and disappeared in the clouds.



A FRUIT PEDDLER ON ONE OF HAVANA'S OLDER RESIDENTIAL STREETS



Photographs by Jacob Gayer

SONS AND DAUGHTERS OF MODERN CUBA

High-school cadets and girls from a normal school. School attendance in Cuba is compulsory. Each Cuban province maintains an *instituto* for secondary education, where four years' work is given in languages, sciences, and agriculture. Higher education is offered at the National University, and at Havana there are also schools of arts and trades, music, painting, sculpture, and the Military Academy.

Photograph by Jacob Gayer

BACCHANTES, BLITHE AND BUXOM, ROMP AROUND A FOUNTAIN IN THE GARDEN OF HAVANA'S MONTE CARLO

Set in grounds aflame with hibiscus, bougainvillea, and other brilliant flowers, the Gran Casino Nacional, which opens for the tourist season each December, is famous for its gay dances, its sumptuous dinners, its roulette and other games.

Of the 2,000,000 Indians here when Spaniards came, not one direct descendant survives, it is said. Slaves brought from Africa fathered most of the 2,500,000 people who now fill the valleys and hillsides of Haiti.

Once ashore, a lingual puzzle assailed us. Even a Frenchman can't understand Haitian French till he's lived here a while. It is a patois, with syllables clipped—a feat in linguistic tightrope walking achieved through centuries by groups from various African tribes which had no common language and were forced to invent one. Shop signs are all in French. A frequent one is "Pas de Crédit."

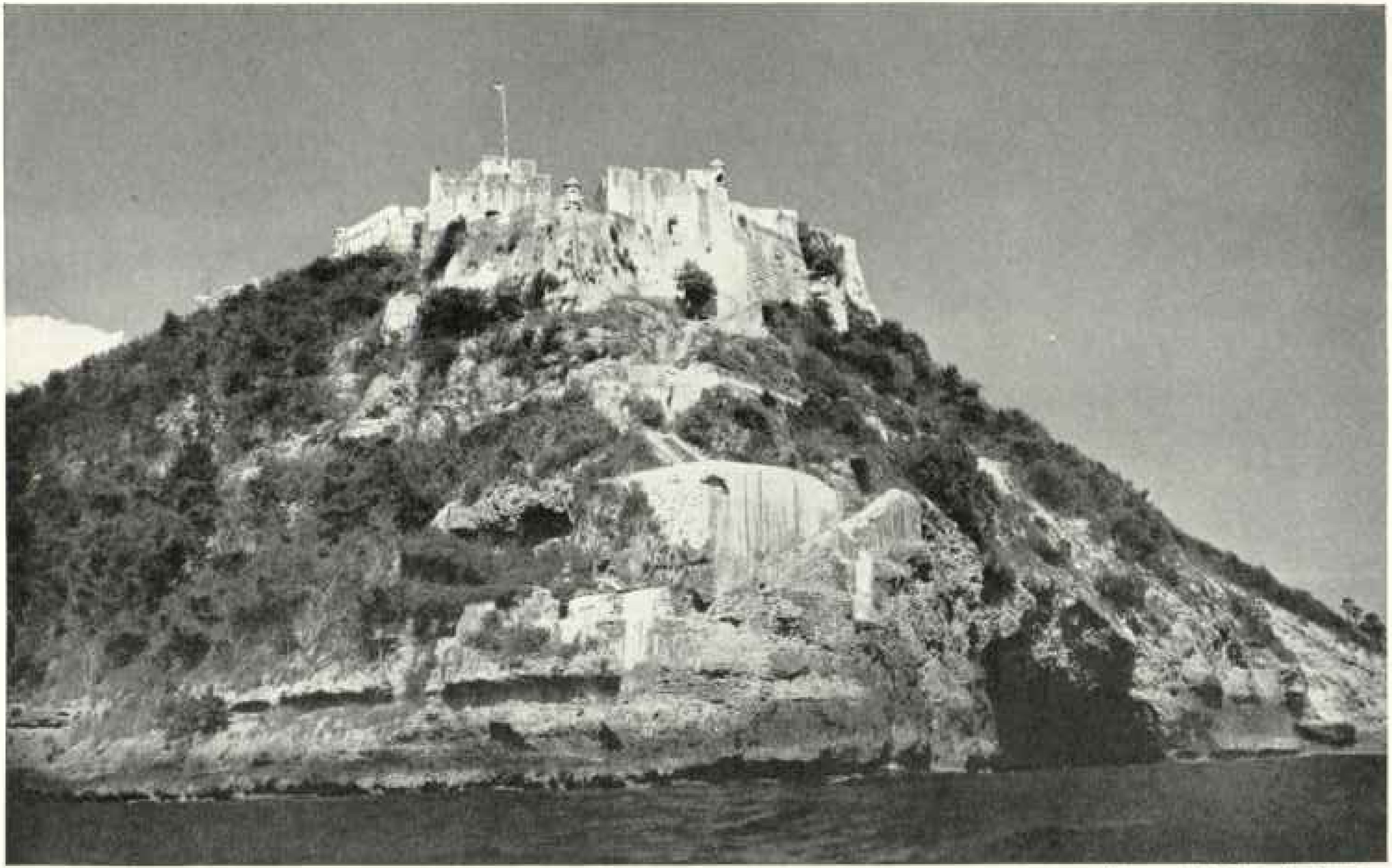
You see signs that America's work here is good: fine roads, farm schools, and peace; you see a financial tangle—an old, hard one—being slowly solved; you learn that banditry and malaria, ancient twin scourges, are under control. Yet, outside of official groups, less than 100 Americans live in Haiti.

Ride even a few short miles inland and the exotic, almost African, bush life of Haiti engulfs you. Sitting under straw sheds, sorting coffee, women in turbans and single garments of denim or calico sing loudly at their work, and rock with laughter when you take their picture.

Food drops from trees in tons. Valleys are veritable botanical gardens, choked with mango, papaya, orange, lime, breadfruit, coconut, and other food-bearing trees. One odd tree I saw looked as if great, green footballs grew on it. This fruit was the huge hollow calabash. Natives dry the calabash, bore holes and fit corks in it, and use it as a jug.

Semiwild coffee is the chief crop. Drip coffee, made by pouring hot cane juice over ground coffee, is a delicious native drink.

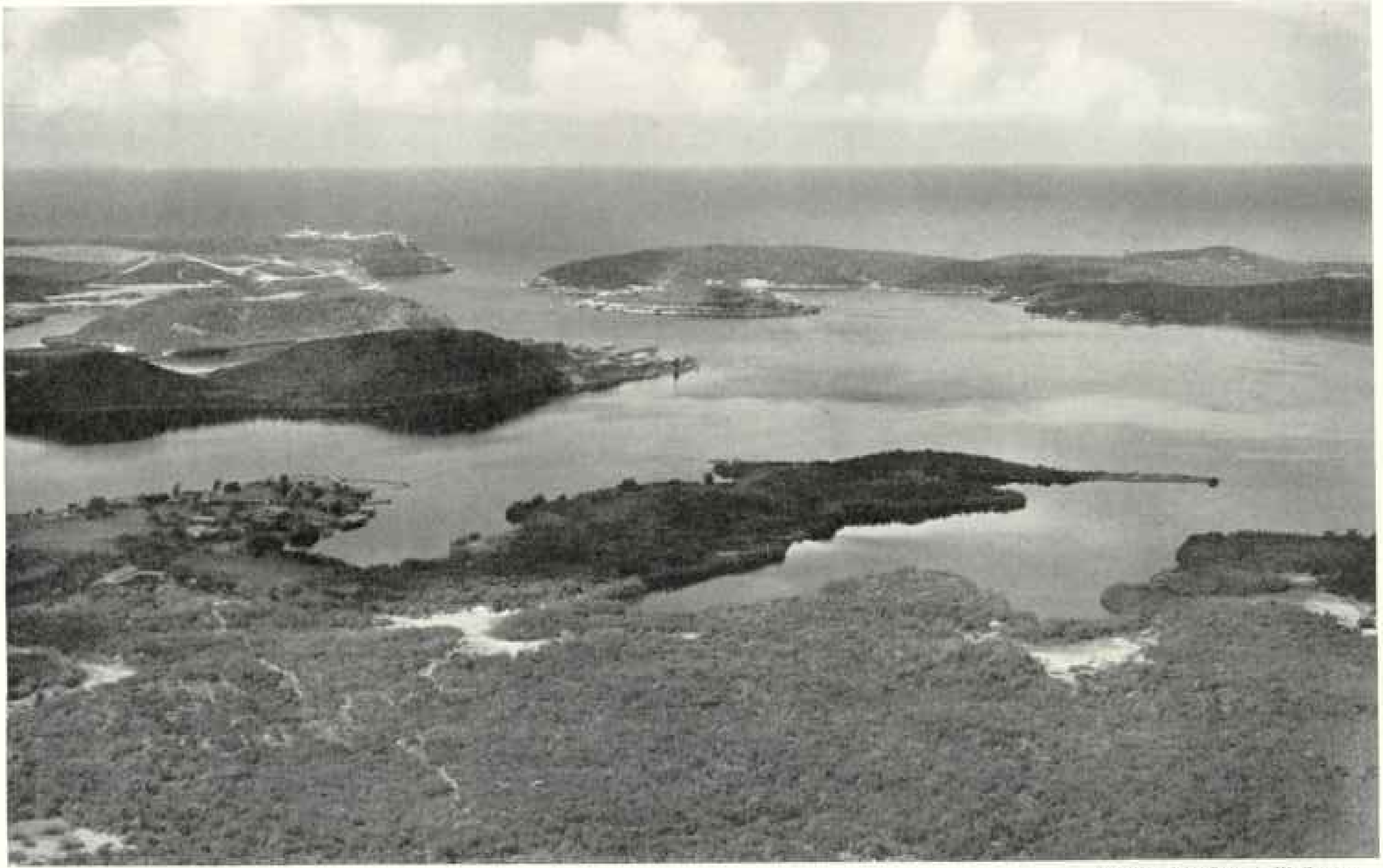
Country life is unbelievably primitive. "The machete is their main tool," said a marine. "They mow, hoe, chop, fight, do everything with it but shave or lead a brass band." Under one tree I saw a barber shop—just a cane chair. In it sat the barefoot customer, his face lathered with



Photograph by Capt. A. W. Stevens

UNDER THE SHADOWS OF GRIM OLD MORRO CASTLE, GUARDING THE BAY OF SANTIAGO DE CUBA, HAS PASSED A LONG LINE OF FIGHTING MEN FAMOUS IN THE MARTIAL ANNALS OF THE NEW WORLD

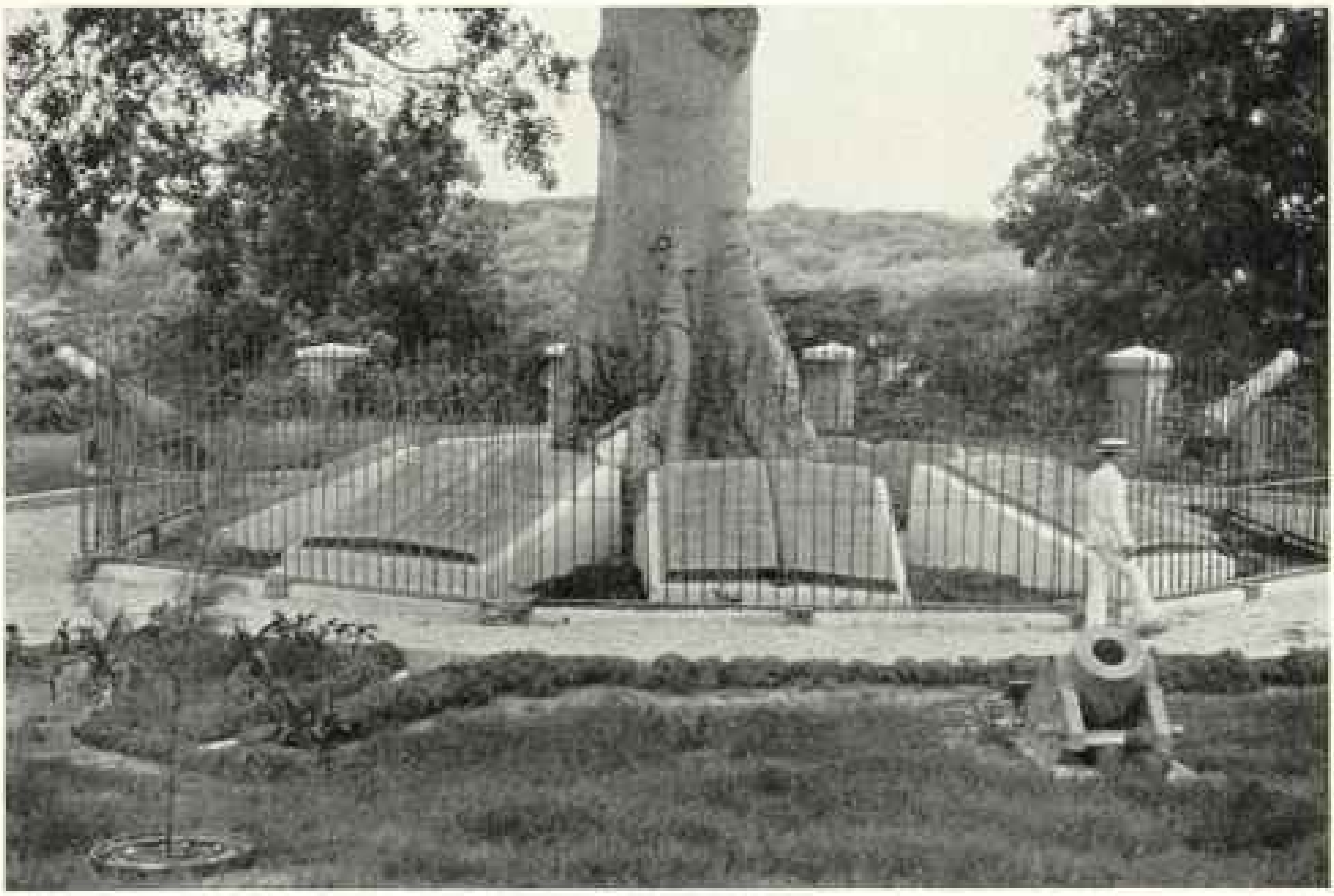
The buccaneer, Henry Morgan, blew up the stronghold after he had sacked Santiago and looted the Cathedral of its bells, and then boasted that *he* could have held such a fort with one gun and a dog. Lieut. Richmond Pearson Hobson, taken by Spaniards after his daring feat in 1898, was held here for a few days.



Photograph by Capt. A. W. Stevens

THE HARBOR OF SANTIAGO DE CUBA, BECAUSE OF DRAMATIC EVENTS IN THE SPANISH-AMERICAN WAR, IS OF ABIDING INTEREST TO ALL AMERICANS

In the background, with Morro Castle at its left (see preceding page), is the entrance to the bay. Just inside, under some 30 feet of water, lies the historic wreck of the collier *Merrimac*, sunk by Lieutenant Hobson in his heroic effort to bottle up the Spanish fleet. Admiral Sampson's fleet lay offshore, awaiting his decisive conflict with Admiral Cervera's fighting ships, that fateful day of July 3, 1898.



Photograph by Jacob Gayer

ON BRONZE TABLETS UNDER THE HISTORIC "PEACE TREE," NEAR SANTIAGO DE CUBA, ARE ENGRAVED THE NAMES OF MANY AMERICAN HEROES IN OUR WAR WITH SPAIN

Here Gen. José Toral, acting for Spain, surrendered to Maj. Gen. W. R. Shafter, commanding the American forces, in July, 1898. Here Spain yielded one of her last strongholds in the Western World (see, also, text, page 5).

laundry soap, while the barber shaved him with a piece of broken glass! Near by a wood-turner worked. On a crude lathe he made graceful cups and other small vessels of wood. Power came from a belt around a big 8-foot wheel turned like a grindstone by a man who worked its crank.

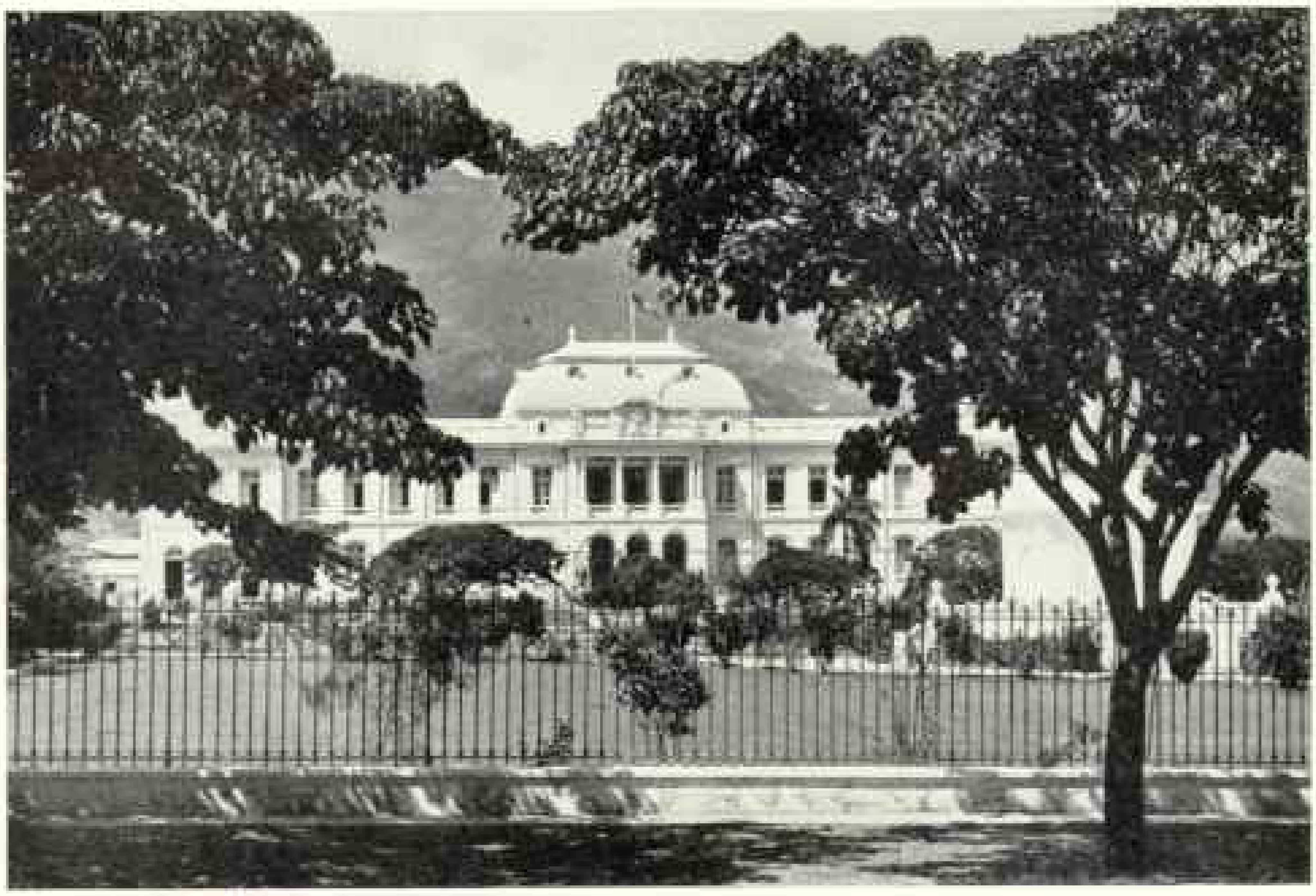
Women pounding *petit maïs* and wild rice in clumsy wooden mortars sang in rhythm with each stroke. Spread on the muddy, open-air market ground at the town of Petit Goâve, I saw clay pipes and crucifixes, long soap bars, cassava loaves, sperm candles, ginger root, and thin pigs tied with strings around their waists. Price these things and you are amazed. A big breadfruit, enough to make a square meal for two men, costs but a cent. Because food is so cheap, Haitian workers can live well on a daily wage of 25 or 30 cents.

I saw four men playing a card game called "3-7." Two wore split bamboo sticks pinched on their noses. "What is that?" you ask. "They're losing. When they win and the two opponents lose, then the latter must wear the pinch-sticks." Hard by, galloping as in a hippodrome, horses hitched to a long pole turned a crude mill for grinding cane. Under a straw shed were big kettles for boiling molasses and making rum.

WE CROSS THE BORDER INTO THE DOMINICAN REPUBLIC

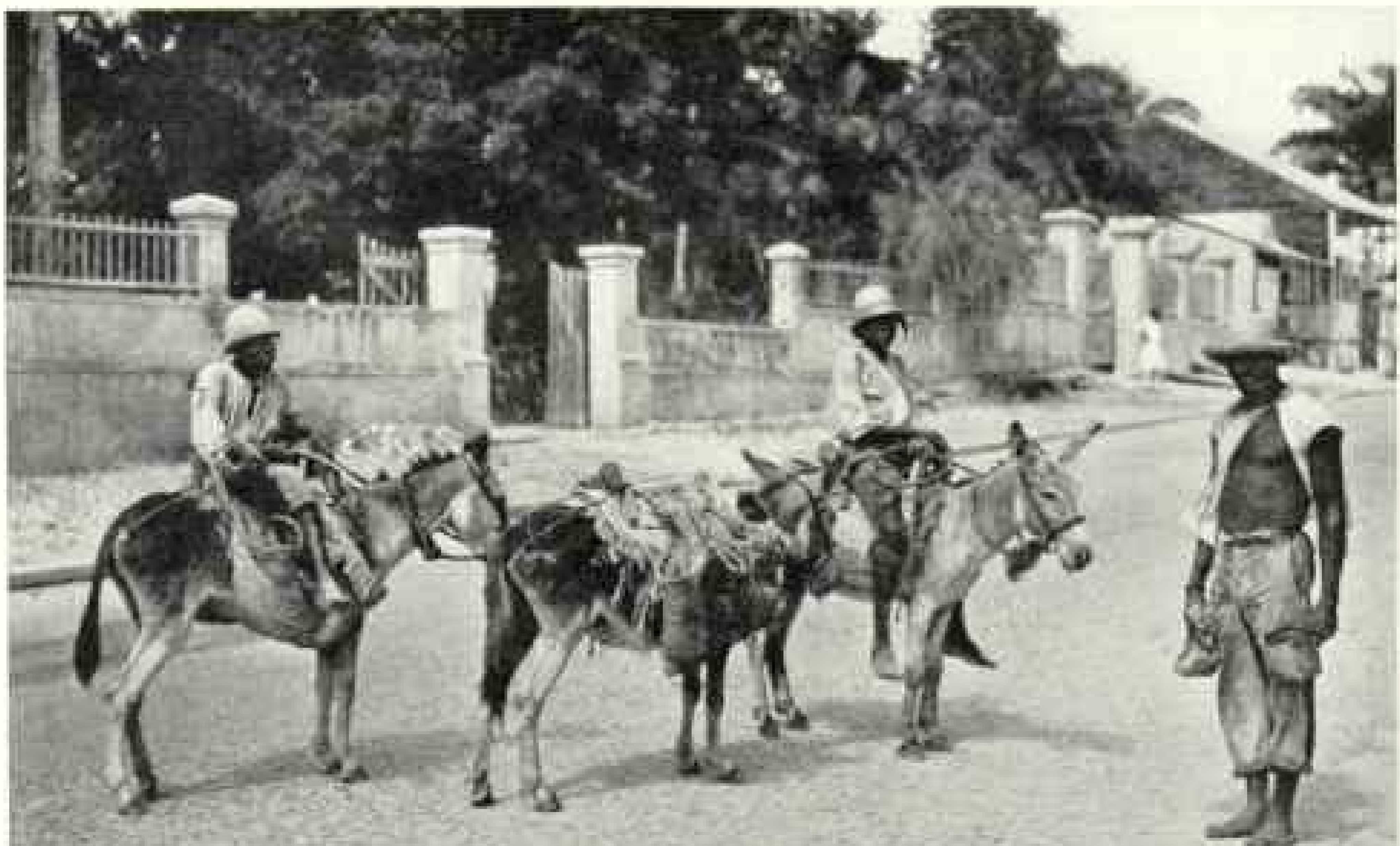
I set my typewriter on Stevens's camera case to write as we flew out of Haiti. It was early, on a bright Sunday morning, and Port au Prince was still asleep, its streets empty. Only kind-faced cows at the Government dairy halted their Sabbath cud-chewing to gaze up, as our big Nyrba ship climbed the tropic skies and turned east.

Up green, thickly settled valleys we roared, hurdled the Haiti-Dominican border, and came to Lake Enriquillo, a salt-water waste more than 100 feet below sea level. To its north rose mountains 10,000 feet high. Stevens made pictures of them with his long-barreled sky camera, whose



HAITI'S ORNATE PALACE OF JUSTICE, AT THE CAPITAL, PORT AU PRINCE

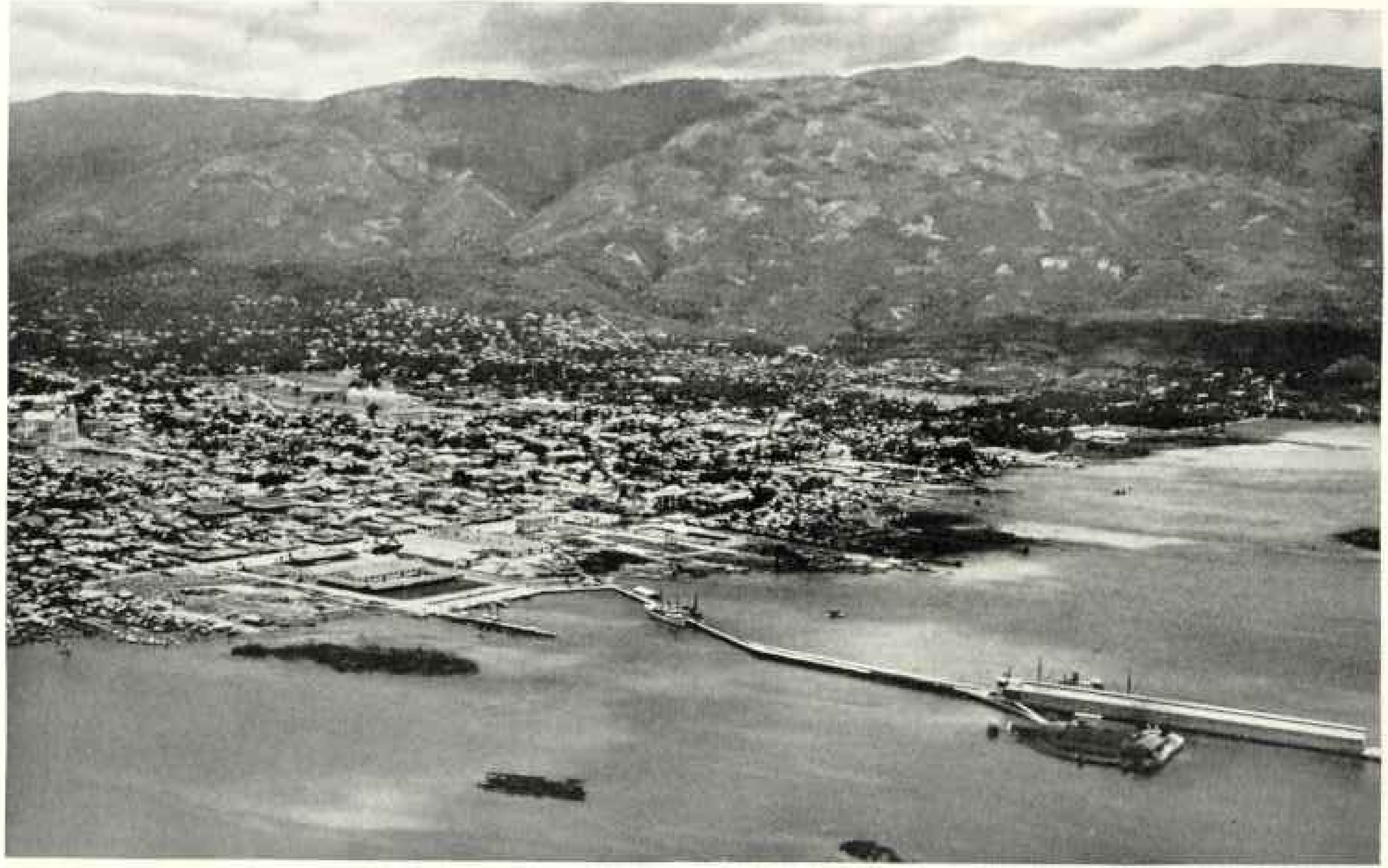
Although highly productive and thickly settled, Haiti has few fine buildings. Most of its 2,500,000 black inhabitants are of the peasant class, living in tiny huts.



Photographs by Jacob Gayer

HAITI HAS MORE BURROS PER SQUARE MILE THAN ANY OTHER COUNTRY

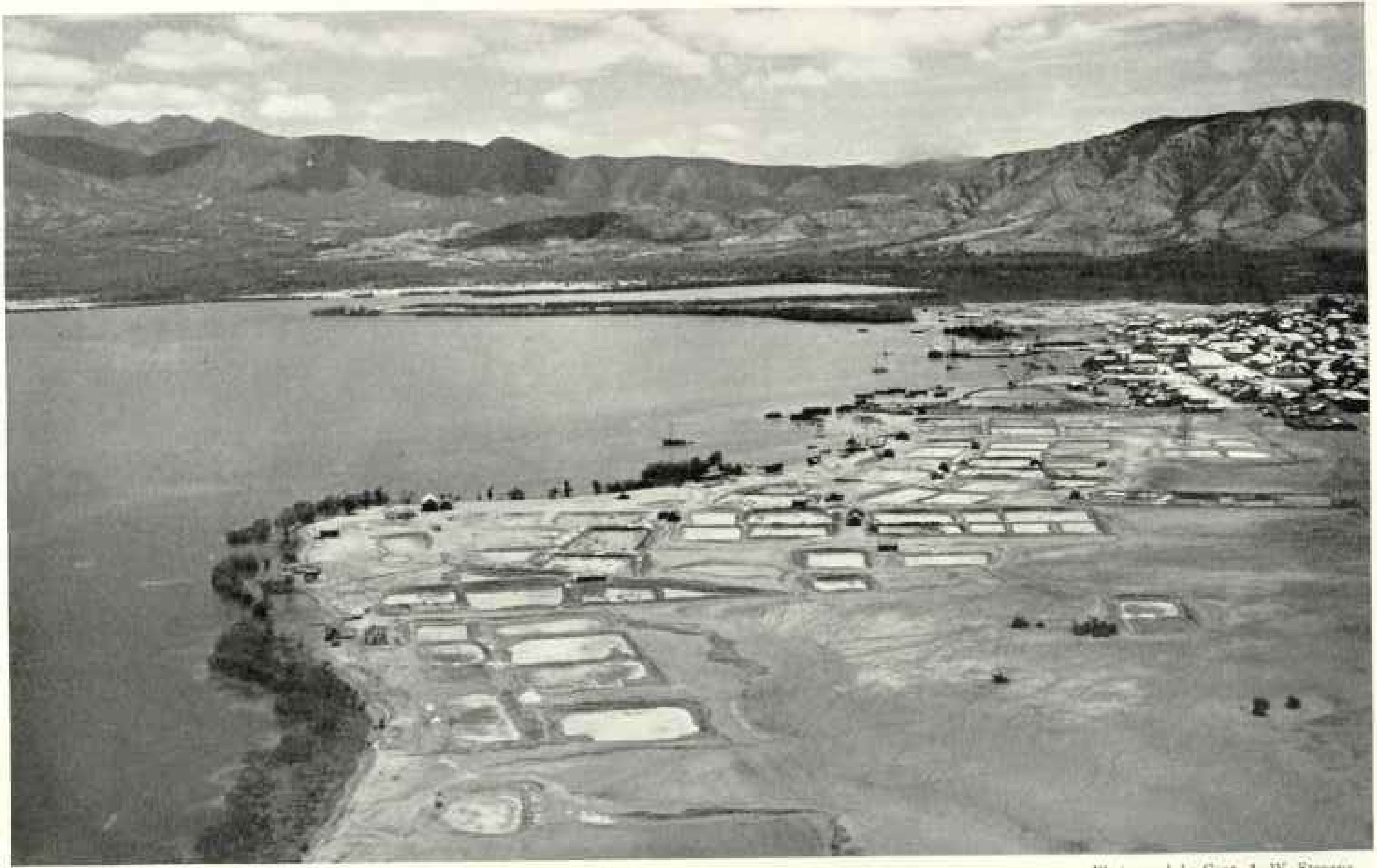
So dense is population that small cultivated fields reach far up the hills and mountain sides. Improved roads are few, so most transport is by mule-back.



Photograph by Capt. A. W. Stevens

PORT AU PRINCE, CAPITAL OF HAITI, SPRAWLS ON A VAST BAY WHICH INDENTS THE WEST COAST OF THIS CROWDED COUNTRY

Founded in 1749, Port au Prince has led a turbulent life. Built largely of wood, destructive fires have been frequent. Since American occupation, sanitary conditions are much improved, better order prevails, and a few fine structures have arisen, notably the Presidential Palace (see page 15).



Photograph by Capt. A. W. Stevens

INTO THESE SHALLOW BEDS ON THE HAITIAN COAST, SEA WATER IS RUN, AND THEN EVAPORATED, TO GET SALT

In rural regions here life is still strangely primitive. Blindfolded horses, walking in a circle, turn old-fashioned sorghum mills; women hull grain by pounding it. Peasants till small land patches by hand, and the few tools used are crude and clumsy. Wood-turners' lathes are run by big hand wheels, and many a family's total earthly goods do not exceed five dollars in value.

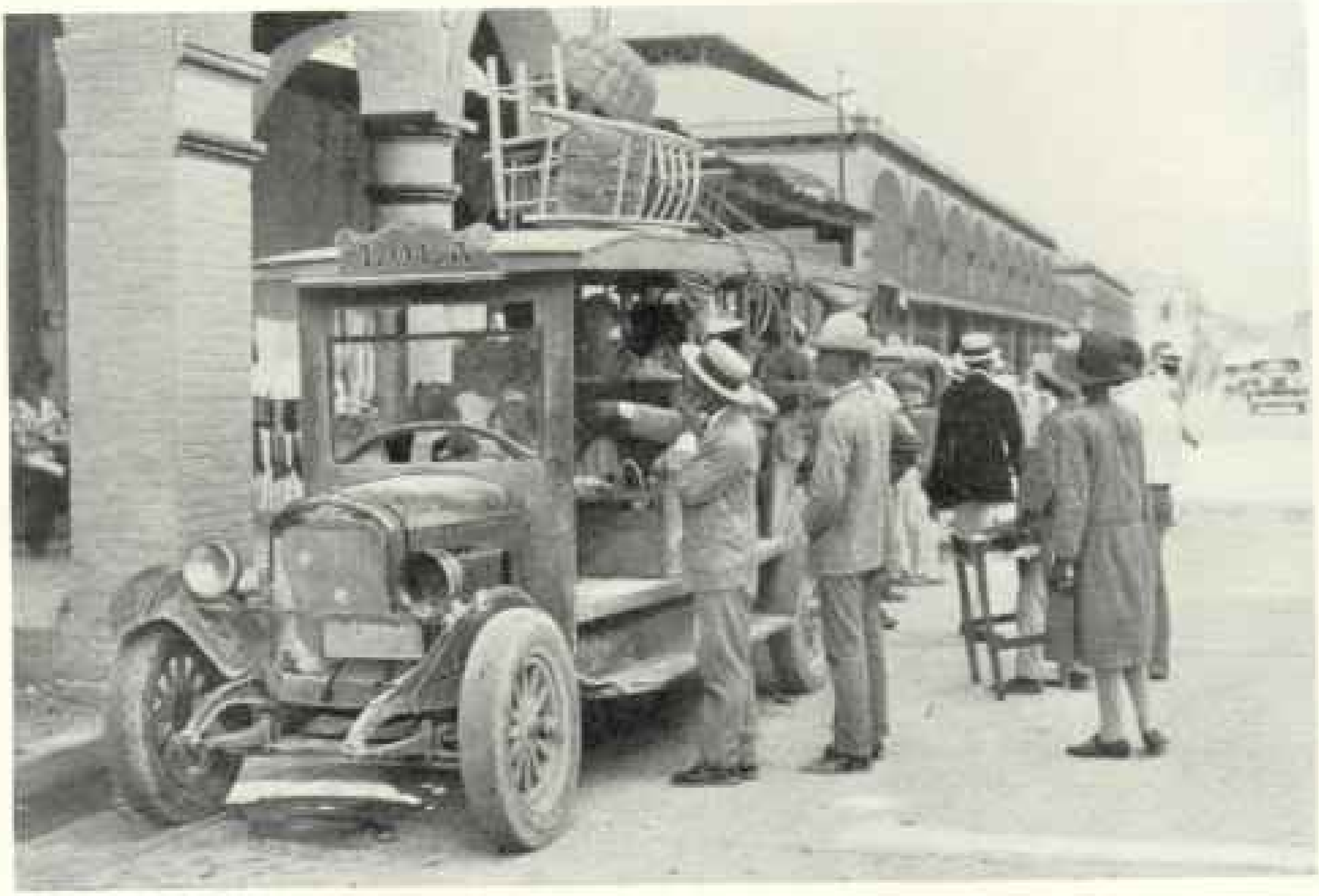
VISITORS COMING TO CALL, AS THE SEAPLANE ALIGHTS IN HAITIAN WATERS

These boys are diving for coins. In swift flight from one country to another, the expedition often found itself with small sums of unspendable coins, left over from the last stop. They served thus for largesse!

Photographs by Jacob Gayer

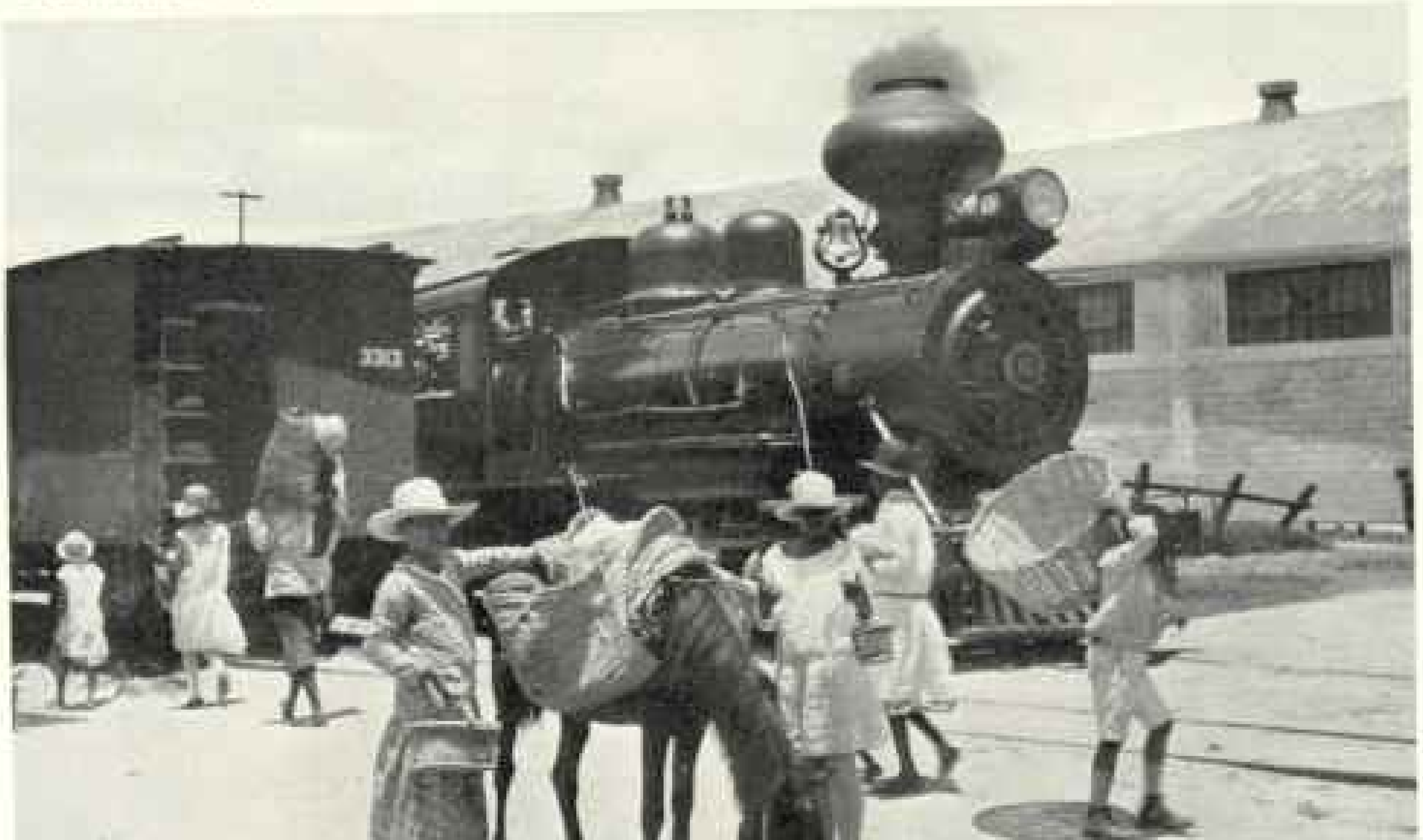
LONG BEFORE DAWN HAITIAN COUNTRYWOMEN START TO MARKET

Many peasants walk, or come by burro, from miles back in the hills. Fruit and vegetables are plentiful and very cheap. Both barter and sale prevail, objects as trifling as half a dozen matches changing hands.



THE MORE THE MERRIER, IN ANY HAITIAN PUBLIC BUS

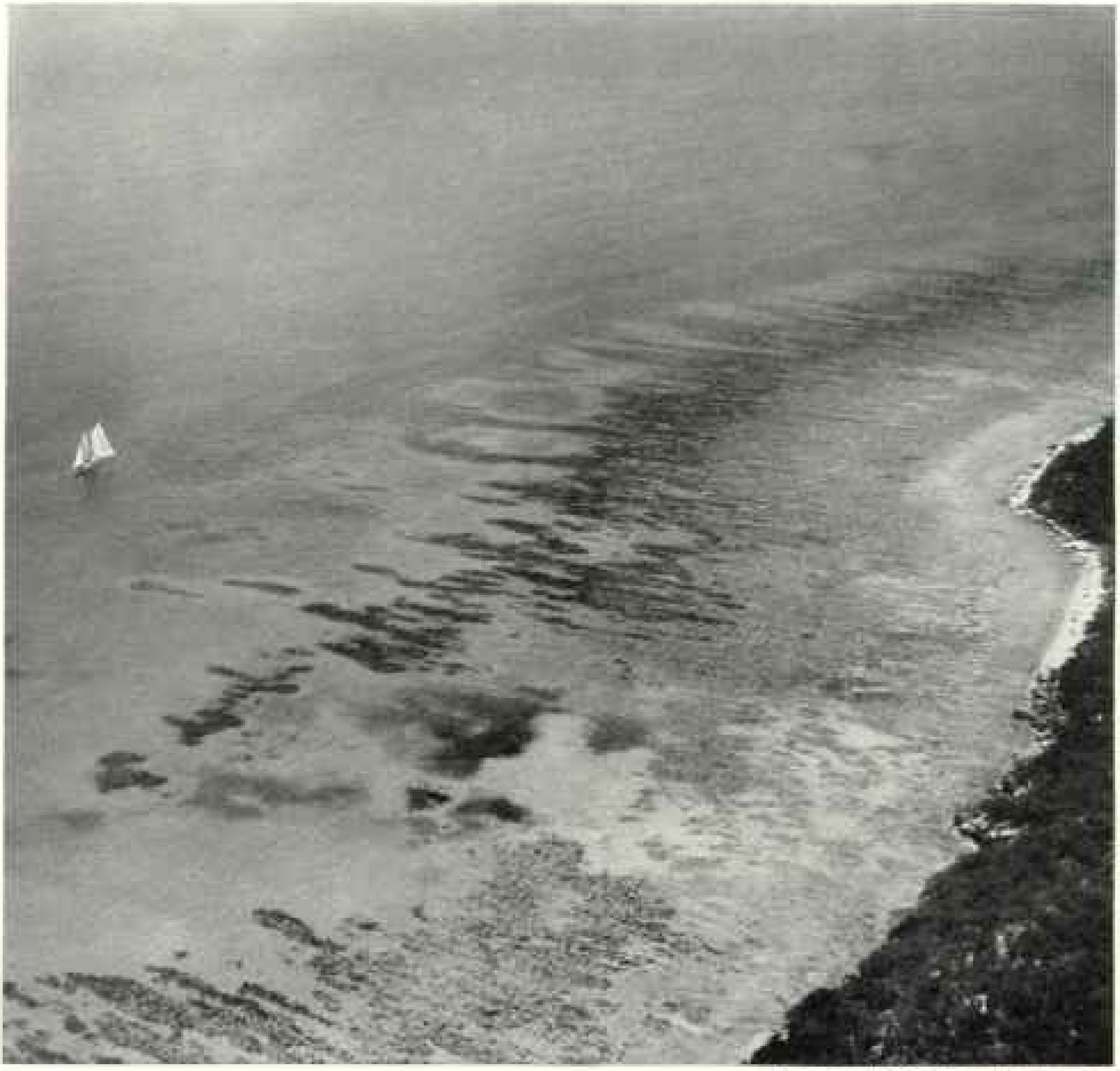
Overcrowding means only more talk and laughter, and a better time had by all. Fares are cheap on Haiti's few roads, and anything from chickens and pigs to family furniture may be carried on top of the bus.



Photographs by Jacob Gayer

THIS TINY LOCOMOTIVE IS A THING OF BEAUTY TO HAITIANS FROM THE HILLS

Two railway systems serve the Republic. One has a name almost as long as its own line—"Compagnie des Chemins de Fer de la Plaine de Cul de Sac"—but over myriad hill and jungle paths it is still the patient ass that moves the goods.



Photograph by Capt. A. W. Stevens

WHEN WATER AND LIGHT CONDITIONS ARE FAVORABLE, CORAL BEDS SEEN FROM AN AIRPLANE REVEAL FANTASTIC FORMS AND PRISMATIC EFFECTS

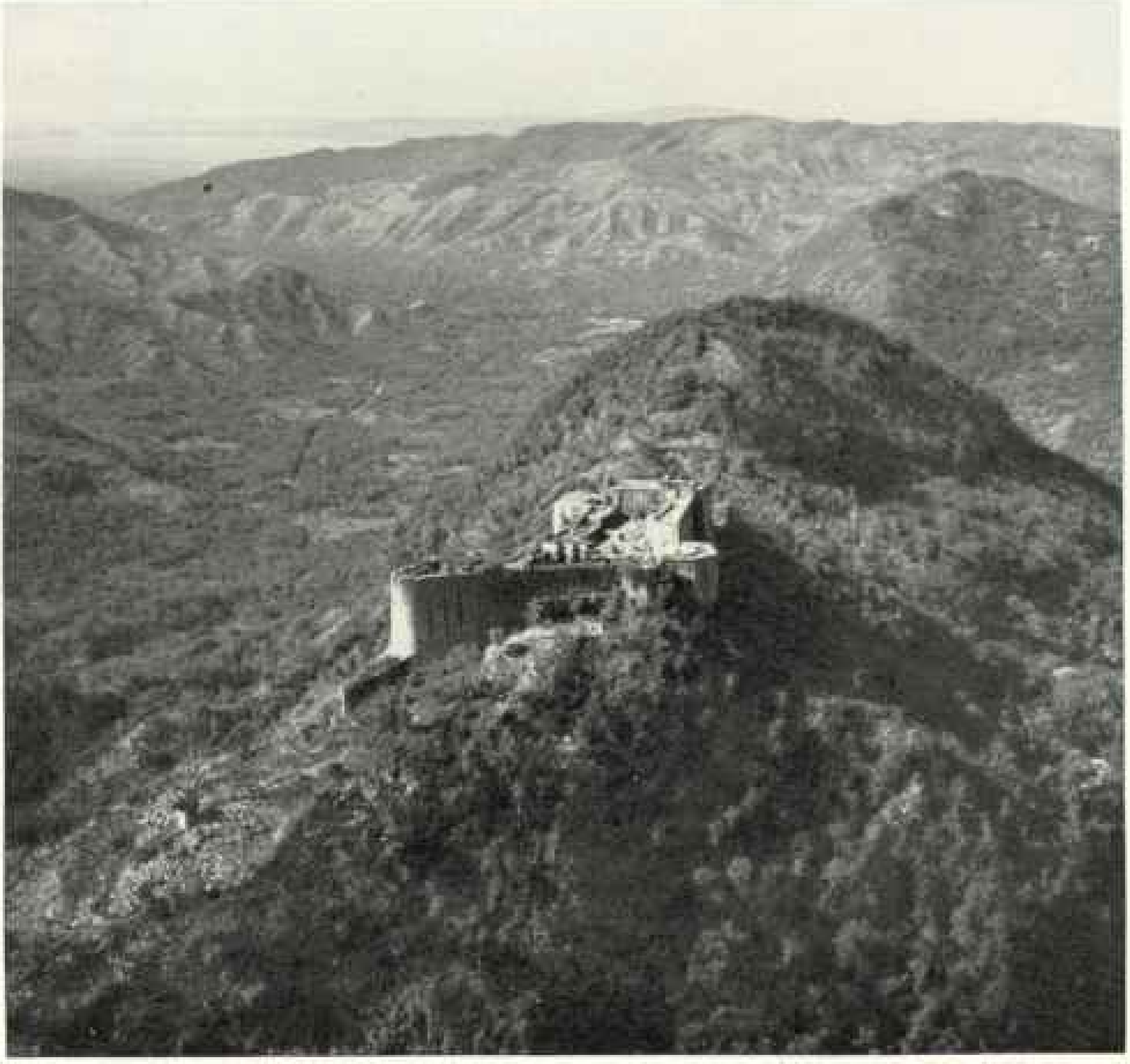
Among the Florida Keys, around the West Indies, and especially off the coast of Antigua Island, the expedition flew low to view the coral beds. Fish were often visible. A coral formation off the coast of Haiti.

Cyclopean lens is so powerful that if you fly high enough to shoot over the curvature of the earth, it can picture a mountain peak 250 miles away—a peak invisible to the naked eye.

Whenever we neared a tempting shot, "Steve," goggled, helmeted, his speaking tube strapped to his head like a diver's air hose, staggered up our open hatch lugging his big camera. With ugly, open muzzle, levers and gadgets, it looked more like a young howitzer than a picture-taking machine.

To see the crocodiles sunning themselves, we swooped low over the salt lake. Big and clumsy as they look, these reptiles scrambled into the water with amazing speed.

Our cameras were ever ready for optical adventures. When a flock of long-legged flamingos, their pink plumage glistening, took wing from a cove, we gave chase. "Catch up with 'em!" yelled Steve through his tube. And Pilot Kenneth Hawkins gave them a merry race. In panic, the birds fled for life. A few, in sheer fright, dropped from the flock and fell head over heels into the lake. Around and around we followed them, banking dizzily, till it seemed to me the tip of our



Photograph by Capt. A. W. Stevens

ON TOP A STEEP, WOODED PEAK THE CITADEL OF CHRISTOPHE REARS ITS RUINED HEAD

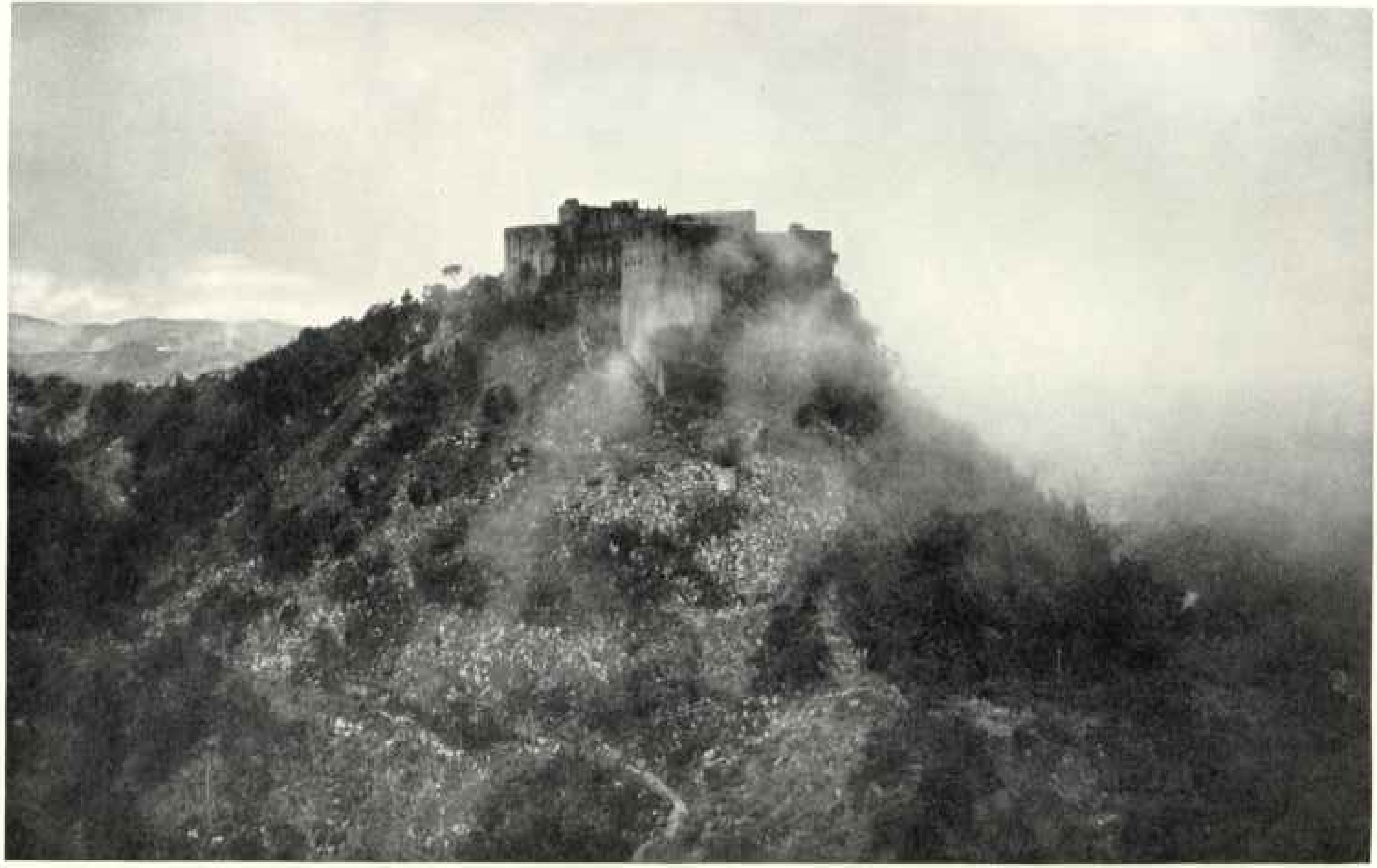
This mighty fortress was built as a last retreat for the Black King, should the French return after their expulsion from Haiti. Its construction is variously estimated to have taken a toll ranging from 10,000 to 20,000 lives. Many experienced travelers regard it the most wonderful structure in the West Indies, when its size and site are taken into consideration (see, also, illustration, page 22).

103-foot wing almost scraped the tops of the bushes that fringe the lake. But Hawkins is a cautious flyer—cautious as the man who swam the Hudson with an armful of eels and lost none. Our wing, of course, was nowhere near the bushes.

The border is more than an imaginary line, as you cross from Haiti into the Dominican Republic. You can tell where one country quits and the other begins, because Haiti is so much more thickly settled. Below us, for many miles east of the lake, we saw no people at all—only a herd of wild horses that dashed from a grove of trees and fled in a dust cloud, their tails up like hearse plumes.

Nearing Neiba Bay and Barahona, we flew over sugar fields. Gas tractors were at work; neat tram-lines tied the square cane fields to a big sugar mill—a contrast with the unbelievably primitive life in rural Haiti.

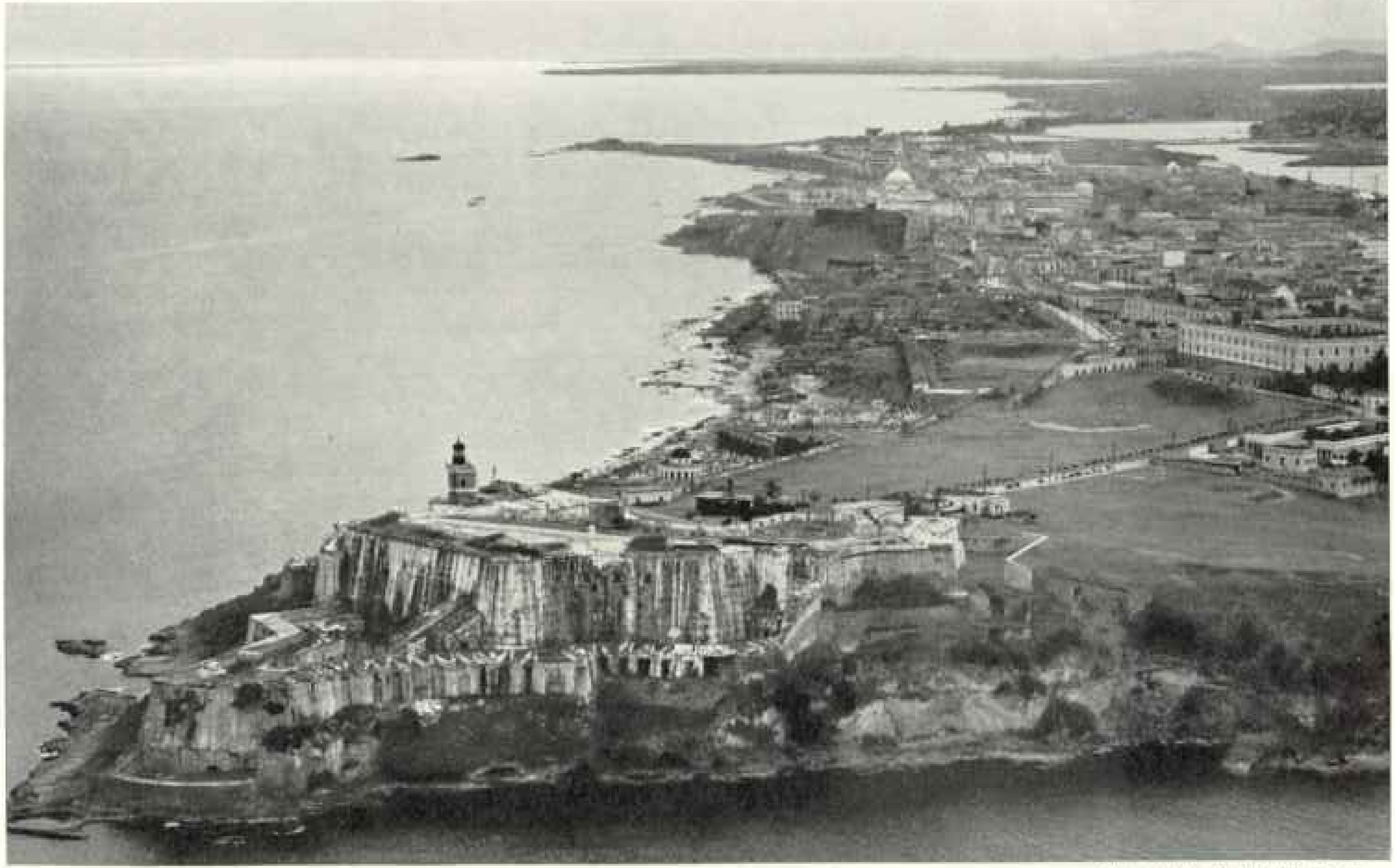
Coming again to the sea, we headed for San Pedro de Macoris. Over a flat, tree-fringed atoll our path lay. Before straw huts a few boats were pulled up on the yellow sands. Men were drying salt in a tide flat (see, also, page 17).



Photograph by Capt. A. W. Stevens

FROM HERE BLACK MAJESTY REIGNED OVER HAITI

A century and a half ago slaves revolted, defeated the French under Napoleon's brother-in-law, massacred much of Haiti's white population, and set up an "empire" of their own. A court of much pomp and ceremony, with dukes and princes, was created, and this theatrical stronghold was built by the Emperor Christophe (see, also, illustration, page 21).



Photograph by Capt. A. W. Stevens

MORRO CASTLE, AT SAN JUAN DE PORTO RICO

Built as a rude defense in 1538, the old fortress has witnessed many a scene of violence. In 1595, when gold-laden galleons bound from Mexico for Spain sought refuge in this harbor, Sir Francis Drake vainly assaulted it. Sir John Hawkins, his fellow filibuster, died at sea offshore and his body was committed to the deep within sight and sound of the Dons' guns.

Photograph by Jacob Gayer

OLD-TIME TRADING SCHOONERS ROLL BESIDE SWANKY MOTOR BOATS ALONG SAN JUAN'S REDOLENT WATER FRONT

New bridges and modern buildings, motorized highways, and mass production in agriculture all mark economic changes in Porto Rican life and work.

Turning inland, we made a short cut to fly over Santo Domingo City. There rests the wreck of the old American cruiser *Memphis*, which went ashore long ago. And we saw the cathedral where it is said the bones of Columbus repose (see Color Plate XVI). I looked for the withered tree to which he is said to have tied his ship, but as we circled over the city it spun under us so crazily I could not get oriented before we were gone again (see page 94).

Dominican officials, newspaper men, photographers, American sugar planters, and others made us warmly welcome at San Pedro de Macoris. In the day there I observed that the Dominicans themselves are not a numerous people; but many Haitians and blacks from the Windward Islands migrate here to do the heavy work of the cane fields.

Here sugar is life. On the vast Consuelo plantation, where we spent the night, 50,000 tons of sugar is a fair year's crop. The Dominican Republic is a rich link in the big chain of sugar islands which begins with Cuba and swings around to Trinidad. Over this Antilles island bridge lay our path to Argentina. Men got slower, cigars longer, and the sun more scorching as we flew steadily south. More and more we saw black women pounding white men's shirts on stones about brooks and puddles,

Photograph by Jacob Gayer

ONE OF PORTO RICO'S OUTSTANDING NEEDS IS A GOOD FISHING FLEET

By economic changes, since American occupation, the island has come to produce mostly things on which its workers cannot subsist. This necessitates importing food at high cost (see text, page 29). Casting a net at San Juan.

and the vast, uninhabited green stretches repeating themselves. Our world from the air seems an oddly empty place.

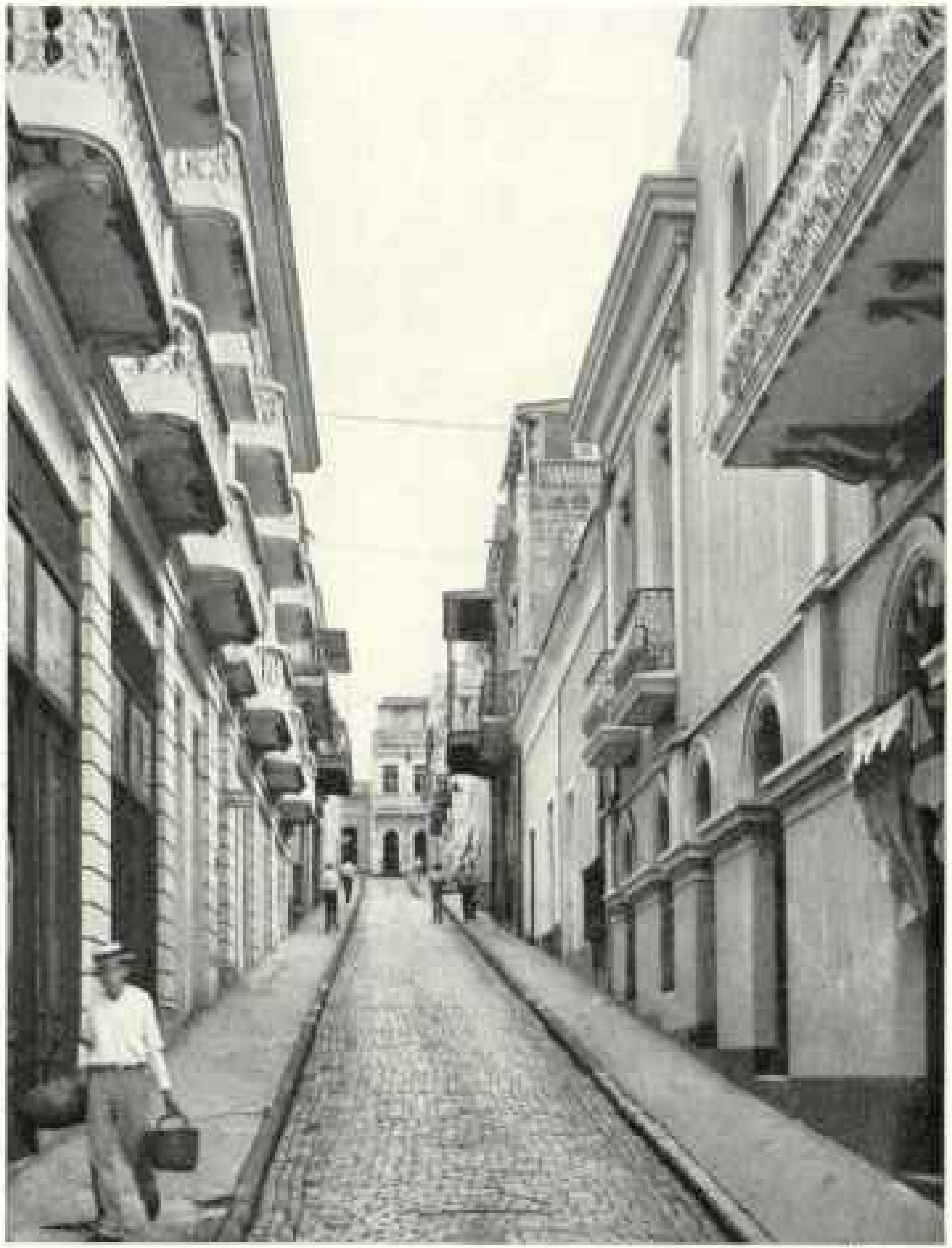
WE COME TO THE ISLAND OF TOO MANY PEOPLE

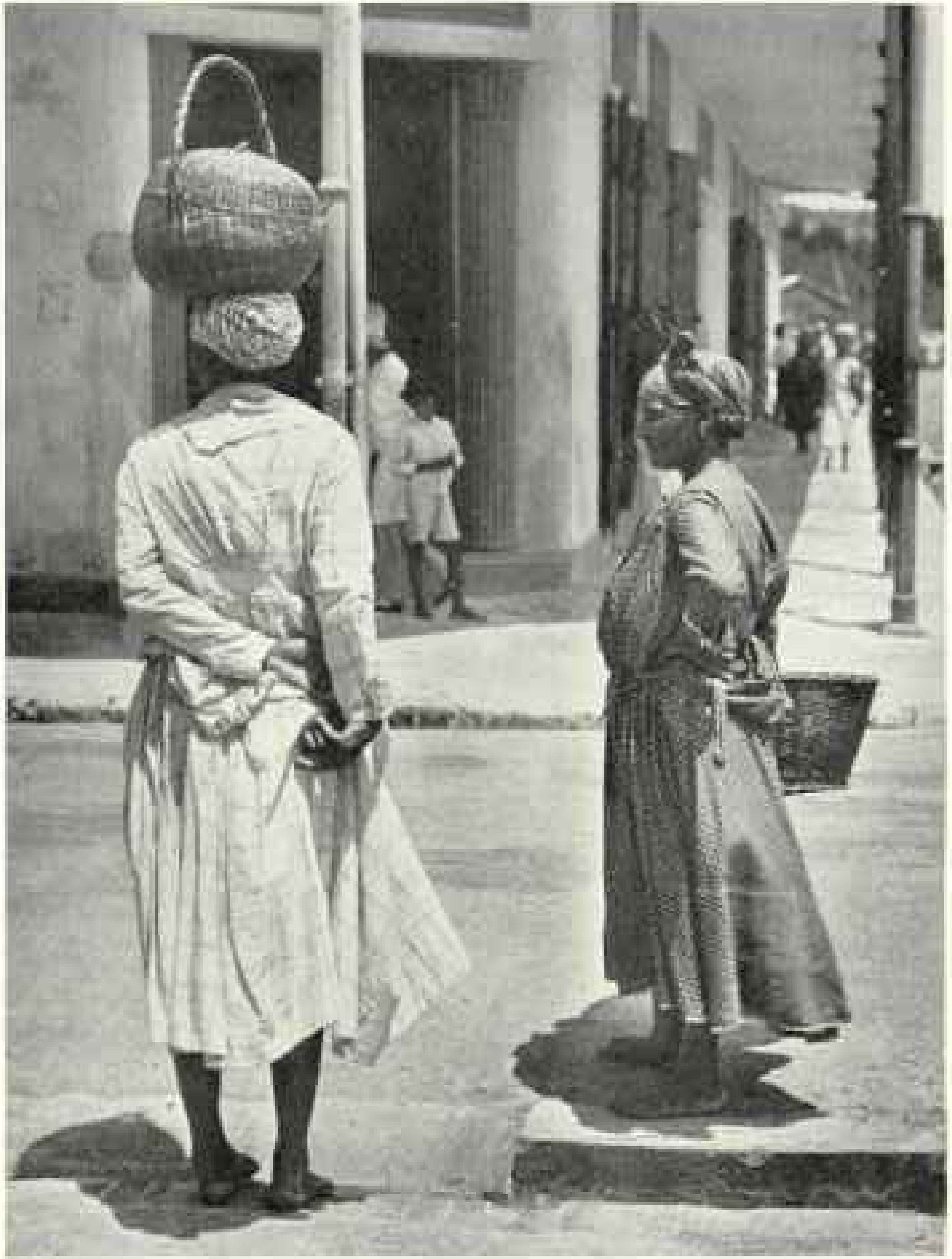
Bucking a head wind, we skimmed low over the stormy Mona Passage to Porto Rico.

I stood at the tomb of Ponce de León, in the Cathedral at San Juan, and tried to imagine what that prince of adventurers might say, could he see Porto Rico now. First really to explore and colonize it, first to govern it, he knew it well. What emotions would he have felt could he have sat with Pilot Hawkins and me, in the glassed-in snout of our big air liner, as we flew over this green island and admired old San Juan from the air!

Moss-grown forts, with thick walls and stone sentry boxes, he would recognize. Forty years it took to build them. Then the King of Spain asked for a telescope, so he could look across the Atlantic and see the golden glitter of his Porto Rican forts that cost so much! Convent and cathedral, presidio, powderhouse, and hand-paved military roads that wind over the island—all these Ponce de León would recognize as ancient Spanish works. San Geronimo fort, its stout walls still showing holes from the solid shot of Sir Francis Drake, he would also understand, even if an American has leased it and built a tiny residence on it.

But that towering 5-and-10-cent store on the plaza! Porto Rican girls gamboling on the beach in one-piece bathing suits; another plane flying under our wing, with a movie man aiming his camera at us; wireless towers; 20,000 race-track fans madly waving hats and cheering the horses. Yet another arena, wherein two husky Porto Rican youths maul each other with 8-ounce gloves, instead of swinging faithful swords against rattling coats of mail. Amazing changes these, since Ponce de León's days. On the wharf, when we landed, the Acting American Governor waited to greet us in a white suit and Panama hat. Instead of cannon salutes,





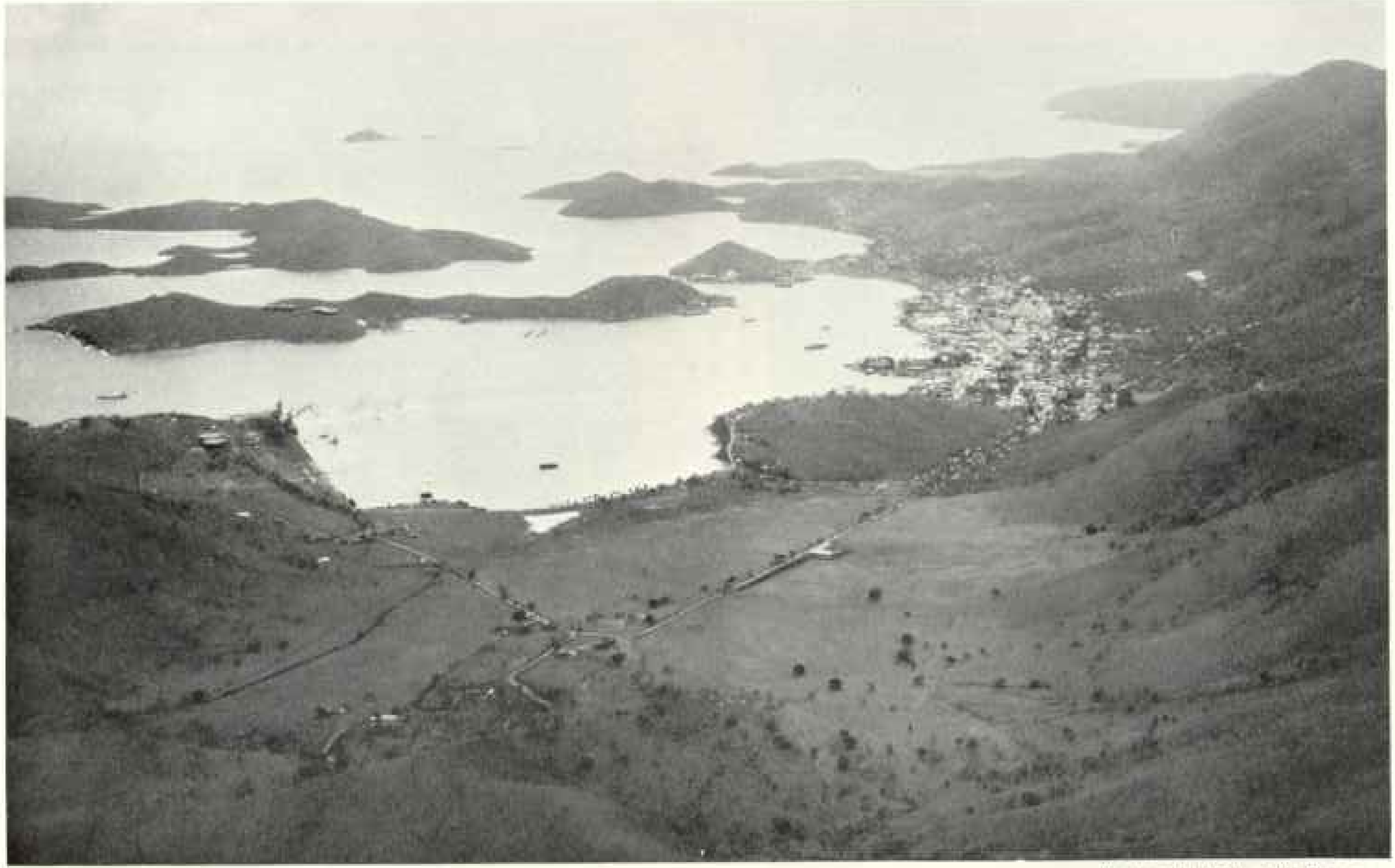
Photographs by Jacob Gayer

A NARROW, COBBLED STREET WITH OVERHANGING BALCONIES, IN SAN JUAN DE PORTO RICO

Although architecture, language, and many cultural habits still reflect the Spanish influence, social and economic life in Porto Rico is slowly taking on an American complexion. The use of English is growing and American methods and machines are being widely adopted.

WOMEN OF ST. LUCIA TRUDGE IN TO THE PORT CASTRIES MARKET WITH A BEWILDERING ARRAY OF PRODUCE

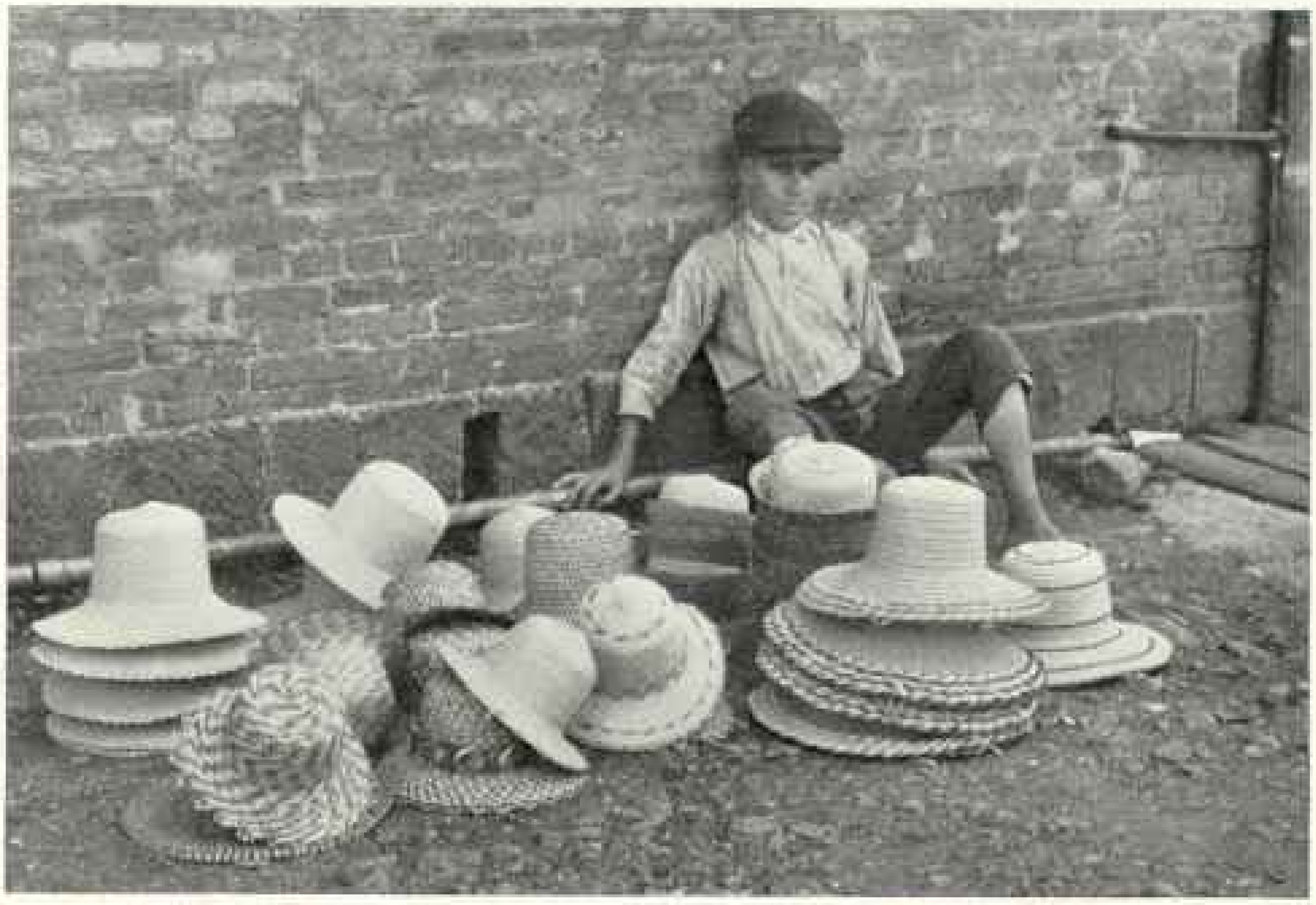
Here you may buy spices, sugar, rum, molasses, fish and turtles, ground cocoa molded into cigar-shapes, odd tropical fruits and vegetables. Wild hogs from the jungle and snipe and partridges from the valleys of the island are also for sale.



Photograph by Capt. A. W. Stevens

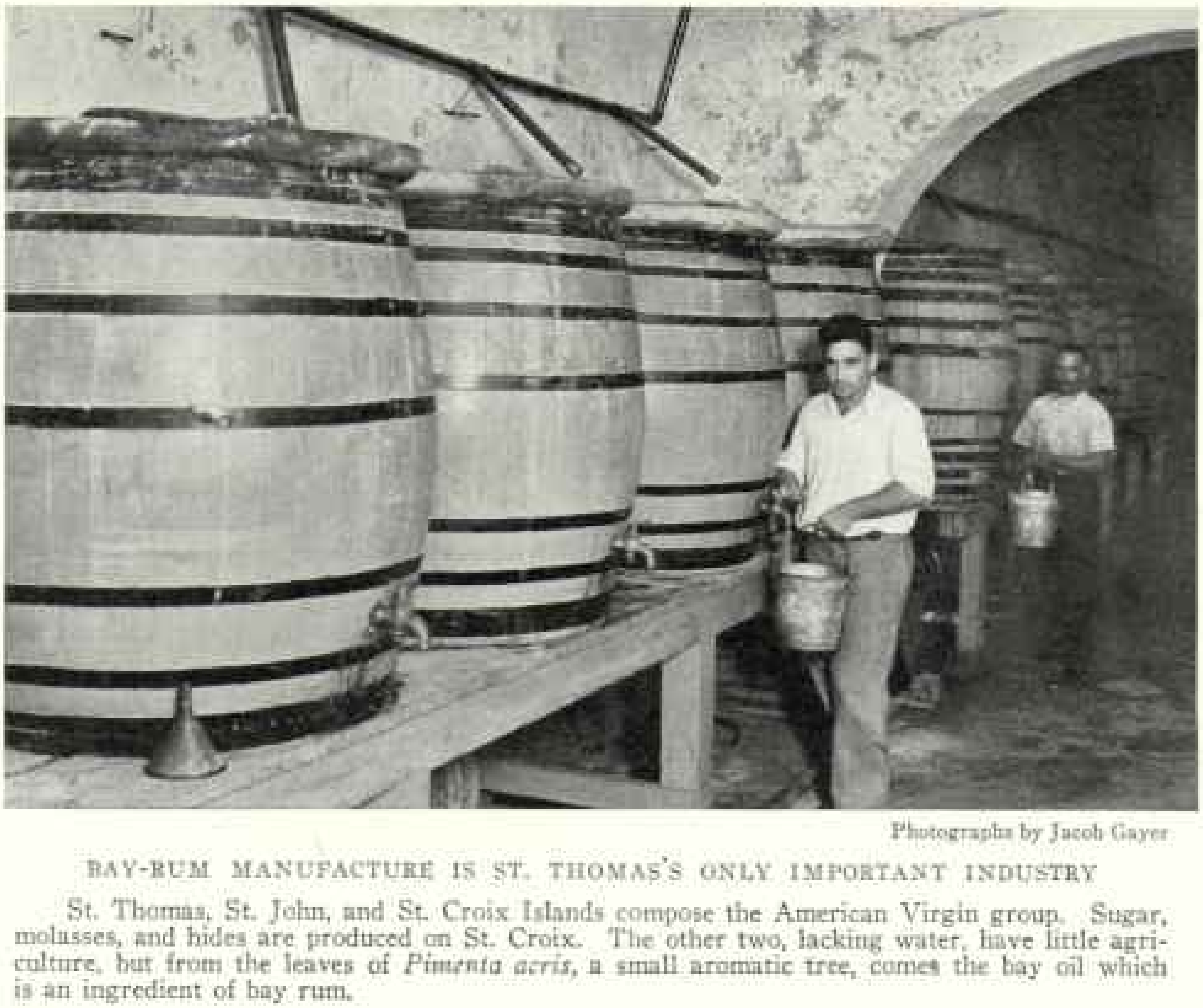
ST. THOMAS, SEAT OF GOVERNMENT IN THE AMERICAN-OWNED VIRGIN ISLANDS, HAS ONE OF THE FINEST HARBORS IN THE WEST INDIES

More than once these hills and harbor islets have shielded the city from ruin by violent hurricanes. In the violent storm of September 13, 1928, wind velocity in the Virgin Islands was estimated at 130 miles an hour. When the United States purchased these islands from Denmark, in 1917, they had a population of about 26,000. Since then this number has considerably decreased, owing to migration to continental United States.



A CHACHA HAT MERCHANT OF ST. THOMAS

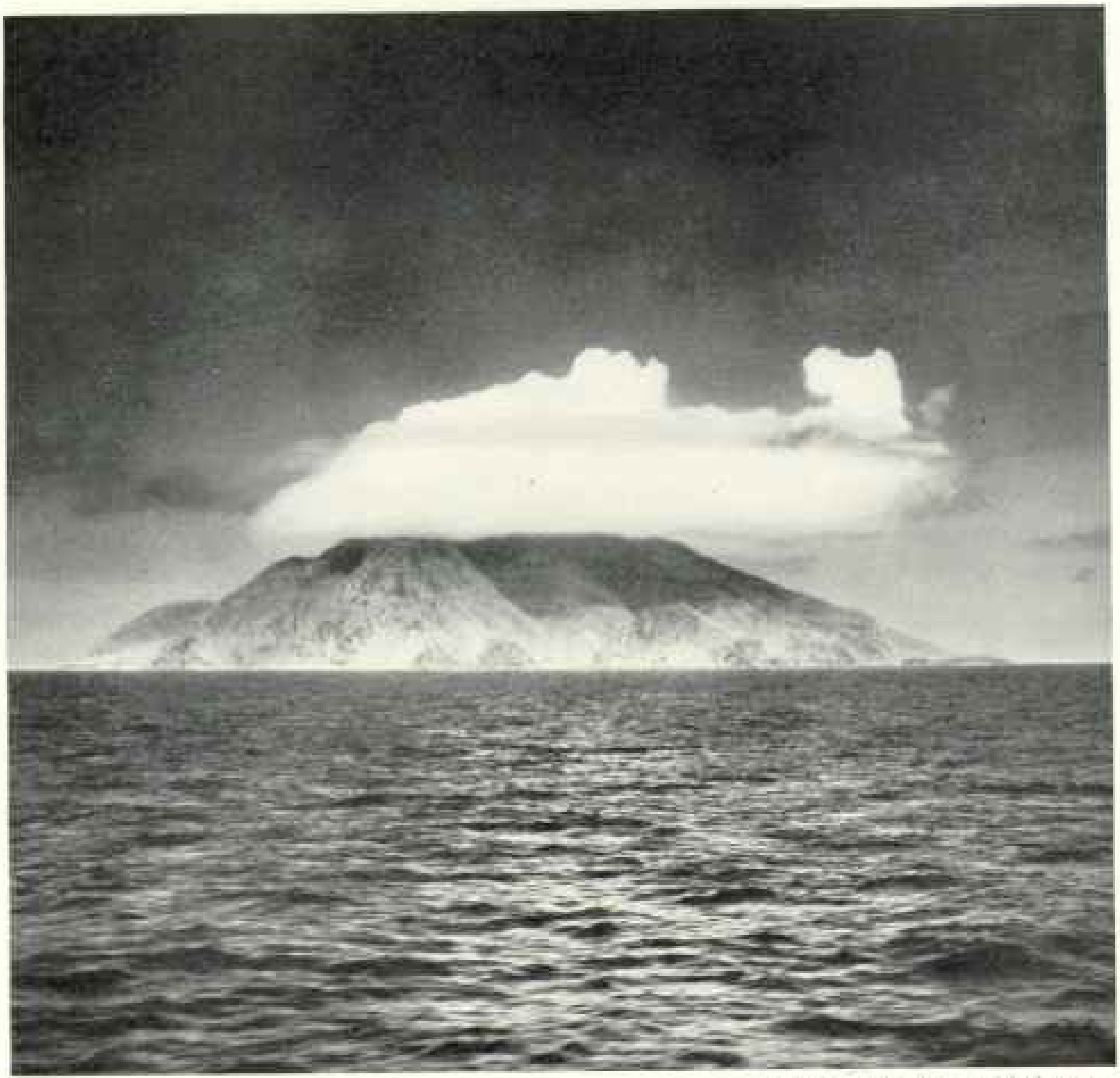
A small French colony, known locally as "Chachas," derived from an exclamation of annoyance they often use, forms a part of St. Thomas, Virgin Islands. They fish, weave hats, intermarry, and mingle hardly at all with other inhabitants of the city.



Photographs by Jacob Gayer

BAY-RUM MANUFACTURE IS ST. THOMAS'S ONLY IMPORTANT INDUSTRY

St. Thomas, St. John, and St. Croix Islands compose the American Virgin group. Sugar, molasses, and hides are produced on St. Croix. The other two, lacking water, have little agriculture, but from the leaves of *Pimenta acris*, a small aromatic tree, comes the bay oil which is an ingredient of bay rum.



Photograph by Capt. A. W. Stevens

SABA ISLAND IS KNOWN TO MANY OLD SAILORS AS "NAPOLEON'S COCKED HAT"

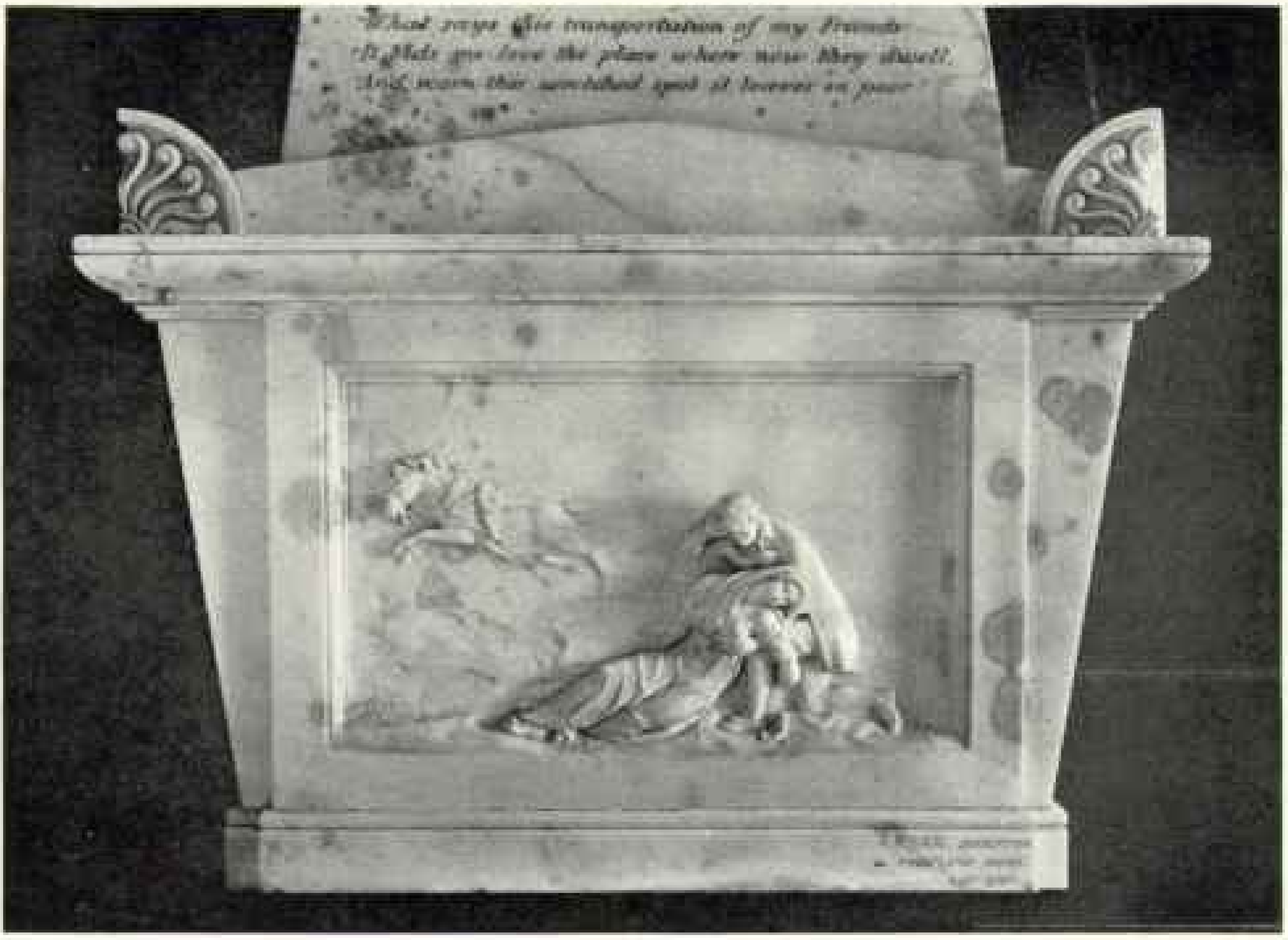
Since Dutch sailors swept the seas with brooms at their mastheads, Saba has been the retreat of Dutch sea-going men and their families. A Dutch colony, including many retired sailors, has dwelt here for generations. The boats built here are the best in the Caribbees. The wood is imported, and when the craft is finished it is lowered over the cliffs.

as would have hailed Ponce de León in his day, cameramen from the newspapers came out to "shoot" us and our big Nyrba ship.

Looking down as you fly, you see how crowded this island is, with tiny huts standing in every nook and cranny and clinging even to hilltops to save level space for crops. And children fairly swarm. The death rate is about 23, the birth rate 39 per 1,000!

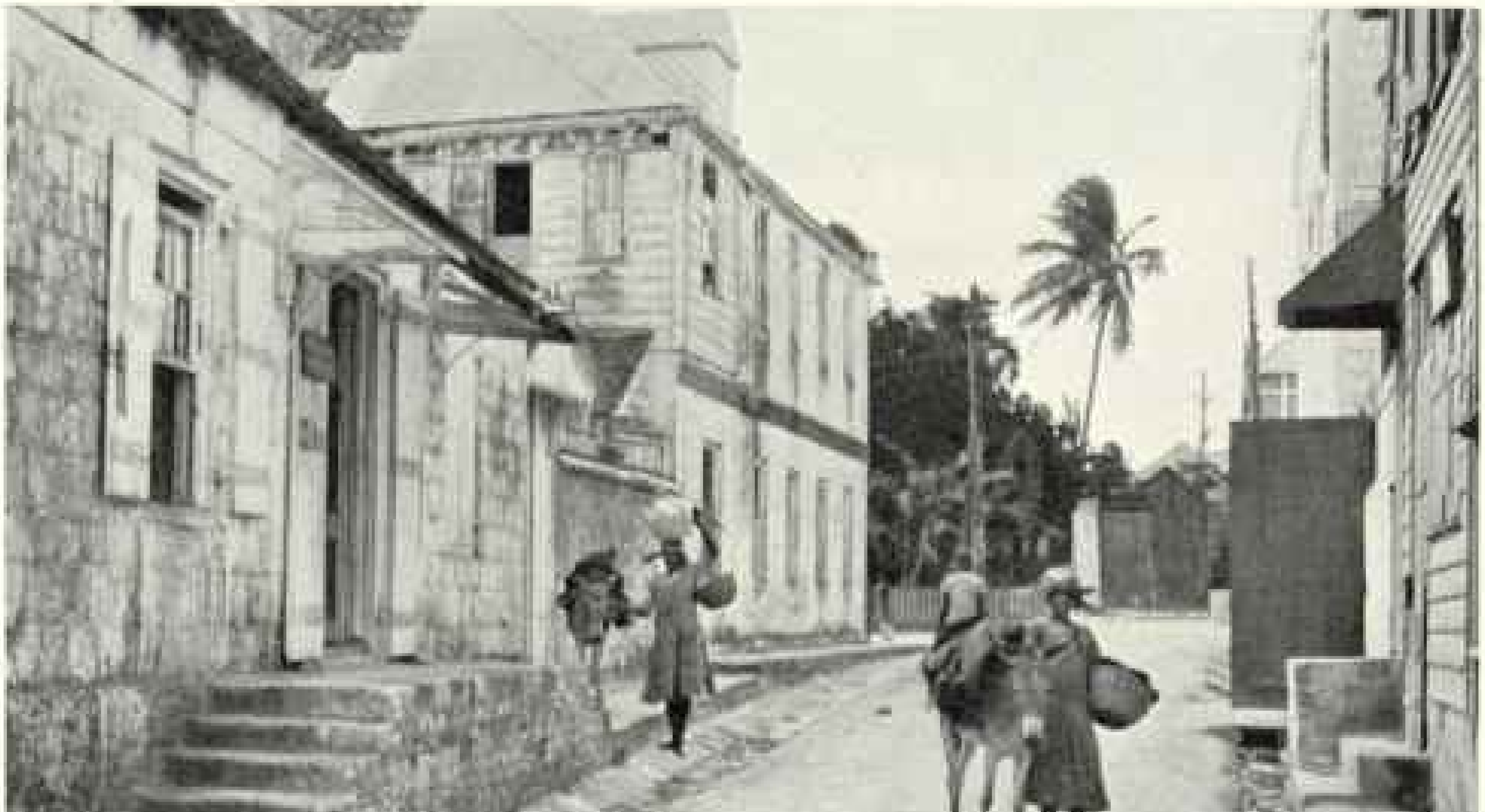
American rule checks disease: since the Spanish flag came down, the population has grown from about 900,000 to 1,544,000. Economic changes continue. From 1910 to 1920 the census shows 17,000 small farms were merged into the big plantations. This is simply the result of the modern tendency of agriculture everywhere to enlarge the unit of its operations. As lands here rose in price, small holders sold out and took jobs on the bigger plantations.

More and more land is devoted to raising pineapples, citrus fruits, sugar, and tobacco. The food of the people—rice, beans, and dried codfish—must be imported. Meat, too, is scarce. Much land on which cattle once grazed has been put under plow, thus diminishing the herds.



AN ANTIGUAN'S UNIQUE MEMORIAL TO HIS BELOVED WIFE

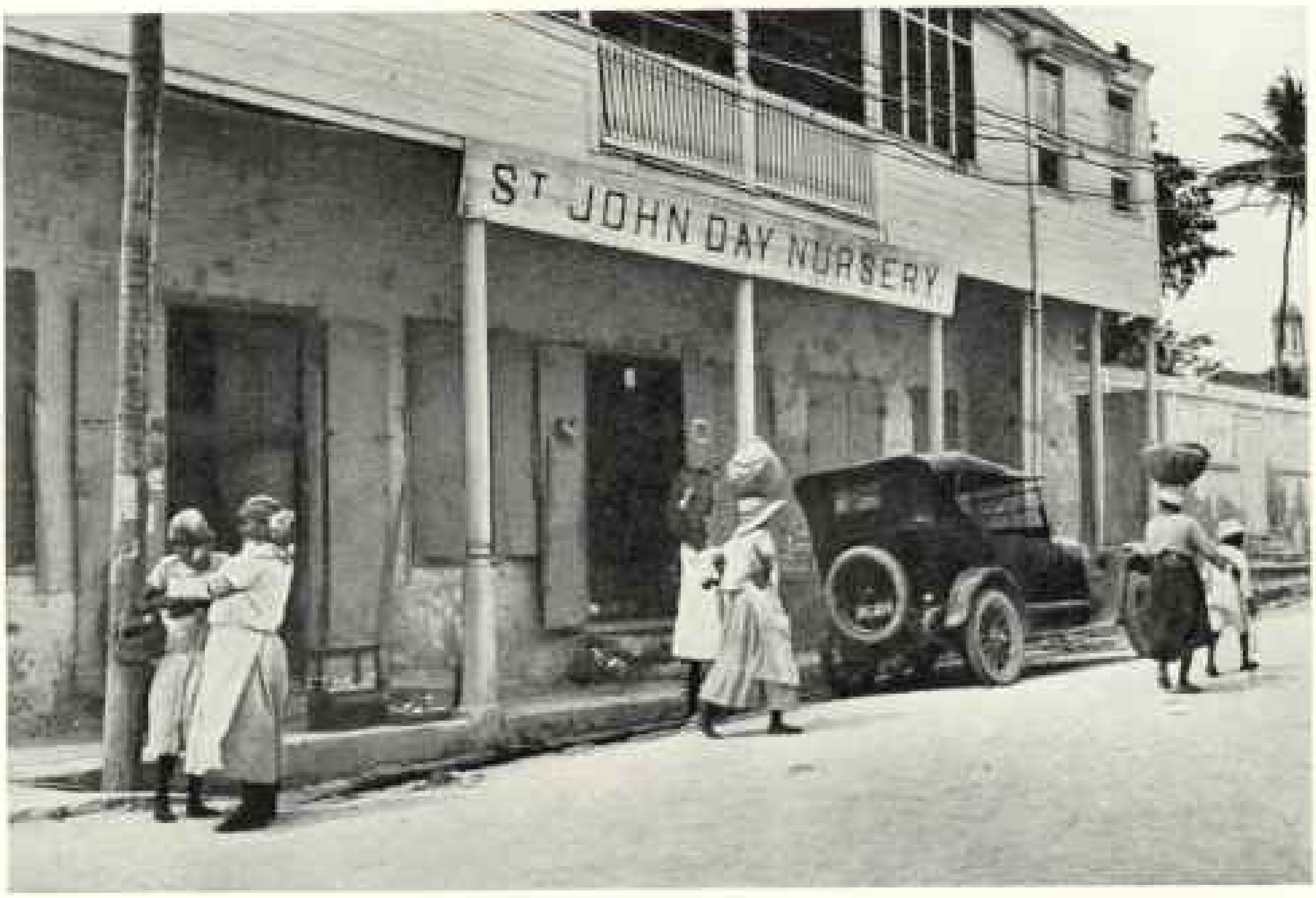
Long ago a horse ran away and killed the wife of a resident of St. John, Antigua, in British West Indies. Set in the Cathedral there, this sculptured tablet portrays the cause of her death.



Photographs by Jacob Gayer

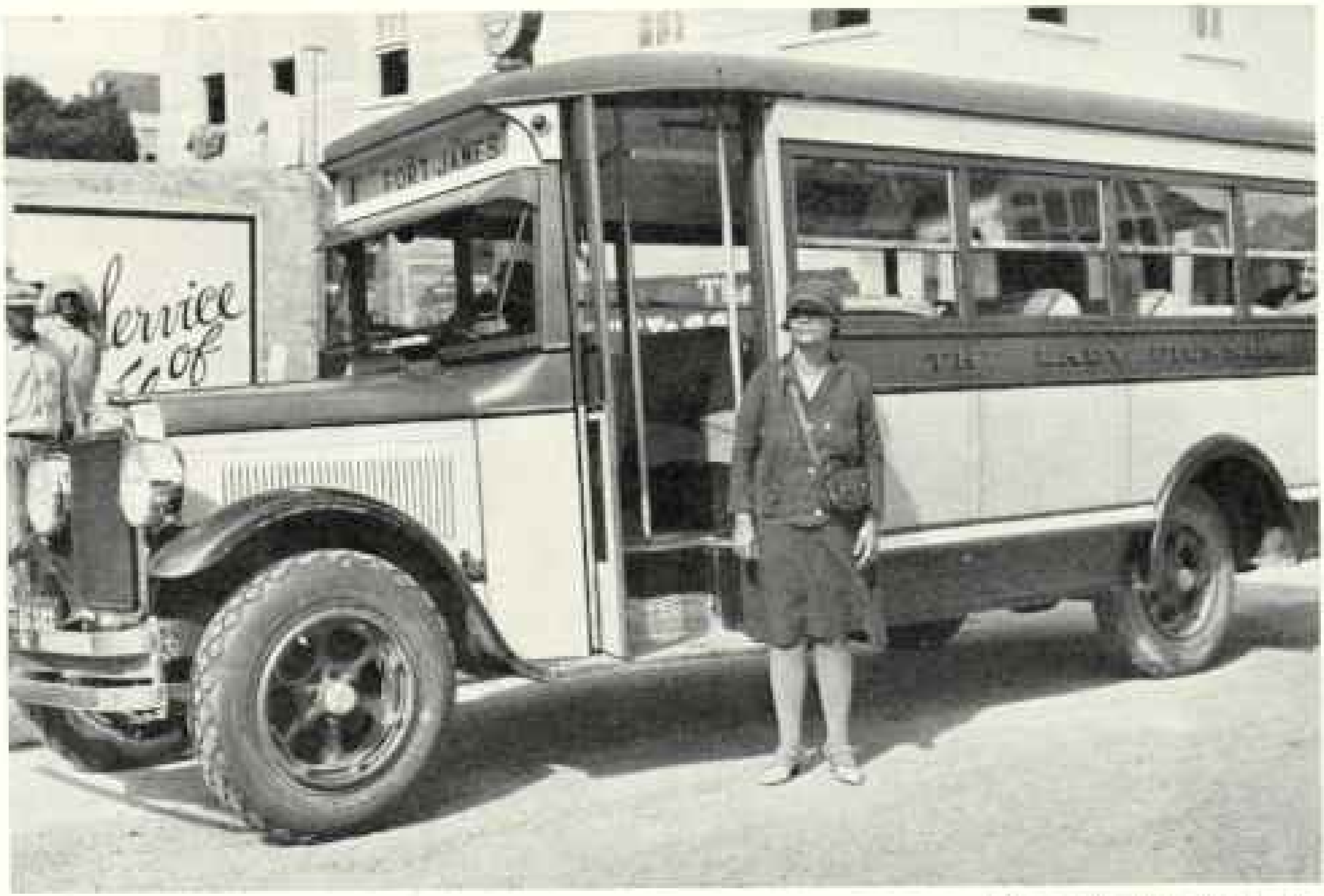
PEDDLING YAMS, MAIZE, AND FRUIT IN ST. JOHN, ANTIGUA

Among England's early outposts of empire in the Western World, this fertile island colony in its heyday was an important source of sugar and rum. To-day, being a port of call for steamers from Canada, it has many charms for winter tourists.



ANTIGUA IS PEOPLED LARGELY BY THE DESCENDANTS OF SLAVES

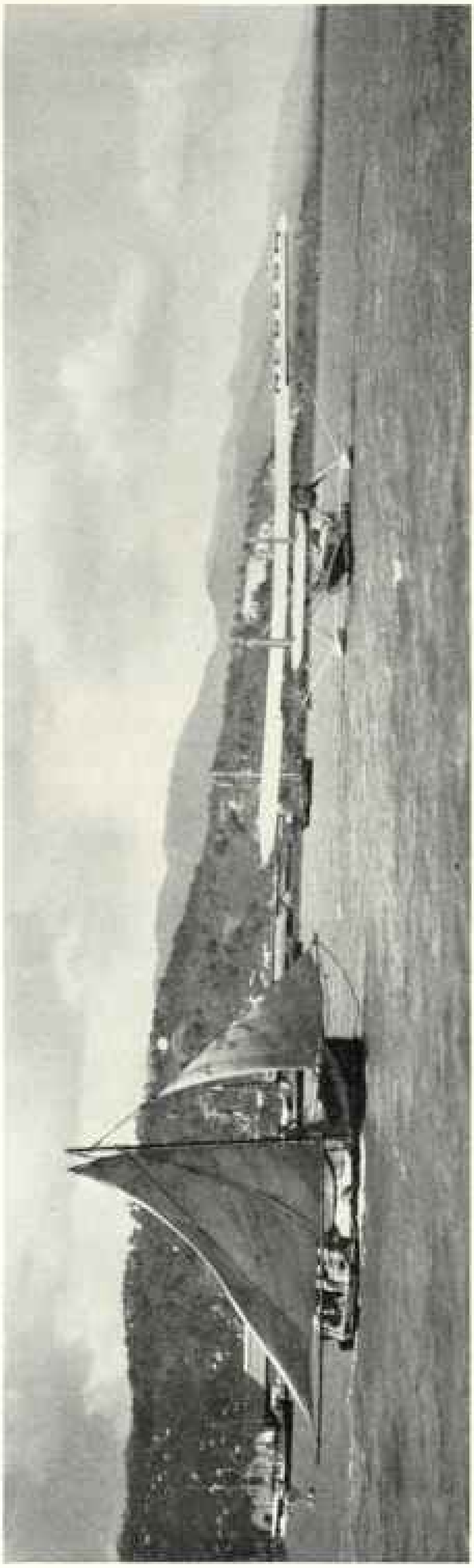
St. John, Antigua, is the residence of the Governor of the Leeward Islands. It is also the see of a bishop of the Church of England.



Photographs by Jacob Gayer

A WOMAN BUS CONDUCTOR AT ST. JOHN

Because of changed conditions in world sugar production, agriculture here has declined and white settlers are diminishing. Ruins of old mills and abandoned fields are symbols of change. A ride across Antigua reveals how thoroughly British colonists cultivated it formerly.



Photograph by Capt. A. W. Stevens

THE SOCIETY'S AËRIAL SURVEY PARTY ARRIVES AT ST. JOHN, ANTIGUA, BRITISH WEST INDIES

With a regular airplane service established between the east coasts of North and South America, via the West Indies, many long-isolated ports of the Antilles now enjoy much quicker communication with the outside world.

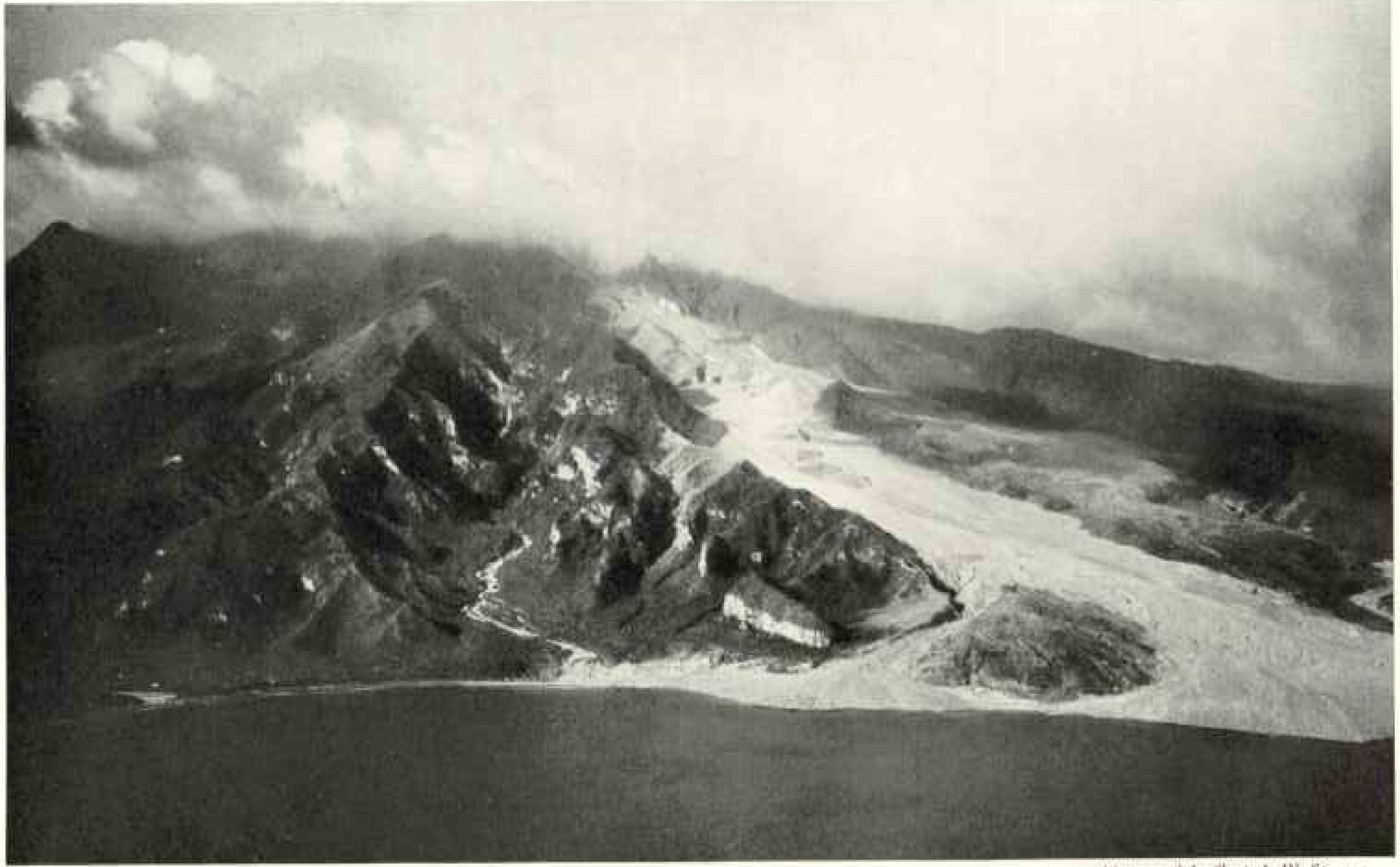
Viewed as a big farm development, this island is prosperous. But the plain truth is, its 1,544,000 people, who mostly work for wages, cannot subsist now on the kinds of things the land produces, and to live on imported foods is costly. Migration has been tried, but so far with little success. Too often it is the educated youths who leave—an element the island needs. So Porto Rico becomes a problem. Under its ancient social order, mortality from disease kept the balance between population and food supply, but now all that is upset.

We flew over San Juan again the day we left. I looked down into the yard of the penitentiary. One wall is formed by the base of an old stone fort — one of those whose cost worried the King of Spain. Yet San Juan in its palmy days was the best fortified Spanish post in the Western World. Pirates, buccaneers, English, French, and even Americans pointed their guns at it in vain. And that valiant warrior who helped build it and ruled over it, Juan Ponce de León, sleeps his last, long sleep now in the shadow of the ancient forts.

SKY GLIMPSES OF THE VIRGIN ISLANDS

Cleaving the morning clouds, we rounded the east end of Porto Rico. A glorious ride across sparkling blue water and we were above St. Thomas, seat of government in the American-owned part of the Virgin Islands.

We looked down on Bluebeard's Castle, where tradition says a pirate slew his many wives, then hung their heads on its grim walls. From 5,000 feet above you can see all three of these islands—St. Thomas, St. John, and St. Croix. The last is the largest and richest. It was the boyhood home of Alexander Hamilton, and the old store still stands where he clerked as a youth.



Photograph by Capt. A. W. Stevens

DOWN FROM THE BLASTED PEAK OF PELÉE, LAVA BURNT ITS WAY TO THE SEA (SEE TEXT, PAGE 37)

The dead city of St. Pierre, with its 30,000 inhabitants who perished when this volcano rocked the island of Martinique in 1902, lies half buried to the right of the white lava stream. Because of fumes emitted, it is dangerous to fly too near Pelée's crater. For accounts of the Pelée eruption see the NATIONAL GEOGRAPHIC MAGAZINE for June and July, 1902.

Viewed from the sky, these islands are strangely beautiful. Only God's own hands could form these gracefully molded emerald hills and set them in turquoise seas with foamy waves as a white fringe about dark-green shores. "Isles of Enchanting Views," the natives call them. A flock of sheep feeding far below on a golf course resembled white mice.

Ashore in St. Thomas, my parrot-infested hotel veranda faced Emancipation Park. Here, in 1848, the slaves tore up the public whipping post, threw it into the sea, and compelled the Danes to grant them freedom. Beyond the park is Fort Christian, with old towers and useless muzzle-loading cannon on its walls. The figures "1671" over its portal tell its age, and now Americans use it as a jail. All through the Caribbeans you see ancient edifices put to unromantic use. Even Bluebeard's Castle, when I climbed up to explore it, had been "restored." Now it has tin gutters, and an electric-light meter about where Bluebeard used to sit with his telescope scanning the sea, and is used as a lodge room by Scottish Rite Masons!

We visited Gov. Waldo Evans, a retired naval officer. On his wall hangs a list of Virgin Island governors dating back to 1677. "Our chief economic woe is lack of water," he said. "That is one reason why we lose population. Then there's the lure of continental United States. The chance to get work there at good wages draws more and more young men away from the Virgin Islands." Tourists would come and bring a welcome prosperity to this forgotten stepchild of ours if there were decent hotels and creature comforts so necessary to the visitor.

A nice, big hole in the clouds, as we flew away, gave Steve a chance for a final aërial shot at St. Thomas (see page 27).

AN AIR CRUISE THROUGH THE LEEWARD ISLANDS

It was a glorious West Indian morning as we sailed south; but a stiff head wind, after an hour, drove us down, to fly low over the water. Our two pilots, Hawkins and Hammond, side by side in their coop up forward, unfolded the specially drawn charts aviators use on this New York to Buenos Aires seaplane course and flew by compass.

On his second voyage Columbus cruised among these islands and gave many their names. The odd isle of Saba lies in this chain. The rattle and bang of our all-metal plane, with nothing to see but water, had made us all drowsy. Gayer was sound asleep, and likewise Stevens, when Hawkins gave two zooms, the signal he used to draw our attention to anything interesting that we were about to pass. And there, now, was the high, volcanic island of Saba, and we were flying around and over it to make pictures.

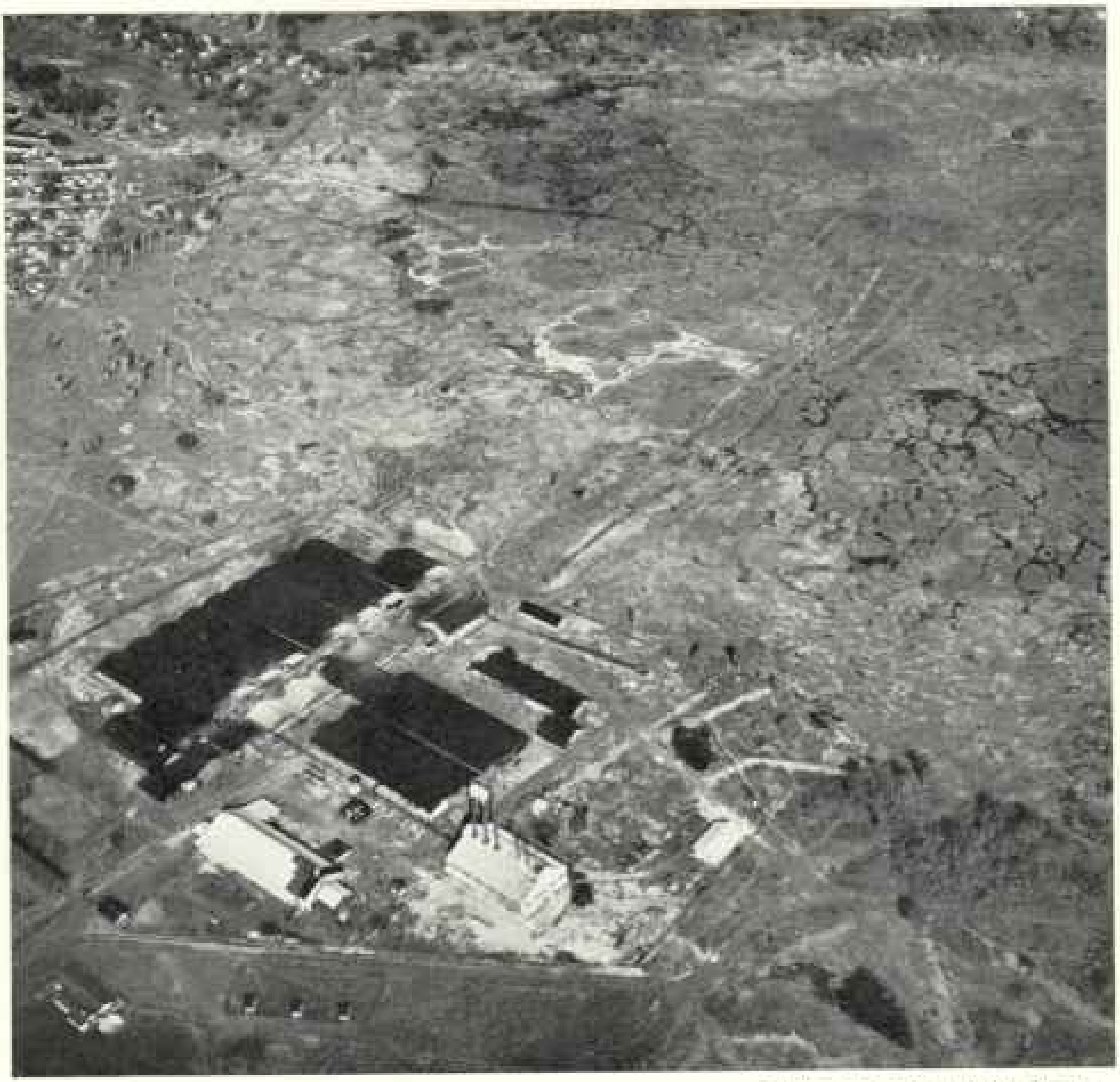
The Dutch have owned Saba and lived here for 300 years, as sailors and boat carpenters. In their little town of Bottom, on the floor of the extinct crater in the center of the island, they build small fishing craft, then hoist them over the crater rim and slide them down to sea. We made out many crooked paths, cut in the slopes of the rocky hill, running down to the beaches (see page 29).

LIFE IN BRITISH WEST INDIES TO-DAY RECALLS EARLY COLONIAL TIMES

In tiny tilled fields we saw women working. These are potato patches, my West Indian guidebook said; but we could only guess. That's one aspect of air travel; you miss the touch and smell with which, in riding on the ground, you identify familiar things. Motor through Missouri on a June day and you delight in the fragrance of new-mown hay, plowed fields, and blossoms; but fly over it and all you smell is gasoline. And air passengers miss the human stimulus of stopping and asking questions; you get a quick glance and are gone. Before I finished my notes on it, Saba was astern; then ahead, to our right, would be St. Christopher (St. Kitts) and Nevis, where Admiral Nelson married the Widow Nisbet, and where Alexander Hamilton was born.

St. Kitts is the mother colony of the British West Indies, for the English settled here a few years after the Pilgrims landed at Plymouth. Its early life was a long struggle among English, French, Spaniards, and Caribs. Then came peace, slavery, and prosperity from rum and sugar, till social and economic changes upset the old order.

Riding over clear, shallow water tinted by coral beds, we neared the island of Antigua, seat of government of the British-



Photograph by Capt. A. W. Stevens

TRINIDAD'S FAMOUS "PITCH LAKE," WHERE, AS EARLY AS 1595, SIR WALTER RALEIGH CALKED HIS SHIPS

This natural phenomenon, more than 100 acres in extent, has for many years yielded a steady income to the colonial government of Trinidad. In appearance the "lake" is a level tract of asphalt dotted with puddles of muddy water. As pitch is removed, more rises in its place, in big roundish lumps with fissures between them. One may walk across if he keeps moving. In spots liquid pitch oozes out. In the lower left is the plant of the company which digs and exports the asphalt; at the upper left, a part of the village built for pitch-lake laborers (see, also, text, pages 37, 40, and 41).

owned Leeward group. Flying over its capital, St. John, with its two-towered Cathedral of the Church of England, we circled over the island to see its plantations. Many ruined mills lifted their old stone towers where big wind wheels once turned the rollers to squeeze out cane juice.

From well-kept fields and gardens workers waved to us; dogs chased our shadow, and a nervous cow jumped from her pen and ran for the brush. Paved roads were crowded with carts.

Word had gone far down ocean lanes that a party of Americans was coming, with many cameras, to make a pictorial story of this increasingly popular air cruise over the West Indies; so crowds welcomed us at the pier. Many people wanted to help us; others came to see the big plane or get a free joy ride.

"Our chief claim to fame is our link with the historic past," said a British official who took me to see famous old English Harbour.

Photograph by Capt. A. W. Stevens

RUNNING OUT, THE TIDE PLOWS DEEP FURROWS INTO THE MUD FLATS ABOUT THE ORINOCO DELTA

The world's largest mud puddle stretches down South America's east coast. Nearly all rivers of South America flow east, carrying cubic miles of mud to sea. Along the weary waste of mud and tangled jungle scrub that forms the coast of Venezuela and the Guianas, mud flats at low tide are often miles in width. The ceaseless flow of shallow tide waters into and then out of these brush-covered coastal flats, and the many birds which patrol for food after the receding tide, are the only motion and life in these vast, almost primordial areas of ooze, slime, and silence (see text, page 44).

As if preserved for museum use, here is a perfect survival of the old-time British West Indian naval dockyard. Huge anchors, figureheads from sailing ships, a "cordage and canvas store," immense wood capstans used for careening ships two centuries ago, and a great stone block and ringbolt for tying up the ship when careened; a stone sundial, and cisterns and pipes by which His Majesty's ships at the quay were provided with fresh water. And then the house where Adm. Horatio Nelson lived; his chairs, a queer, fountainlike pool in the kitchen, which kept ants from crawling up into the Admiral's pantry, and some old maps and woodcuts of his time. In this ancient dockyard Nelson fitted out his ships and sailed to his fate at Trafalgar.

These once rich islands were in the eyes of all Europe in those days, for Europe was sugar-mad. Cuba, the Far East, and sugar beets were not then competitors. But now the white man's sun is setting in this romantic island world he has ruled so long. Wars matter little any more. The fight to survive has become a racial-economic struggle. Whites lose because they do not take root in the Tropics. There you look in vain for a spot where a white colony grows up through generations. It is so here, on Antigua Island. Few new settlers come from England, and old families depart or die out. Most of its inhabitants now are the descendants of slaves.

Again our big motors roared, and we waved to Anglo-Saxon friends of a day. They waved back, a bit wistfully, from a slightly shaky dock in this weather-beaten old outpost of empire where the white man is laying down his burden.

PAST MONT PELÉE AND THE BURIED CITY OF ST. PIERRE

Thundering down the Carib sea lane, we skirted the west coasts of Guadeloupe and Dominica. Repeatedly, squalls engulfed us; nearing Martinique, afternoon sun broke through and rainbows chased us. A complete rainbow circle formed against the gray rain wall east of us, as we climbed high to picture the evil cone of Mont Pelée.

Sinister and lava-burnt, Mont Pelée bulks above the buried city of St. Pierre, where more than 30,000 people perished when this volcano blew up, in 1902. Plainly we saw the great river of molten rock and ashes which, with the incalculable blast of poison gas let loose, wrought the appalling volcanic tragedy. Skillfully weaving his plane to give Gayer and Stevens just the right light and angle for air pictures, Hawkins brought us closer and closer to the scarred and abysmal slopes of the volcanic monster. From the air its every aspect reflects the cataclysm of Nature which years ago convulsed the island (p. 33).

On the steep sides of Pelée you see deep, wicked trenches plowed by flowing fires. A long, white river of treeless ash and lava runs down into the sea. Under it, buried forever, is the once happy, prosperous French city of St. Pierre, only one of whose inhabitants lived to tell the story. Even many ships anchored offshore were set on fire by flaming volcanic gas.

Diamond Rock loomed in our path now, on the way to St. Lucia Island. During a war with France the British 74-gun ship *Centaur* garrisoned this rock with her crew. In 1803 Admiral Hood swung guns from his ship and hauled them to the top of the biscuit-shaped islet, and from this high perch doughty Englishmen for 18 months sniped at French ships which sought to attack St. Lucia from Martinique.

The sun was setting behind us as we landed in the theatrical harbor of Port Castries, on British-owned St. Lucia. Sharp-pointed hills draped in jungly verdure rise above the snuggling city.

Howling blacks fought to row us ashore and lug our bags up steep hills to where a lone English lady takes "paying guests." No man can sleep on St. Lucia till he gets used to the night song of bugs and frogs. One frog near my window ran a rhythmic do-re-mi-fa-sol-la! But his playmate had no ear for music. He did well as far as do-re-mi; then he broke on a sad, flat note and held it, like the squeak of a squeezed rubber doll.

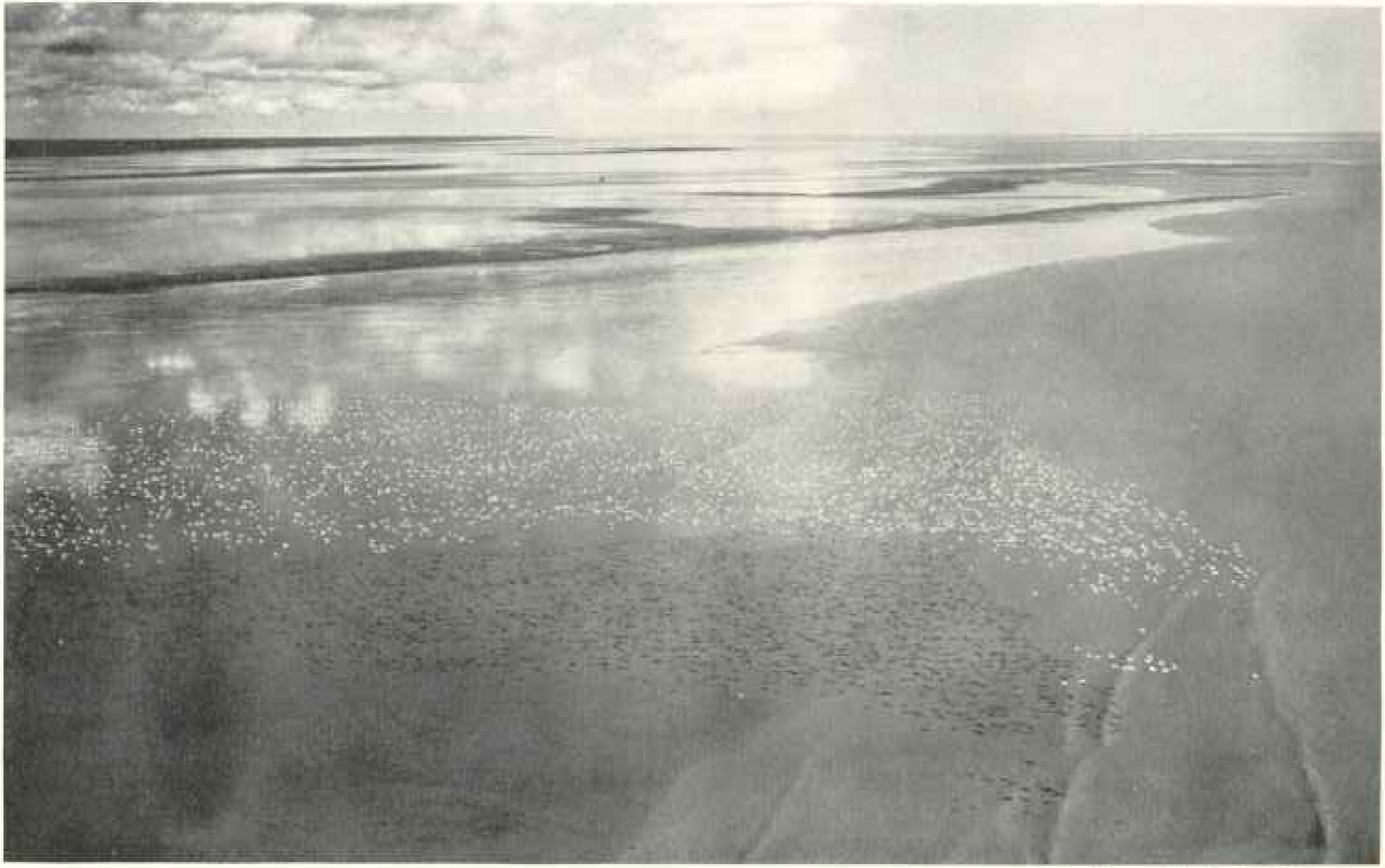
In a spacious old house, typical of British colonial officialdom, I lunched next day with the Governor. From his veranda on Morne Fortuné, high above the scenic harbor of Castries, we could see faintly the evil peak of Pelée, miles to the west. It had been smoking lately, and people said the odd haze slightly visible was volcanic dust. I looked back at it, as we flew south for Trinidad, and thought of Pliny and his story of the destruction of Pompeii.

TRINIDAD, IN THE WAKE OF SIR WALTER RALEIGH

Trinidad, shaped like an oxhide, lies ten degrees north of the Equator. As we climbed its high cacao- and coffee-covered northwest hills, we got our first view of South America—the headlands of Venezuela, a tip of the old Spanish Main, at our right. In the shallow harbor of Port of Spain, silted up by mud from the Orinoco's mouths, we came to rest.

Just as the blunt, metal nose of our flying boat rubbed the ramp, another Nyrba ship shot into view, a fast-flying "duck," or Sikorsky, from far-away Pará, on the Amazon. In that one day this plane had flown more than 1,400 miles.

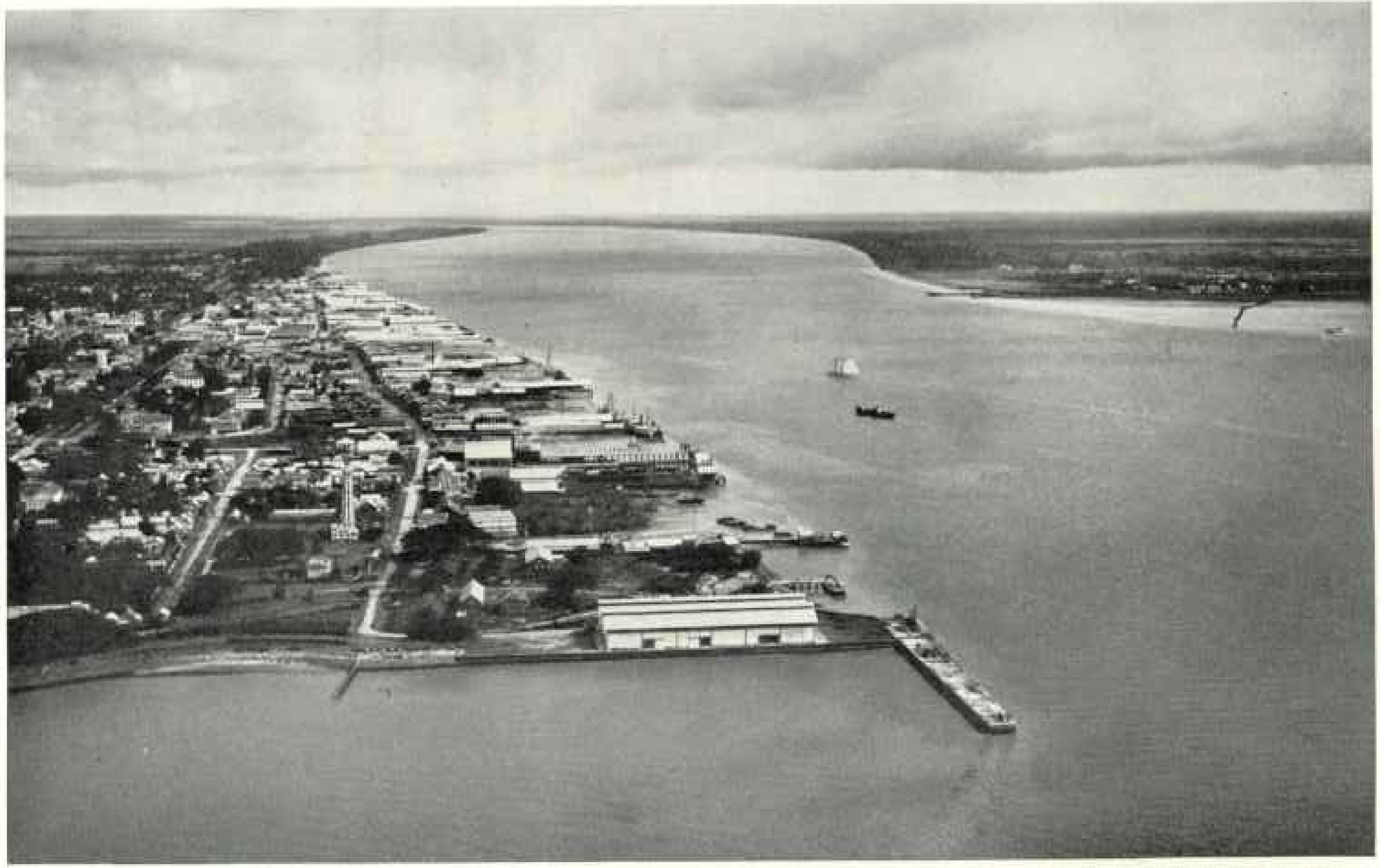
A polyglot port this, where Hindus compete with Americans, and Scotchmen, somehow, with Chinese. In this warm, humid, noisy island, where night winds rattle the palms with the sound of crumpling paper, you see almost every well-known race except Japanese. Stores sell everything, from cork sun-helmets, Paris lingerie, and cricket bats to East Indian jewelry, monkeys, parrots, snakes, and baby crocodiles stuffed and dried erect on their hind legs, with electric-light globes in their mouths—a Trinidad idea of an ornamental reading lamp.



Photograph by Capt. A. W. Stevens

FROM MUD FLATS, SWAMPS, AND JUNGLES COUNTLESS THOUSANDS OF BIRDS ROSE BENEATH THE ROARING PLANE

Herons, cranes, ducks, snipe, curlew, parrots, ibis, and flamingo—all were observed. So were doves, migrating from Haiti to Cuba. The largest flocks of birds, estimated at from 4,000 to 6,000, were seen from Venezuela down through the Guianas, and to the Amazon Delta. Flamingos along Venezuela's coastal mud flats. Black outlines below are the birds' shadows.



Photograph by Capt. A. W. Stevens

AT THE MUDDY, RED MOUTH OF THE RACING DEMERARA STANDS GEORGETOWN, CAPITAL OF BRITISH GUIANA (SEE PAGE 43)

Photograph by Jacob Gayer

TOO HEAVY TO FLOAT, GREENHEART LOGS ARE TRANSPORTED BY BOAT DOWN THE DEMERARA RIVER TO GEORGETOWN, BRITISH GUIANA

This wood, used mostly in marine construction, is the best known and most important export of British Guiana timber. Six power-driven sawmills and four woodworking factories in Georgetown alone indicate the extent of this industry.

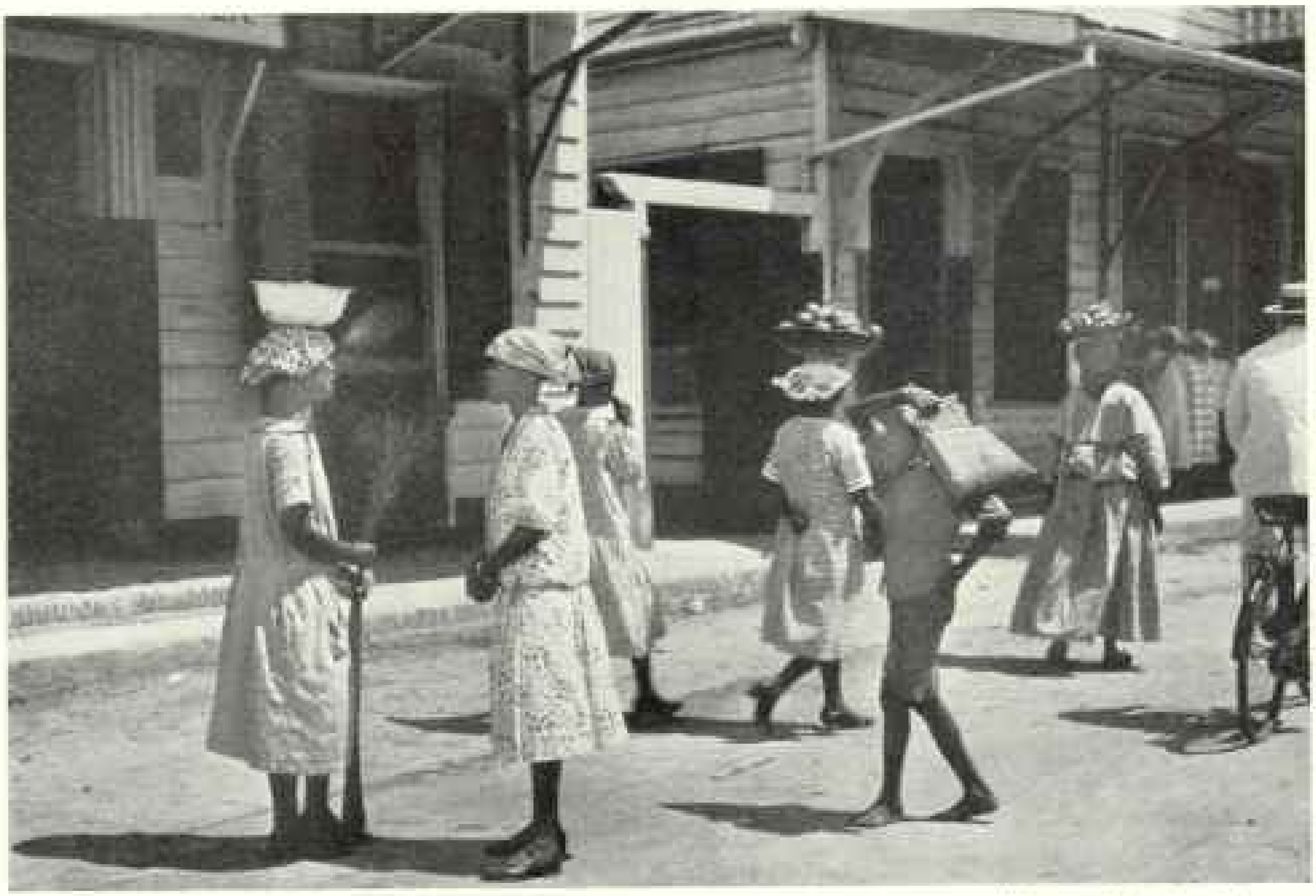
Odd sights, sounds, and smells echo the clash of East and West: Chinese girls playing hockey; motor cars honking at flocks of schoolgirls on bicycles; street signs pointing the way to church; a ring-nosed Hindu girl in a silk scarf smiling at a sailor; delicate orchids growing out of pieces of wood hung by wires in veranda shade; silk-cotton trees with shinbone roots rising six feet above ground; saman, or rain, trees spreading 150 feet; Hindus, Chinese, Moslems, Africans, Europeans—all mingling at a social affair; zebu cattle; peddlers of rum and coconut milk mixed; radios picking up Spanish music from Caracas; the "Vasco da Gama" and "Early Bird" bars; mosques, Hindu temples, and Christian edifices; a big, fat black woman buying a long, stiff, salted pig's tail "to boil with yams."

Here comes a market woman with a pain in the neck, for her head load is too heavy; it must weigh fifty pounds. Sidling up to the nearest pedestrian, she grunts a distress signal. He lifts her bundle while she twists her head to rest her tired neck muscles; then the good Samaritan replaces her load and she marches on. This is a friendly island custom that does not plague the wise.

"Humming Bird Island," the Caribs called Trinidad, and many of these birds are still found here. At Government House Lady Hollis showed me a brilliant collection.

Sir Walter Raleigh struck here in old days, putting Spanish soldiers to the sword. Also, he calked his ships at "ye Great Pitche Lake on Trinidad," one of Nature's odd pranks. Like a big mud pie, seen from the air, this deep asphalt lake lies on the southwest corner of the island, and, no matter how much pitch is dug, the fountain never fails. For 40 years its yield has helped to pave the cities of the world.

Whole pages of history, in the white man's conquest of the Western World, were spawned on this island chain, of which Trinidad forms the last southern link. Gold-seeking Spaniards gained their peak of West Indian power in the 16th



Photograph by Jacob Gayer

MORNING ACTIVITY IN PARAMARIBO, DUTCH GUIANA

Nothing that can be balanced on the head is ever carried otherwise here, as in many other tropical lands. It is not uncommon to see a Paramaribo woman transporting a piece of furniture, or a coffin, in this manner. Even when wearing the old-time "cotta-missie" costume, a voluminous dress stiffened to boardlike quality and padded front and back with pillows, she moves with surprising ease and grace.

century. This was an age of adventure, too, for the British. Hawkins, Drake, Oxenham, Barker, and others passed this way, "singeing the Spaniards' beards."

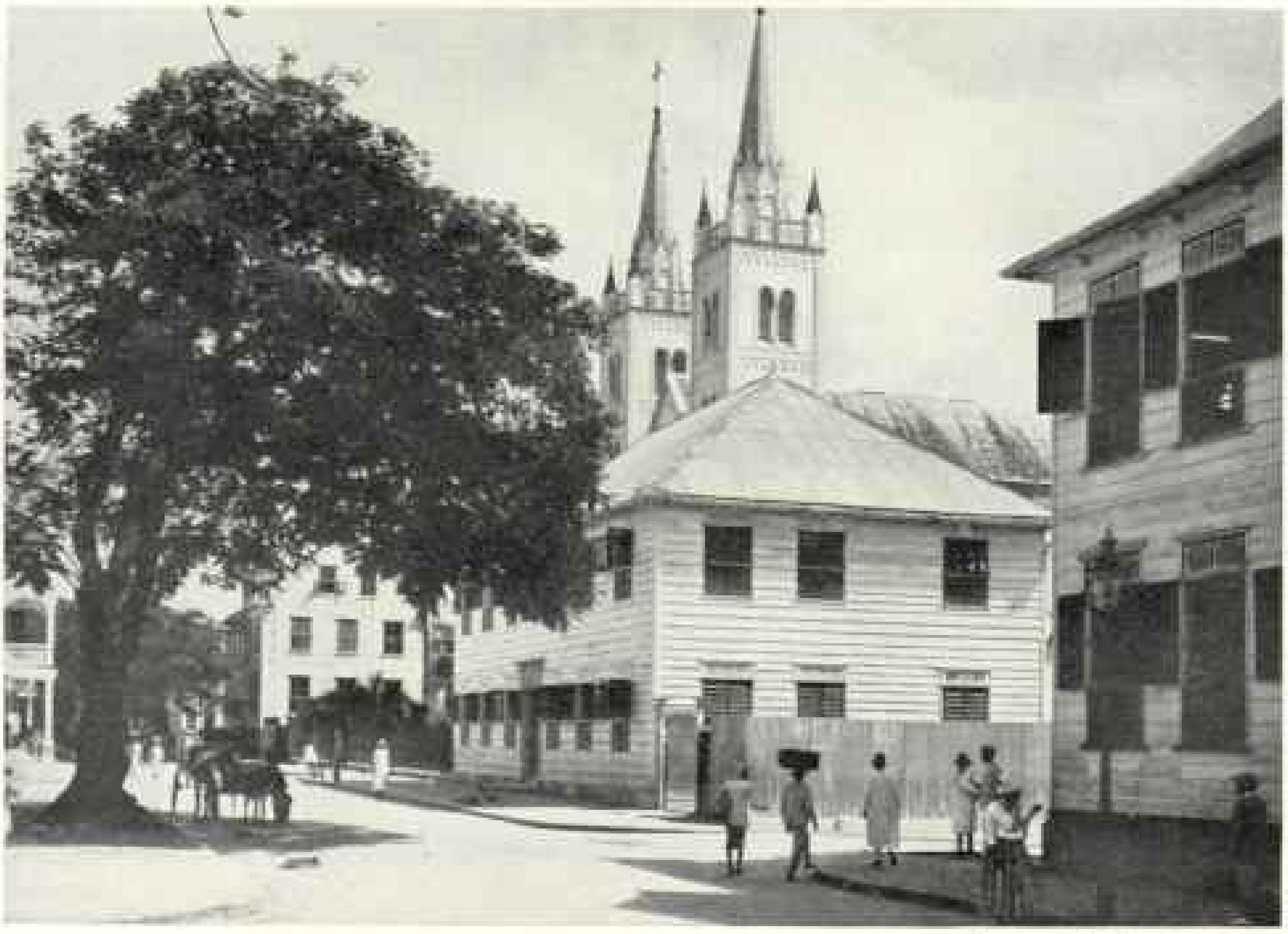
But it wasn't gold, nor adventure with arms, which in the end made money for England in Trinidad and other islands. It was trade, and agriculture based on slaves. Catching blacks in Africa and selling them here also piled up huge fortunes. Slave labor built up the cacao and sugar plantations. When imperial statute banned slavery, in 1834, shiploads of East Indian coolie workers were imported by the Government and indentured to planters. Today about one-third of the 400,000 people on Trinidad are Indian coolies or their descendants. One babu asked the public library for "Solajers Tree." "What he wants is 'Soldiers Three'," said the experienced librarian.

These West Indies, measured by world trade at the time, were worth more to England than her North American colonies, up to the Revolution. Then sugar was king; now, in Trinidad, oil and asphalt are above everything.

THE ORINOCO DELTA IS A LONELY WASTE

It was a lost world we flew over from Trinidad to British Guiana. We did not fly the usual over-water course, but turned inland from time to time. Up yellow and brown estuaries of the dismal Orinoco Delta we flew, crossed intervening green jungle wastes, and returned to the muddy coastal tide flats by some other wandering stream in this swampy labyrinth. Except for two or three widely separated grass huts of savages, we saw no signs at all of human life (see page 36).

But birds—countless thousands! Flocks of bright-red parrots tumbled away into the brush with erratic motions, like rags blown in the wind. Herons, ducks, literally clouds of some long-legged, slow-flying white bird; waders in armies—all fled from the plane's roar (see page 38).



Photograph by Jacob Gayer

EXCEPT FOR THE COLORED NATIVES, WITH THE INEVITABLE HEAD BURDEN, THIS MIGHT BE A SCENE FROM A SMALL TOWN IN NEW ENGLAND

Paramaribo, in Dutch Guiana, first settled by the French around 1640, makes no claim to great progress; but its simple frame houses, painted white with green blinds, its shady walks, and air of peace and tranquillity, all give a rural charm not to be denied.

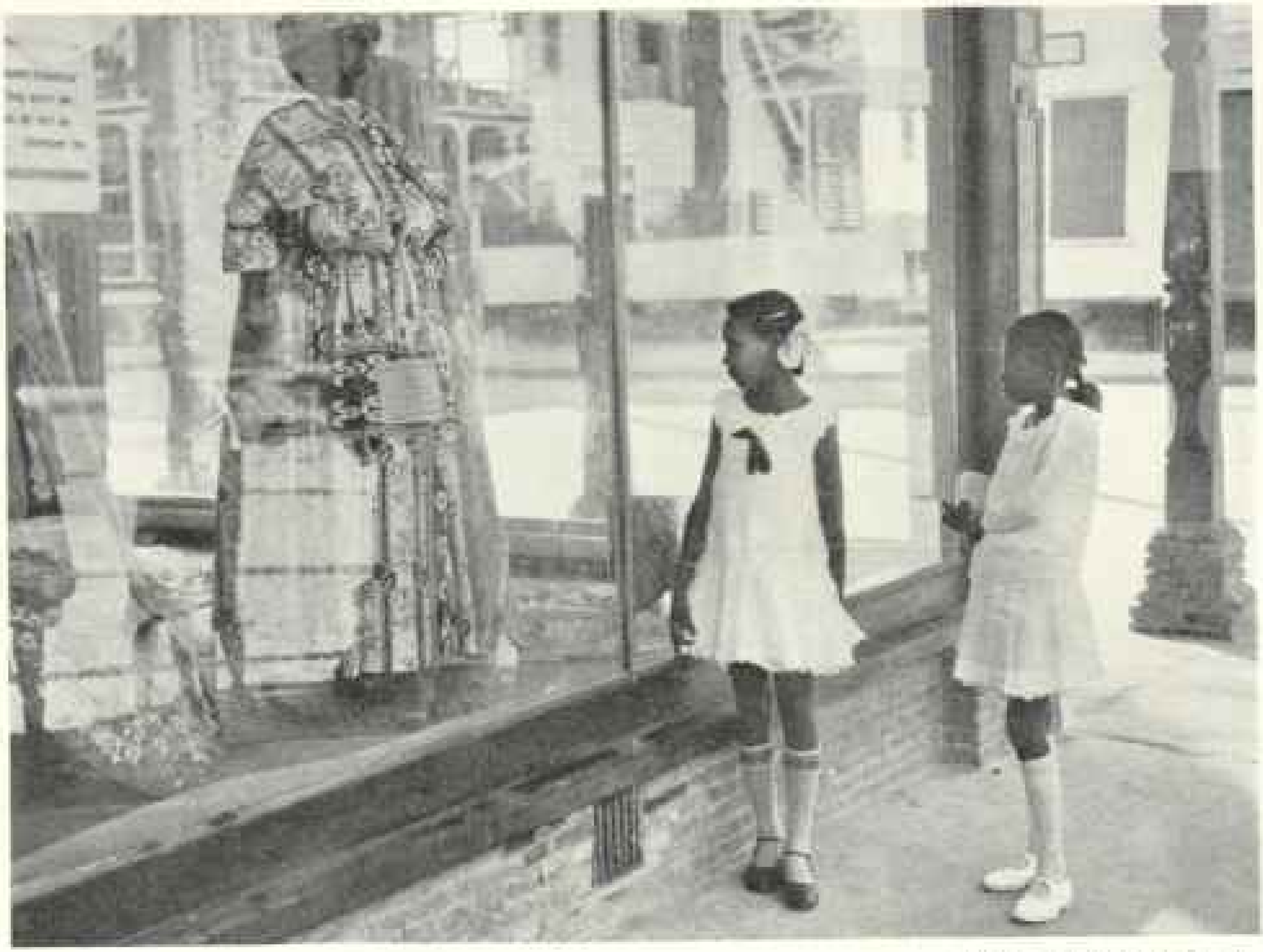
Stevens, thrusting his head out of the open hatch to make pictures, narrowly missed being struck by a big bird that whizzed past. We were flying just above the tree tops, and often birds passed dangerously near.

Later, over the Amazon, a large gull dived at the approaching airplane. The pilot tried unsuccessfully to avoid the bird, and it struck the starboard engine. Gull fragments, passing between the cylinders and continuing on the line of impact, struck Stevens on the head, knocking him flat on his back. In his daze he thought a piece of the engine had struck him; he mistook the wreck of the bird scattered on the cabin floor for the top of his own head!

We made film records of regions where no man's foot ever trod. In these waste places there is nothing to tempt man—white or Indian.

Even when we flew high, the interminable waste of water and jungle stretched into the dim distance till earth and sky met, a gray-green dead level. A forced landing anywhere in that desolate, uninhabited wilderness would have ended the expedition. Of course, planes in the regular mail and passenger service avoid penetrating these by-lanes.

Finally we emerged on the channel of the Orinoco itself—a rolling yellow sea on which oceanlike breakers were pounding from a recent storm. Somewhere up that lonely river lies the son of Sir Walter Raleigh, who was killed in a fight with the Spaniards. Turning almost east, we headed across the dirty inland delta sea, then down the Atlantic coast for British Guiana. A lighthouse, the first in many a weary hour; then the distant smokestacks of sugar mills told us we again neared civilization. That day we hit many rain squalls blowing north. They were in waves many leagues long east and west, but quite short from north to south. However, in



Photograph by Jacob Gayer

FEMININE FASHIONS IN PARAMARIBO, DUTCH GUIANA

The figure on display shows the type of "Sunday best" costume worn by women of the working class. The voluminous skirts are significant of the Dutch influence.

each case we broke through the squall in four or five minutes of flying, emerging into sunshine.

GEORGETOWN WITH ITS DIKES IS LIKE A HOLLAND TOWN

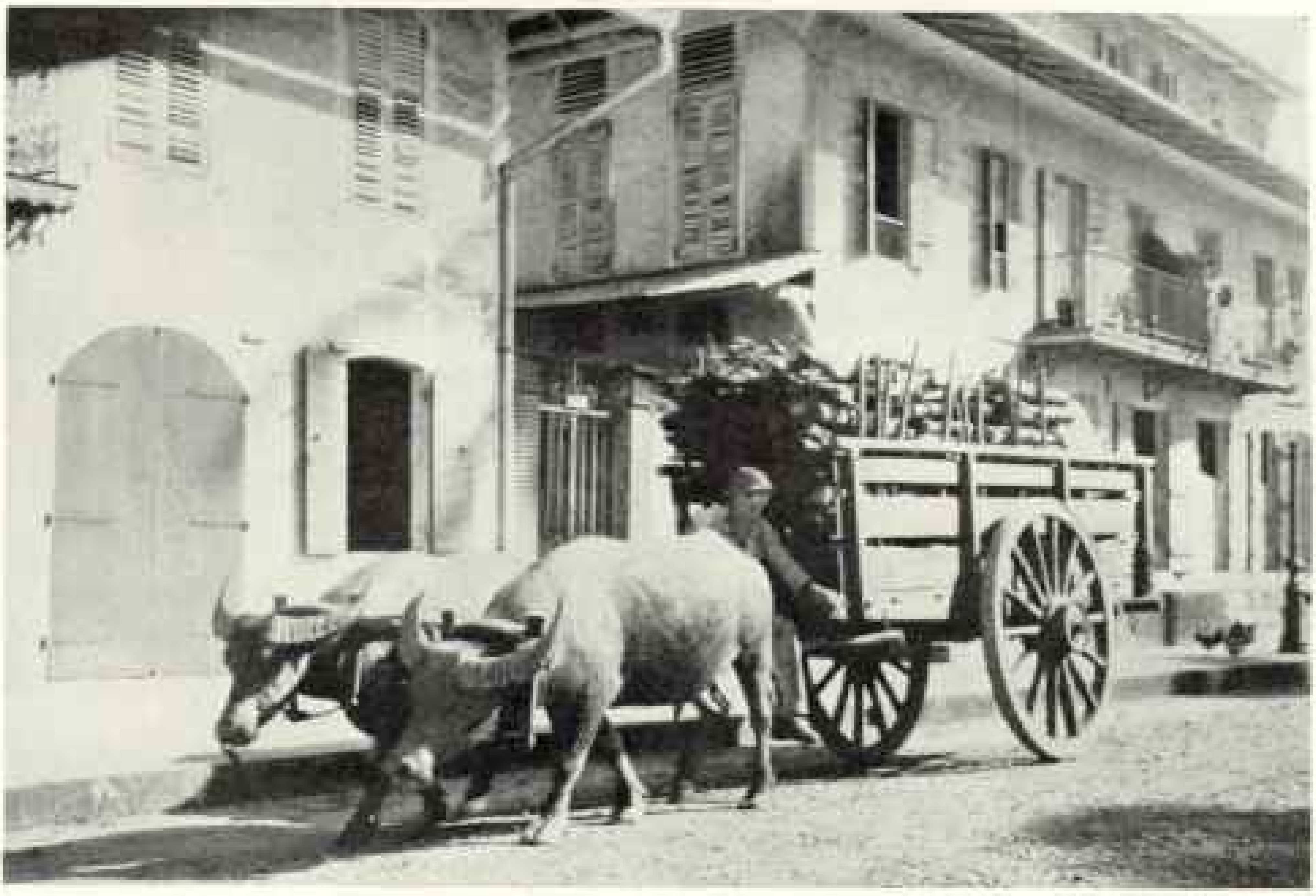
Georgetown, at the mouth of the Demerara, is the capital of this sole British possession in South America. It lies behind dikes; so that, skimming low over the waves, you hardly see the city till you are upon it. We climbed high, better to see this strange, far-away, Hollandlike town of dikes, canals, weather-beaten warehouses, hulks, shady streets, carrion crows, and diamond brokers (see page 39).

"This is the only place in the world where pigs have learned to swim without cutting their own throats with their front feet," said a vice consul, after we had landed in the reddish Demerara, swift with a 7-knot current. "They have to swim or drown, in the wet season." This is a land of too much water. Early Dutch settlers built the dikes and the many drainage canals.

All about, in the cleared fields, we saw shallow ponds of water and many giant pumping stations used in man's fight against floods. Amphibious sheep grazed belly-deep in pools, and cows waded in three feet of water, munching grass that grew up through it.

Plant life grows so fast you can almost hear the big leaves pop as they unfurl. In the gorgeous botanical gardens are *Victoria regia* lilies with leaves several feet in diameter and shaped like trays. Here are the manatees, or "mermaids" of early explorers. Lady Denham, the Governor's wife, showed me through the botanical gardens. She whistled as we came to a pond, and threw cut grass into the water; up swam the seven-foot manatees to eat it.

Here is one of the first oversea spots to which Englishmen migrated; here they built one of the pioneer railways in South America. With that fortitude which makes



Photograph by Capt. A. W. Stevens

"FREED," THE CONVICT EKES OUT EXISTENCE PEDDLING WOOD

At Cayenne, French Guiana, *libérés* of the penal colony face a bitter struggle to earn a livelihood. Their lot here is almost as hopeless as on Devil's Island.

them such wonderful colonizers, they developed here sugar, rice, diamond digging, gold washing, and lumber industries. Up the Demerara now an American concern works a great bauxite deposit.

But isolation has retarded the economic growth of British Guiana. Less than one per cent of its 90,000 square miles is developed; population is just a little over three per square mile. Most people live on the coastal plains or along rivers. Hills and mountains rise in the interior, but here dwell only scattered Indians, with now and then the rude camp of gold and diamond hunters and men who cut the greenheart lumber (see page 40).

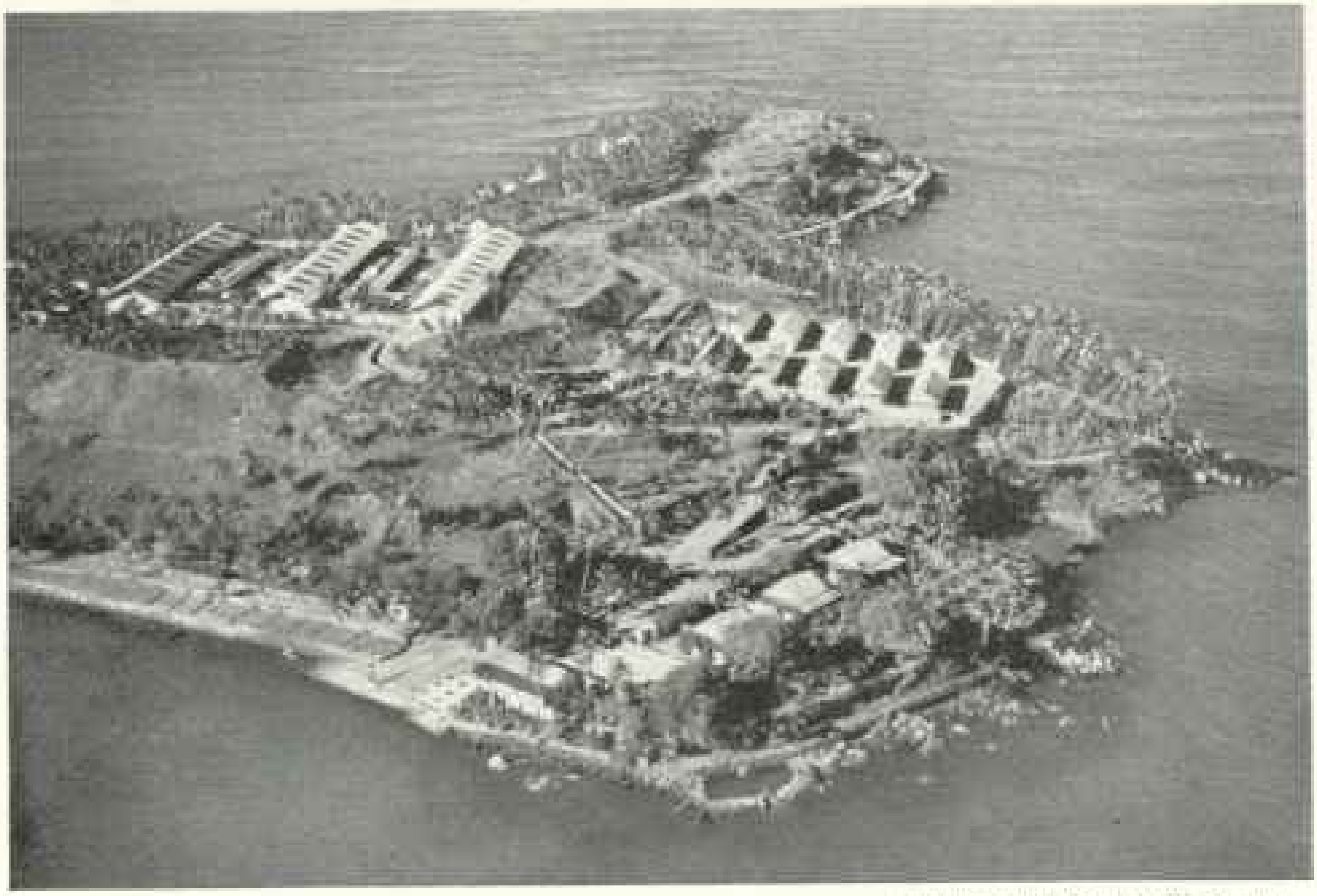
Whites are but a handful, even after four centuries, for this is not a white man's country. The death rate has usually been above the birth rate.

Riding with the Governor one day, a crowd gathered about our car. They sang "God Save the King," gave three rousing British cheers, then presented a petition and made speeches. They asked the kindly Governor to do economic miracles! Only a superman could raise the price of sugar or make rice cheaper for these childlike peasants.

The turbid, swift-flowing Demerara is not good to look at, and it's a bad place to land a seaplane. Out over the Atlantic, as we flew, we saw the mud of these jungle rivers, forever stirred by opposing ocean currents.

WE COME TO THE OLD DUTCH TOWN OF PARAMARIBO

Probably the biggest mud puddle on earth stretches south from the Orinoco Delta. The biggest rivers in South America flow east, loaded with silt. Cubic miles of mud wash out. From Georgetown to Paramaribo we flew over endless mud flats, often three miles wide or even more. On the land side these flats are covered with brush or trees, through which salt water swirls as tides rise and fall. We saw acres and acres of uprooted trees scattered over mud flats, showing that the actual coastline, wherever it is, is often shifting. When the tide runs out, it scours deep furrows here, as if made by giant plows (see illustration, page 36).



Photograph by Capt. A. W. Stevens

ON ISLE ROYAL, ONE OF THE FRENCH GUIANA PENAL GROUP, INCORRIGIBLES ARE CONFINED. UNDER THE PALMS ARE ROWS OF PRISONERS' GRAVES

From the time we passed the last sugar fields, near New Amsterdam, built when the Dutch held what is now British Guiana, until almost to the mouth of the Surinam, with its floating green islands of small trees and water plants, we saw nothing but mud, mud, mud. And birds! I saw no other life save one big sea-devil, floating idly, waving his thick, crablike pincers. *Manta birostris* naturalists call this giant ray, with eyes at the base of its horns.

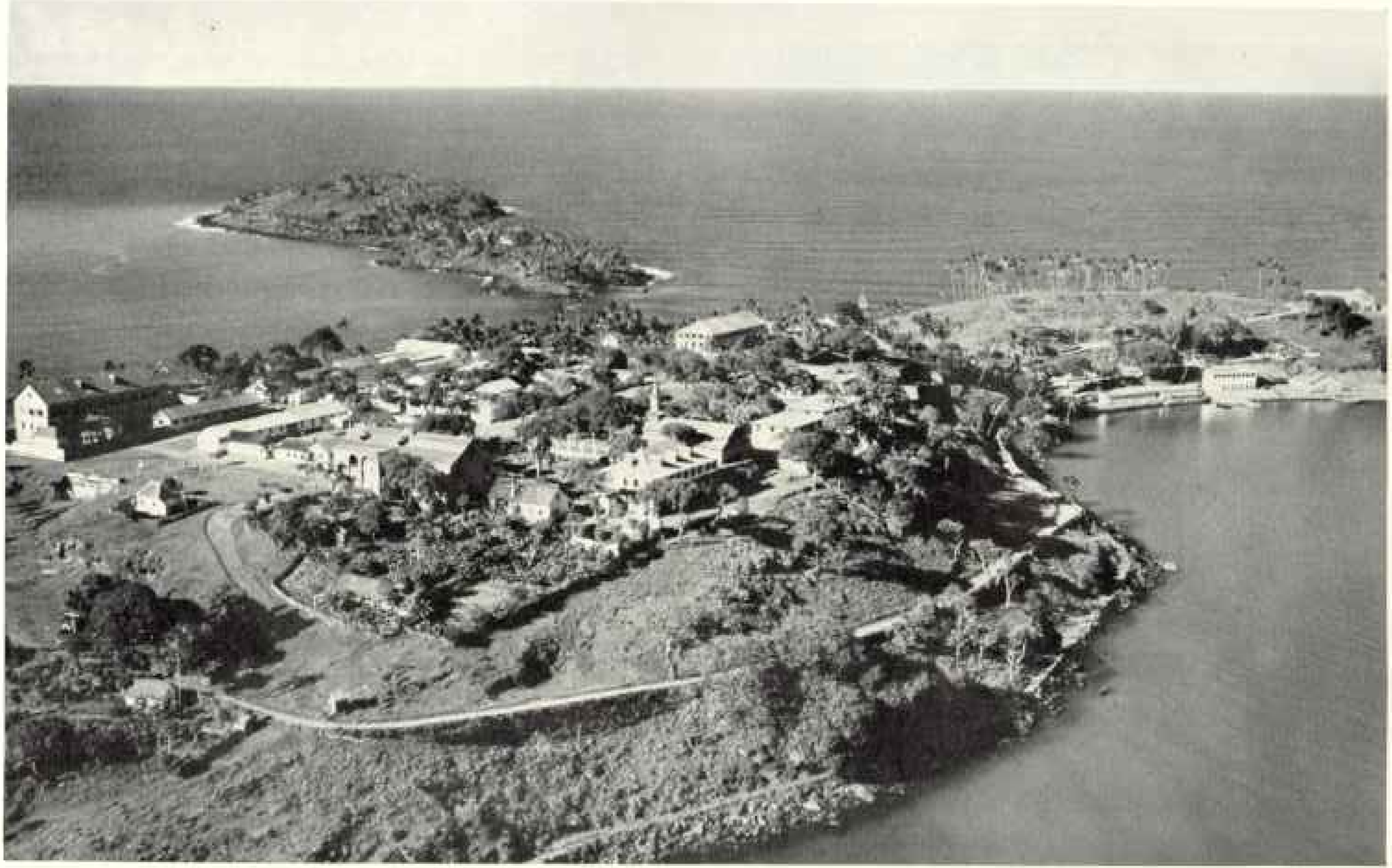
Below the muddy mouth of the Berbice we came to the wide, foamy-waved delta of the Corentin, which forms the line between British and Dutch Guiana; into its delta flows the big river Nickerie. Flying over, we observed that many of these jungle rivers are tied to each other by cross-streams. To the Nickerie, for example, estuaries join the Coppename, farther down the coast.

Twelve miles up the Surinam we landed at Paramaribo — a serene, trim, orderly Dutch town. At twilight solemn-faced fathers rode bicycles in upright dignity, silently followed by numerous offspring in white duck, all pedaling sedately after papa, single file, over clean, sandy streets.

That night I heard a Salvation Army man address a street crowd. He spoke Dutch, as does all Paramaribo. In his audience were Hindus, Portuguese, Chinese, blacks—and they all understood.

Slavery spelt the heyday of Surinam prosperity, but now many plantations are abandoned and the white population is dwindling, for few new settlers come from Holland and young men migrate. A few miles from the river and the jungle engulfs you, for most of the country is still wild, uninhabited. "Bush Indians" is the local name of an odd element. They are descended from African slaves who long ago escaped into the jungles. Once a menace, now they are tame, and at early morning you see them come down river to market their soft-shelled turtle eggs, string beans 18 inches long, odd pods, horned cucumbers, breadfruit, sapodillas, and bananas. Their speech is called "talkeetalkee," a weird mixture of English, Spanish, Dutch, Portuguese, and French, with probably a touch of African dialect.

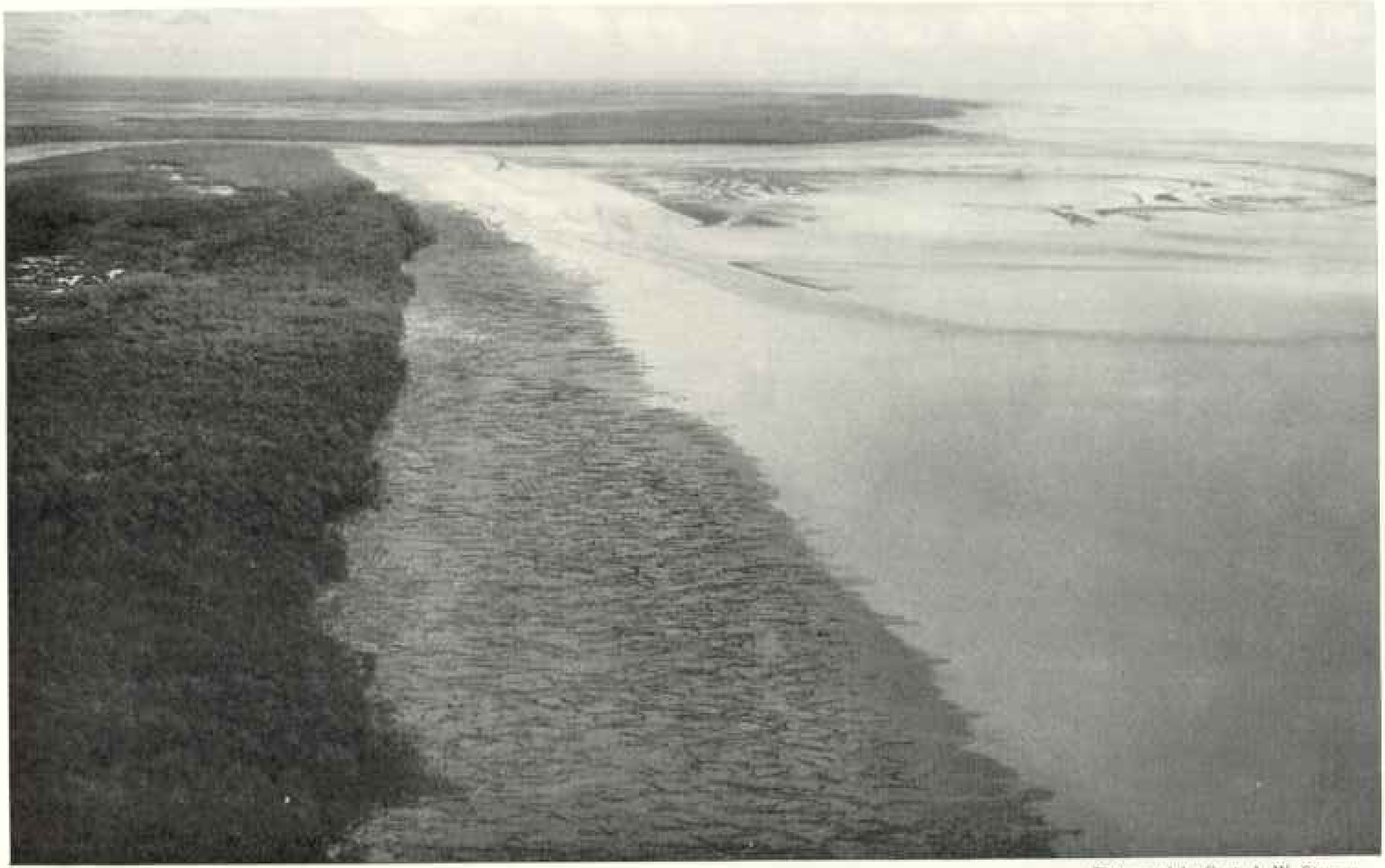
In a sunrise of almost intolerable heat we took the air for Cayenne, in French Guiana.



Photograph by Capt. A. W. Stevens

TINY, YET TALKED OF AROUND THE WORLD, DEVIL'S ISLAND BASKS IN TROPIC SUNS JUST OFF THE COAST OF FRENCH GUIANA

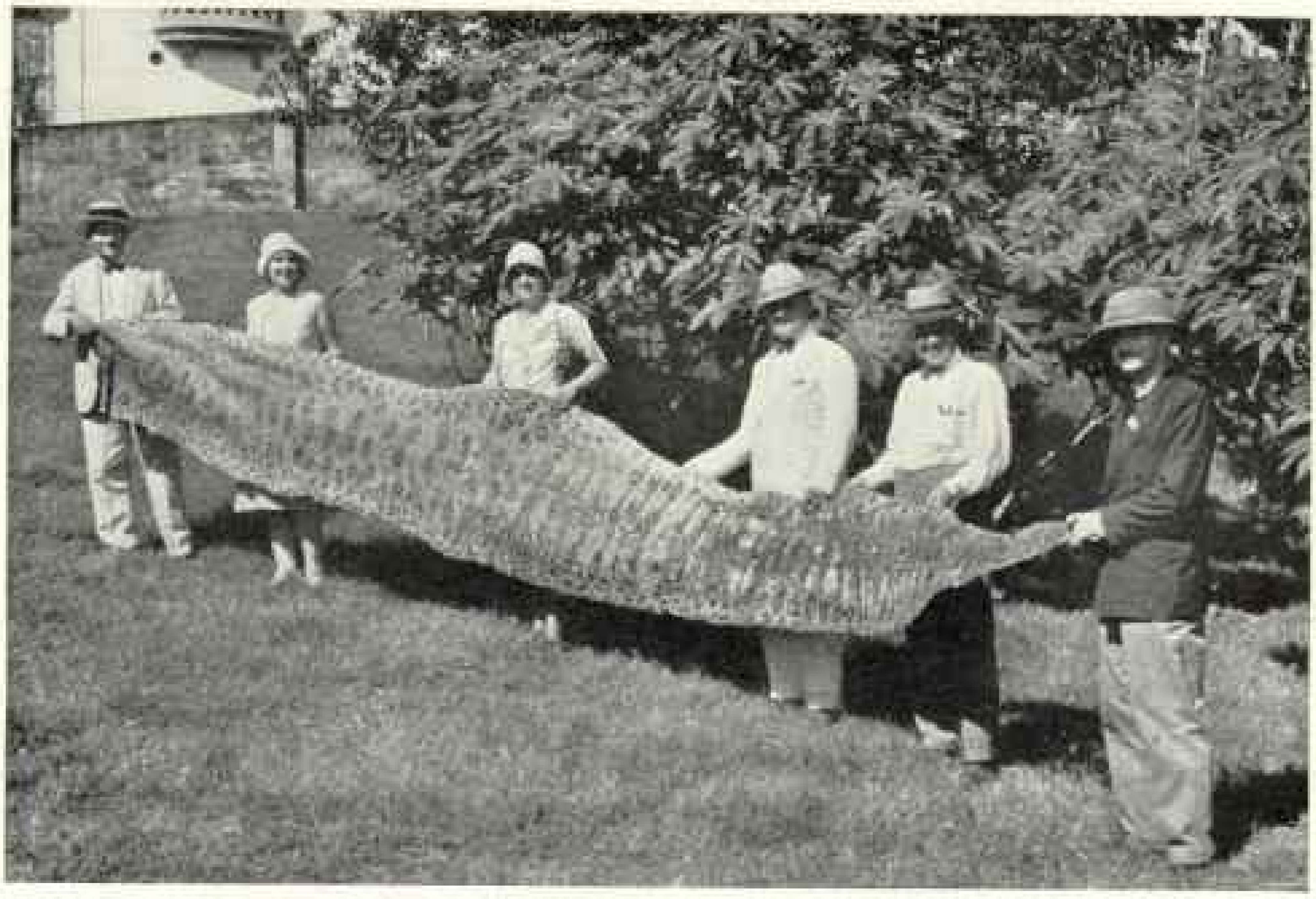
On St. Joseph Island, of the penal group Iles du Salut, stand the hospital, stores, and administration buildings. Devil's Island itself is the small, palm-shaded isle in the background. Isle Royal, with tiers of cells for the incorrigibles, lies at the right. At Cayenne, on the mainland 27 miles to the southeast, about 7,000 convicts are held. Only a few are on Devil's Island (see, also, text, page 48).



Photograph by Capt. A. W. Stevens

MILES OF GIANT FOREST TREES, UPROOTED AND SCATTERED LIKE MATCHES ALONG ITS BANKS, PROVE THE POWER OF THE AMAZON

The free fecundity of deep alluvial mud, of fierce sun, warm showers, and eternal summer, through the centuries, has buried the Amazon Valley deep in humus, and tall trees whose interlacing tops shade the forest spaces in perpetual darkness. Through this sylvan labyrinth cuts the mighty river, carrying endless uprooted trees to sea.



Photograph by Jacob Gayer

ANACONDAS BIG ENOUGH TO SWALLOW A CALF INFEST THE DELTA OF THE AMAZON

On Marajó Island in particular these serpents attain great length; there, residents say, they destroy much young live stock. Members of the expedition as guests at the home of an American engineer in Maranhão.

With the Governor General of French Guiana, M. Siasdous, we flew to Devil's Island. Here Captain Dreyfus languished through long years, till freed and vindicated through the aid of Émile Zola and other supporters. His dramatic trial, uncovering the amazing Esterhazy plot, stirred the civilized world.

Three tiny green dots rise from the sea 27 miles north of Cayenne. They form the penal group, Îles du Salut, which includes St. Joseph, with its prison hospital; Isle Royal, with tiers of tiny stone cells for incorrigibles, and Devil's Island itself, so famed in tales of fact and fiction. As we flew over, men without women gazed up at us from behind walls. Women are no longer sent to this "great penitentiary of France." Here and in Cayenne are about 7,000 prisoners, including such French colonials as Arabs, Africans, and convicts from French Indo-China.

On Devil's Island, despite its world-wide notoriety, only nine men are held, including three aviators. I wondered what their thoughts must be, as they saw our big ship flying free in their own once familiar element—able to carry them so quickly to freedom were they only up in it! Hard by, on Isle Royal, are graves, row on row, where now men of high and low degree sleep side by side, their earthly penalties paid (see pages 45, 46).

Returning to Cayenne, we took the Governor General for a ride over the delta of the Kourou. Up this river a French colonizing company sent 12,000 emigrants in 1763-4. Badly equipped, unwisely chosen—for the party included jewelers, dancing masters, and dressmakers and very few experienced farmers—the great majority perished. Only about 900 survived and went back home. Miles inland we saw the low, tree-painted ridges, a hard land where gold-seekers go, for gold is the chief export of French Guiana.

"The Dry Guillotine" is the convicts' grim name for this depressing penal colony. The town of Cayenne is full of *libérés*—prisoners no longer confined behind walls, but allowed to work for a living, serving out the last half of their sentences with this limited freedom. But a man sentenced to Cayenne for longer than eight years must remain for life.

"My chauffeur is a convict," said the Governor, as we drove about the depressing place. "Most of the people you see in the streets are libérés." Lawyers, doctors, engineers, artists, skilled artisans, all are here. They seek to earn a few francs at any kind of work. Figurines of jaguars, women, and birds, beautifully carved from hard wood, and even cleverly fashioned little guillotines, are the work of one formerly a sculptor.

I killed a centipede in the room where I slept. There are no hotels.

I was glad when we flew away, over the vapor-draped jungles, in early dawn, toward the River Oyapock, beyond which lies Brazil.

Photograph from Carmen O'Neill

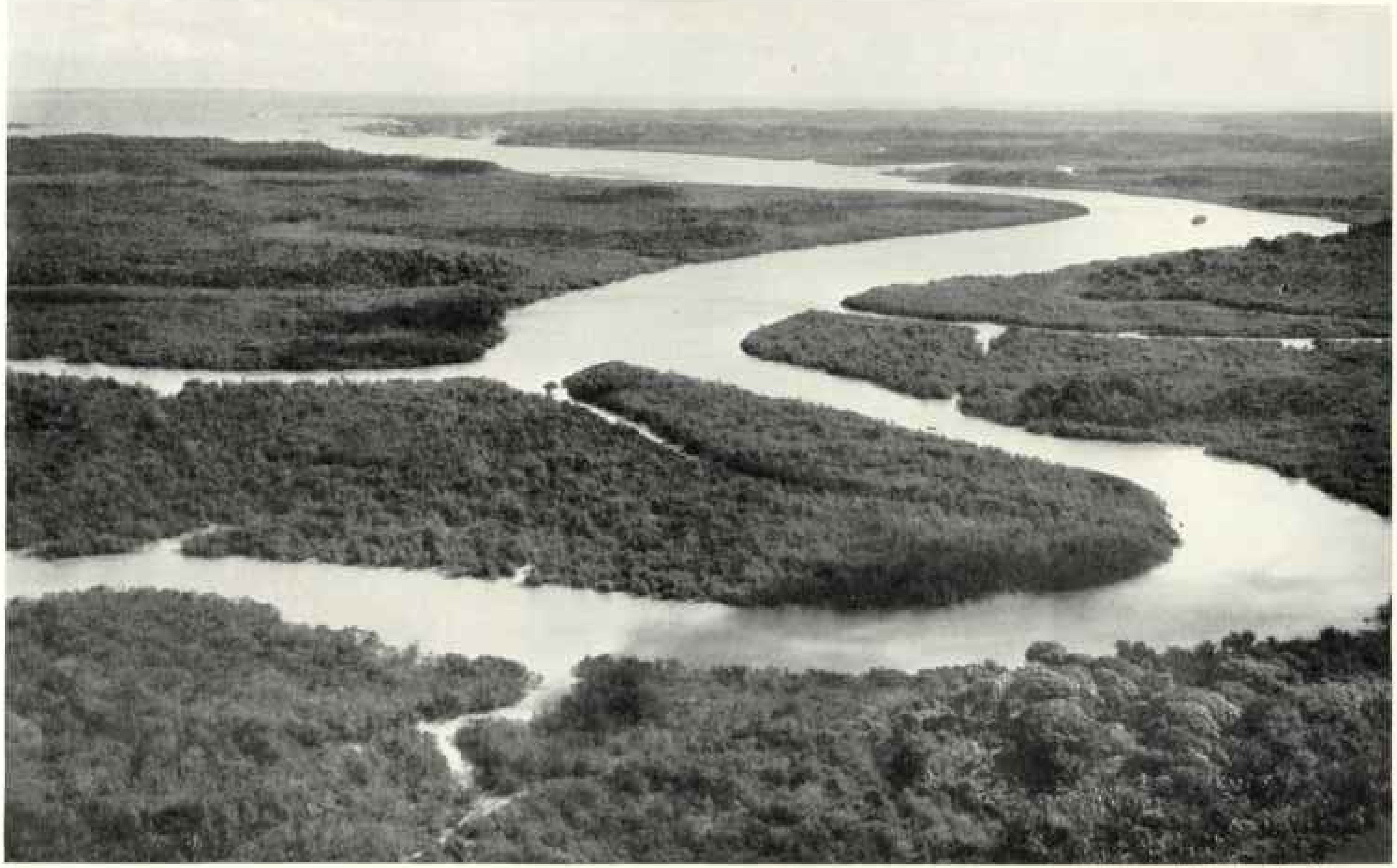
"MY JOB IS TO CLEAN STREETS; NO TIME TO POSE FOR PICTURES!"

Princes and potentates, governors in gold braid, brides in their finery—all these are often patient with cameramen. Not so this "whitewings" in Pará. He flatly refused to pose. Even as the camera clicked he grumbled, "What do they think I carry this pan and broom for?"

ZOOMING THE EQUATOR

Entering Brazil from the north, one wonders where its millions of people are hiding! For two hours, after crossing the Oyapock, we saw no human habitation. It was not till we turned inland, west of Maracá Island, in search of a lonely gas cache on a tiny lake, that we again caught sight of a few people. Now and then a hut appeared, a tiny settlement, and then our little-known lake. "I flew around for two hours hunting it, the first time I brought a plane through," said the pilot. "To get gas here from Pará we have first to use a steam launch, then canoes, and on the last lap Indians carry it on their backs."

This jungle puddle, from high above, seemed too small to land in; but, after many turns, Hawkins skillfully set our big boat down, although at the last minute he had to jump a floating log which would have smashed our hull had he not seen it in the nick of time. Indians, with bows, arrows, and spears, and a fish and a turtle they had killed, helped gas the plane. A storm blew up while we worked, ruffling the little lake and aiding us with its strong wind to get our heavy craft off the water. Heading into the blinding rain, using all our 1,100 horsepower, Hawkins raced the



Photograph by Capt. A. W. Stevens

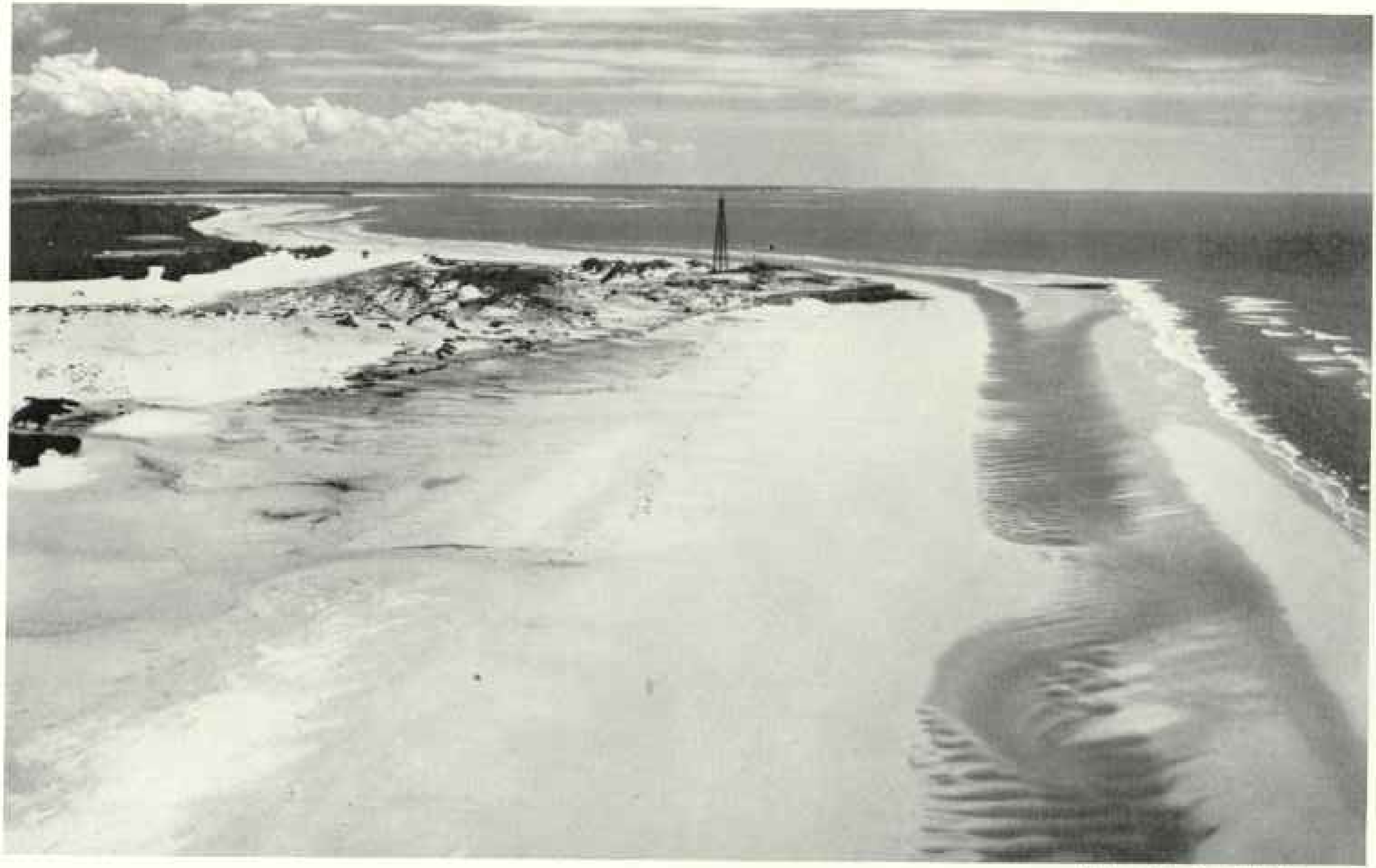
EQUATORIAL FORESTS VIBRATE BY NIGHT FROM THE RHYTHMIC CLANGOR OF CROAKING FROGS AND SINGING BUGS

An ocean of foliage prodigal with natural wealth—vast, green, and impenetrable except by streams and rivers—such is the infinite, unconquered forest of Brazil. All its trees ever cut by man are but as so many straws plucked from the wheatfields of the Dakotas. A jungle delta in Maranhão.

Photograph by Capt. A. W. Stevens

AT SUNSET FISHING BOATS TACK INTO THE SHALLOW HARBOR OF MARANHÃO

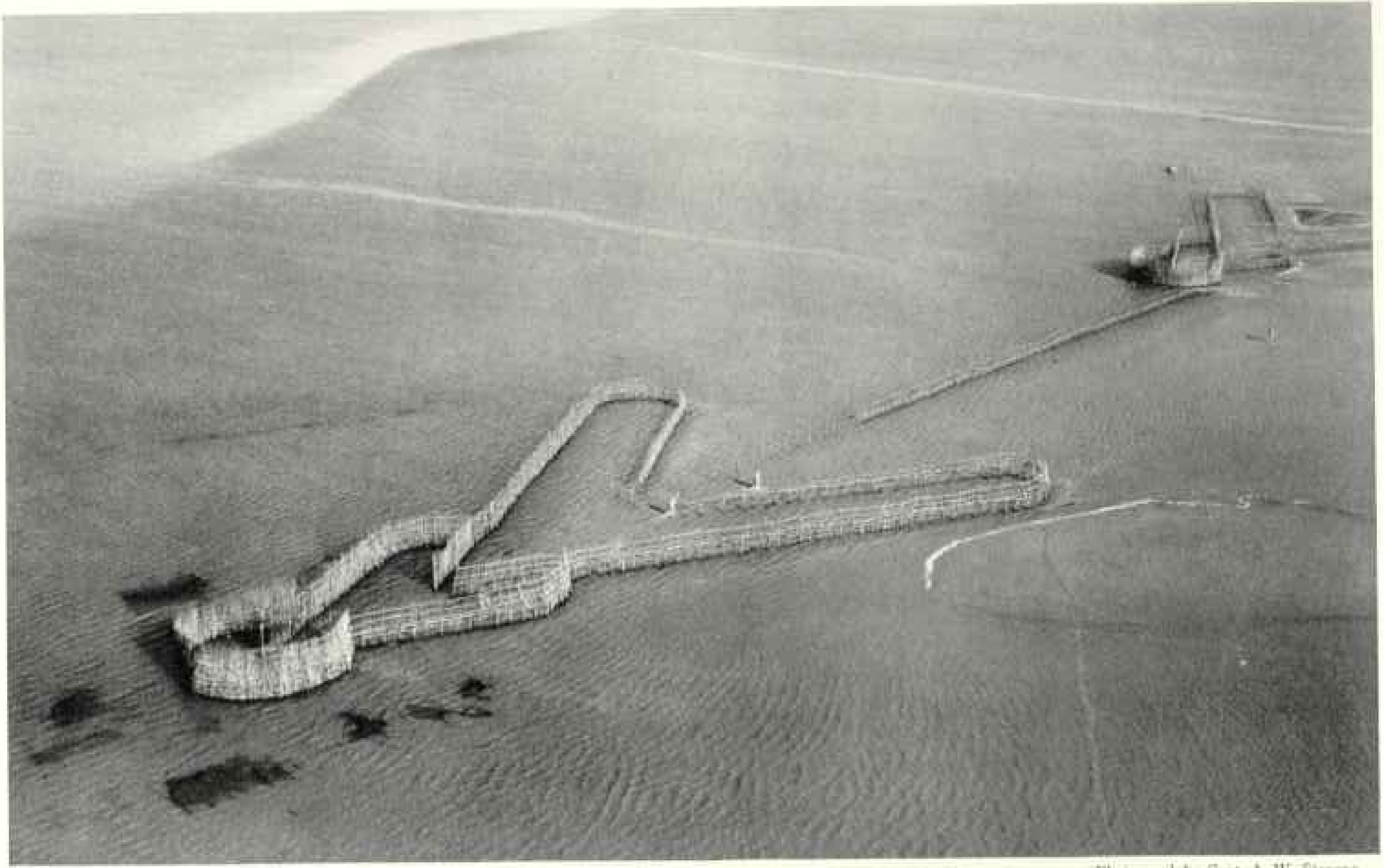
After a long flight down the Amazon Delta from Pará, and along the sandy, desolate, and often uninhabited coast of northern Brazil, the expedition came to the former Portuguese stronghold and present bustling capital of the State of Maranhão (see page 59).



Photograph by Capt. A. W. Stevens

ON MANY LONG, LONELY STRETCHES OF THE SOUTH AMERICAN EAST COAST, LIGHTHOUSES ARE FEW AND FAR BETWEEN

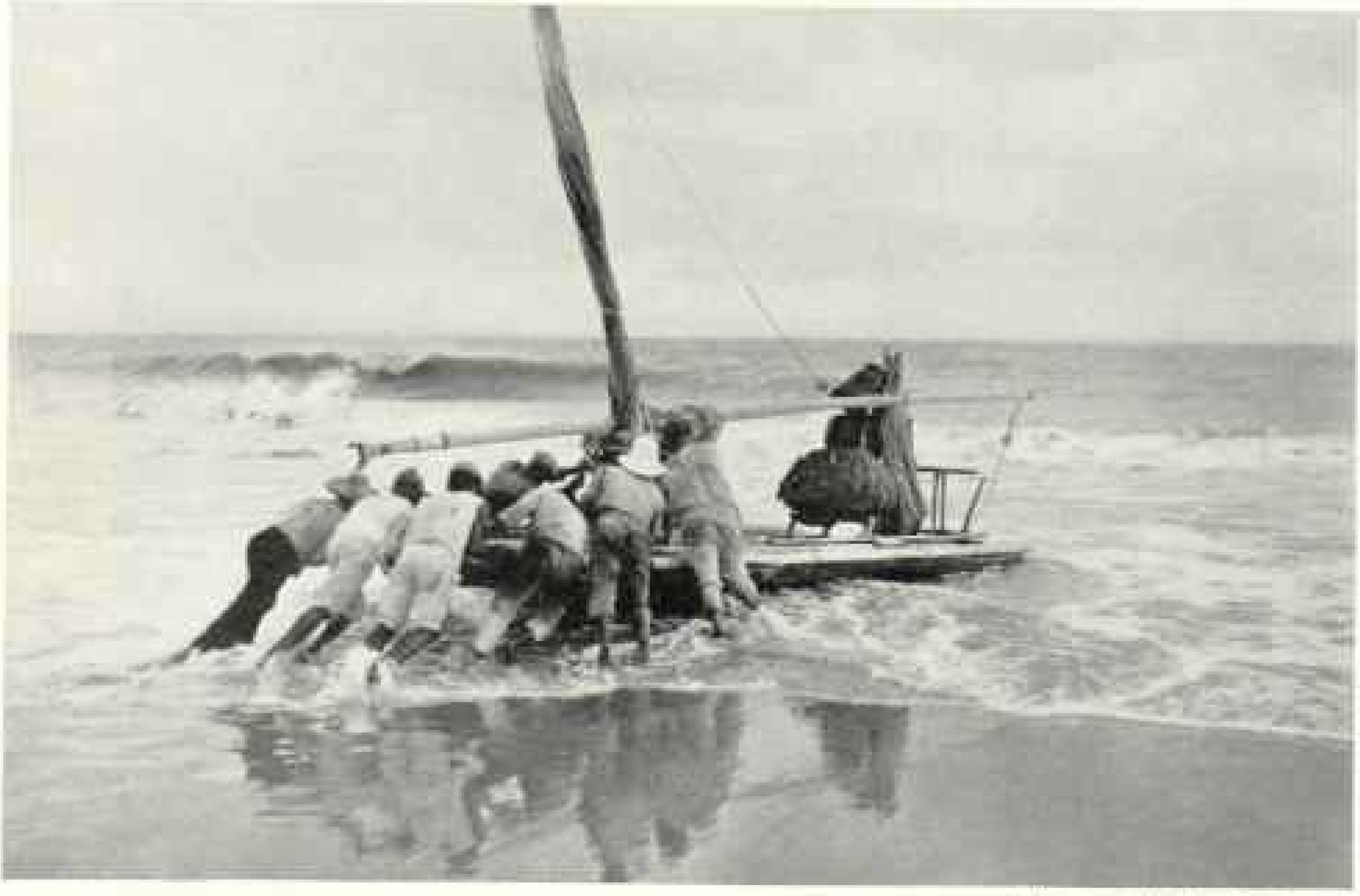
This isolated beacon of commerce stands on a cape, east of Pará, where shipping leaves the Amazon Delta on its long journey around the great hump of Brazil. Sand dunes line the coast here; inland is a flat, jungle-grown waste.



Photograph by Capt. A. W. Stevens

THESE PENS ON THE BRAZILIAN COAST TRAP FISH WHEN THE TIDE RUNS OUT

The rounded end at the left is always pointed out to sea. The open "Y" points toward the beach. Fish schools, running in toward shore to feed at high tide, are thus caught when the tide falls, carrying them into the open "Y." Men are seen working about the trap.



Photograph by Jacob Gayer

FISHERMEN LAUNCH A "JANGADA" AT FORTALEZA

Clumsy as it looks—simply a raft of four or five spliced logs fitted with a sail and crude rudder—this fishing craft ventures many miles to sea.

boat the full length of the pond and jumped into the air. With only seconds to spare, we cleared the tree tops and headed south.

A purgatory of empty islands, dismal swamps, and dead trees that would paralyze the brush of a Doré stretches for weary miles, till you reach the River Araguary. Crossing it, we came soon to the mud banks of the incomparable island-studded Amazon—a vast, yellow, sinister sea, before which puny man can only marvel at the majesty of Nature. You sense the colossal power and magnitude of its mighty, moving bulk when you fly its far-flung delta banks and see its mud flats covered with countless thousands of forest trees wrenched up by the roots and scattered like matches.

Bearing southeast, we skirted the channel island of Caviana. Then, on our 169-mile hop across the world's greatest river, we zoomed the Equator at a point just east of the north end of Mexiana Island. In fact, the big mark splits this island.

For more than an hour we were out of sight of land. What a stupendous stream! Running some 4,000 miles across the continent from the Andes, it drains about two-fifths of South America, and in the rainy season varies in its lower reaches from 5 to 400 miles in width.

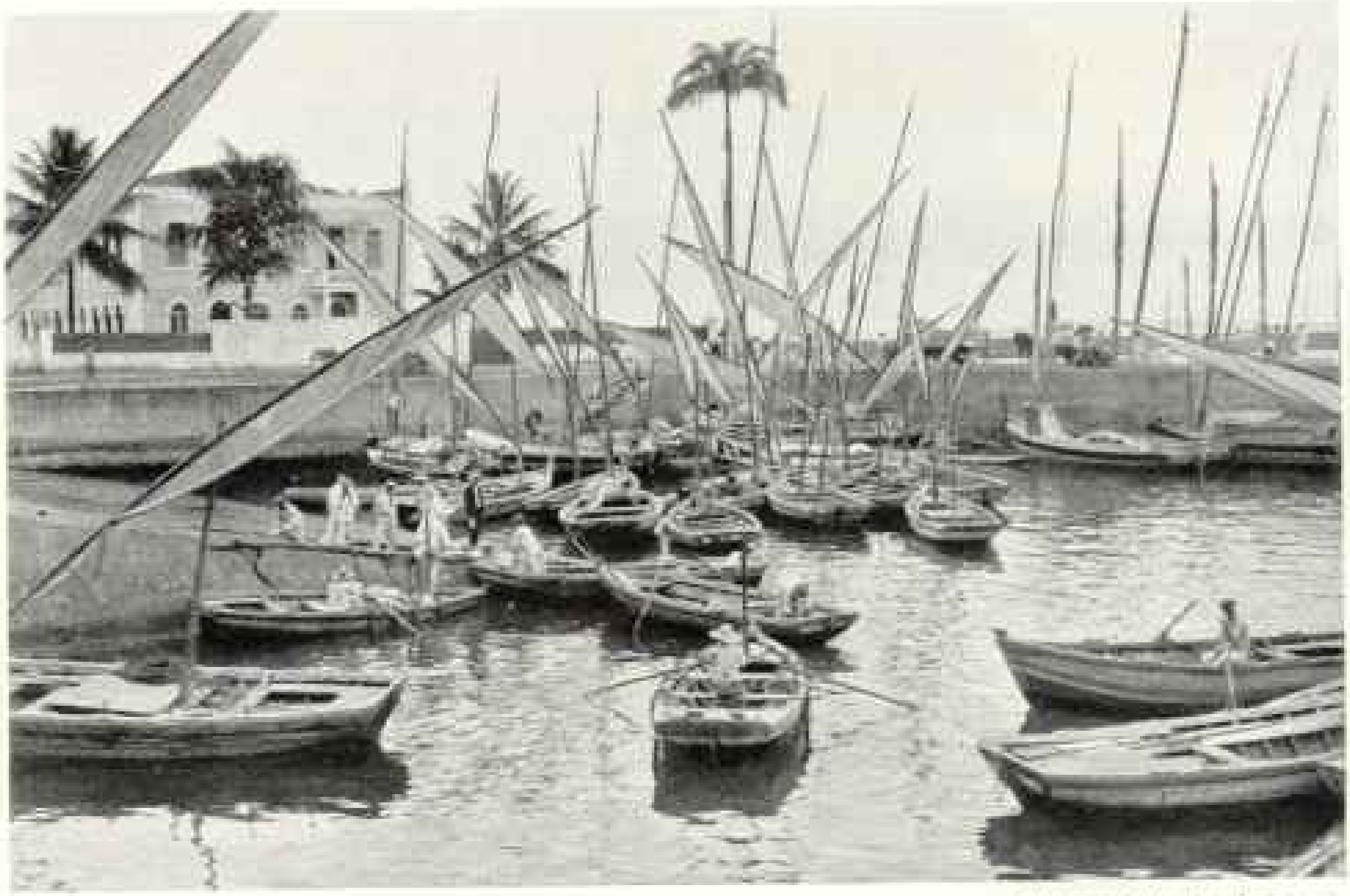
Nearing Pará, I crawled up into the pilot house with Hawkins, to get a full view of the city from high above. Eight hours' flying from Cayenne and the first half of the National Geographic Society's long aërial survey of seaplane paths to Buenos Aires was ended.

JUNGLES SHAPE THE DESTINY OF PARÁ

From the air, you see how close primeval forests crowd Pará. Its streets end in the jungle. We stopped here five days to overhaul our plane, and when we got ashore we saw even more clearly how utterly the vast forests of Brazil dominate the life of this greatest city on the Amazon.

Yet Pará lives on the jungle. The big woods give it Brazil nuts, rubber, hardwoods, fruits, vegetable wax, oils, and jungle-bred animals, on which its sea trade is based.

In equatorial dawn and dusk it smells of jungle. Its beautiful *bosque* park is but a bit of natural jungle, cut with paths and set with man's kiosks, swings, benches,



Photograph by Jacob Gayer

LIKE BIG QUILLS WHEN FURLED, THESE ODD SAILS ARE NUMEROUS ALONG THE COAST OF NORTHERN BRAZIL

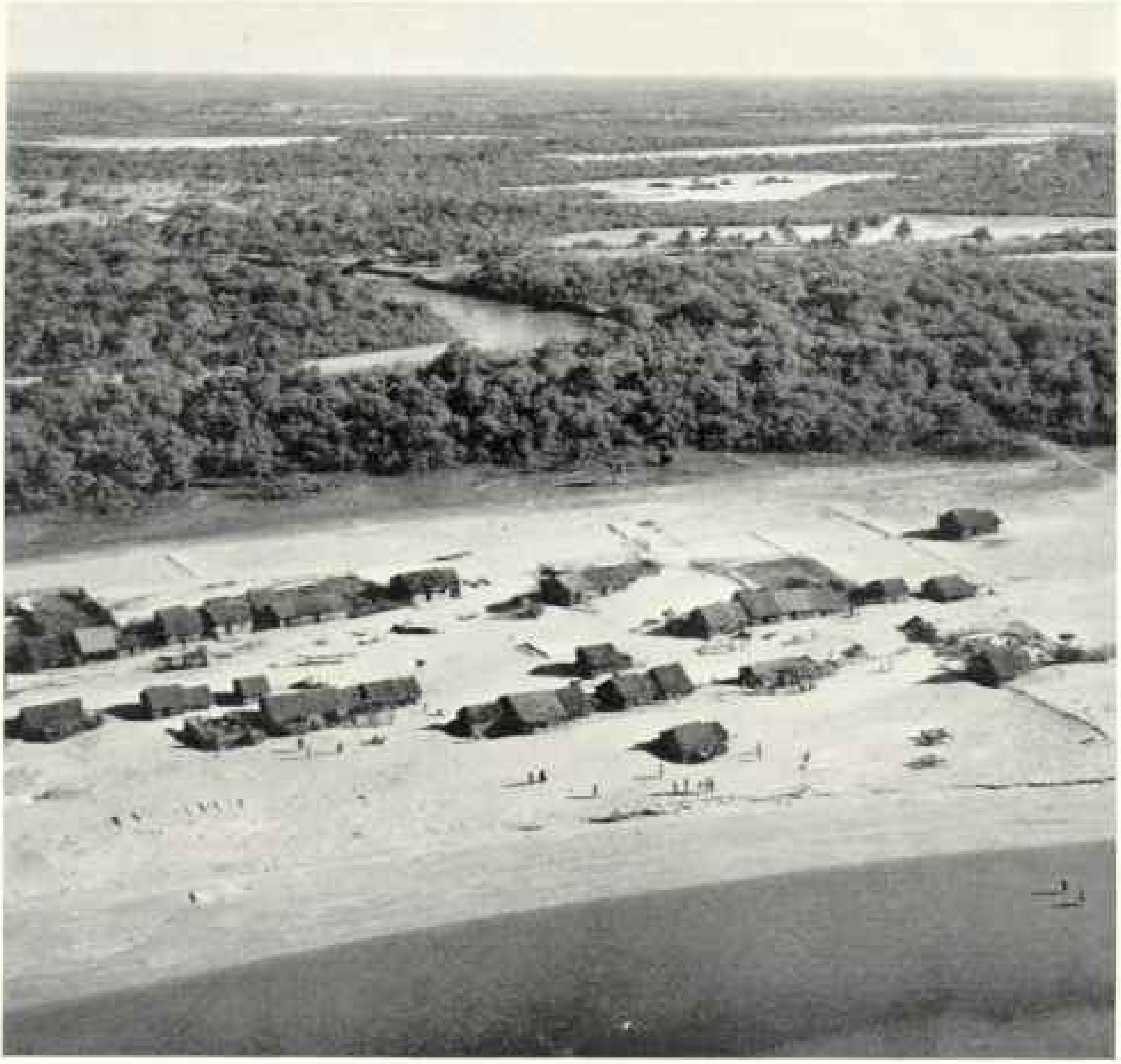
and bandstands, where, after nightfall, big jungle bats dart about and smaller jungle animals forage for food in the wake of daytime children's picnics.

Giant mango trees, when in fruit pelted with rocks by small boys, shade the wide cobblestoned streets of its better quarters. Along its water front you smell smoked crude rubber, the half-tanned skins of jaguars and snakes, pineapples, piles of Brazil nuts ready for ships bound for New York or Liverpool, bags of cacao, piles of squared logs, their ends painted, and you smell the fresh-cut firewood half-breed Indians are stacking for use on wood-burning river boats; and the soft winds that sweep the far-flung forests bring always the smells of the Tropics, which spawn the jungles.

You smell, too, the shop of the wild-animal dealer, its front gaudily painted with a Noah's Ark group of jungle creatures. He shows you bright, shrill macaws, lewd monkeys, and snarling jaguars; and anteaters, living now not on ants, but on fresh eggs broken into a dish; and cunning little capybaras, or "river pigs"; and the scarlet ibis, a stork, a white owl in a black mask; rare parrots, multicolored wild ducks; and an electric eel which gives you a distinct shock when you stick a wire into his water barrel and touch him.

"They'd arrest me in New York for this," says the proprietor as he turns two live birds into a snake's cage to provide that beady-eyed reptile a quick breakfast. You turn away shivering, though for food you have bagged thousands of ducks, quail, snipe, geese, with a shotgun. Then comes the growling skipper who must chaperon this noisy, smelly jungle company up to the States, for they are crated now for export.

Pará is no mean city. It is the capital of a State that runs into more than 13 degrees of latitude—large enough to hold a dozen small European countries. At the zenith of Brazil's historic rubber boom, before the Far East ruined her monopoly, Pará got fabulously rich on "black gold." Abundant survivals of the oil-field-like extravagance of the rubber-boom period are seen in sumptuous Government palaces and paintings, luxurious clubs and rows of private mansions, built a generation ago. But hope springs eternal and the jungle is prolific. Now Pará watches keenly the work of Henry Ford at Boa Vista, on the



Photograph by Capt. A. W. Stevens

PALM- AND GRASS-THATCHED HUTS OF FISHERMEN ON THE SANDY BEACH OF NORTHEAST BRAZIL

Along the coast, at several spots between the Amazon Delta and Cape São Roque, these beach settlements were observed. Inland from them the country appeared uninhabited. Usually near such hamlets fish-traps were observed built on the tide flats (see page 53).

Tapajóz, in the broad Amazon Valley. "Fordlandia," local papers have renamed the spot where American engineers have built a model camp and are clearing jungle to grow rubber in mass-production way.

AS YET MAN HAS BARELY SCRATCHED THE AMAZON JUNGLE

Meantime, 300-year-old Portuguese Pará lives on the jungle. Long-horned ox-teams haul crated automobiles from the docks, with their cranes, chains, anchors, tankers, with naked men shoveling Brazil nuts, and big wharf rats nimbly crawling up dripping hawsers, while a mail plane takes off for Rio. You sense progress here when you recall that slavery was not abolished until 1888; and that the Amazon system was not open to world trade till after our Civil War.

If man ever conquers the jungle, this valley will hold many millions. Its resources are infinite. Forests yield more than 400 useful woods. Rubber, vanilla, sarsaparilla, many nuts, copaiba—these and many other good things grow wild. Any crops from cane, coffee, and cereals to canary-bird seed will grow here, if only you can clear the choking, obstinate jungle. How vast it is, how astounding its mere dimensions! How little, after all, has man scratched its great green body that fairly rubs against Pará, which merely built its zoo, left the gate open, and, figuratively, the wild animals walked in. Three-toed pigs, sloths, tapirs, monkeys with heads the size of golf balls, snakes that can swallow calves, a river frog with fingers in which to hold live minnows to eat them, as men hold corn on the cob, and a turtle, "the ox of the Amazon," because so much eaten, from whose eggs an oil is extracted called "turtle butter."

English bank clerks, German hardware agents, American oil men and seaplane mechanics, Japanese colonizing on Amazon lands, and foreign sailors, all haunt the zoo. Brazilians are fewer, among zoo visitors. The jungle and its inmates are too close.

Pará rises soon after dawn; its offices open early, while the air is yet cool along the Equator. When not about its daily duties the city rests. It rests quietly, utterly. From 11 till 3 nobody stirs—not even the vultures that ride in flocks on open garbage wagons.

Toward sunset the town takes the air, mostly by looking out of its windows. Many families have specially built little kiosks out in the front yard, where they can sit and watch the street. Movies there are, a few motor cars, a semblance of outdoor sports among boys, and a few short promenades, but looking out of the window seems Pará's favorite diversion. More women lean out of windows here, I am quite sure, and look at other women leaning out of other windows than in any other city anywhere. Sometimes they lean out and look at the men, pretending to enjoy only the cool evening zephyrs from the embattled jungles.

STUDYING THE AMAZON DELTA FROM THE AIR

From 3,000 feet up you can see different-colored currents flowing in different directions, in the lower delta of the Amazon. Riding from Pará to São Luiz de Maranhão, or Maranhão as it is also called, we rounded Cape Tijoca, and paralleled the Equator due east, at about 30' south latitude. Here the big river, 180 miles wide between its capes, colors the sea and dilutes its salt for fifty miles offshore. Men in small fishing boats, venturing out of sight of land, figure how far out they are by tasting the water.

The rise of the river here in flood times is often 50 feet, when vast areas of forest are completely inundated. Snow in the Andes begins to melt in August, but this delta doesn't feel the rise till six months later. With a drainage area covering 2,722,000 square miles, including the Tocatins, and containing about 40,000 miles of navigable water communications, it is easy to see why it takes the big river six months to rise and six months to fall. Also the slope of the vast valley from the foot of the Andes to the Atlantic is only a few hundred feet. This is why tides from the sea are felt up the Amazon for 600 miles. Sometimes three or four tides are running up and down the river at once, like waves.

Looking at our maps, we observe the Amazon Delta does not run out to sea on land bridges, as do those of the Nile, the Ganges, and the Mississippi. It carries prodigious loads of mud, and geologists say its delta once extended 300 miles past its present mouths; but now the ocean is rapidly eating into the continent, and from the air you see how this goes on. By an odd freak of Nature the sea is driving inland huge waves of white sand. These big dunes in many places have buried the trees; elsewhere you can see dead trees, once covered with sand and killed, and then exposed again to the advancing sea waves, which now wash them out by the roots.

The Pará, or south, coast of the delta is higher and drier than the coast of Brazilian Guiana, north of the Amazon Delta. Around Maracá Island and the mouth of the Araguary River the famous Amazon bore is at its best. When it runs in, at low tide, its roar can be heard six miles. Its speed is 10 to 15 knots, and anything in its path is swept away.

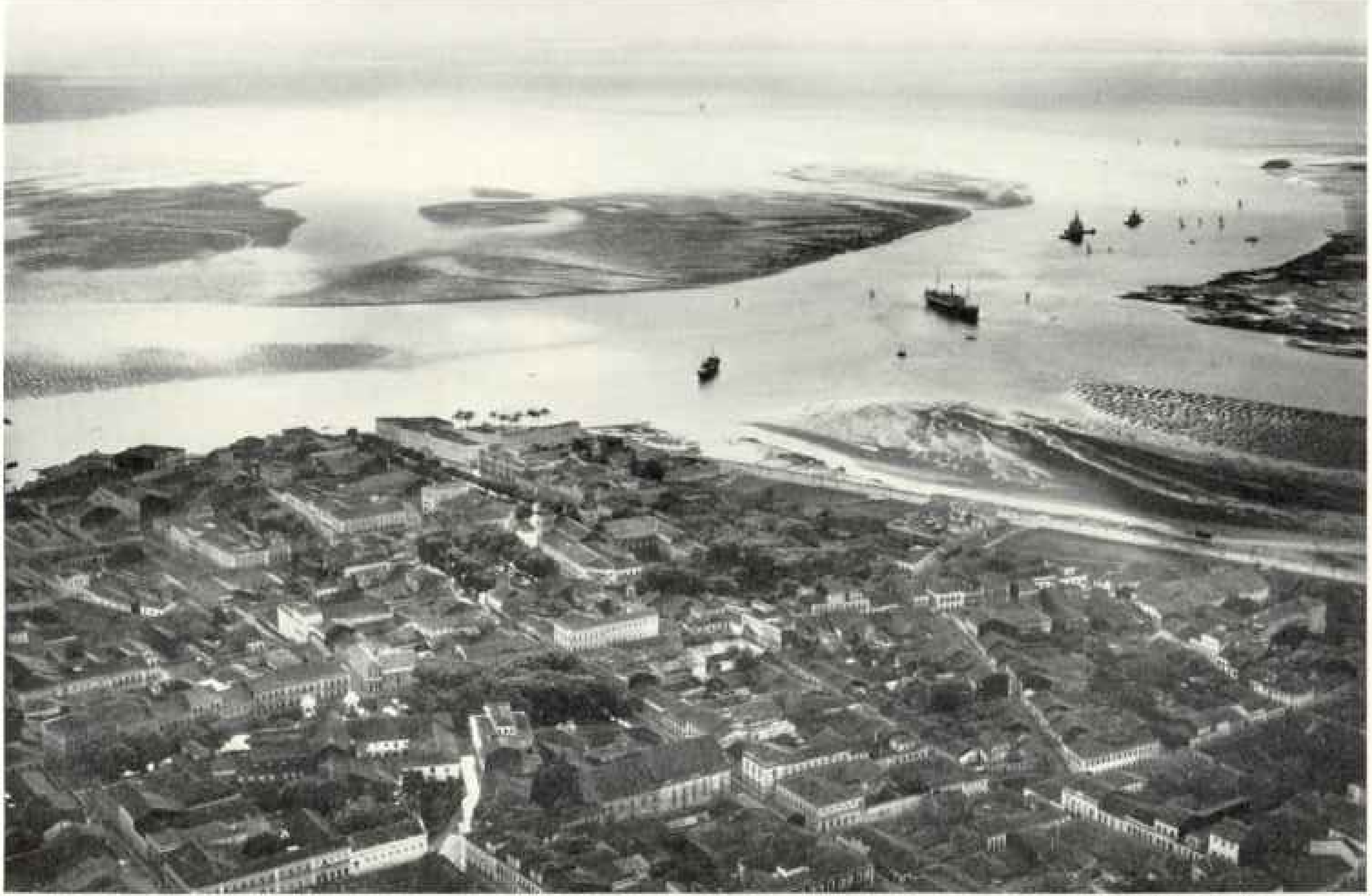
Look down on all these mud banks, rips, and shallows, and you see why skippers dread navigation in these waters. Changes in coast outlines are constant; shoals and flats form only to be washed away. Mud banks which a few years ago barely showed above the sea are now covered with trees; bad lights and buoys, lack of good charts, ever-shifting currents, bring many ships to grief.

Even the many small native trading boats, their cabins thatched over and their sails made of blue cotton cloth, have their

Photograph by Capt. A. W. Stevens

FISHERMEN CUTTING UP A SEA TURTLE ON THE BEACH NEAR NATAL, BRAZIL

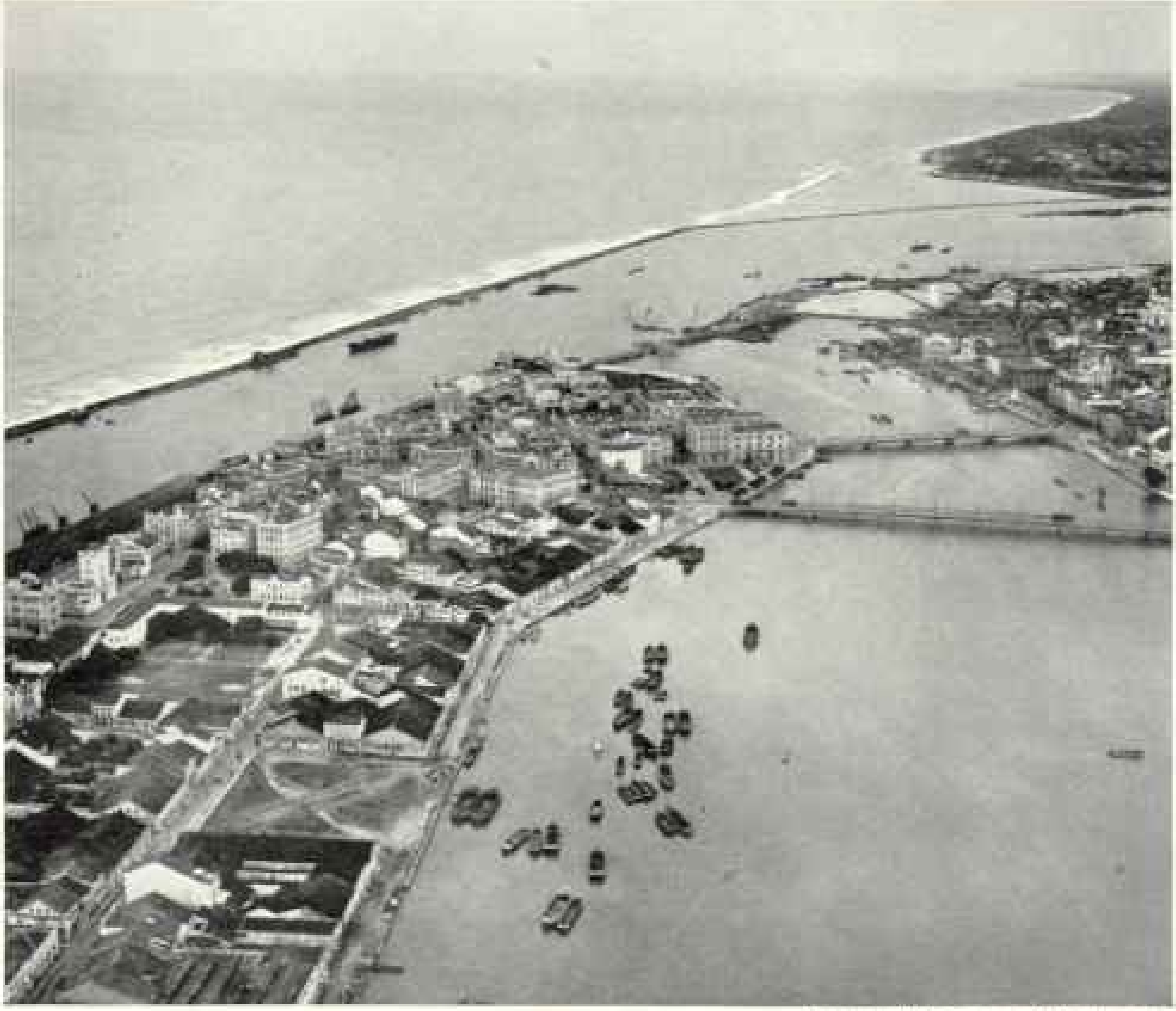
Grass huts on the sands, higher dunes and distant mountains are seen in the background. Along this section of the Brazilian coast population appeared very scant. Between Fortaleza and Natal sandy, semiarid stretches recalled parts of Arizona and southern California.



Photograph by Capt. A. W. Stevens

VAST MUD FLATS APPEAR WHEN THE TIDE FALLS AT MARANHÃO, ON THE NORTH COAST OF BRAZIL

Built on the slopes of an island, and better drained than most Brazilian cities, Maranhão is tied by rail with productive Maranhão State. In this old slave mart, where 20th-century commerce flourishes, many houses have glazed tile fronts and marble figures mounted over arched doorways (see page 60).



Photograph by Capt. A. W. Stevens

PERNAMBUCO'S MAGNIFICENT SEA WALL IS BUILT ALONG THE TOP OF A NATURAL LEDGE (SEE PAGE 65)

Flying along this section of the Brazilian coast, the expedition observed that for miles, in many stretches, rock ledges parallel the beach at varying distances from shore. Wrecks piled on these rocks prove what a menace they are to navigation. In rough weather heavy swells break, high and violent, over the Pernambuco sea wall. The plane landed inside this breakwater.

own troubles here with wind, tide, and mud. I saw one fast in the mud, as we flew past.

Looking back over the yellow tail of our ship, it was with genuine regret that we saw the last of this great Amazon Valley, with its 20,000 kinds of trees, its infinite fruits and wild animals, and its infinite possibilities as the future home of millions yet unborn.

Our roaring engines scared the cattle of São João Island into stampede, but pigs, more cautious, ran and crawled into the brush. Natives poured from grass-roofed huts, and we were gone.

Maranhão, from the air, is a compact, red-roofed town of many patios and narrow streets. At dusk we went ashore and out to see a "bull dance," in which natives, grotesquely costumed, do a rhythmic endurance dance that lasts till exhaustion. Though staged on St. John's Day, the dance itself was brought from Africa; for Maranhão was long a famous slave-trading post. A house was shown me where the king of the slave traders lived. It once had solid-gold door knobs; all furniture was trimmed in gold and silver; even the servants wore solid-gold buttons on their livery.

"This old fort was built by the French," explained the Governor, as we sat in his library among books in many languages, some three centuries old. "Our town is on an island and a railway connects us with the mainland. We export rice and cotton

Photograph by Jacob Gayer

A STRING OF COUNTRY PACK ANIMALS RESTING IN A PERNAMBUCO STREET

Tremendous quantities of ocean freight, including much plantation machinery, are distributed from this busy port. From here a railway leads inland to the sugar lands.

and manufacture some cotton cloth here. An American corporation built and operates our public utilities."

The spring tide here is 16 feet; so we had to start when it was high or stick in the mud (see page 59).

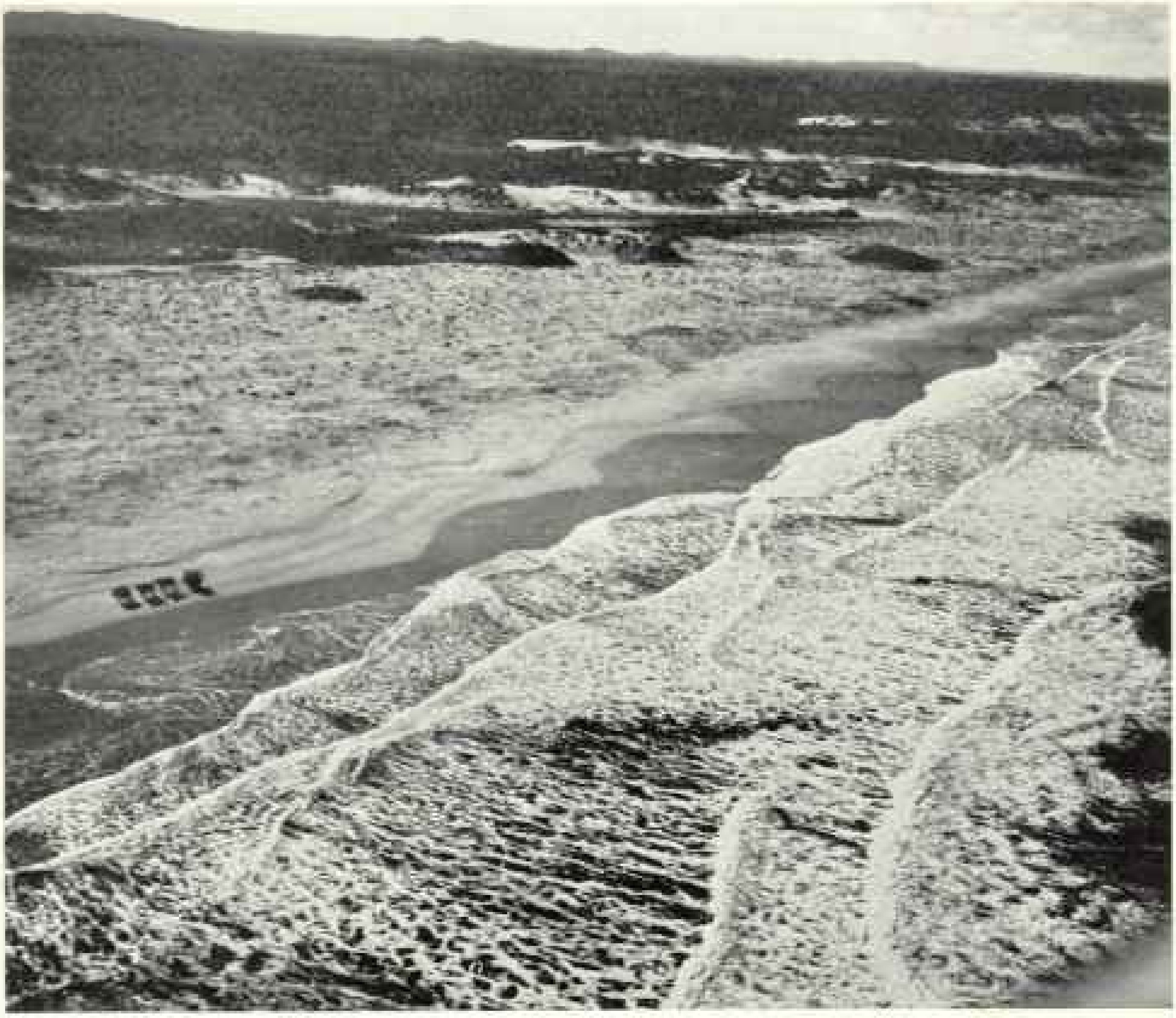
AIR TRAVEL BRINGS NEW TIES TO TWO AMERICAS

From Miami to Buenos Aires is strung a line of American boys in overalls. Some are seaplane pilots; some are mechanics, with grease guns and wrenches; some are radio operators, and some are agents and ticket-sellers, stationed at various ports; for now an air line ties the two Americas together, and a small army, highly trained, is required to fly and care for the planes of the company which operates this long-distance service.

Flying has brought a new American type to cities all the way from Havana and San Juan de Porto Rico to Pará and Pernambuco. Guests at hotels are accustomed now to seeing a crowd of sunburnt, khaki-clad flying Americans come trooping in to lunch, just in from a long flight and too hungry to stop to change clothes. In a day the mail-plane pilots make anywhere from 1,000 to 1,400 miles, eating breakfast in Miami and dinner in Haiti, or sleeping one night in Pará and the next in Port of Spain, Trinidad. Passengers who ride these planes are up at dawn and into the air before sunrise. Agents supply each with a lunch, and reading matter is put on the ships. Baggage is limited, but careful choice of light wash-clothes and quick work by seaport laundry women give comfort to travelers.

From Maranhão we flew to Amarração and then to Fortaleza (Ceará).

Men, women, nude children—with parrots, monkeys, and dogs—cluttered the docks and beaches of Amarração as we stopped for gas. Circling for pictures before we landed, we saw pigs and goats run into the houses as people ran out. Wherever we wished, we stopped for three or four days to make side trips, for we were not flying on regular schedule. To get maps, aërial photographs of islands, lakes, river mouths, lighthouses, and harbors, all for educational purposes, we planned to spend more than two months on the cruise. While working out from Pará, The So-



Photograph by Capt. A. W. Stevens

STRINGS OF OXEN PULL CARTS ALONG THE DUNE-LINED BEACHES OF NORTH BRAZIL

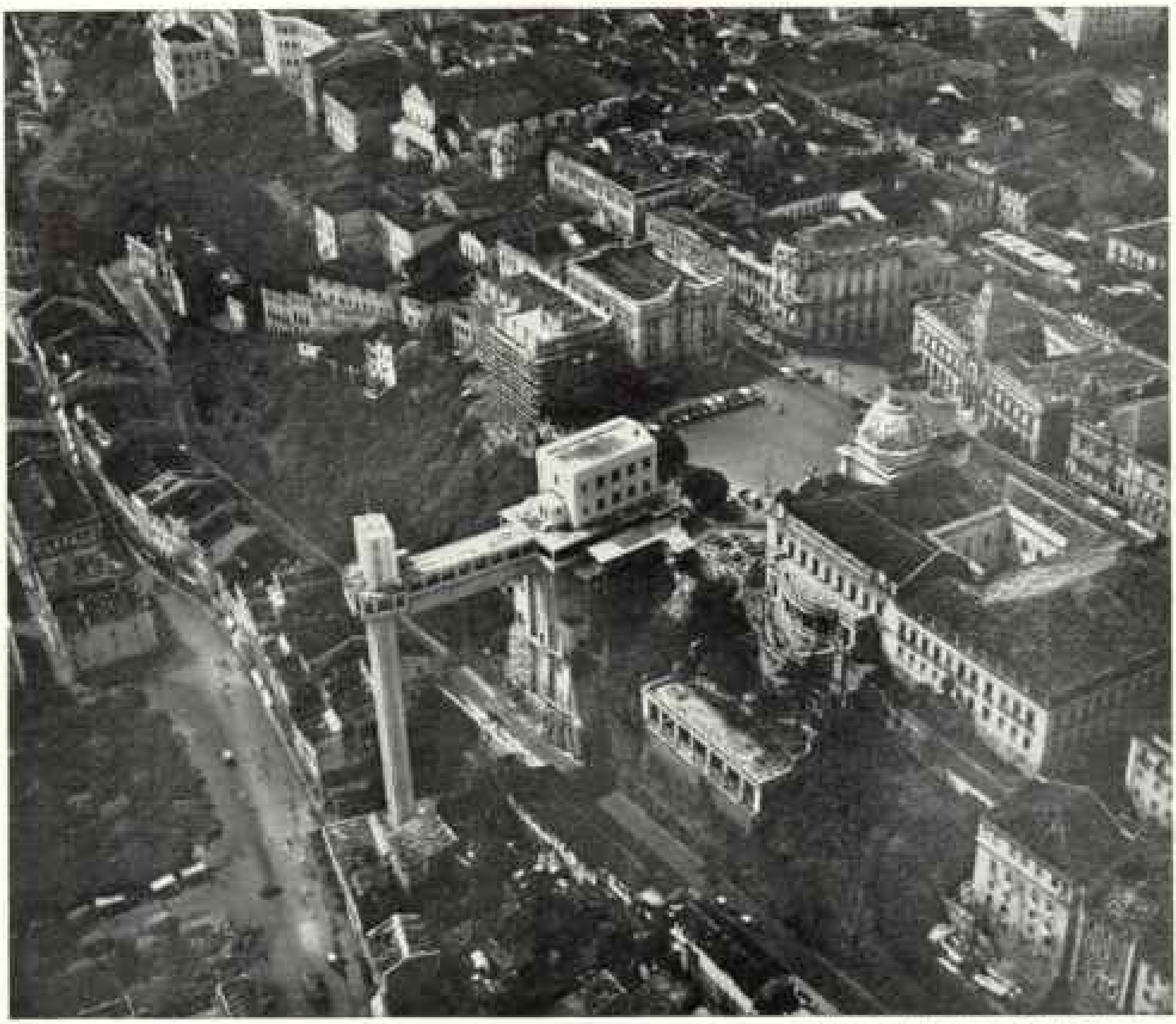
From the sea, pounding surf; inland, brush-grown sand wastes, with now and then clearings, fields, grazing animals; between, a hard beach, used as a road by country folk and villagers. A frequent aspect this of the coast from the Amazon Delta down to Bahia.

ciety's survey party, flown by Pilot Hawkins, explored the islands of Marajó and Mexiana, in the Amazon Delta. From terrain and lakes observed and photographed, it now appears that the Cayenne-Pará leg of this long route may be much shortened by flying over these islands safely instead of around them, as heretofore.

Wherever we stopped, the pilots were known, just as engineers and brakemen were in the early days of railroading in our West. Besides being skilled flyers, many of these pilots—lucky for them—are good linguists, for confusion of tongues is met from Havana to the Argentine—Spanish, French, English, Dutch, and Portuguese! And money! Some say it has no home; that it wanders where it can earn the best return. But along this line, jumping from flag to flag, we found in use dollars, pesos, francs, shillings, Danish money in the Virgin Islands, guldens in Dutch Guiana, francs again in Cayenne, and milreis in Brazil.

You sense the permanence and stability of air travel when in city after city you see new ramps, floats, and hangars, with shops, extra planes, spare parts, radio stations, and all the paraphernalia of aviation.

In 30 years of travel in many lands, I have seen no phase of American activity abroad received with more friendly interest than our air-line extensions in Latin America. At port after port, governors, mayors, and distinguished citizens repeatedly expressed to me their enthusiasm over the coming of American-managed seaplane service, making travel and mails so much



Photograph by Capt. A. W. Stevens

IN BAHIA, "LIFE IS ONE UP AND DOWN AFTER ANOTHER" FOR MEN WHO RIDE THIS UNIQUE ELEVATOR BETWEEN STREET LEVELS

Along Brazil's coast, where Bahia is built, runs a high cliff. It divides the city into two parts, Upper and Lower Town. The elevator, in the high white shaft, is the easiest way between the two city levels (see page 71).

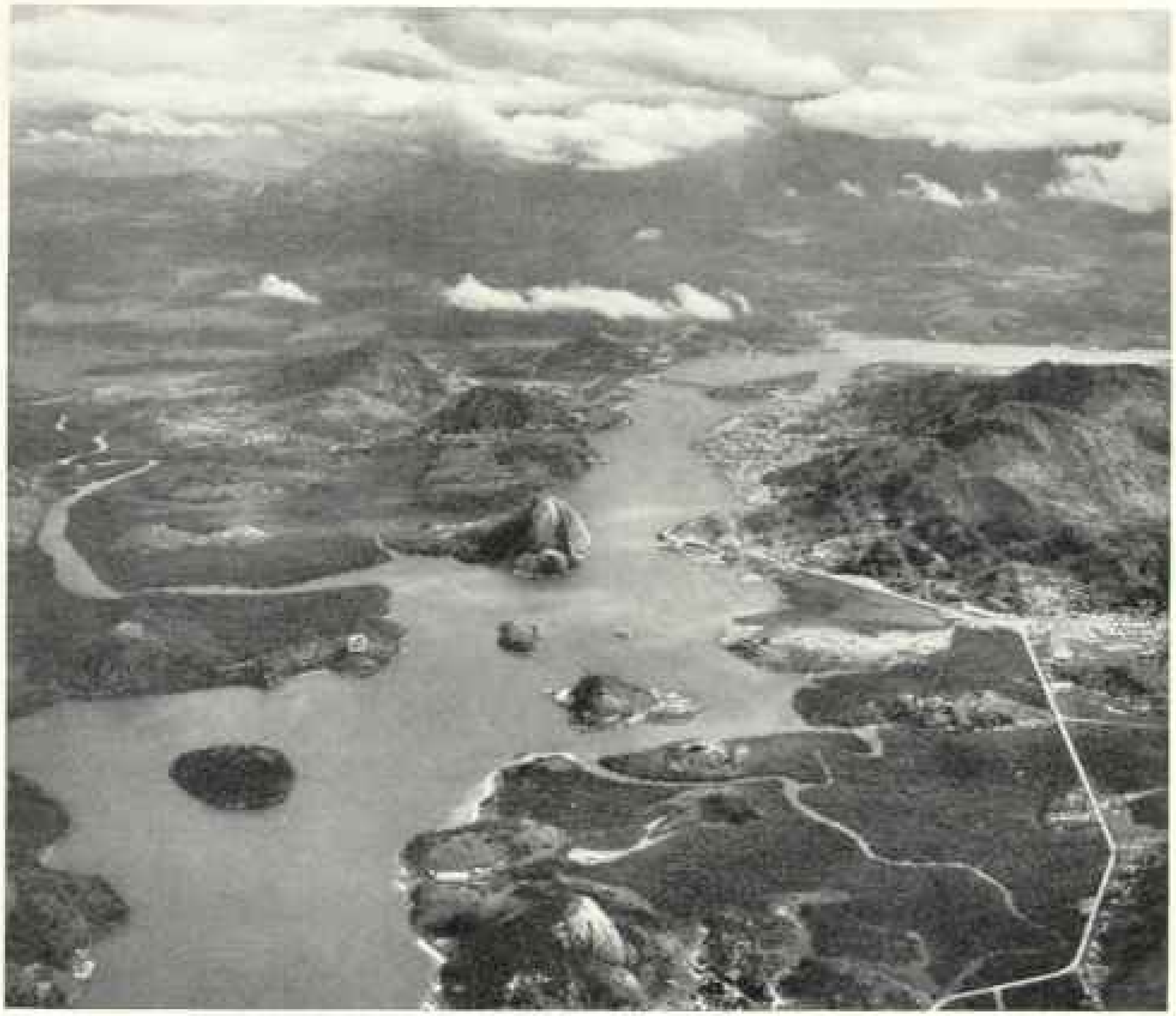
faster. And many are air-minded. Our pilots took scores for complimentary joy rides, wherever we halted for a day or so, and among paying passengers women and children fly as readily as men. "It took me six weeks in a sailboat, the first time I came from Jacksonville to Pará," said one old American there. "Lately my son came down from Miami in four days." Time and miles grow shorter, the two Americas closer, as we fly; ours is a new day.

TRADE ON SOUTH AMERICAN SEAPLANE PATHS

"I'll meet you just before the second afternoon shower," the Pará man may say in making a business engagement. "In the rainy season it rains all day, and in the dry season it rains part of the day." An imaginative aviator added this: "It's easy to fly into Pará in the rainy season; I just cut off my gas and ride down on the rain."

But once you quit the Amazon Delta and get around the great shoulder of northeast Brazil, the soaking jungles change to a parched and sunburnt land, with milelong sand dunes forlorn as the shores of Suez. Stick a few camels under the lonely clumps of coconut trees, which you see being smothered by sand dunes, often 60 feet high, and you would get as good a desert picture as any from Baghdad to Cairo.

Men killing a big sea turtle on the beach; lonely lighthouses; sandy Araby scenery, with goats prowling sand dunes for stray



Photograph by Capt. A. W. Stevens

AËRIAL PHOTOGRAPHY SHOWS AT A GLANCE THE TORTUOUS GEOGRAPHY OF THE BAY OF VICTORIA

Capital of the Brazilian State of Espirito Santo, Victoria is one of the oldest European settlements in the Americas. Its Governor received members of the National Geographic Society expedition in his hilltop palace.

plant life; odd boats of five spliced logs and a dirty sail, awash from stem to stern, so that two fishermen aboard work standing in water; fish traps like long picket fences in coastal shallows; grass-roofed huts on stretches of coconut-shaded beach, an idyllic Robinson Crusoe setting. These sights we photographed, as much empty country and a few busy towns that North America never heard of slipped under us.

MANY MARKETS FOR IMPORTED GOODS ARE SCATTERED DOWN THIS LONG COAST

We came to Fortaleza, typical of the many ports scattered down this seaplane path that help consume the ever-growing stream of shop-made things we must export to keep our mills running full time. We walked its noisy, narrow, cobblestoned streets and saw how North American machines and methods mark its life. Broadway melodies crooned by talking machines to soothe a roomful of bob-haired dressmakers; another roomful of girls demonstrating sewing machines; busses, trucks, motor cars, typewriters, cash registers, fountain pens, printing presses, pop-corn roasters, vending machines, cameras, garages with young Brazilian boys using North American tools; Ferris wheels, merry-go-rounds, gas stoves, electric equipment, movie-houses—even movie-fan magazines in the native language, but printed in the States; telephones, street cars, wireless—a growing city whose very name few North Americans ever heard;

yet a good customer of ours, paying for what it buys with skins, vegetable wax, or with cash from cotton sold to Liverpool.

Here, as in all cities which stand along this route, North American capital and management help build up the public utilities; and here the people bless the Rockefeller Foundation for killing their old enemy, the mosquito.

On the seaplane path from New York to Buenos Aires, this air line serves cities with a total population of more than 20,000,000. Touching the big coastal cities of the Guianas, of Brazil, Uruguay, and the Argentine, this line taps countries in which originates the bulk of all the postal traffic of South America, and in this region the United States does most of its trade with South America. To make up this big trade, you add big towns and little ones—the Fortalezas, Maranhãos, and Paramaribos, as well as the Rios and the Pernambucos.

Rounding the shoulder of South America, we passed Cape São Roque, which aviators use as the nearest point from which to quit this coast for Europe. Below it stands Natal, the now well-known western terminus of Africa-Brazil flights. Here, too, converges the air-net of plane paths which collect South American mail for Europe, sent from here to Dakar, Africa, by speedy French dispatch boats, and there put again on planes for Europe. The French hope in time to set up a transatlantic air-mail line between Natal and Dakar.

Alighting at Natal in a blinding rain, we were welcomed by Mayor Omar O'Grady, an Irish-Brazilian educated in Chicago at Armour Institute. Just then a monoplane flashed past in the rain. "There goes the famous French pilot, J. Mermoz. He flew here from Dakar, in a nonstop flight. Now he's off to see if he can fly back again." But he didn't that time. Rain and head winds forced him back, and a little later we saw him land near our plane.

When we were in Natal five air lines served the town—the Nyrba and the Pan American (now consolidated), the Kondor, the Brazilian, and the French Aéropostale. Natal reveals proof of Brazil's interest in air travel. You see hangars for seaplanes, radio towers, Brazil's first civilian school for aviators, and a fine flying field for land planes.

From Natal we flew to Pernambuco (Recife). (See page 60.)

Taxis here smell of antifreezing mixture, though this town is in the Tropics. "That's because we burn alcohol and kerosene mixed, instead of gasoline," says your guide. "The law makes us put in the kerosene, so chauffeurs won't drink the fuel tanks dry."

STREET SCENES IN PERNAMBUCO

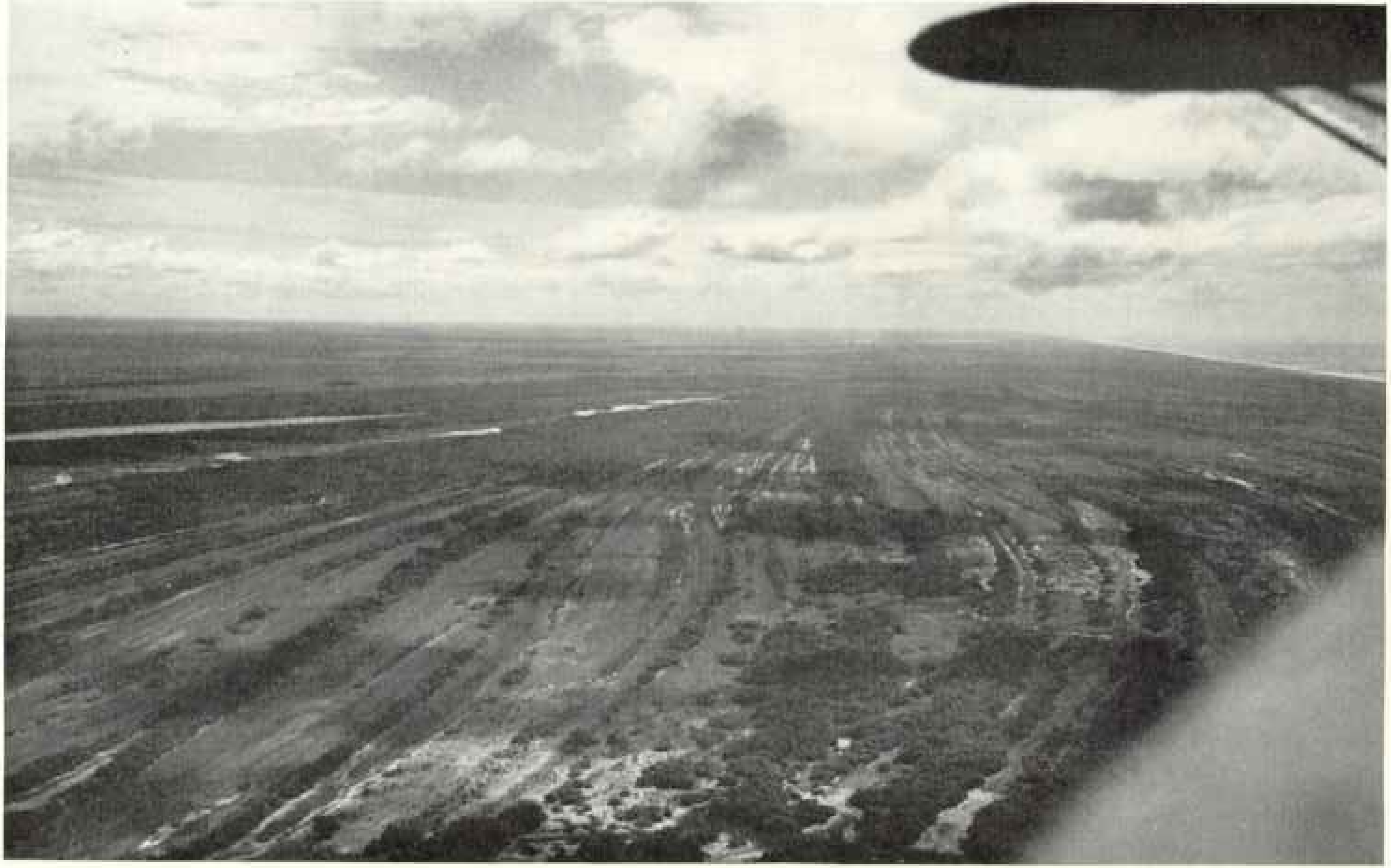
This is a Dutchlike town. Prince John Maurice of Nassau came here in 1637, when the Dutch ruled, with many artists, scientists, writers, naturalists, and architects, to build an idealized Holland city in South America. Few original Dutch edifices remain; but there is something in the canals, deep-shaded streets, and many bridges that reminds you of Holland or of old-fashioned Bremen.

Our flight was interrupted here, for in the night a bark rammed our big flying boat while it swung at anchor and tore off part of one wing. While waiting for another Nyrba airplane to pick us up, we studied and photographed this busy Brazilian city of Pernambuco.

There's a newspaper here more than 100 years old, the *Diario de Pernambuco*. Its editor, Dr. Mario Melo, was with the South American journalists invited to the United States in 1926 by President Coolidge. He showed me the city.

Pernambuco is the Virginia of the United States of Brazil. Freedom was born here, and here South America saw the first legislative assembly, as the House of Burgesses was the first in North America. Here was the first society for abolition of slavery; they show you the site of the folks tribunal, where Joaquim Nabuco made his celebrated oration against slavery.

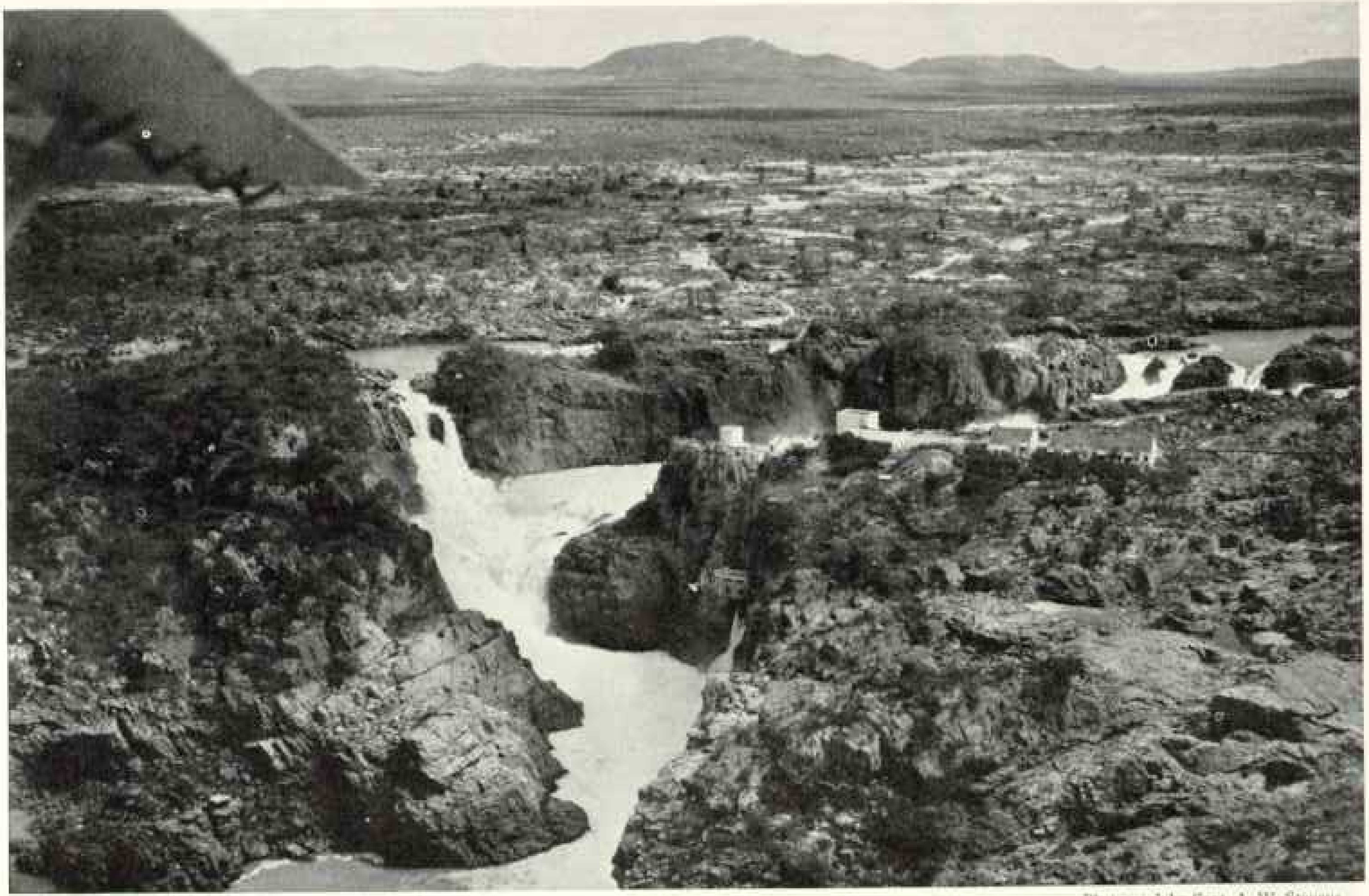
In the museum you see a vast canvas depicting the fights between Portuguese and Dutch for possession of the capital; a fine old map, drawn by the Dutch 300 years ago, showing the city then; leg irons and chains and a whip for slaves; ornate palanquins of dead and gone bishops and governors; a beautiful bronze cannon dated 1629, embossed with a fine three-masted Dutch ship from the days of Henry Hudson; square gold coins, minted here by the Dutch about the time the Pilgrims were getting set up in New England business; an old Dutch fort, still in military use after



Photograph by Capt. A. W. Stevens

FURROWLIKE DEPRESSIONS MILES AND MILES LONG RUN PARALLEL WITH CERTAIN BEACHES IN BRAZIL

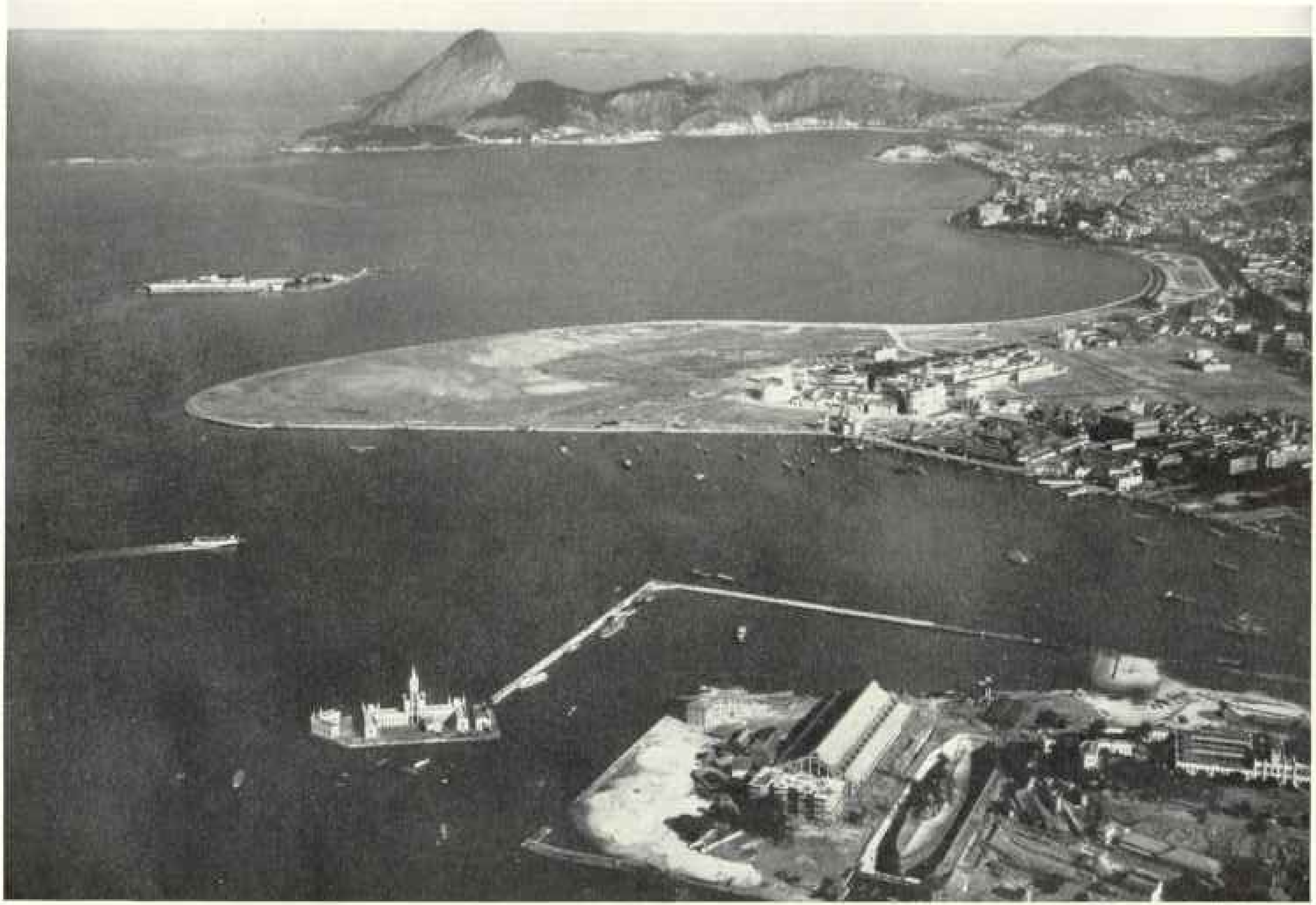
At first, members of the expedition mistook these oddly scarified areas for abandoned sugar fields, as marked by steam plows or tractors. Actually, through the centuries, the pounding sea made these ditches and ridges as it added this area to the continent. Ledges out at sea keep steamers far from shore. Few men indeed ever observed this phenomenon north of Victoria, Brazil, for it is noticeable only from the air.



Photograph by Capt. A. W. Stevens

BELOW PERNAMBUCO THE EXPEDITION FLEW UP THE GREAT RIO SÃO FRANCISCO TO PHOTOGRAPH THE ROARING PAULO AFFONSO FALLS

Although she was built to land only on water, Pilot Hawkins flew the big seaplane *Argentina* far inland, over deep gorges and turbulent floods, that the first aërial photographs of the great Brazilian cataracts, estimated as some 265 feet in height, might be made (see text, page 70). Engineers calculate that more than 1,000,000 horsepower could be developed here. Both above and below the falls the São Francisco River is navigable.



Photograph by Capt. A. W. Stevens

MAN, NEVER SATISFIED, SEEKS TO IMPROVE ON NATURE'S AMAZING ACHIEVEMENT, THE HARBOR OF RIO DE JANEIRO

No longer with antlike toil, as on the Pyramids or Chinese Wall, but now with modern machines, men move mountains and beat back the seas. The flat peninsula is "made land"; ashore, hills have been leveled to add building space to Rio. The towered building at the left is on Fiscal Island and houses a part of the naval ministry. In the left background is the much-photographed Sugar Loaf peak.

three centuries, where the amiable Brazilian captain served us coffee; many reminders of Portuguese discovery and settlement when that bold race roamed the seas from India and Africa to the far coasts of Brazil. Tedious? Not here! As thrilling to Brazilian schoolboys, who march the streets at night singing patriotic songs, as the tales of Bunker Hill or Custer at the Little Horn to North American youth.

Here comes a string of burros dragging 20-foot palm fronds to thatch a hut of the poor. "Mucambo," such a hut is called, a word brought straight here from black Africa. And then a street car with a trailer full of fresh meat to be delivered to butcher shops.

Near the coast are many artificial lakes, or ponds, each tied to the sea with a ditch in which is a little wicker gate or trap. At high tide small fish come in and get caught. Thus confined, they are raised for food, just as we see pigs and chickens fattened in pens.

IN BRAZIL, TOO, THE WOMEN READ THE FASHION MAGAZINES

Crowds of women in a bookstore buy North American fashion magazines, and those that show how to build and furnish modest homes. Few can read English; yet the pictures intrigue them, and North American influence is observed in dress and house furnishings. Movies, too, influence dress and diversions here; but football and horse-racing predominate.

On Rua Bom Jesus, a water-front street, you see sailors from the seven seas and Pernambuco's contribution to a "wife in every port." On the sidewalk stands a man with a sloth on a pole—a big, fat, hairy thing, with a small, silly face, its eyes, nose, and mouth all squeezed together, and three very long, horny toes on each foot. "How much?" you ask. "Twenty milreis." Cheap enough, you think at first; then, again, wouldn't a live sloth be dear at any price? You photograph its idiotic countenance, give the man two milreis, and move on.

Here's an old man with white, curly hair and the beard of a prophet—a broken Portuguese actor selling his own photograph and telling of past stage triumphs, when he "played 200 nights in Paris." Sailors, amused, give him a ragged five-milreis note and pass into the "English Ship Chandler's Café," where red-necked mates and white-clad skippers sip ale, their long mustaches, like bicycle handlebars, dripping with cool froth.

Bird peddlers hang about the open door and a vegetarian Hindu comes, vainly trying to sell his book. What English sailorman would quit soup, fish, and roast beef for a lifetime diet of squash and string beans?

At the near-by school for merchant seamen we see uniformed cadets at drill, led by a good band. Just in front of the bandmaster marches a big, white ram, the cadets' mascot. A flock of geese appears and starts marching sedately ahead of the ram, in step. Enraged, the ram charges and butts a gander into the gutter. The band can't play from laughter and the cadets whoop with joy. "Fall in!" sternly yells a *commandante*, or Brazilian words to that effect, and the precise drill resumes, the ram again in the lead.

We return along the Riverside Drive of Pernambuco, the famous seashore highway known as Boa Viagem, a bathing beach on one side, on the other sumptuous red-stone mansions of sugar planters and other rich Brazilians. Then back to the water front, where a sign says "Man Spricht Deutsch" and German sailors are drinking beer and singing and ogling two girls on a balcony across the street. This is a Romeo-and-Juliet town. Every evening you see the swain arguing to his lady love ambushed behind the lattice. Sometimes she'll consent to open the lattice a few inches, so he may get a look at her.

FLYING DOWN THE WORLD'S LONGEST COCONUT GROVE

Below Pernambuco another world begins. Almost clipping the nuts off coconut trees, we flew low over the palm belt which stretches down the Brazilian coast, to let our cameramen record its odd sights. Thatched-hut dwellers in this world's longest orchard, broken only now and then by barren spots, towns, or river mouths, seem to live largely on coconuts and fish.

At low tide the hard beach makes the local highway between villages. A thin traffic stream trickles over it. We saw many ox-teams, six and eight yokes to a team, hauling the big country carts with their clumsy wheels, each one a solid piece of wood. One day, when ashore, I heard

Photograph by Jacob Gayer

THE UNIVERSITY OF MONTEVIDEO WAS FOUNDED IN 1849

Schools of law, medicine, agriculture, engineering, and, of course, letters and science comprise Uruguay's leading educational institution. It is coeducational, but the women also have a university of their own. This building houses the College of Law.

the hideous scream of such a cart, as its dry axle squeaked under its heavy load.

"Why don't they grease it?" I asked.

"The oxen like the racket," I was told. "They pull better when the cart squeaks."

Landing at little towns, flying up occasional rivers, or visiting big plantations, we got a fresh, intimate close-up of country life in parts of Brazil where North Americans seldom go. Voyagers by steamer do not know that many of these places exist. Stevens and Gayer made air pictures of the great waterfall of Paulo Affonso, at a point about 200 miles upstream from the mouth of the São Francisco River (see illustration, page 67).

No plane ever flew there before. Here a huge though yet undeveloped horsepower makes a great roar. The gorges and canyons, through which the river drops some 265 feet in a series of falls, are comparable in grandeur and vivid rock coloration to sections of the Grand Canyon of the Colorado. No landings anywhere; no place for a motor to "konk"!

Life on Brazilian sugar estates recalls ante-bellum tales of our own Old South. Owners live an easy, baronial existence. Servants fairly swarm; they must go barefoot for silence. Men and women in the cane fields at sunrise; the tonic smell of fresh-plowed earth; white-clad overseers on sweating, fretting ponies; one excited group about a new North American tractor.

From towns like Maceió new roads split the jungles—as yet mud or dust roads, but a beginning. In the last two years on these new roads the motor bus has appeared. Out on one such road I met a young man from Louisiana, the only North American in that region. He was installing more new machines in what is already one of the world's model sugar mills.

Yet some old ways persist. As when slaves built Babel, I saw 26 men use cross-poles to carry a log so huge we in the States could have lifted it only with cranes; and railway track workers, not running their little car as our section hands run a hand car by pumping, but poling it along as men push boats in shallow water.

Here is a store that sells small images

Photograph by Jacob Gayer

CALLE SARANDÍ, TRAVERSING THE FASHIONABLE SHOPPING DISTRICT, IS ONE OF MONTEVIDEO'S OLDEST STREETS

The motor bus is in common use in all Latin-American cities and towns. In rural regions, too, as highways are developed, its use multiplies. Certain railways use bus lines as feeders.

of the saints. Before a shelf of painted figures an old woman stands, fumbling in the folds of her long, black skirt for hoarded coins. Outside, a chattering later generation hastens to the town's tawdry movie house. On top this tiny place of amusement is yet another North American device, a fire engine's siren. When the picture is about to be run, the siren screams a warning. Then all the people from the coconut groves come running.

CLOSE TIES EXIST BETWEEN BAHIA AND THE UNITED STATES

Over many wrecks, awash on the reefs of this dangerous coast, we flew to Bahia.

High coastal cliffs divide Bahia into an upper and lower city. Flying into its bay, a striking, obelisklike white shaft catches the eye. It rises from the water front and its top is on a level with streets in Upper Bahia. This is an elevator shaft built by a North American company which also owns and runs all other public utilities. It hauls thousands of people up and down, between the high and low parts of town.

Bahia is one of the oldest centers of European civilization in Brazil. Many years before the English established colonies in what is now the United States, the Portuguese were here. Its history is fascinating, with such grim episodes as twenty-nine pirates hanged in one day, and a whole church congregation slain and devoured by Indians. To Bahia fled the Portuguese court, getting away from the army of Junot in 1807. During our Civil War, here came the *Alabama* and *Georgia*, to get arms from British ships, and here occurred the celebrated case of the U. S. S. *Wachusetts*, which seized the Confederate gunboat *Florida* and towed her out to sea.

More North Americans lived here in 1845 than now, for the slave trade was good then and our fleet clipper ships were in demand (see page 63).

Miners in the United States depend on Bahia for black diamonds, or carbonadoes, used in the ends of diamond drills.

"The finest service North Americans ever rendered Bahia," a prominent resident said, "was in setting up the Rockefeller

Yellow Fever Service. We put your brave doctors among Bahia's immortals."

I spent a day in the Rockefeller laboratory, where physicians from the United States seek a serum with which to inoculate human beings against yellow fever. Here are cages of monkeys imported from India; experiment cannot be made with Brazilian monkeys, because they are immune to yellow fever. And here also are rabbits, hens, guinea pigs, mice, and frogs used in experimental work; also pans of larvæ and wiggletails and cages of mosquitoes.

In this service more than 10,000 men are employed. Their chief job is to prevent mosquitoes from laying eggs on stagnant water near homes. They fill up holes, clean out ditches, and teach the people to coöperate. I saw scores waiting in line with pails to get free minnows at a public health station. Many such stations exist, for the Brazilian Government and the Rockefeller Foundation work hand in hand, each paying half the expense in yellow-fever control. The minnows, feeding on mosquito eggs, are put in cisterns, tanks, and other water deposits about premises where mosquitoes may breed.

"In our work this year we pulled down 12 miles of old gutters," said Dr. P. B. Wilson, "and we buried more than 1,000,000 empty tin cans. Bahia seems the spot where epidemics begin and end. Look at that map on the wall. The little yellow pinheads show where yellow fever exists. To check its spread we examine about 300 ships and boats a day, visit some 8,000 different houses, and look at no less than 136,000 tanks, cisterns, sinks, etc."

"Our golden dream," said Dr. Martin Frobisher at the great laboratory, "is, of course, to find a vaccine against this fever, which is from 50 to 60 per cent fatal." He showed me sheets of filter paper on which mosquitoes had laid eggs. These eggs may be dried, yet remain vital for months, hatching only when placed in water.

"This work is of world importance," said Dr. Frobisher. "The dread of all yellow-fever experts now is that this disease may reach the Orient. In days of slower transport that was less likely. But we know now that a mosquito which bites a yellow-fever victim lives long enough to be carried to the Far East, where she could bite somebody else."

I was glad to get out of this lethal laboratory into open air, away from those cages, pans of wiggletails, sick rabbits, and white mice reeling crazily with yellow fever.

In the mouth of a crocodile-infested river we anchored and went ashore in the palm-fringed town of Ilhéos. It lives on chocolate beans, or cacao. Brazil produces about 14 per cent of the world's total crop, and Ilhéos moves a goodly share of it. Five white men manage the giant industry.

LIFE ALONG A TOY RAILWAY IN THE BRAZILIAN CACAO COUNTRY

Riding in a gasoline speed car with the railway manager, we rattled out over the toy line which wanders into the jungle.

From the forest whizzed a stinging bug and bit our black driver on the nose. "If we weren't here, he'd take a croc tooth from his pocket and rub his nose with it," said our host. "That's the popular cure for bites." We passed a new-made grave with flowers on it. A man killed by a crocodile had just been buried.

"Dogs are the crocodiles' favorite dish," said my host. "When a village dog ventures near the river bank at night and barks, the crocs gather. A favorite nature story hereabout says that a certain wise old dog late one night found himself on the wrong side of the stream. To get back to his village, he would have to swim. But there were the crocodiles. So he went downstream a few rods, barked lustily, and drew all the dog-eating reptiles down that way. Then he raced swiftly back upstream and swam safely across."

In the State of Bahia cacao has been grown for 100 years, and this tiny railway serves the heart of the great cacao region. Short and little-known as this line is, it hauls a staggering tonnage.

Leaving the coastal plain and entering the foothills, you see the cacao plantations. We got down and walked in the shaded groves. Among bigger, protecting trees the small cacao trees are planted for shelter from sun and wind. I twisted off a green fruit, broke it open, and tasted the whitish seeds. The flavor was like watermelon. Barefooted men and women split the pods, empty the seeds on a wide platform, and

Photograph by Jacob Gayer

URUGUAY'S CAPITAL RANKS AMONG THE BEAUTIFUL CITIES OF THE WORLD

Spacious, well-paved streets, numerous fine parks, excellent power facilities, good transport, and a pleasing architecture combine to lend charm to Montevideo. The rather bizarre tower of the Salvo Building (center background) dominates the city's skyline.

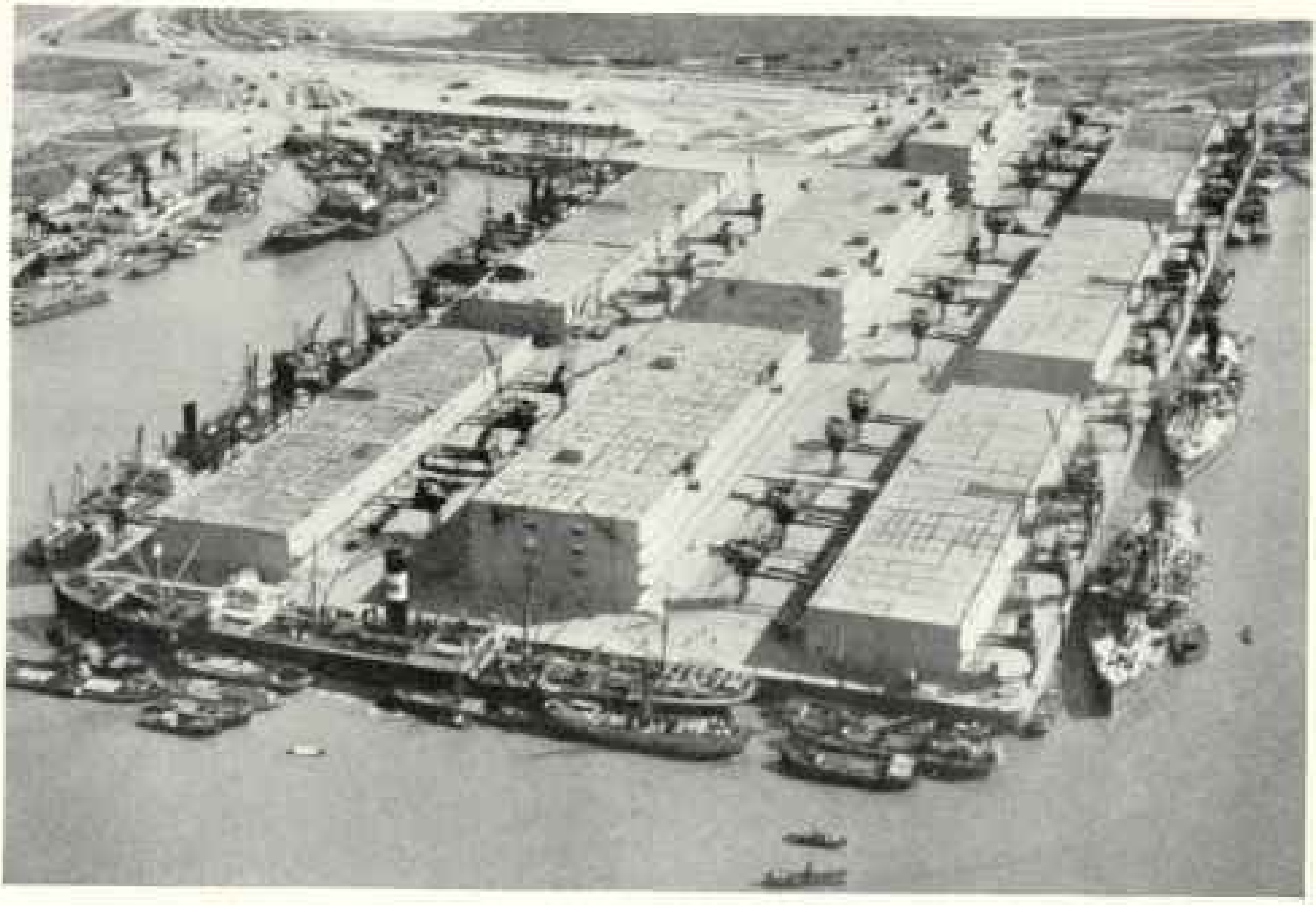
tread them free of pulp and pith. They call this "dancing the cacao."

Near the station "Lava Pes," or "Wash Your Feet," we stopped to watch a long file of umbrella ants. Each carried a leaf as if it were an umbrella. Many ants were up in a tree, biting off bits of leaf and dropping them to other ants waiting on the ground. This line of ants is often a mile or more long. The ants carry the leaves to their underground home and store them. On the leaves forms a fungus which they eat.

Under a shed near by we saw four men with machetes scraping a wild pig they had shot.

White men find life here hard because of malaria and of so many insects. Bugs are a plague. I saw a horned tumblebug more than seven inches long, larger than many kinds of birds; and there were snails that must have weighed half a pound; and there were the fer-de-lance and other dangerous snakes.

"It's hard to hunt here," said the lonely English superintendent. "You can't get



Photograph by Capt. A. W. Stevens

OCEAN STEAMERS LOAD AT THE DOCKS IN MONTEVIDEO'S MAN-MADE HARBOR

Engineering work begun by the Uruguayan Government in 1901 has provided a 32-foot channel for large ships, and thus created a great world port where once were treacherous shallows navigable only by small craft.

through the jungle. Edible pigeons and other good game birds there are and deer, but the only way to get them is to find a convenient place from which to shoot, and then call them to you by imitating their cries. Yes, it's lonely. I make frequent trips to England, but I've spent 18 years here. For days I see only native workmen. Their language is quickly learned, so you soon possess all the knowledge they do. They use about 400 words—a blend of Portuguese, Indian, and African words imported by slaves."

"ROLLING DOWN TO RIO"

One may go rolling down to Rio nowadays on big ferryboats of the sky!

We made motion pictures of our own shadow on the clouds below, as we flew over Victoria, our last stop before Rio de Janeiro. Victoria's harbor is full of islands, strangely like the Inland Sea of Japan. In one place light and power cables dangle between two islands, high above the water. On these dangerous cables, as big a menace to flying as we found anywhere, passing pilots keep a wary eye (p. 64).

Down the coast from Victoria we skimmed low to see the country. For miles it is empty, with here and there league-long parallel strips of alternating brush and sand, marking where the coastline lay in times past. Inland is the blue of distant mountains.

Nearing Campos we struck rich, green plains. Horses and cattle by thousands grazed here; many herds stampeded as we roared a few yards above them. Peons cutting sugar cane and loading it on big-wheeled oxcarts waved machetes at us. Over muddy roads plodding oxen hauled heavy cane carts to smoking mills. Field overseers in white suits sat about on horseback. On our whole flight from Washington no bit of passing scenery was more absorbing or gave so quick a cross-section of local life. It was like a 100-mile mural of "Country Life in Brazil," with farm folk gardening, feeding pigs, chopping wood, milking, or loafing, and children at play, one group with a goat harnessed to a little wagon. Chickens raced to cover, as if the plane were a big hawk.

Photograph by Jacob Gayer

WHAT SMALL BOY WOULDN'T LIKE TO RIDE A LLAMA!

On this dignified and mincing steed, a small son of Argentina inspects the Zoölogical Gardens of Buenos Aires. The zoo itself offers a fascinating collection of animals, and the grounds present one of the best examples of landscape gardening in South America.

Then it rained. Water fell all about us, shutting out a world-famed view we had waited for—the flock of odd, queer-shaped mountain rocks about Rio. These are a curiosity. They look almost artificial, as if on the earth yet not of it. You fancy that some big David on another planet used his sling to hurl these bowlders through space at our world, with Rio as his bull's-eye (see, also, page 68).

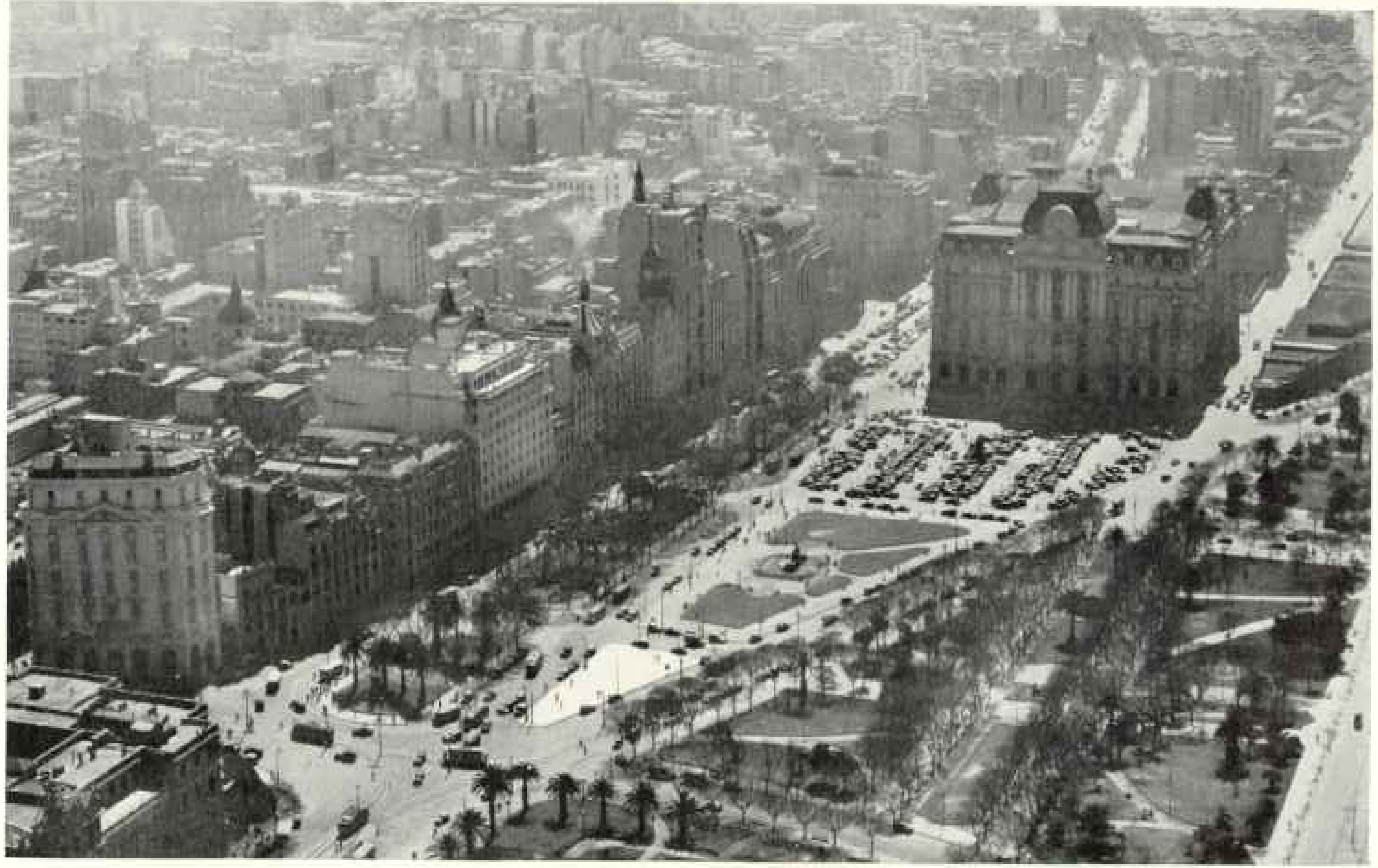
"This makes aviators gray-headed," said the pilot, as we bored ahead into the squall curtain. Horizons faded into rain. We never moved around in the plane when the pilot was "flying blind." He warned us not to. "I can't take my eyes off the instruments, to work the stabilizer," he explained. "But Rabbi Hawkins is always lucky," his fellow Navy officers used to say. "Even if he did crash in the Dole Race of 1927, he always gets a break." When a hole of light showed through clouds ahead, Hawkins gave the big Nyrba ship "all the motors had," and we fairly raced for that hole. And there was Sugar Loaf and Rio, overcast but visible, with one of its mountains, "The Finger of God," reaching up and poking into clouds.

"Most beautiful bay in the world," the travel-stained call this. Brilliant capital of a nation that embraces nearly half the land and more than half of the people in all South America. But from the air you see Rio not as one big city unit like Chicago. A great city, with upward of 2,000,000 people; but broken into kaleidoscopic parts that are tucked away into green valleys, set on points of land, spread in the graceful bends of blue bays. Some cling like Tibetan monasteries to steep, wooded hills.

To develop films, to explore and picture this amazing city of theatrical architecture and scenic hills, the expedition halted many days.

OUT OF RIO ON THE WINGS OF MORNING

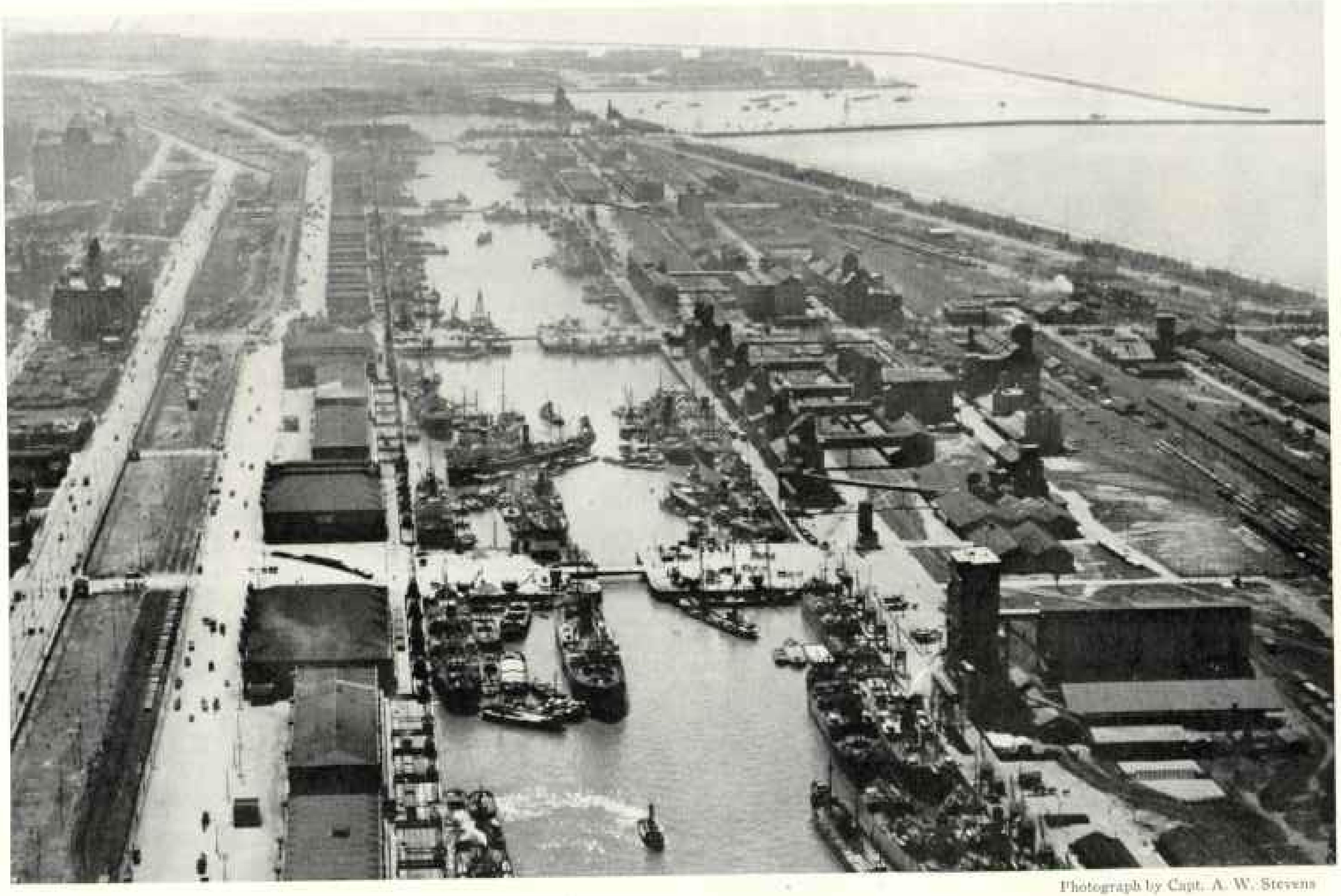
Then, to see at first hand how planes on regular schedule are run, I flew with the mail plane for Buenos Aires. Gayer and Stevens followed on the *Argentina*, when again in commission after repairs at Pernambuco.



Photograph by Capt. A. W. Stevens

PULL UP ITS PALMS, USE ENGLISH INSTEAD OF SPANISH; PUT LAKE MICHIGAN WHERE THE RIVER PLATE IS, AND FLAT, BUSY BUENOS AIRES BECOMES CHICAGO IN CLAMOR AND INDUSTRIAL SPEED

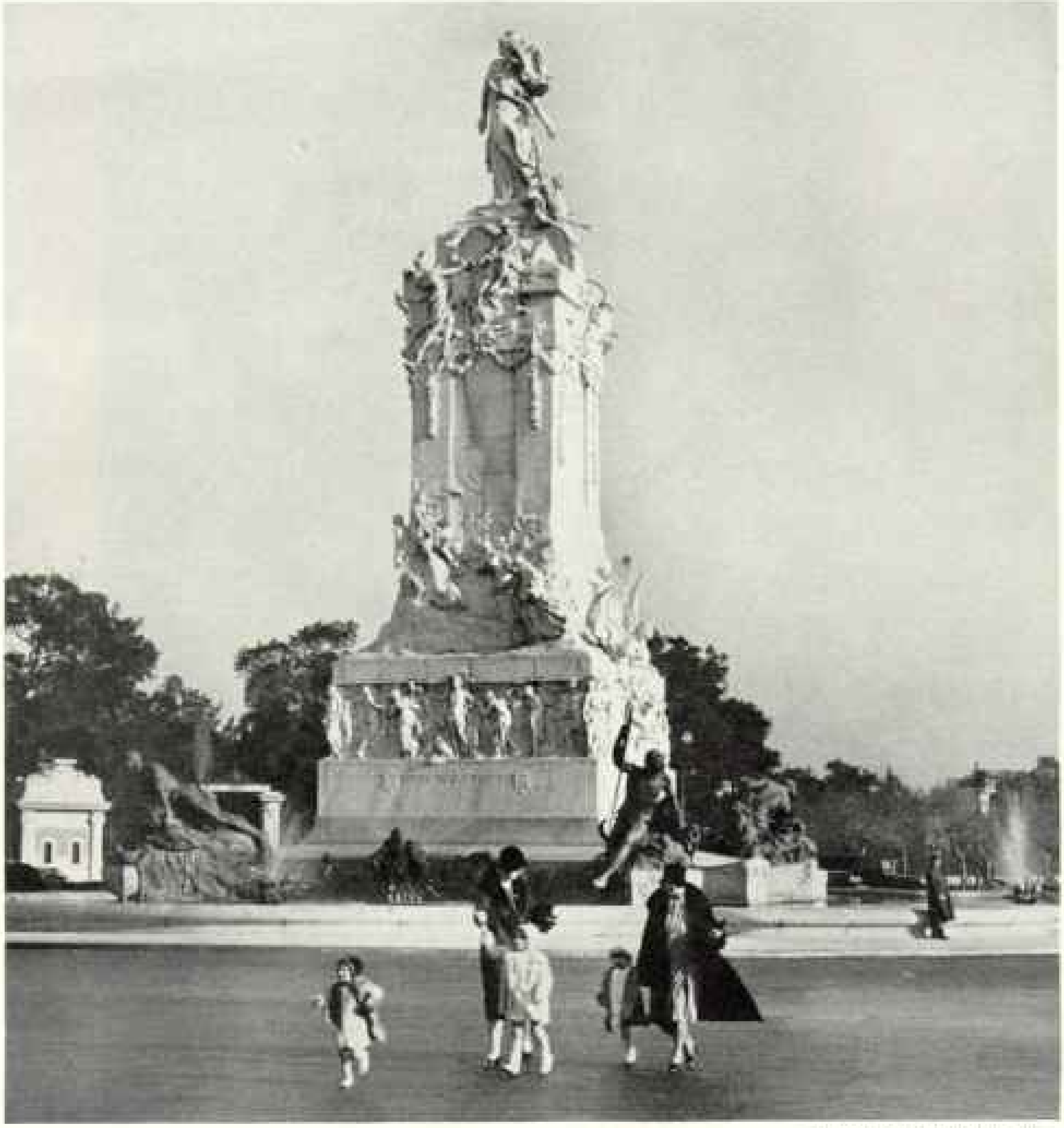
Both cities boast huge fortunes founded on grain, meats, wool, lands, and farm machinery. As Chicago grew rich and great from the prairies of the Middle West, so Buenos Aires waxes opulent and strong from the productive pampas. A Buenos Aires plaza south of the Post Office Building.



Photograph by Capt. A. W. Stevens

OUT OF SHOALS AND MARSHLAND BUENOS AIRES HAS CONJURED ONE OF THE WORLD'S GREATEST PORTS

The Rio de la Plata is a mighty estuary, 120 miles wide at its mouth and 28 here, 125 miles inland, yet shifting silt so chokes the channel that constant dredging is required to keep it clear for big ships from every clime. Not even Chicago, with its playground snatched from Lake Michigan, has performed a more remarkable feat than the Argentine capital's construction of its harbor and water front. Through the sheltering breakwater (upper right), ocean-going vessels steam into the man-made canal. To the right of this busy artery may be seen a portion of the famous Water Park, which glorifies the city's seaward doorstep.



Photograph by Jacob Gayer

THIS SUPERB MONUMENT WAS THE GIFT OF THE FRENCH COLONY AT BUENOS AIRES AT THE TIME OF THE CENTENNIAL OF ARGENTINE INDEPENDENCE, IN 1910

It stands near the entrance to the Zoölogical Gardens, on the wide boulevard through Palermo Park. During the celebration of this centennial not only the French residents, but other sympathetic colonies as well, donated memorials in token of friendship toward their adopted country.

A slim slice of golden new moon tilted over sleeping Rio de Janeiro. Then dawn broke, just as I climbed into the mail plane for Buenos Aires.

This was the last long leg of the seaplane cruise from Washington to Cuba, thence over the West Indian island bridge to Orinoco swamps, across amazing solitudes of the Amazon Delta, and around the huge hump of Brazil to Argentina.

Ninety miles down the hill-tumbled coast below Rio, we hit the fog. First it hung in league-long, twisted ropes, like great gray cables for some phantom bridge across the Atlantic. Then, stirred by the faint breath of morning, the long fog ropes merged into solid, dirty waves. Barely could we see our wing tips. Time endured, but space had no measure.

Pilot Shea climbed up into another world. And the glory of God was about us. Morning sun played on billowy seas of fog, stretching like snowfields to far horizons. Childhood memories awoke of Bible pictures showing chariots on the clouds or white-robed, singing angels winging upward.

Then the fairy landscapes faded; all the cloud palaces, the pink and snow-white peaks melted into common dirty fog again, for a higher cloud hid the sun. Flying by instruments, we bored the fog bank through and came to Santos, where the world gets most of its coffee, in bright sunshine. From the air, we saw the short railway that runs inland to the near-by, swiftly growing city of São Paulo. In five minutes we landed a passenger, put off mail and took on more, and were in the air. You marvel at the speed and precision of the mail schedule. At Florianopolis we met a Fleetster, flown by a lone pilot named Stark, carrying north nothing but mail. On a tail wind that morning he had averaged 180 miles an hour!

Toward Porto Alegre, where thousands of German colonists make local life more like Breslau than Brazil, we struck more fog.

From May till October, between Rio and the River Plate, fogs are frequent. The banks are anywhere from 200 to 2,500 feet high, or "thick," as the pilots say. "If you come to a bank that lies flat on the sea or has no holes in it," said Pilot Shea, "it's safest to get down on the water and wait for it to lift, or else turn around and go back. We never expose passengers to any risk. Most of the time here the fog ceiling is high enough so we can fly under it, low over the water, or else it's Swiss cheese fog, with big holes in it through which we can see the ocean."

"The weather prophet gets no breaks down here," said another pilot. "The winds run wild. They blow from anywhere. Rain comes from the north or northeast, usually, and cold, clearing winds blow from the southwest. And the lightning is bad; it gets less as you fly north, toward the Equator.

"But it's the *pampero* that makes the worst weather. It blows off the pampas, but we don't mind it much. Pilots always get ample warning by the big clouds of dust that can be seen coming ahead of these storms."

In pouring rain we took gas at Rio Grande do Sul, and hopped off with water fairly streaming from our wide wings. In heavy rain—not as in fog—you can see land or water plainly at least 200 feet below you. The force and weight of heavy rainfall slows down a plane, as mud slows down a motor car, but it keeps going.

For 250 miles, along the lonely coast of Rio Grande do Sul, Brazil's southernmost State, we flew past a string of great lakes. The north end of this stretch is known as the Lagôa dos Patos. It is a wild, forsaken region till you round the shoulder of Uruguay, with its vast, green sheep pastures.

AND SO BUENOS AIRES AT LAST

Swift transition from empty wilderness to civilization's refined works is almost astounding here. Magnificent summer hotels with well-kept golf courses dot the beaches, as you near Montevideo. Big stockyards remind you of Kansas City. On a packing plant you see the name "Swift" in big white letters. Ten minutes only we stop for gas and mails in this great, busy city of nearly half a million; then up and off, over the wide, muddy mouth of the great River Plate.

In the long trip from Rio we had seen hardly a ship, but now here came a great parade of merchant vessels, flying flags of many sea-trading nations. A double line of buoys marks the channel, which hugs the south shore of the Plate and forms a busy lane to the sea. Like the Rhine, the Plate carries a colossal tonnage.

We jump a fog bank and get another look at the long line of ships. It seems like some big nation's navy cruising in review past a king.

Then beyond, like a mirage in desert haze, we glimpse the majestic skyline of Buenos Aires, metropolis of South America—our goal, after 10,000 miles of flying over strange lands, up hidden rivers, around volcanoes, across forests primeval, and the jungle wastes of trackless Tropics. Smoky, foggy, serrated with skyscrapers, tall chimneys, radio towers, masts, funnels, cranes, derricks, it emerges from the blurred etching as our plane speeds closer at 100 miles an hour. Pilots always want to spurt the last few leagues. Higher we climb for a better view, and see a vast, solid, far-flung prairie city, flat as Chicago, stretching miles and miles; and still farther away, in the red haze of foggy sunset, the everlasting pampas.

HISPANIOLA REDISCOVERED

By Jacob Gayer

Staff Photographer of the National Geographic Society

With Illustrations by the Author

"IT IS a marvel; the mountains and hills, and plains, and fields, and the soil so beautiful and rich for planting and sowing, for breeding cattle of all sorts, for building towns and villages. There could be no believing, without seeing, such harbors as are here, as well as many and great rivers and excellent waters, many of which contain gold.

"The lands there are high and in it there are many ranges of hills and most lofty mountains; all most beautiful in a thousand shapes and full of trees so tall they seem to reach the sky. And I am assured that they never lose their foliage, as may be imagined, since I saw them as green and as beautiful as they are in Spain in May, and the nightingale was singing, and other birds of a thousand sorts, in the month of November, round about the way I was going.

"There are wonderful pine groves and very large plains of verdure, and there is honey and many kinds of birds and great diversity of fruits. Española is a marvel."

In these words the first travel writer of the Western World paid tribute to the island which sprawls like a Brobdingnagian frog in the waters that unite the Atlantic Ocean and the Caribbean Sea, and separates Cuba from Porto Rico.

And as one visits that island of Haiti to-day, studying its flora and fauna, climbing its mountains, prospecting its valleys, the realization comes that Christopher Columbus could picture newly discovered lands as well as he could navigate unknown seas.

TWO REPUBLICS IN AN AREA SMALLER THAN SOUTH CAROLINA

Though not quite so large as the State of South Carolina, Haiti has two governments and two peoples—the Republic of Haiti and the Dominican Republic. The international boundary which separates the two nations is not along a great natural barrier, for at places one may wade a stream that divides them. But if there were a Chinese Wall, with its top sprinkled with broken glass, it would not more effectually mark the passage from one country to the other than do the human barriers of alien races, languages, and traditions.

Within the 19,000 square miles of territory of Santo Domingo, to call the eastern republic by its popular name, there is an amazing diversity of climate. Going from the city of Santo Domingo to Azua, for instance, is like going from the east coast of Florida to the arid areas of New Mexico. Desert cacti take the place of waving palms and dry sands succeed jungle-covered soil, while mountain and desert, high plateau and coastal plain, offer an almost unbelievable variety in scenery and in plant and animal life.

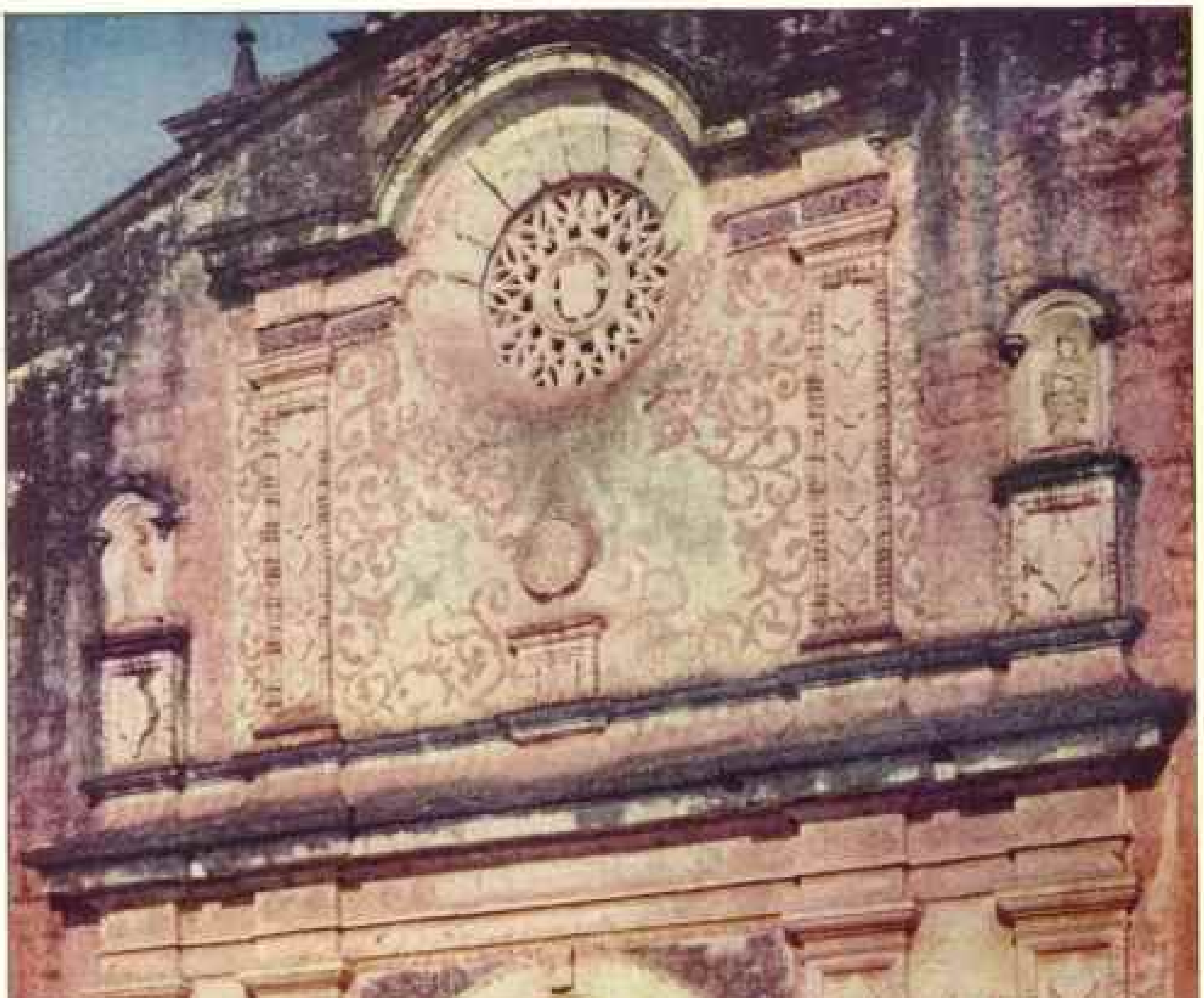
ORIGINALLY ALL ROADS FROM EUROPE LED TO IT

Three times it has been my privilege to see this land Columbus loved so well that his dying request was that his ashes should find their last resting place here. My first visit was ten years ago, when I traveled throughout the length and breadth of the country on horseback. In 1929 I came again. Good roads between the principal cities had taken the place of muddy trails, automobiles had relegated horses and donkeys to the side roads, and a photographer in an hour could cover the distance that before had been a day's journey.

My third visit was by air, as a member of the National Geographic Society's Aërial Expedition to South America (see pages 1-79).

In the three journeys my modes of travel had covered thousands of years of the evolution of ways of going about, and my points of view had ranged from the intimate outlook of a mud-bound traveler to the broad survey of the eagle.

As one looks down upon the country from the air, it is easy to sense the fact that Santo Domingo is the roof of the American Mediterranean. From Florida eastward, succeeding islands rise higher and higher until an elevation of around 10,000 feet is reached in the heart of the



© National Geographic Society

Natural-Color Photograph by Jacob Gayer

ST. DOMINIC'S DIM INTERIOR SHELTERS THE TOMBS OF MANY OF HISPANIOLA'S EARLY ARISTOCRACY

In the Dominican Convent of which this church is a part, the University of St. Thomas Aquinas was established, in 1558. It was one of the New World's first institutions of higher learning.

ESTATE OWNERS "ROUGH IT" IN PALATIAL RANCH HOUSES

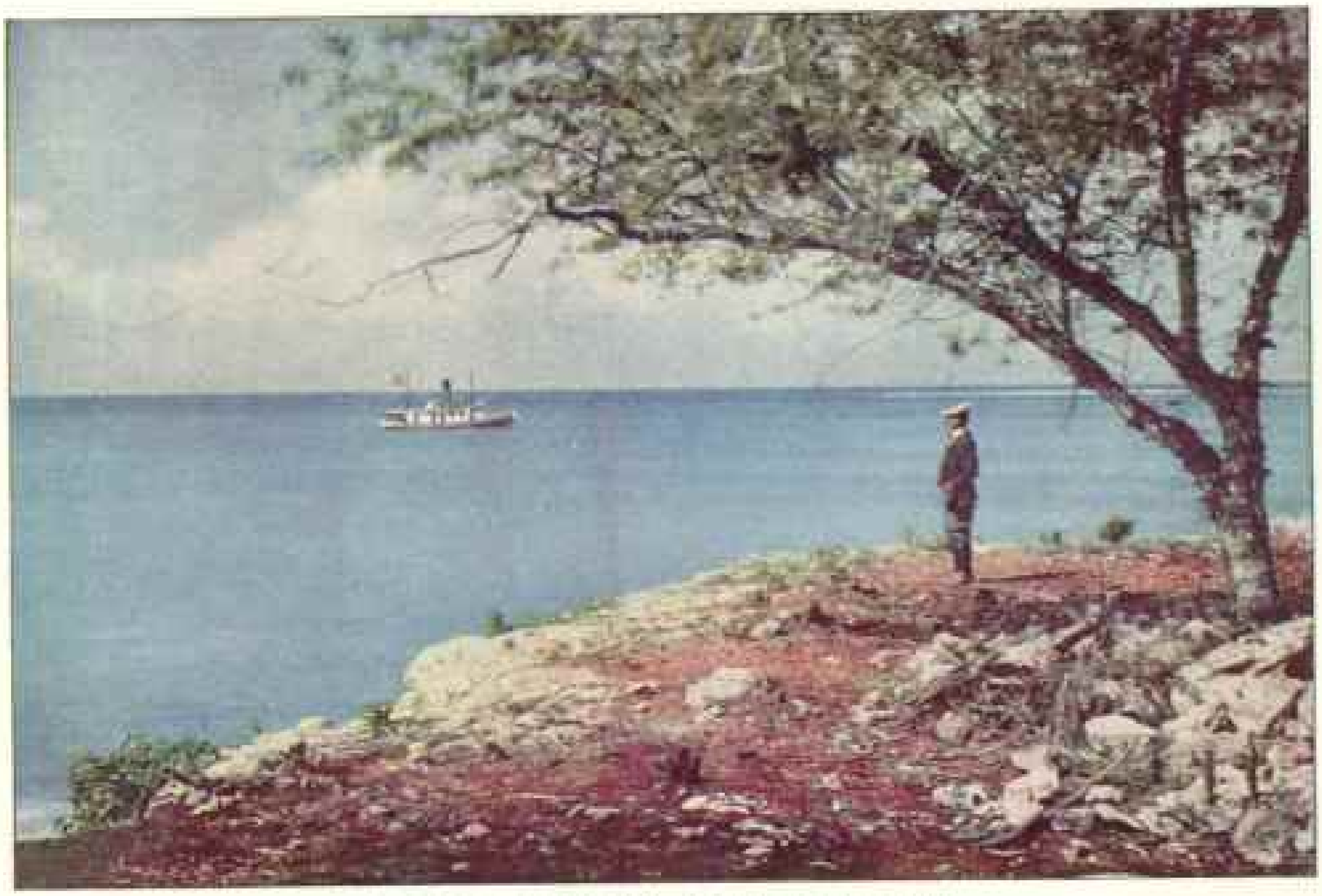
Most large-scale Dominican farmers enjoy many of the comforts and conveniences of the city on their well-equipped estates. The Republic's economic development is mainly along the lines of agriculture and stock raising.

© National Geographic Society

Natural-Color Photographs by Jacob Gayer

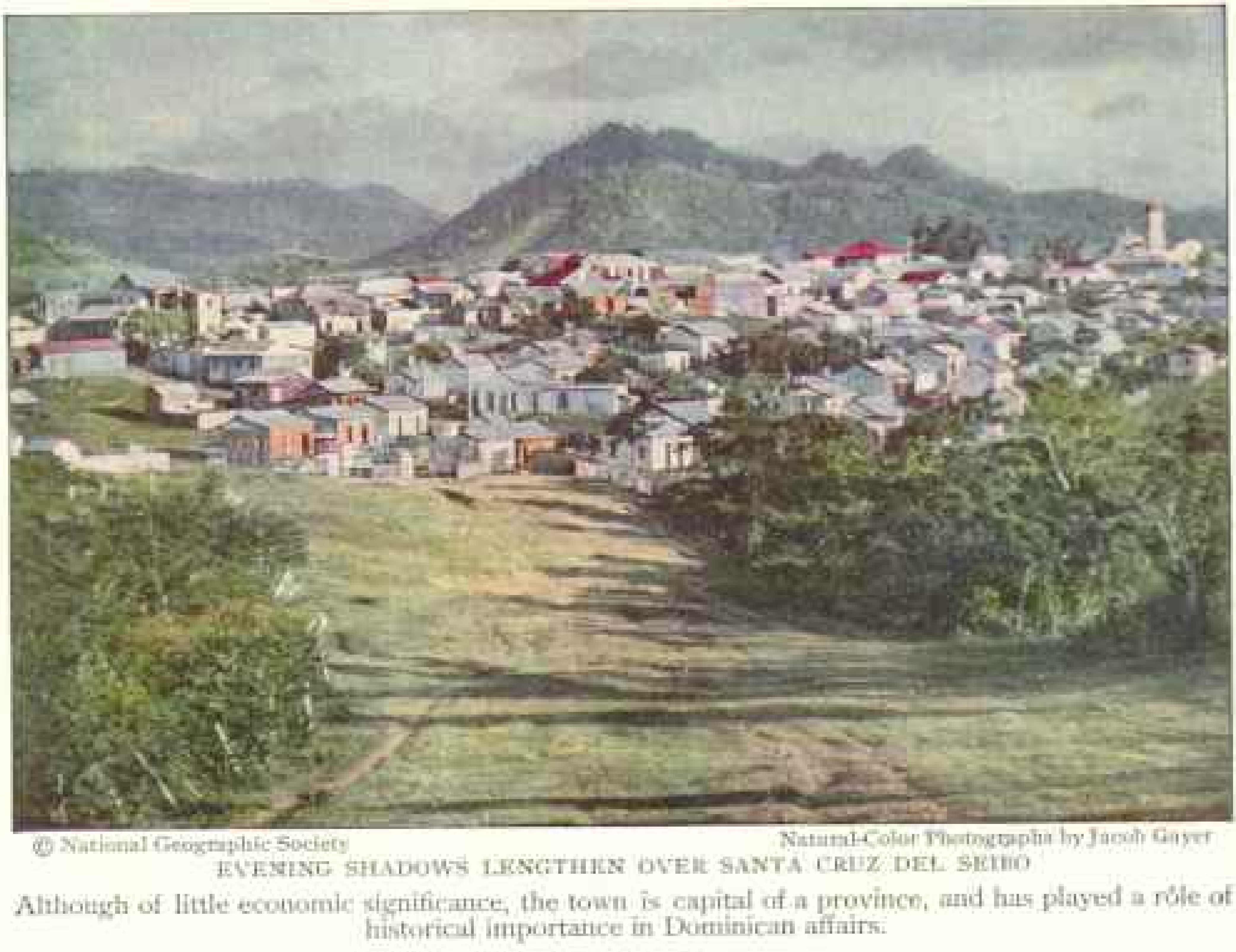
DECEMBER BRINGS GENIAL WEATHER TO SANTO DOMINGO

The first month of the dry season is characterized by warm, sunny days. Heavy rains prevail generally from April to November.



COLUMBUS FOUNDED A CITY HERE IN 1493

Isabela, named for the discoverer's patroness, has long been a ghost city. The location, about 30 miles west of Puerto Plata, was found to be unhealthy and the settlement was abandoned a few years after its establishment.

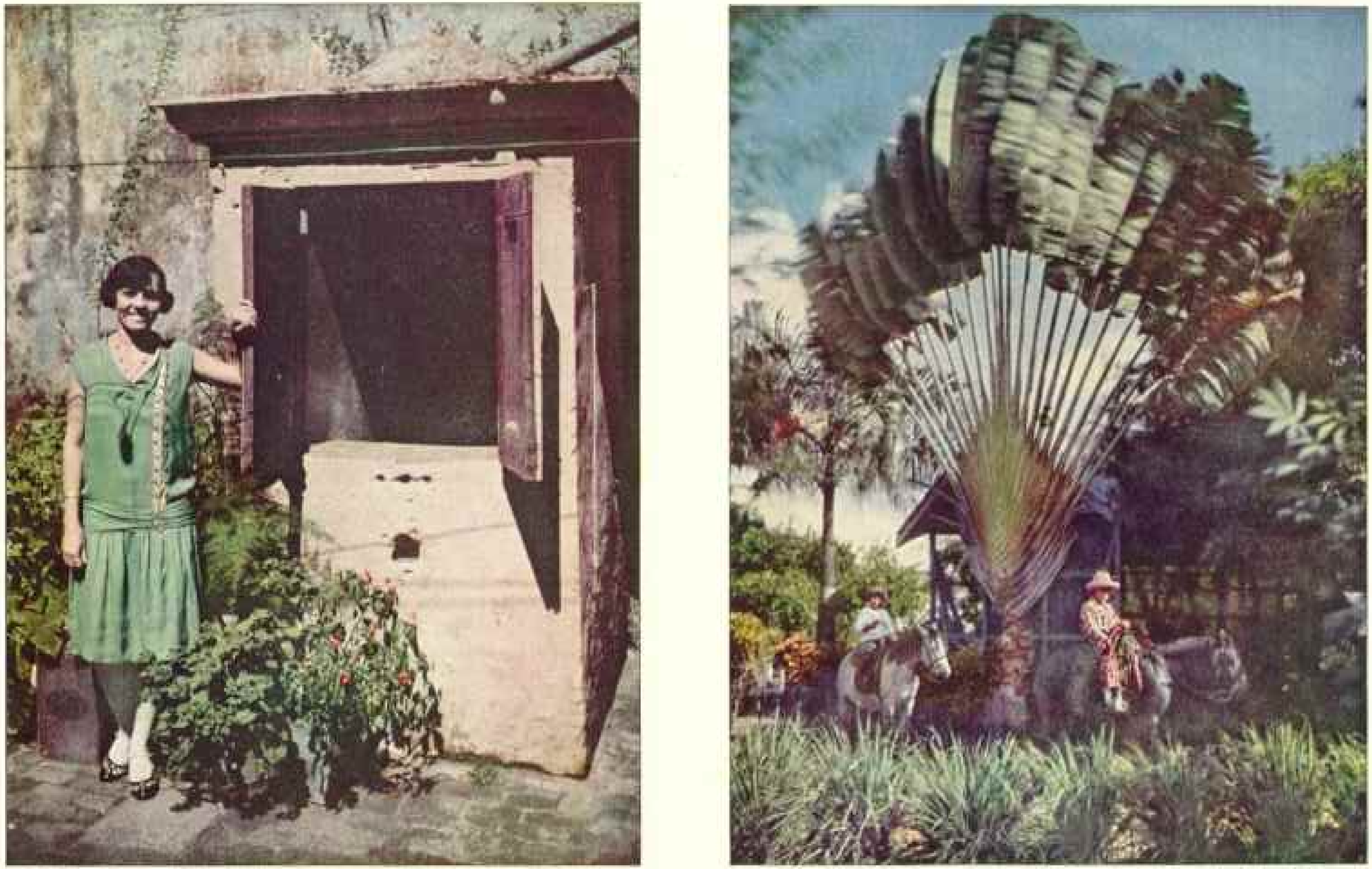


© National Geographic Society

Natural-Color Photographs by Jacob Gayer

EVENING SHADOWS LENGTHEN OVER SANTA CRUZ DEL SEIBO

Although of little economic significance, the town is capital of a province, and has played a rôle of historical importance in Dominican affairs.

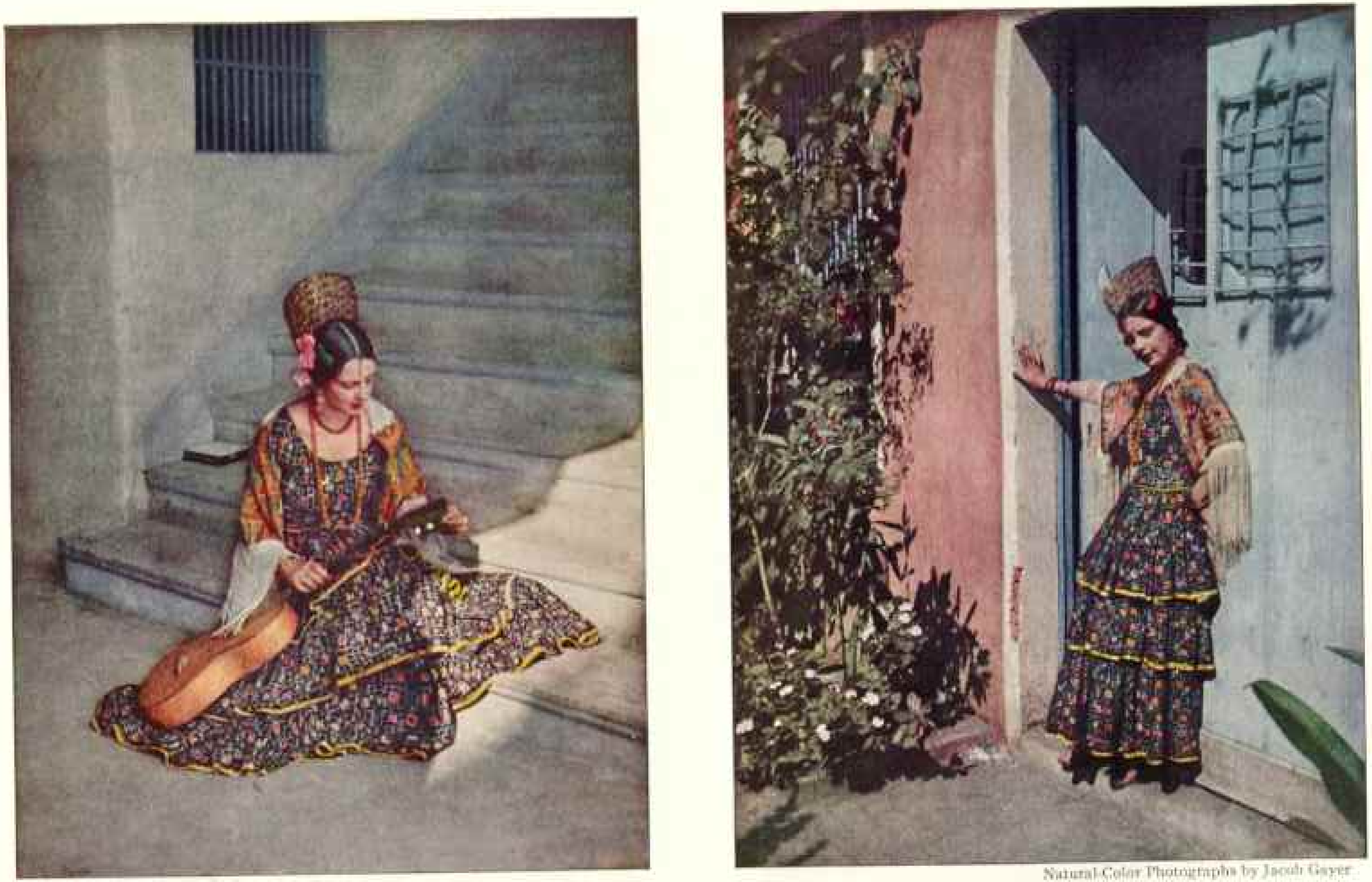


© National Geographic Society

Natural-Color Photographs by Jacob Gayer

MODERN WATER SYSTEMS ARE DISPLACING THESE MORE PRIMITIVE METHODS OF SUPPLY

For centuries wells and cisterns supplied all the water for Santo Domingo. Now pipe lines assure a constant flow from distant mountain reservoirs. The old Spanish cistern (left) was filled with rain water draining from the roofs through numerous down spouts. At the right is a traveler's palm, so called because sheaths at the base of the leaf stalks act as natural reservoirs and collect rain water, which is thus made available to the thirsty wayfarer.

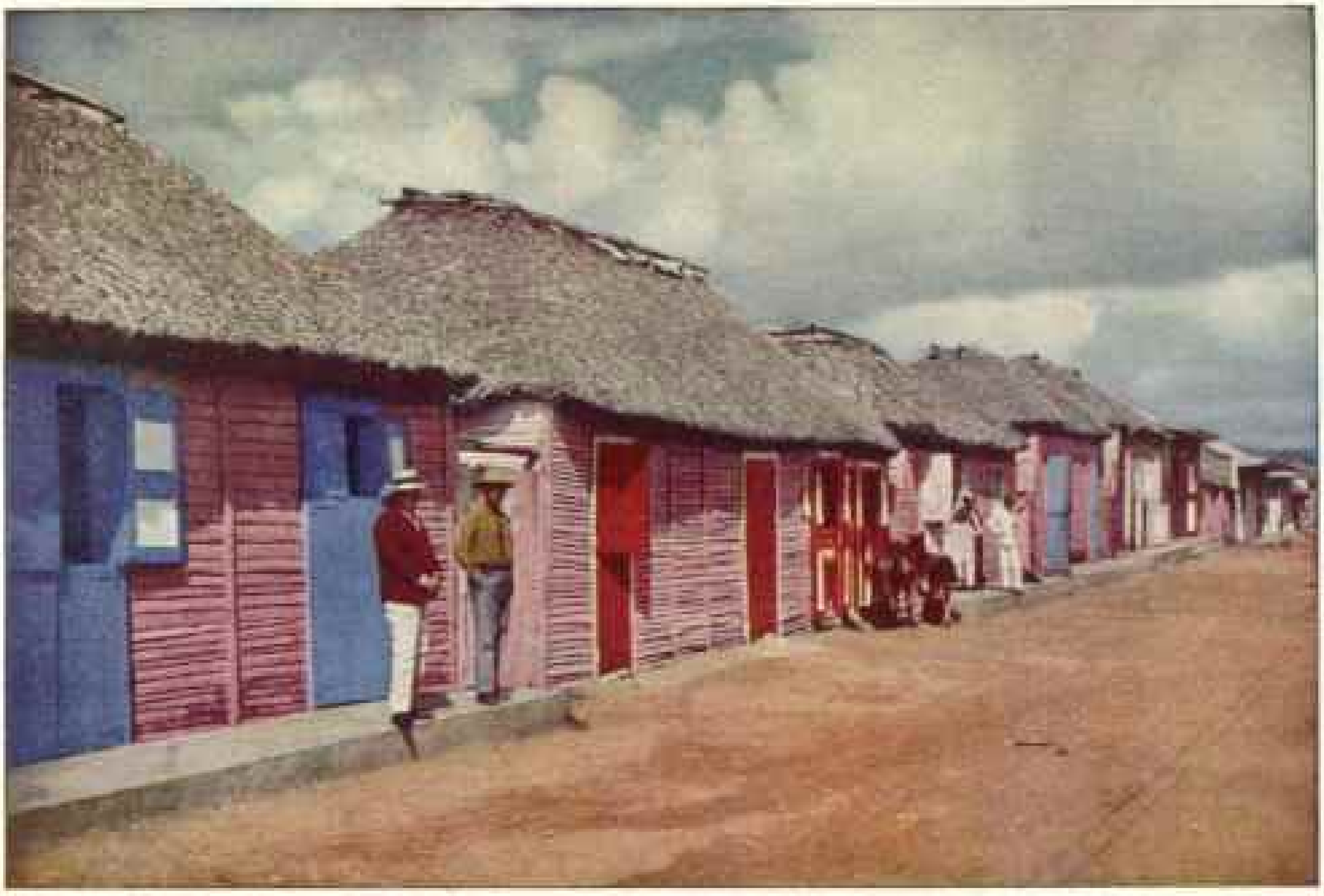


© National Geographic Society

Natural-Color Photographs by Jacob Gayer

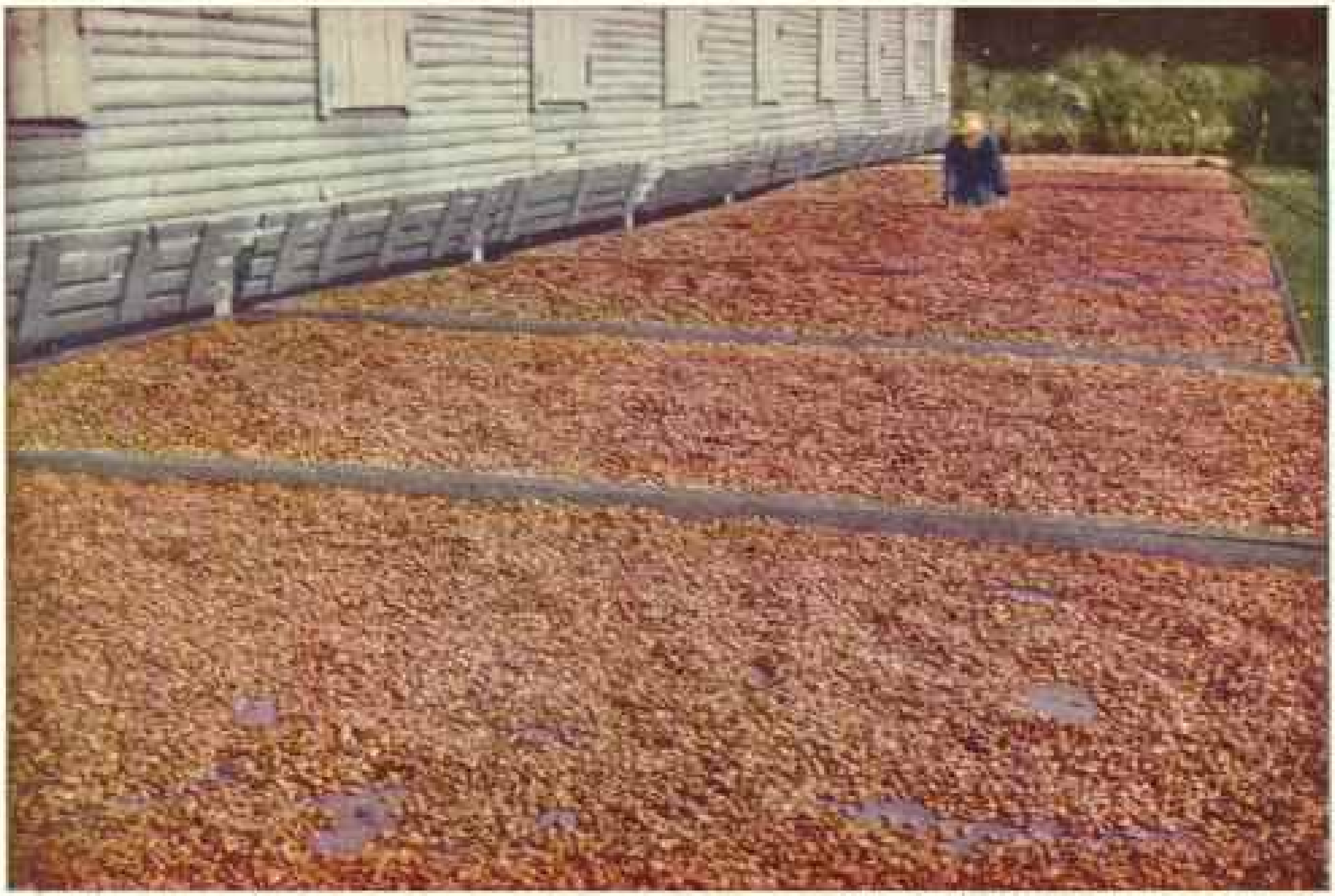
A 20TH-CENTURY DAUGHTER OF THE DOMINICAN REPUBLIC POSES IN A SETTING OF COLONIAL DAYS

The two countries which occupy the Island of Haiti are very different in their background. The Dominican Republic is thoroughly Spanish in its traditions, while the culture of the Republic of Haiti is that of France and Africa.



MAIN STREET IN HIGÜEY

Small, thatch-roof houses of flimsy construction are the rule in most provincial towns. One of the chief attractions here is a shrine to which miracles are attributed (see Color Plate XIII).

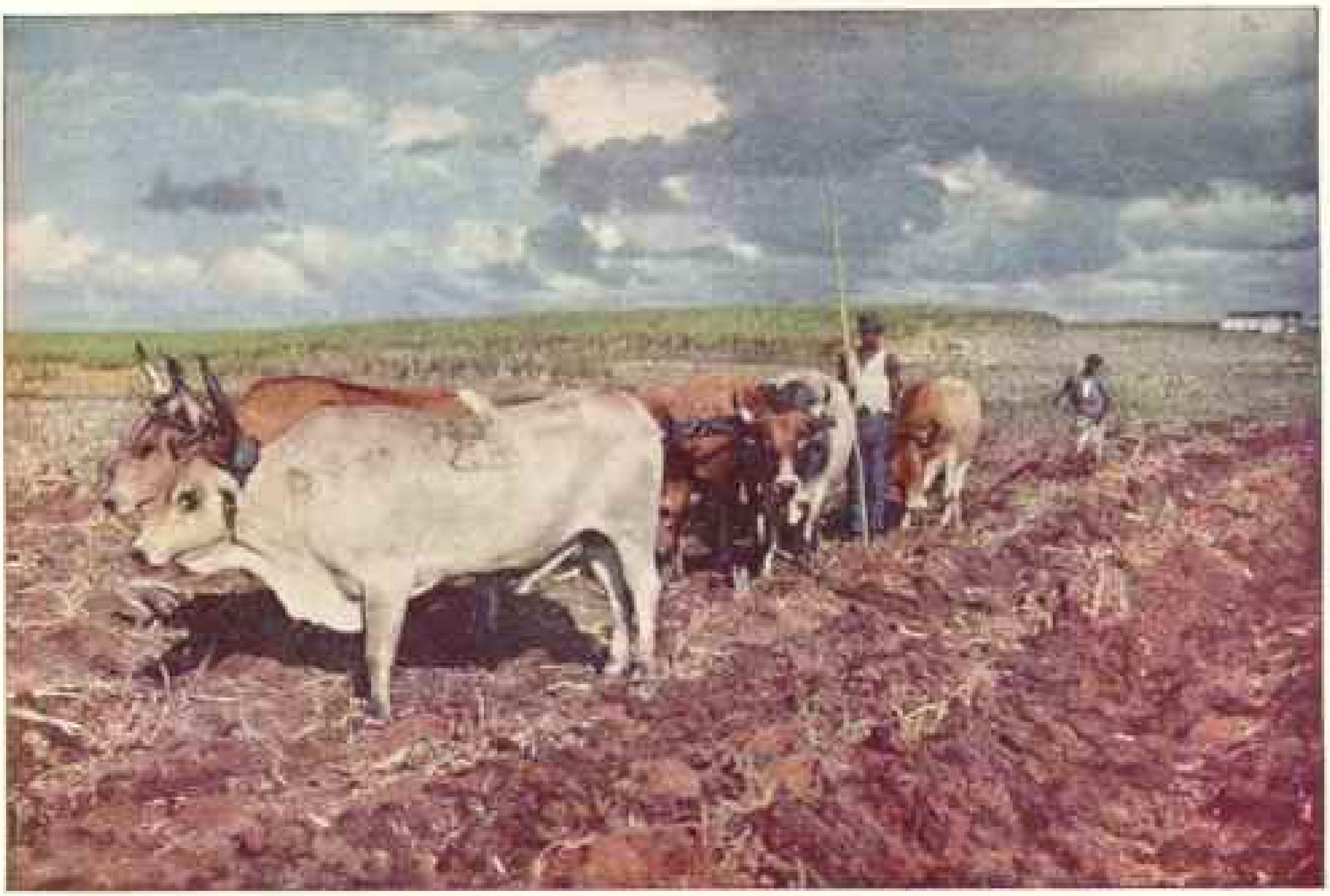


© National Geographic Society

Natural-Color Photographs by Jacob Gayer

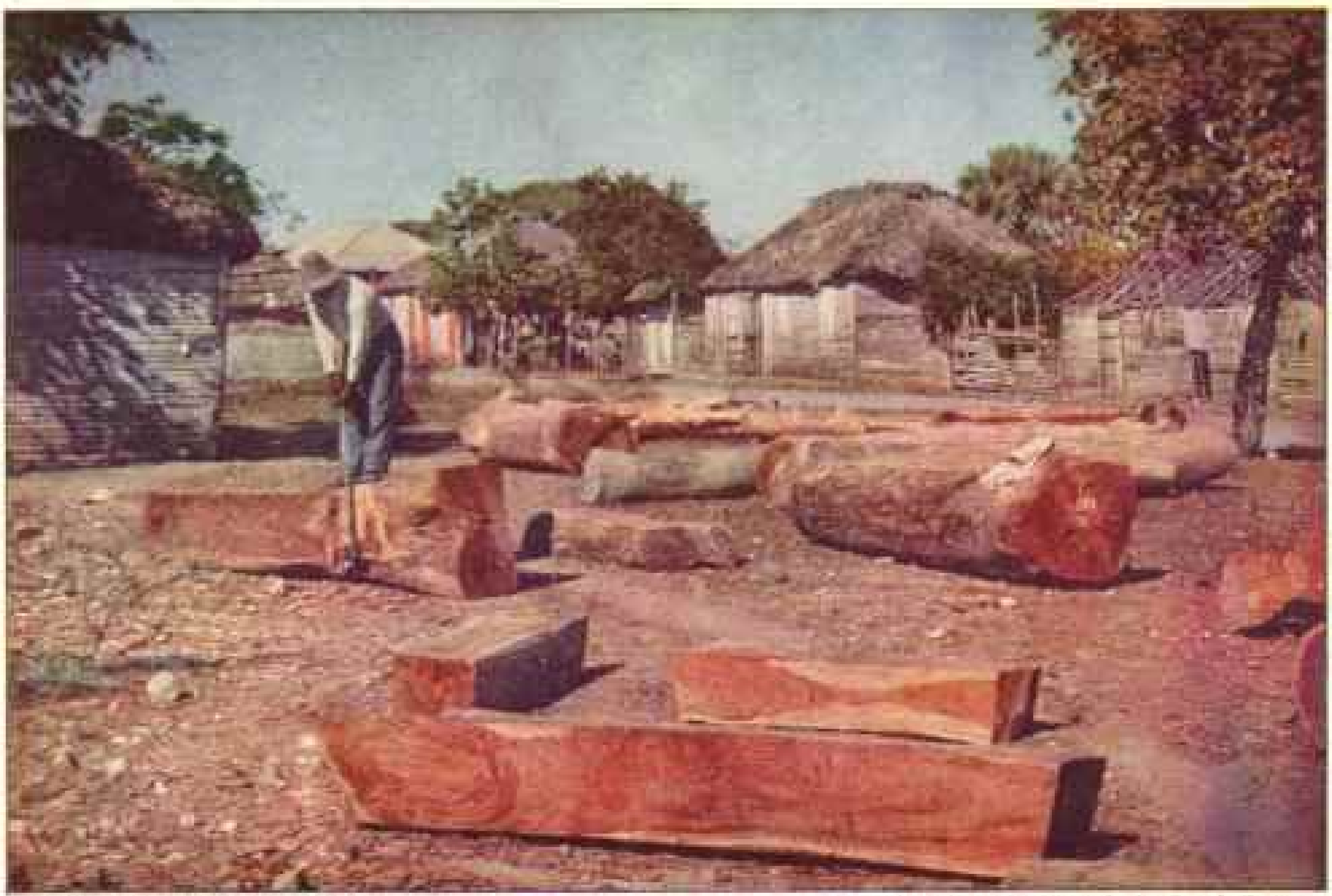
RAW MATERIAL FOR AMERICAN CHOCOLATE BARS

Cacao beans, from which chocolate is made, are cultivated more extensively in the Dominican Republic than elsewhere in the West Indies. Here they are being dried in large trays mounted on tracks. When rain threatens, these are rolled under cover in the building at the left.



ONE ESTATE CULTIVATES MORE THAN 58,000 ACRES OF CANE

The largest sugar property in Santo Domingo still finds the ox-plow method of preparing its fields for planting more economical than the use of machinery.

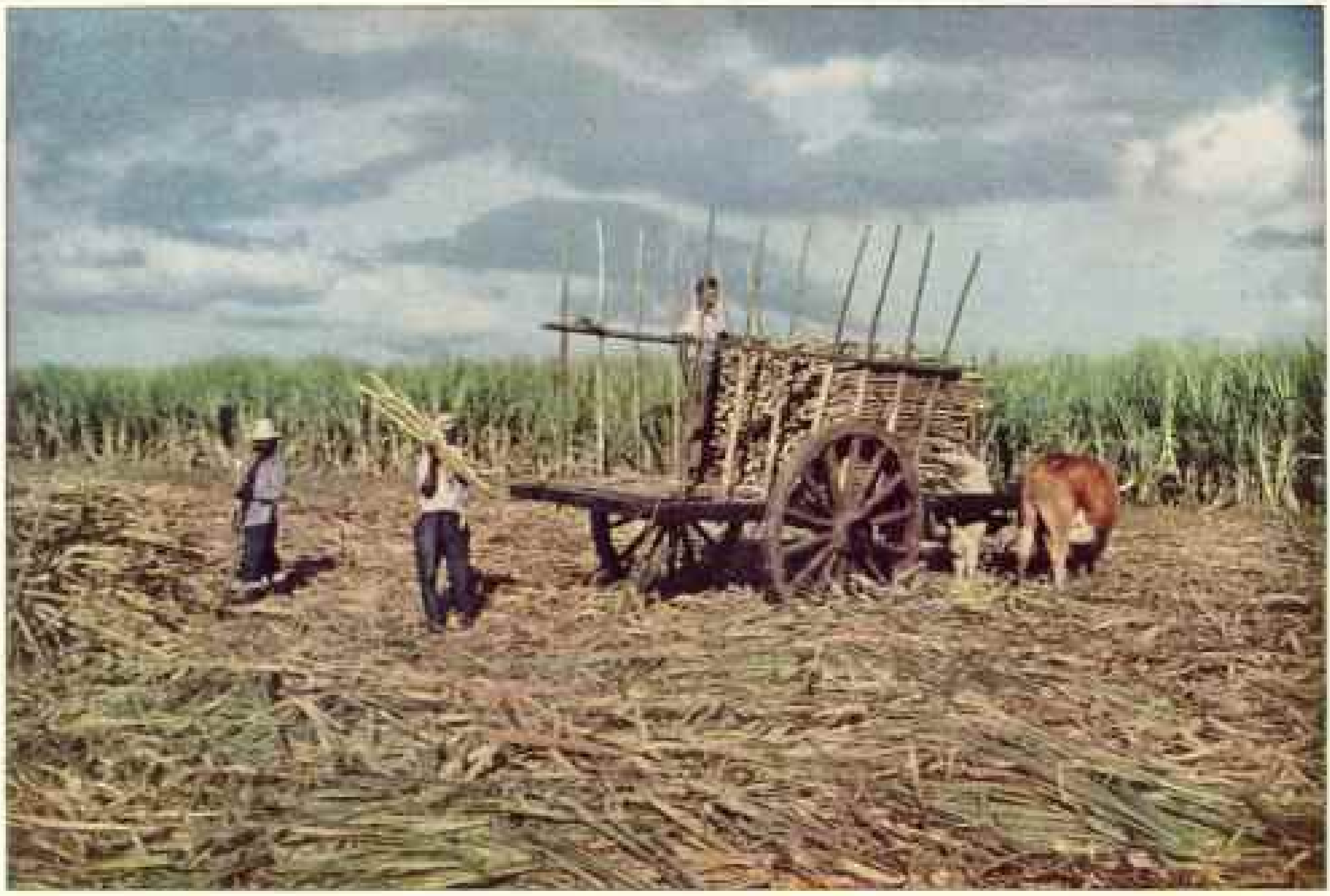


© National Geographic Society

Natural-Color Photographs by Jacob Gayer

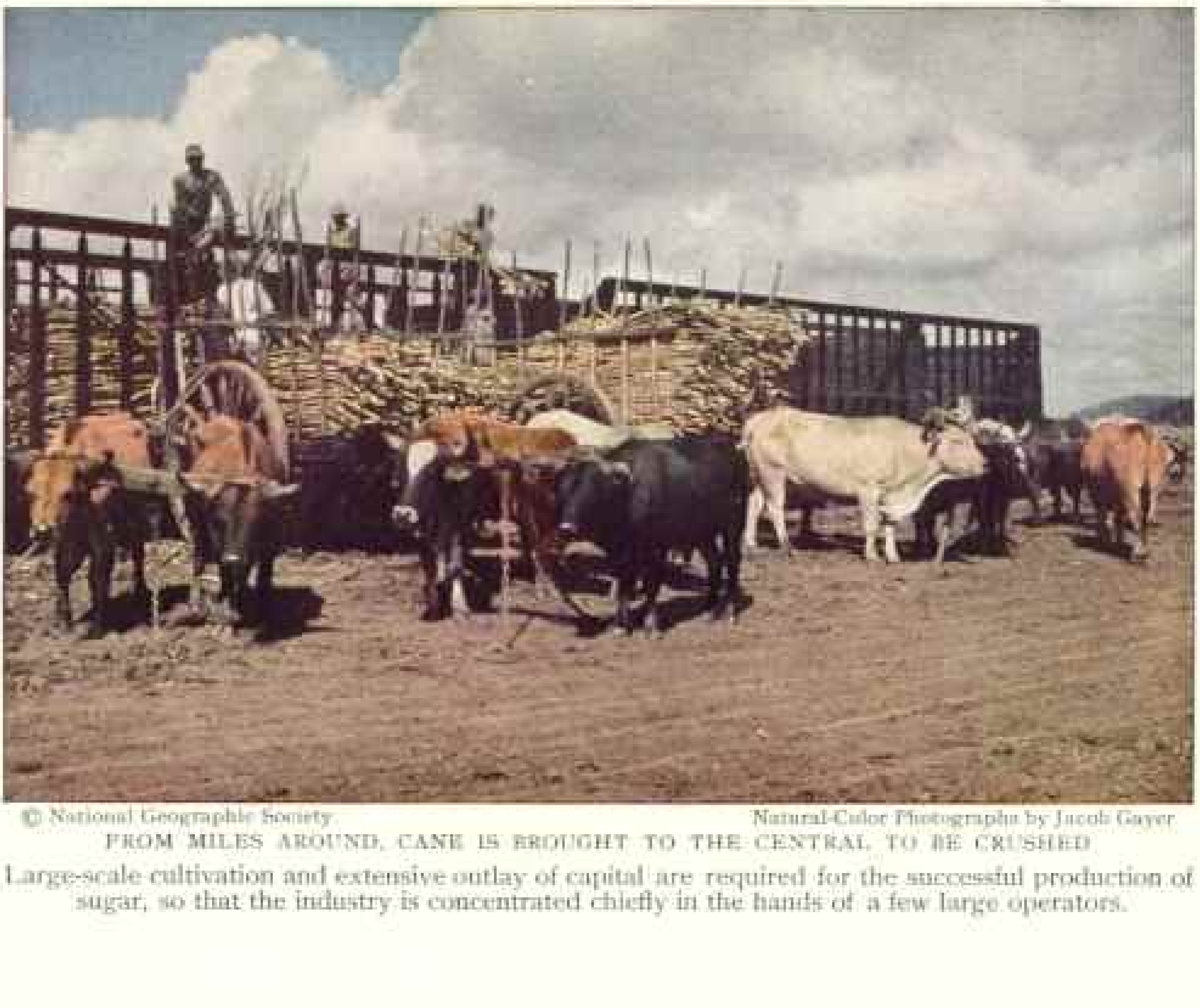
DOMINICAN FORESTS YIELD AN EXCELLENT GRADE OF MAHOGANY

It is not the straightest logs that are most highly prized; finer-grained wood is obtained from trees of a more irregular shape. Other valuable woods exported are cedar, logwood, and lignum-vitæ, the last named so heavy that if dropped in water it will sink like a piece of iron.



MOST IMPORTANT OF THE REPUBLIC'S CROPS IS SUGAR

Much of the labor used to cultivate and harvest the cane is recruited in Haiti and other near-by Caribbean countries.



© National Geographic Society

Natural-Color Photographs by Jacob Gayer

FROM MILES AROUND, CANE IS BROUGHT TO THE CENTRAL TO BE CRUSHED

Large-scale cultivation and extensive outlay of capital are required for the successful production of sugar, so that the industry is concentrated chiefly in the hands of a few large operators.

Dominican Republic. Then the heights begin to drop once more, sloping off through Porto Rico, the Virgin Islands, and Martinique.

So, too, in a way, this little land has been the pantheon of American history. In the beginning, all roads from Europe led to it, and later it became the center from which radiated Spanish influence in the Western World.

During its first century of existence the country continued to be the base of operations for Spanish explorers and conquistadores. For the two succeeding centuries it was the battle ground of the buccaneers of many nations.

Its exposed position as the key to the Caribbean in the formative days of American history made this land a coveted place in many dreams of empire, and France, Spain, and England used it as a pawn in their great game of world power.

In 1821 Santo Domingo rose to the urge that had stirred the hearts of the peoples of the Latin countries of the New World and joined with many other lands in declaring its independence; but it soon proved to be too weak to maintain itself, and a year later fell under the rule of its neighbor, the Republic of Haiti—a yoke it was not able to cast off until 1844.

In 1861, with the United States busy with its own Civil War, Haiti saw an opportunity to regain control of the whole island. Unhappy as had been Santo Domingo's experiences under Spanish rule, they seemed pleasant when the winds of another Haitian era blew menacingly over the land. And so the country sought annexation to Spain as a welcome alternative.

Two years later a revolution was started to throw off the rule that had been accepted with eagerness in 1861, and in 1865 Spain once more bade her irreconcilable daughter go her own way.

COLUMBUS DENIED ADMITTANCE TO CITY HE FOUNDED

Easily the center of interest in the country is the capital, Santo Domingo City. Upon entering the harbor of this oldest city founded by Europeans in America, one is reminded of the time when Columbus himself, under whose direction it was established, was refused entrance here. In June, 1502, then on his fourth voyage of discovery, the First Admiral appeared with a small fleet of four vessels before the city and asked permission to enter the harbor for protection from a hurricane he believed to be impending. For political reasons, this was refused by Nicolás de Ovando, then governor of the colony.

One can imagine the thoughts which must have come to Hispaniola's discoverer, as he sadly resumed his voyage and found refuge in a bay farther along the coast, where with his little flotilla he rode out the storm in safety.

As he steered his craft out of the harbor which owed but denied him haven, another fleet was weighing anchor for Spain. On the best craft of the fleet was Bobadilla, who had sent him back to Spain in chains. Roldán and other foes were also aboard that fleet. One of the two weakest ships of the squadron carried De Bastidas, the loyal friend, and the other the goods of the First Admiral.

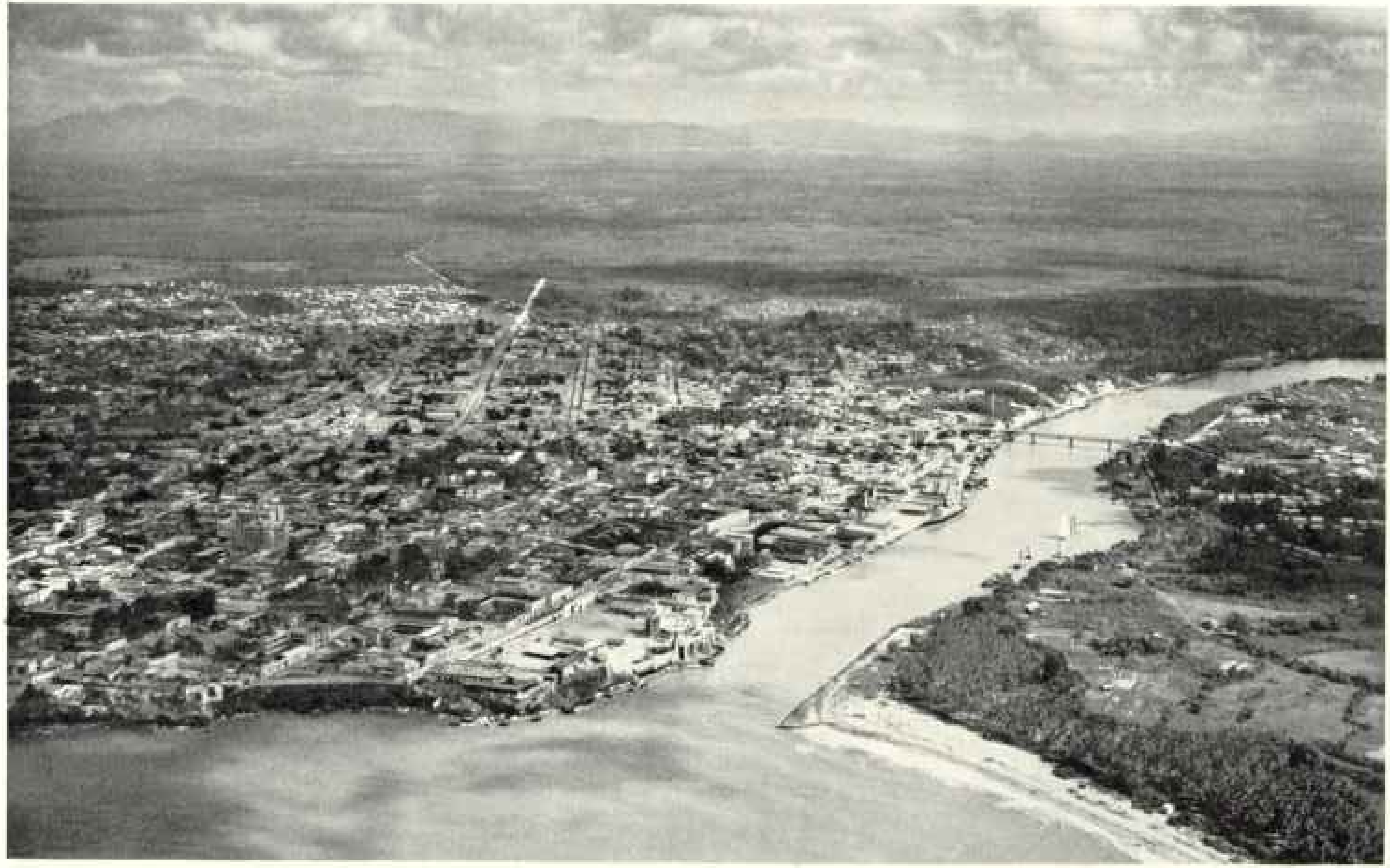
Derision met the veteran sailor's warning that a hurricane was brewing in the east; but before the Europe-bound fleet had rounded the headlands of Mona Passage, the storm broke. Only two ships survived and these carried the property of the First Admiral and the person of his loyal friend.

SANTO DOMINGO IS OLDEST CITY IN AMERICA FOUNDED BY EUROPEANS

Santo Domingo City, although now modernized, still retains much of its Spanish colonial aspect. "Oldest in the New World" and "first to be established by white men in America" are phrases of inevitable recurrence in any descriptive list of the historic buildings and ruins of this ancient city. The early colonists built for the centuries, and many edifices dating from the sixteenth century are still in use.

The Ministry of Foreign Affairs and other departments of the Dominican Government occupy the old colonial palace of government—a spacious structure that was venerable long before the first buildings rose at Jamestown, Virginia.

Surmounting a bluff which commands the entrance to the inner harbor rises the ancient Tower of Homage. Unshaken through the centuries, this pioneer outpost of New World conquest seems to dream of the golden age when it guarded the key city of the far-flung empire of Spain in America.



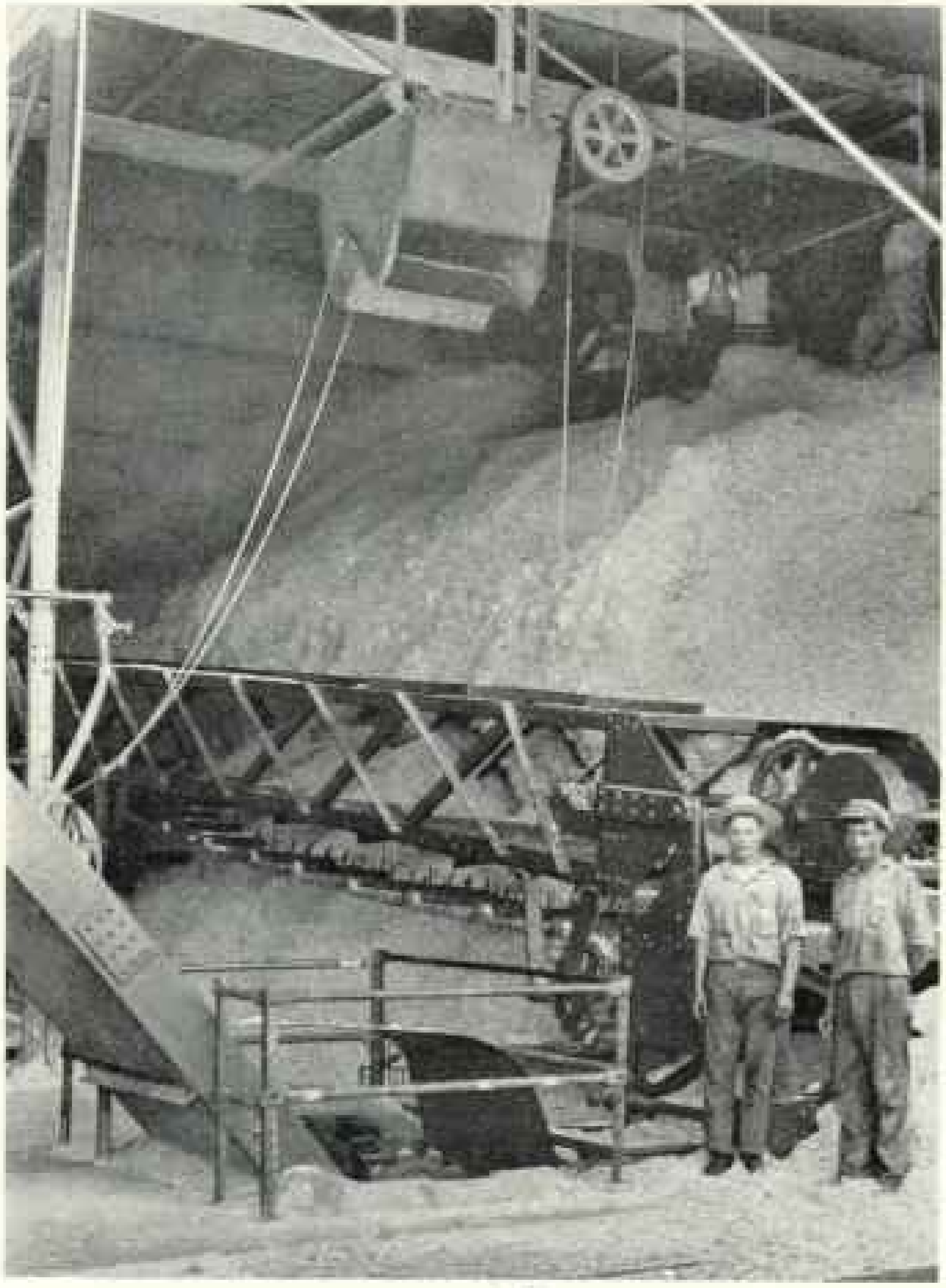
Photograph by Capt. A. W. Stevens

SANTO DOMINGO, AT THE MOUTH OF THE OZAMA RIVER, IS THE CAPITAL OF THE DOMINICAN REPUBLIC

The Republic covers the eastern part of the Island of Haiti, in the Greater Antilles, between the Atlantic Ocean and the Caribbean. Soon after The Society's expedition visited Santo Domingo it was devastated by the hurricane of 1930 (see page 109).

THE FINE HIGHWAY WHICH CONNECTS SANTIAGO AND PUERTO PLATA PASSES THROUGH A REGION OF MAGNIFICENT MOUNTAIN SCENERY

Rainfall is abundant in this part of the country, and in consequence it supports a luxuriant vegetation. Less than 100 miles to the west is an arid district where little but cactus can grow.



THE RESIDUE OF CRUSHED CANE IS USED FOR FUEL

Little or nothing is wasted in the manufacture of sugar. After the juice has been pressed from cane, the remaining fibrous substance, known as "bagasse," is burned in boilers which operate the mill's machinery.

In the tower is a small barred aperture that sometimes is pointed out as the window of the cell in which Columbus was imprisoned by Bobadilla before being sent back to Spain in chains—a statement that cannot be true, since Columbus's imprisonment took place in 1500, when the city was situated on the opposite bank of the Ozama River. The same hurricane that destroyed the home-bound fleet in 1502 so damaged the city that it was decided to rebuild it on the higher western side of the Ozama, the site it now occupies.

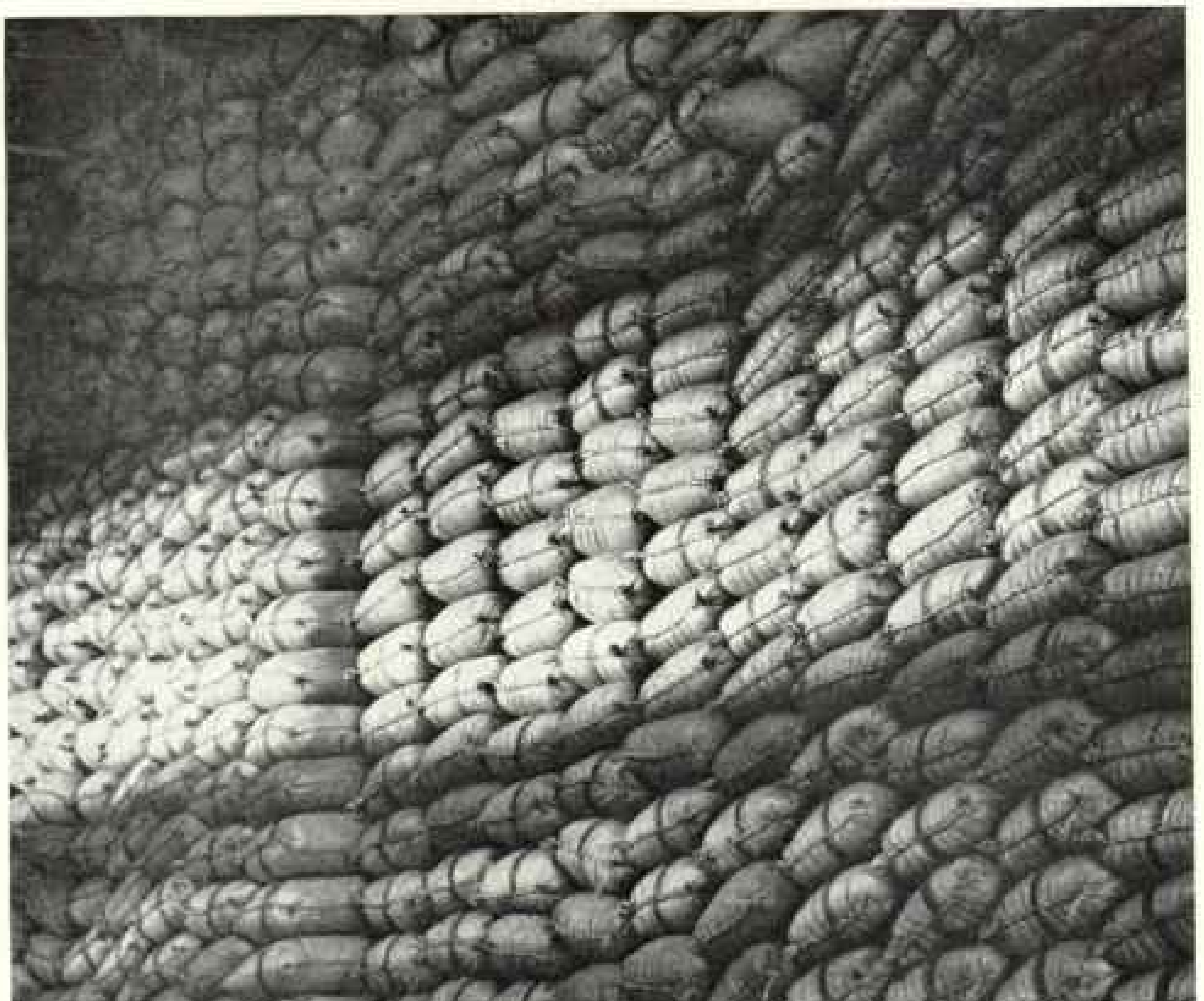
The old tower has been the temporary residence of many distinguished political prisoners, but missed the greatest of them all by a matter of two or three years

THE HOUSE OF THE ADMIRAL STILL STANDS

Of the buildings now in ruins one of the most interesting is the castle of Diego Colón, or House of the Admiral, the ancestral home of the Columbus family in America. Its construction was begun in 1509, when Diego Columbus, Second Admiral and son of the discoverer, came to Santo Domingo as governor of the colony. The house was occupied by members of the Columbus family until the death of another Diego, great-grandson of the discoverer and last of the direct line of his male descendants.

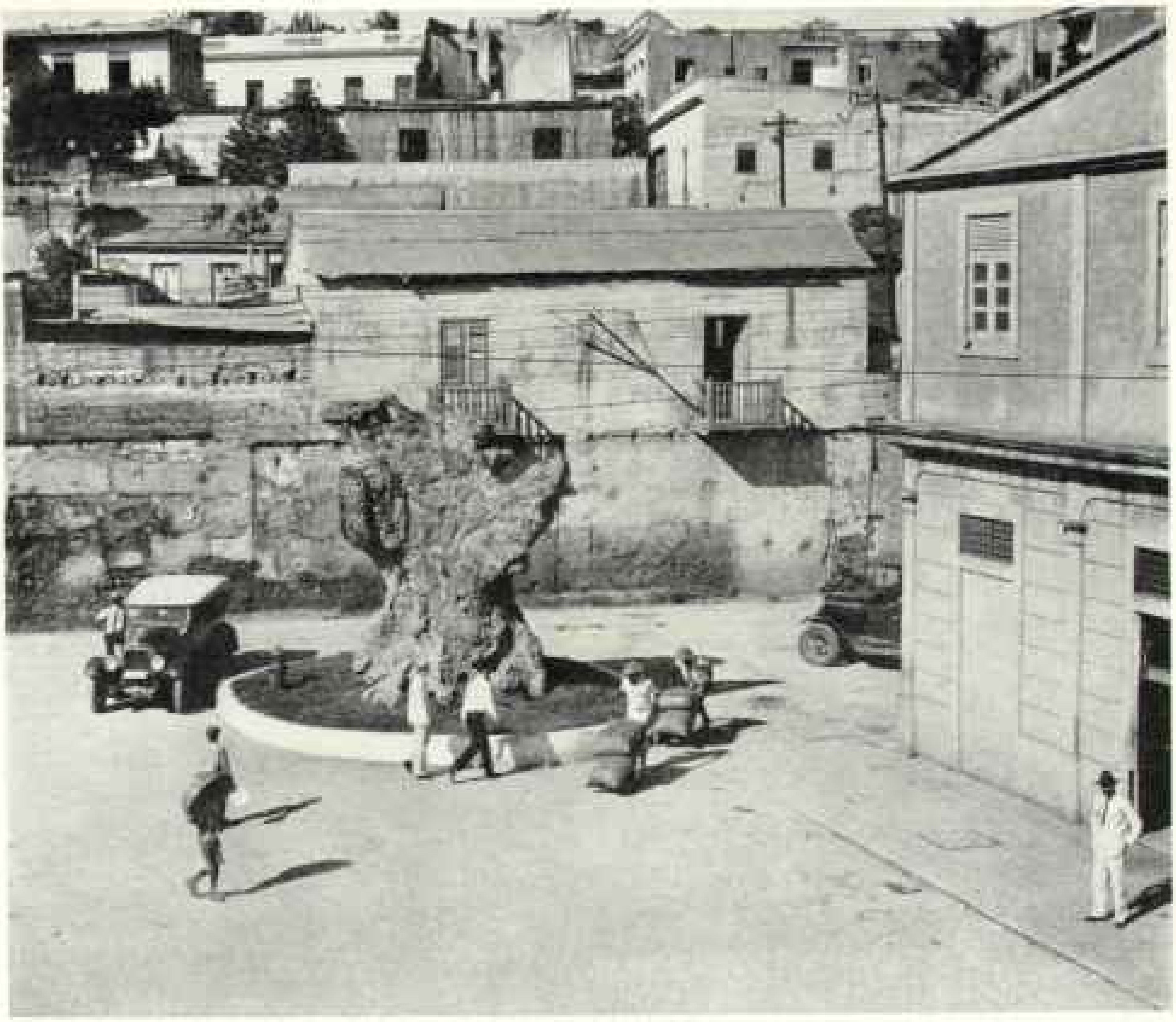
Although the House of the Admiral has been allowed to fall into ruin, with its destruction further hastened by the vandalism of treasure-seekers, its heroic walls still bear mute testimony to its former magnificence. It was to this and other pretentious mansions of the city that the chronicler Oviedo referred when in a letter to the King of Spain he said that His Royal Highness often lodged in palaces far inferior to those of Santo Domingo, and added that he considered the city superior to any in Spain in its location, beauty, and arrangement (see, also, Color Plate XV).

Fifty years after its founding, Santo Domingo had passed the apex of its first glory. Interest in the new colony was eclipsed by desire for further conquest, and its meteoric rise was almost equaled by the rapidity of its decline. From a goal, Santo Domingo became a base for expeditions



THE REPUBLIC'S SUGAR EXPORTS AMOUNT TO NEARLY 400,000 TONS A YEAR

Sugar plantations and factories represent the most important capital investment of the Nation and produce three-fifths of the value of the total exports. Great Britain consumes about half of the Dominican sugar output, with Canada, France, and the United States following in order. Bags of raw sugar in a Santo Domingo warehouse.



COLUMBUS'S "HITCHING POST" STANDS ON THE WATER FRONT

According to tradition, the discoverer moored his ship to a ceiba tree, the remains of which may still be seen near the docks of Santo Domingo City. The tree was living until recently, when paving operations in connection with new water-front improvements killed it. The stump has been built up with concrete into a replica.

farther westward. Cortez, Pizarro, and Ponce de León were only a few of the gentlemen adventurers who sailed out of the mouth of the Ozama with their eyes strained for the glitter of gold on the western horizon.

By 1586 the power of Santo Domingo had so waned that the capital fell an easy prey to Sir Francis Drake, and a ransom was extorted by methods smacking of the torture chamber. Each day proscribed buildings were demolished until about a third of the city lay in ruins. Then the citizens managed to scrape together a going-away present amounting to about $30,000, with which Drake took his leave after hanging a few prominent citizens by way of valediction.

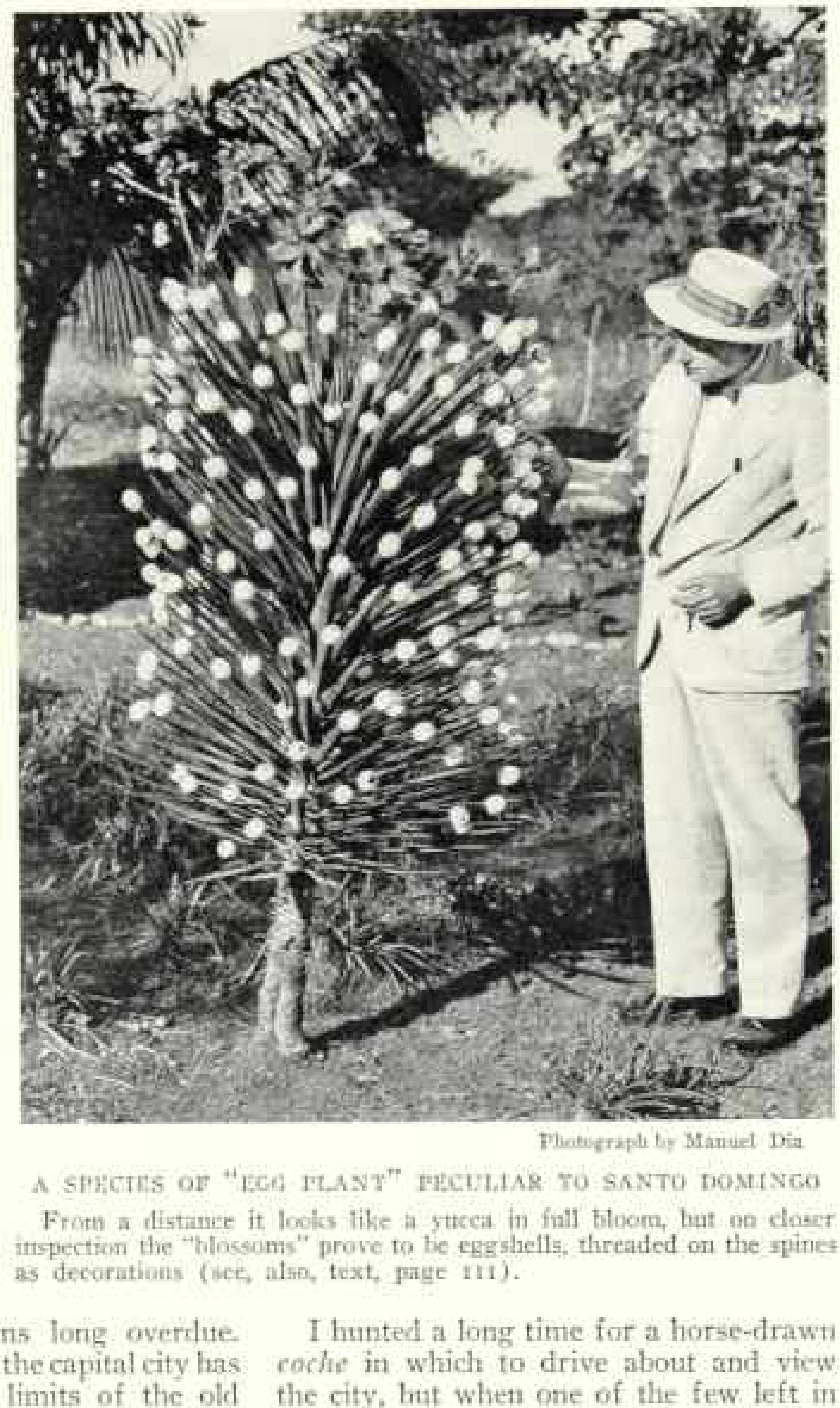
Of less stern caliber were the warriors of the Admiral Penn expedition which in 1655 was sent to the island by Cromwell with the object of gaining permanent possession of the colony. Landing on the coast west of Santo Domingo City, the English forces were met by determined resistance in their advance on the capital and were soon glad to leave Hispaniola and regain some prestige by seizing the more defenseless colony of Jamaica.

TRADITION SAYS CRABS ROUTED EXPEDITION UNDER PENN

According to legend, the defenders of Santo Domingo were aided by strange allies, and along the beach near Jaina the site of the traditional "battle of the crabs" is still pointed out. The story runs that the invading forces encamped here one night. With their nerves on edge from constant ambuscades and surprise attacks, they mistook the clattering of the large numbers of land crabs hereabout for the hoof-beats of charging cavalry, and were soon retreating pell-mell.

Between 1730 and 1740 the population of the capital fell to about five hundred, but fifty years later it was again riding on one of its high tides of greatness as a Spanish colonial city, only to be overtaken within a decade by another period of adversity.

Now, after more than four centuries of varying fortunes and despite siege, earthquake, and tropical hurricane, the brave old city stands defiantly at the mouth of the Ozama—a little bewildered, perhaps, as if undecided whether definitely to capitulate to the march of modern progress or wait patiently a little longer for galleons long overdue.



Photograph by Manuel Día

A SPECIES OF "EGG PLANT" PECULIAR TO SANTO DOMINGO

From a distance it looks like a yucca in full bloom, but on closer inspection the "blossoms" prove to be eggshells, threaded on the spines as decorations (see, also, text, page 111).

In the last thirty years the capital city has spread far beyond the limits of the old town. Gates in the old walls now open on extensive suburbs and residential districts.

One with a romantic turn of mind could wish that the streets in the old part of the city had been allowed to retain their original names, but these have nearly all been rechristened in honor of men and dates prominent in the history of the Republic. Of the old names, only the "Street of Isabel the Catholic" remains, and much of its romance is dispelled by the traffic policemen, who briskly "shoo" automobiles along that narrow thoroughfare.

I hunted a long time for a horse-drawn *coche* in which to drive about and view the city, but when one of the few left in commission was finally tracked down, I lacked the moral courage to charter it for fear of being thought eccentric—or worse. It just isn't done any more. Jitneys now hustle each other in keen competition for passengers and for five cents carry one to any part of the city.

The streets are a little bumpy, but that is another sign of the times. They have recently been torn up for the installation of much-needed water works; there is a modern telephone system which transmits other words besides 'Allo; electric lights burn steadily all night instead of only now and then, and newsboys charge through the streets selling papers that really contain news.

In the cool of a fine December morning, going to the Cibao, the great central valley region, we left the capital by the new Duarte Highway, one of the three modern roads that now link the major sections and cities of the country. It runs in a northwesterly direction, reaching the north coast at Monte Cristi, with a branch to Puerto Plata. The coastal plain soon gives way to a winding climb through the Cordillera Central, one of the five mountain ranges of the country, and the genial warmth of midsummer yields to the freshness of early June.

From Bonao the road swings down the northern slope of the cordillera into the Cibao and to the town of La Vega. This is historic ground, for it was here that Columbus was met by the confederated Indian tribes under the cacique Caonabo, and here that the gage of battle was thrown down for the long conflict between red man and white which in our own country has terminated only within the memory of living men.

THE MARVELOUS ROYAL PLAIN WHICH COLUMBUS EULOGIZED

From the summit of the Santo Cerro, in the heart of this historic battle field, a comprehensive view is obtained of the great central valley so aptly named by Columbus—La Vega Real. Any other name than the Royal Plain would do scant justice to this magnificent terrain, the rich fertility of which has few equals in any part of the world. More than a hundred miles long, from ten to fifteen miles wide, and covered with a rich surface loam averaging nine feet in depth, the Vega Real alone justifies Columbus's panegyric on his beloved Hispaniola.

On its way over the Royal Plain the road passes Moca, where coffee was first grown in Santo Domingo. During the Haitian invasion of 1805 this town was the scene of the massacre of 500 Dominicans by the Christophe* who later made himself emperor of Haiti. The victims were lured into a church to hold a thanksgiving service for their promised safety, and, having thus been conveniently assembled, were cut to pieces by the invaders.

In contrast to the sparsely settled countryside through which we passed earlier in the journey, the Vega Real seemed almost populous. The highway here leads through a settled region of small farms and straggling villages and soon comes to Santiago, or, to give the metropolis of the Cibao its official title, Santiago de los Caballeros. This is the Republic's second city in size and importance.

Originally established by Bartholomew Columbus as a military outpost, a permanent settlement was made here about 1504. Thirty knights of Spain were the founders of the town, and from them it got its name of "St. James of the Gentlemen."

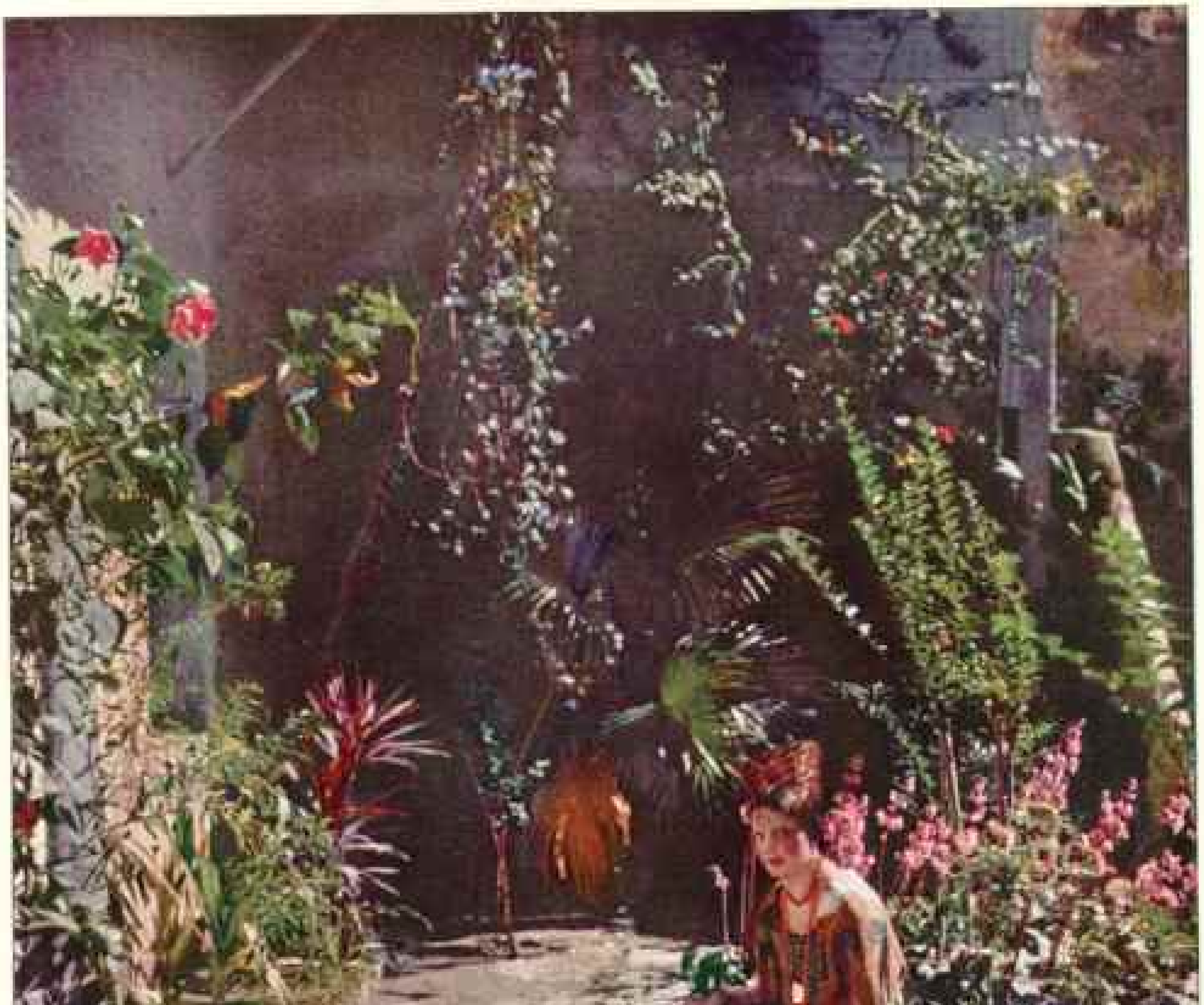
The history of this inland city has been even more hectic, perhaps, than that of the capital. In 1564 it was completely overthrown by an earthquake, and was reëstablished on its present site, about six miles from the old location. During the wars with the French, who had gained a foothold in the western end of the island, and later with the Haitians, the city suffered severely and was several times reduced to ashes. It is from these circumstances that Santiago now presents little of its old colonial aspect and gives the impression of being a comparatively new city. Its streets are well laid out and better paved than those of the capital itself.

Although it is progressive and takes pride in its public improvements, Santiago still clings to some of its traditions. Automobiles there are in plenty, but here one can still ride about in a coche without feeling self-conscious. Moral support to those who prefer actual to mechanical horsepower is given by the occasional cowboys, who clatter briskly into town on their nimble ponies and lend a picturesque note to the otherwise matter-of-fact streets.

The Latin American bootblack is well known for his aggressive approach and skill in breaking down "shine resistance," but in Santiago he is at his best. Walk across the plaza with so much as a speck of dust on your shoes and your attention is drawn by a sibilant "S-s-s-s-t" and reproachful pointings at the offending footgear. Your startled downward glance is

---

* See, also, "A Little-known Marvel of the Western Hemisphere: Christophe's Citadel, a Monument to the Tyranny and Genius of Haiti's King of Slaves," in the NATIONAL GEOGRAPHIC MAGAZINE for December, 1920.



© National Geographic Society

Natural-Color Photograph by Jacob Gayer

THE HISPANIOLA OF DAYS LONG GONE STILL MANIFESTS ITSELF IN THE PATIOS OF SANTO DOMINGO'S COLONIAL HOMES

In its heyday the island which now includes both Haiti and the Dominican Republic was one of Spain's most prosperous New World colonies. The wealth and beauty that characterized the social life of the Spanish grandees of the 16th century were abundantly present here.

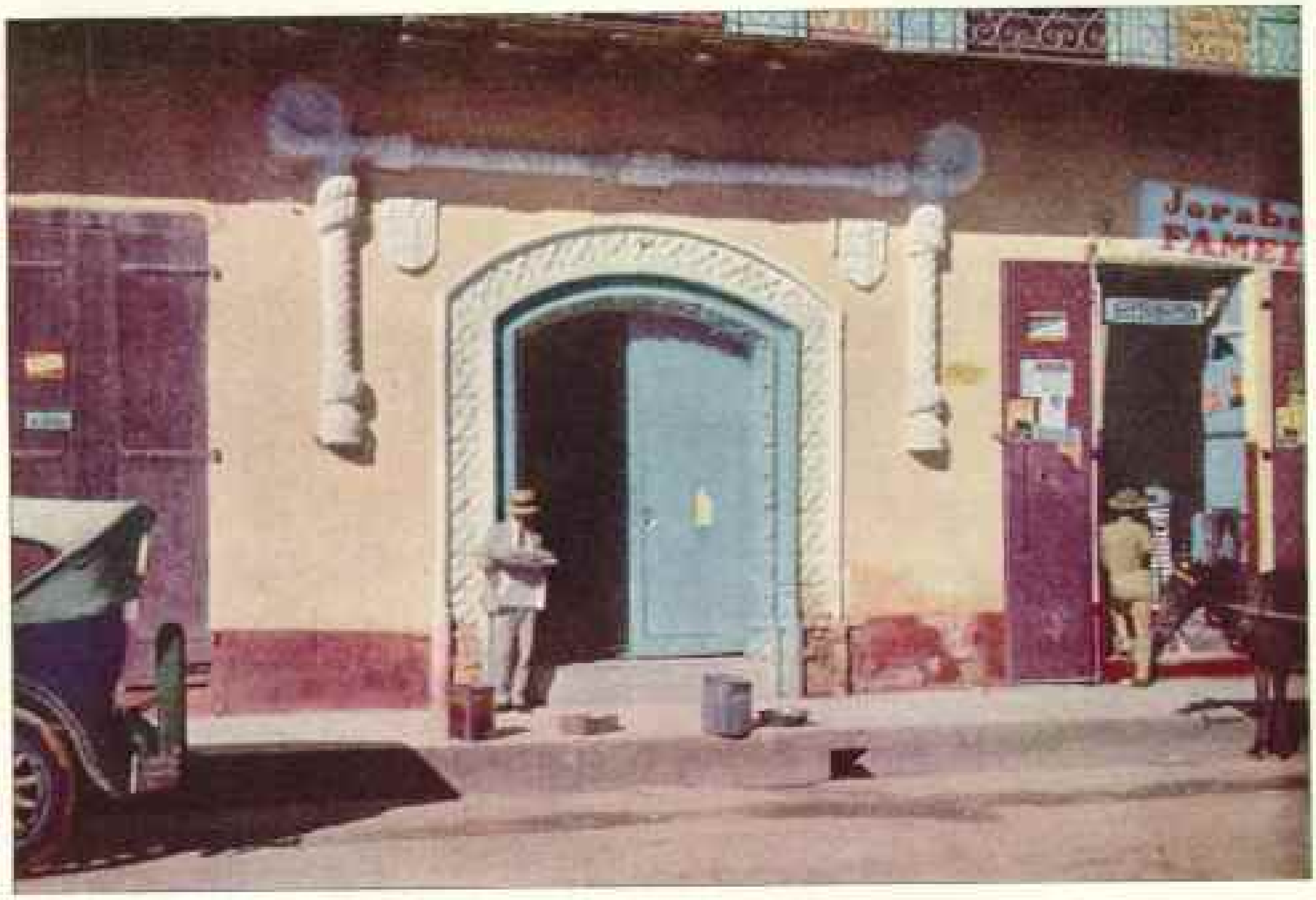
AT VÁSICA THE PUBLIC WORKS DEPARTMENT MAINTAINS A SUPPLY DEPOT

Such "camps" are located at various points about the Republic and serve as bases for the construction of roads and bridges. This one is on a recently constructed highway which leads through a beautiful mountain region between Santiago and Puerto Plata.

© National Geographic Society Natural-Color Photographs by Jacob Gayer

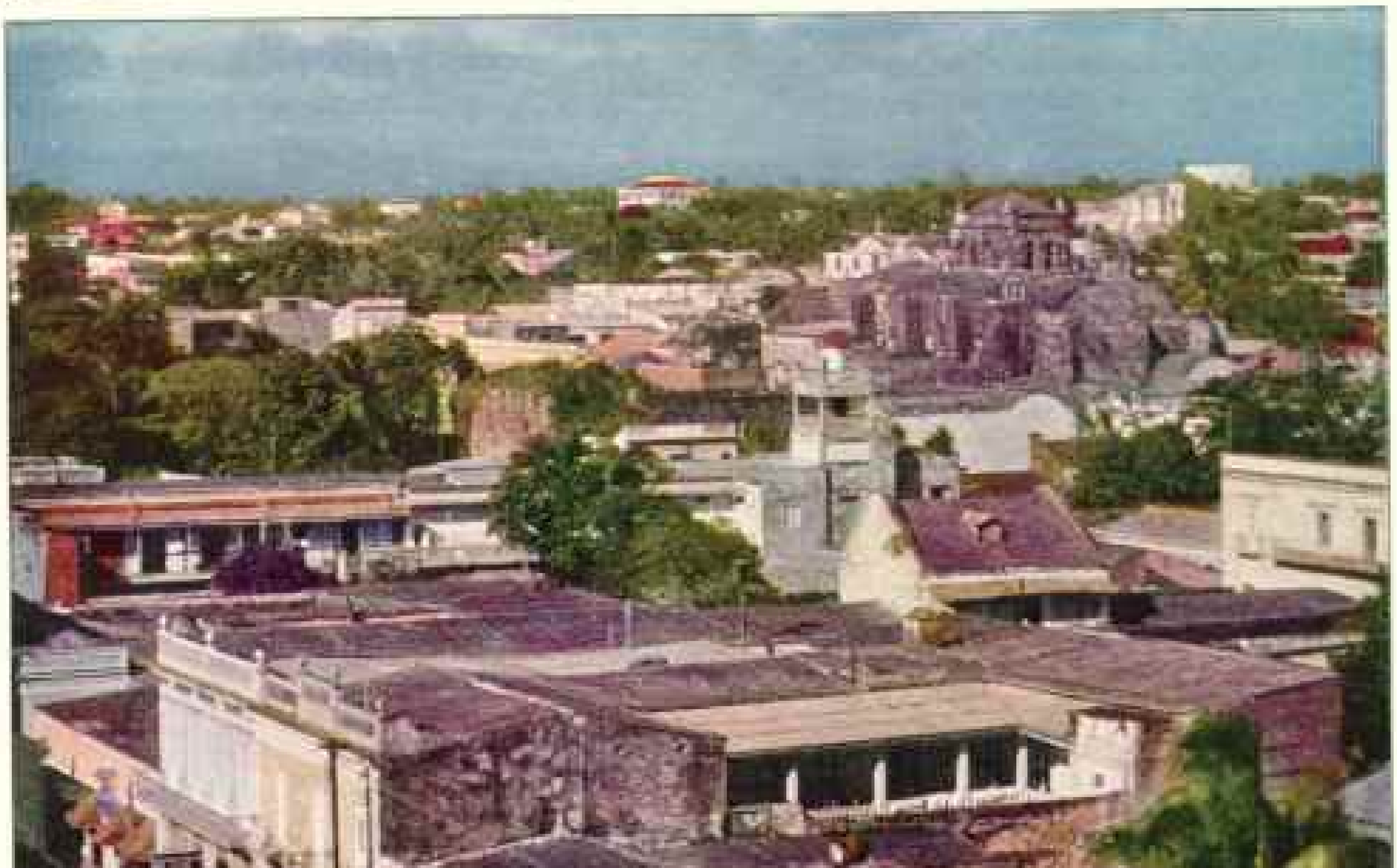
THE CAPITAL CITY TAKES PRIDE IN AN EXCELLENT FIRE DEPARTMENT

High and frequent winds make a mobile and efficient fire-fighting force essential to the safety of Santo Domingo. It is composed of both professionals and volunteers and is equipped with modern apparatus from the United States.



SANTO DOMINGO REVEALS FREQUENT REMINDERS OF ITS EARLY DAYS

A trip through the older portion of the Dominican capital discloses many establishments now fallen from their former high estate. The "Casa del Cordón," so called because of a monk's girdle carved in stone above its doorway, was built early in the 16th century.

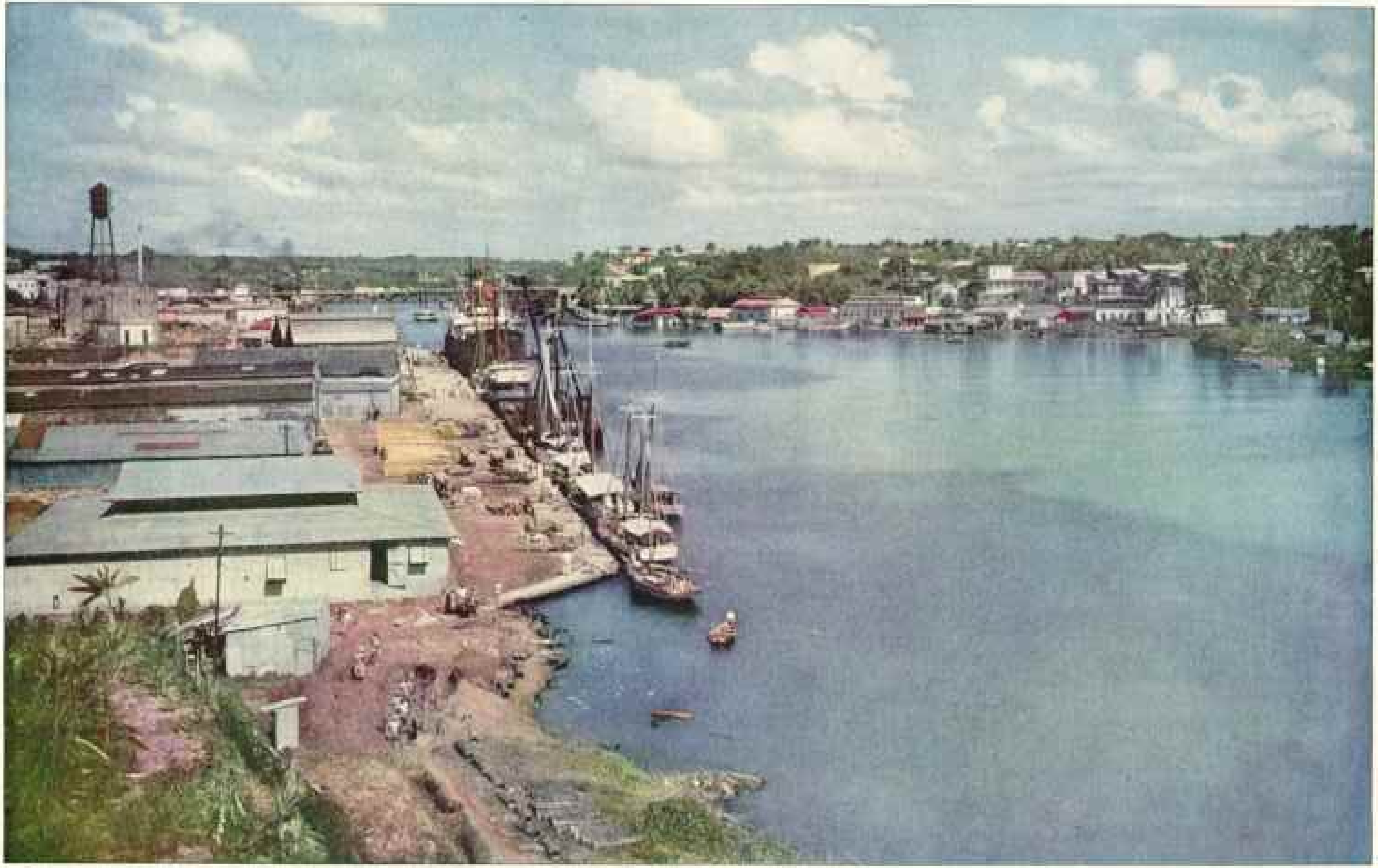


© National Geographic Society

Natural-Color Photographs by Jacob Gayer

HURRICANE WINDS CHANGED THIS SCENE IN A FEW HOURS TO ONE OF UTTER RUIN

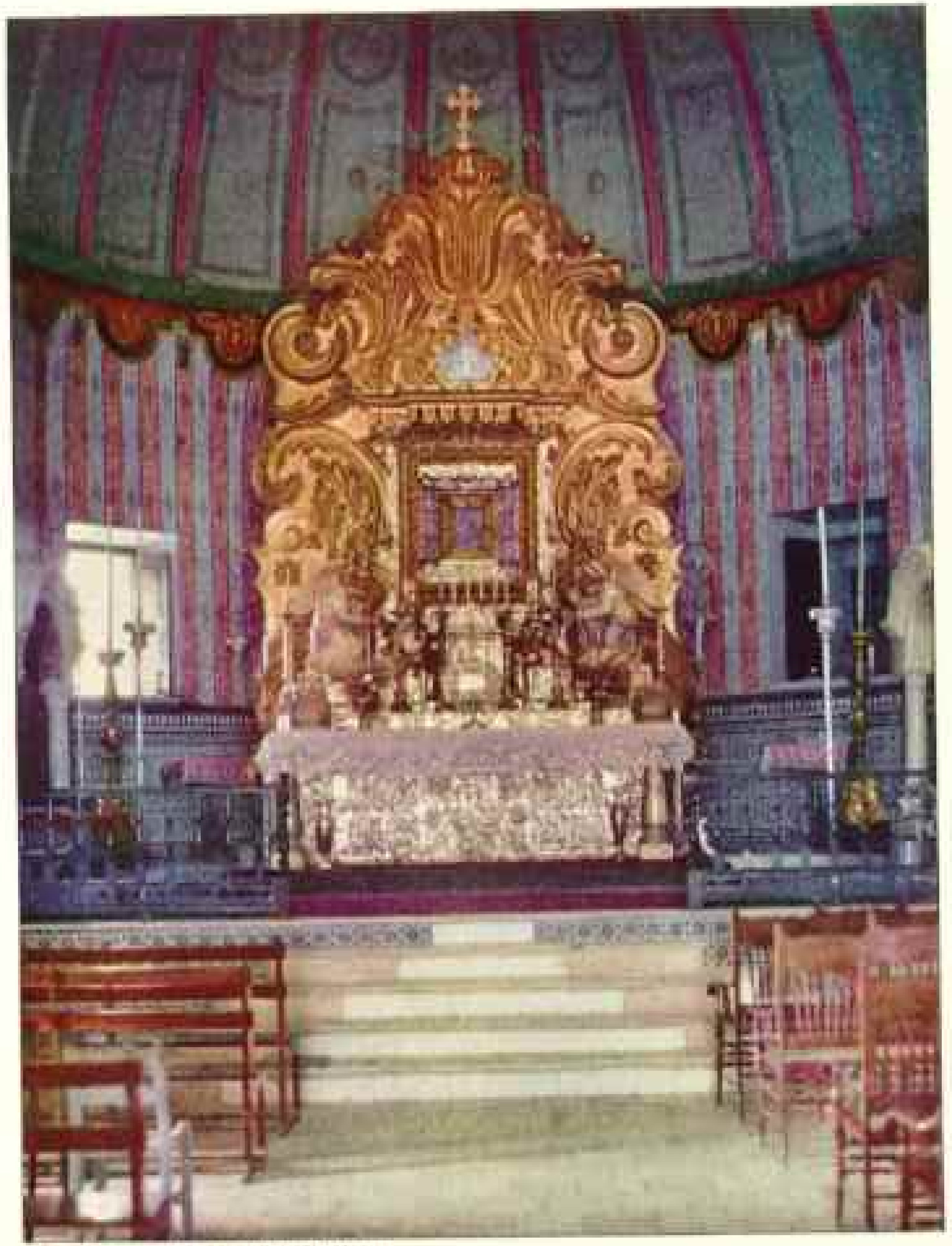
Early in September, 1930, a terrific storm descended suddenly upon the city of Santo Domingo. Only the sturdiest buildings survived its fury and many of them were sadly damaged. The President's house, visible against the skyline in the central background, was unroofed.



© National Geographic Society

Natural-Color Photograph by Jacob Gayer

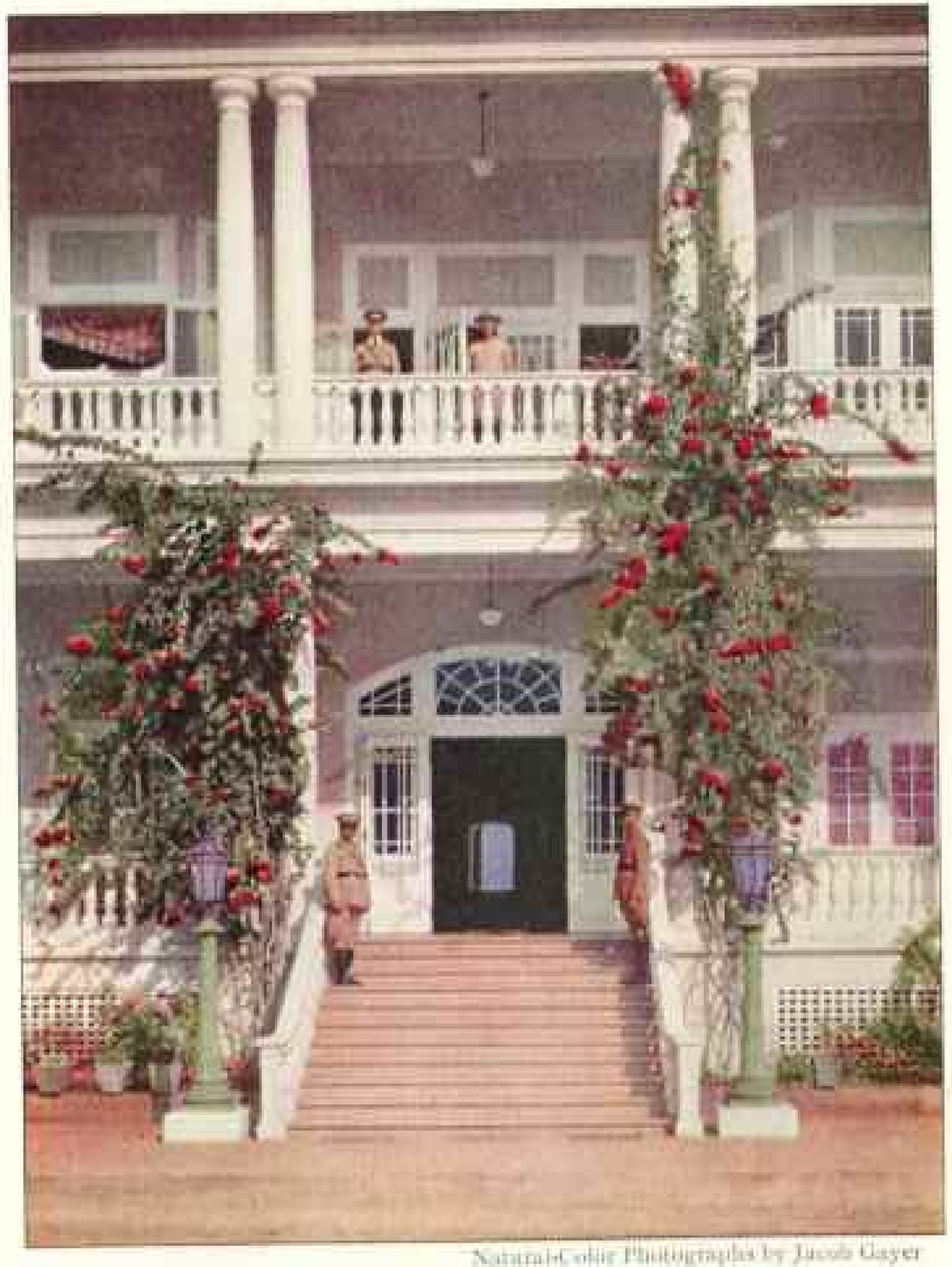
THE MOUTH OF THE OZAMA RIVER PROVIDES A HARBOR FOR THE CITY OF SANTO DOMINGO



© National Geographic Society

THE SHRINE OF OUR LADY OF ALTAGRACIA IS A "MECCA" FOR PILGRIMS

Each year in January thousands of people come from all over the Dominican Republic and Haiti to this church at Higüey, in the eastern part of the Republic.



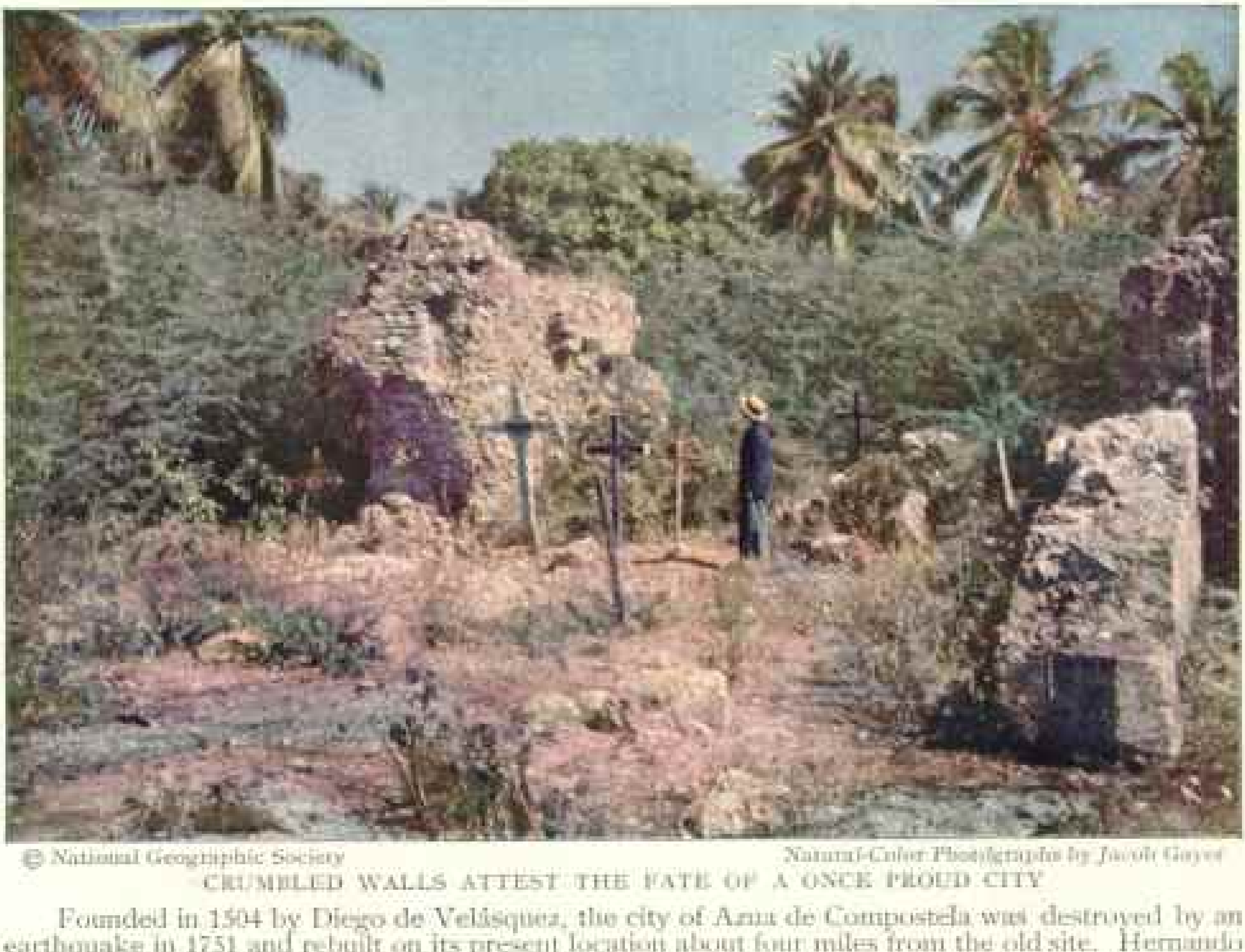
Natural-Color Photographs by Jacob Gayer

FLOWERING VINES DRAPE A DOORWAY OF SANTO DOMINGO'S "WHITE HOUSE"

The official home of the President of the Dominican Republic is an all-white building. It is pleasantly situated on an eminence at the edge of the city (see Plate XI).

GOOD ROADS BESPEAK THE COMING OF A NEW DAY

The past 10 years have seen remarkable progress in road building. Journeys which once took days to complete on horseback may now be accomplished comfortably in as many hours by motor.

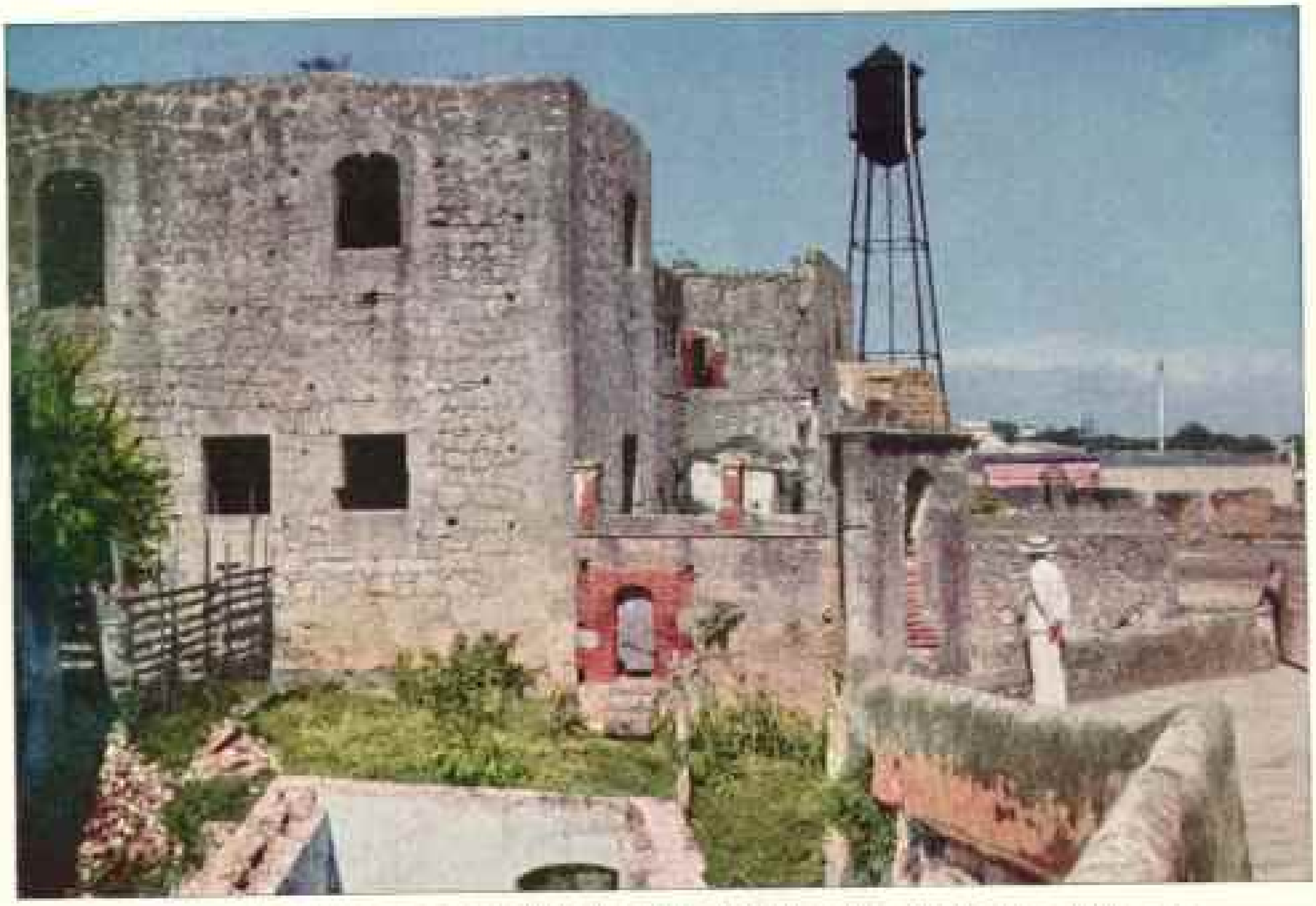


© National Geographic Society

Natural-Color Photographs by Jacob Gayer

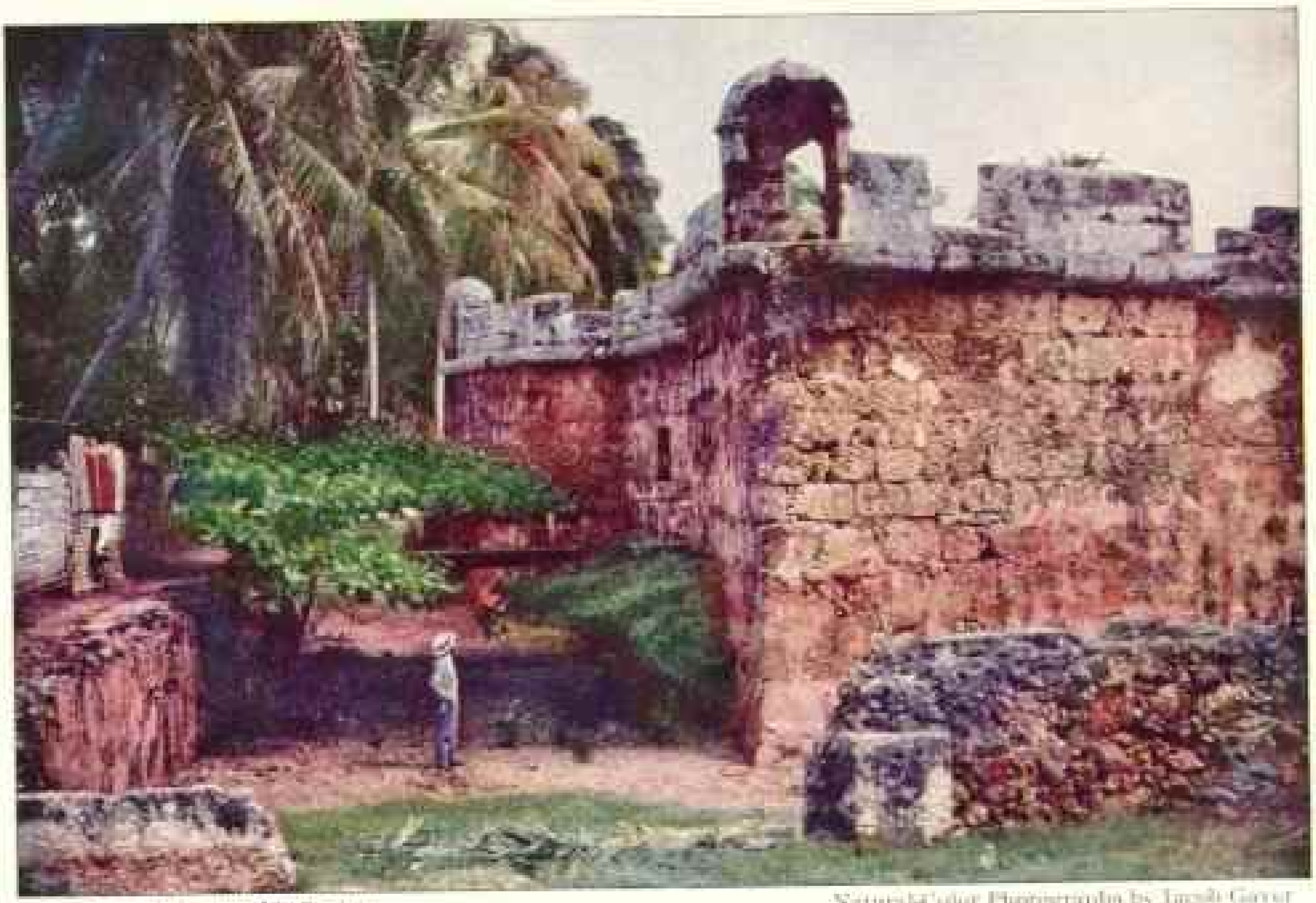
CRUMBLED WALLS ATTEST THE FATE OF A ONCE PROUD CITY

Founded in 1504 by Diego de Velásquez, the city of Azua de Compostela was destroyed by an earthquake in 1751 and rebuilt on its present location about four miles from the old site. Hernando Cortez, known to fame as the conqueror of Mexico, was for some years notary of the town.



DIEGO COLUMBUS, SON OF CHRISTOPHER, LIVED HERE IN REGAL SPLENDOR

Activities of treasure-seekers have hastened the ruin of this old colonial palace, which was once a center of social and political life in the colony.

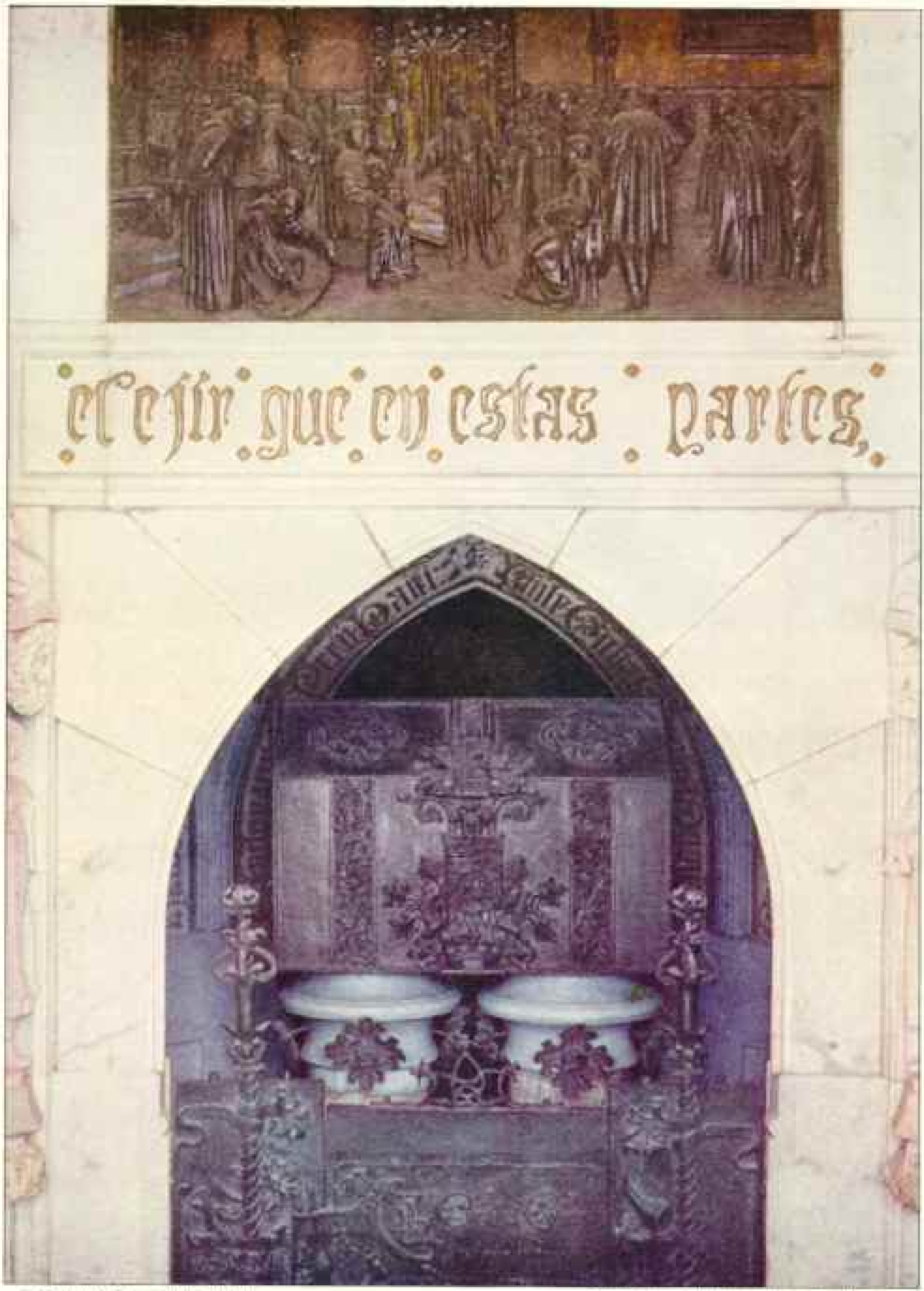


© National Geographic Society

Natural-Color Photographs by Jacob Gayer

FORT SAN GERONIMO HAS WITHSTOOD THE SIEGES OF THREE CENTURIES

Neither the forces of Nature nor the attacks of men have prevailed against the 10-foot thick walls of this stronghold. It has played a conspicuous part in the military history of Santo Domingo and was an important factor in the repulse of the English invasion under Penn and Venables in 1655.



© National Geographic Society

Natural-*Color* Photograph by Jacob Gayer

SANTO DOMINGO MAINTAINS THAT IN THIS CASKET, IN THE CATHEDRAL, LIE THE REMAINS OF THE GREAT ADMIRAL

Christopher Columbus's remains, by his request, were carried from Spain to Santo Domingo and interred in the cathedral. Subsequently Spain decided to remove them to Havana, then to Seville. Later, however, in repairing the Santo Domingo Cathedral, a leaden casket was found marked "Cristóbal Colón, Primera Almirante." This inscription and other evidence incline to the belief that Columbus rests where he willed to rest.

construed as assent and your shoes are again shined for the nth time that day.

For early rising, Santiago easily carries off the palm. If there is any virtue in the old formula for becoming healthy, wealthy, and wise, the average Santiagueño should develop into a composite of Methuselah, Crœsus, and Solomon. At 4:30 a. m. the streets are filled with people going to business.

North of Santiago a range of high mountains rises abruptly from the level basin of the Vega Real. Climbing steeply, the road enters a region of natural beauty in which one splendid scene succeeds another with kaleidoscopic rapidity. With the exception of the excellently engineered highway and at rare intervals a small clearing, these highlands have been untouched by the hand of man and present the same aspect as when first seen by Columbus.

Sharing with him the delight of these "most lofty mountains," one feels very close to Hispaniola's discoverer, glad to know that the great man was not so obsessed with his never-ending search for the riches of Cathay as to be unable to see the flowers blooming along his path.

PUERTO PLATA, MAIN SEAPORT OF THE NORTHERN COAST

For about fifty miles the highway winds deviously through the cloud-draped mountains, and then leaves them with almost the abruptness of its entrance, passing through palm-fringed meadows to Puerto Plata, main seaport of the north coast.

Approaching this port from the sea, white clouds capping the mountains through which the highway passes have the shining appearance of silver. Again we have an insight into the imaginative mind of the discoverer, for it was from these shining clouds that he named the place the Port of Silver.

Santiago may make the country's cigars and cigarettes, but Puerto Plata furnishes the matches to light them. Santo Domingo has not risen to the bait of a foreign match monopoly, and the well-equipped factory at Puerto Plata, financed by domestic capital, supplies the whole country with an excellent product at a low price.

There is an appearance of cleanly brightness about the Port of Silver. A few years ago, when the need was felt for a road to a near-by town and funds for its construction were lacking, the townsfolk turned out in a body and with picks, shovels, and wheelbarrows administered another black eye to the "enervating Tropics" tradition.

A GOVERNOR'S MUSTACHIO DONATED TO A PLAYGROUND

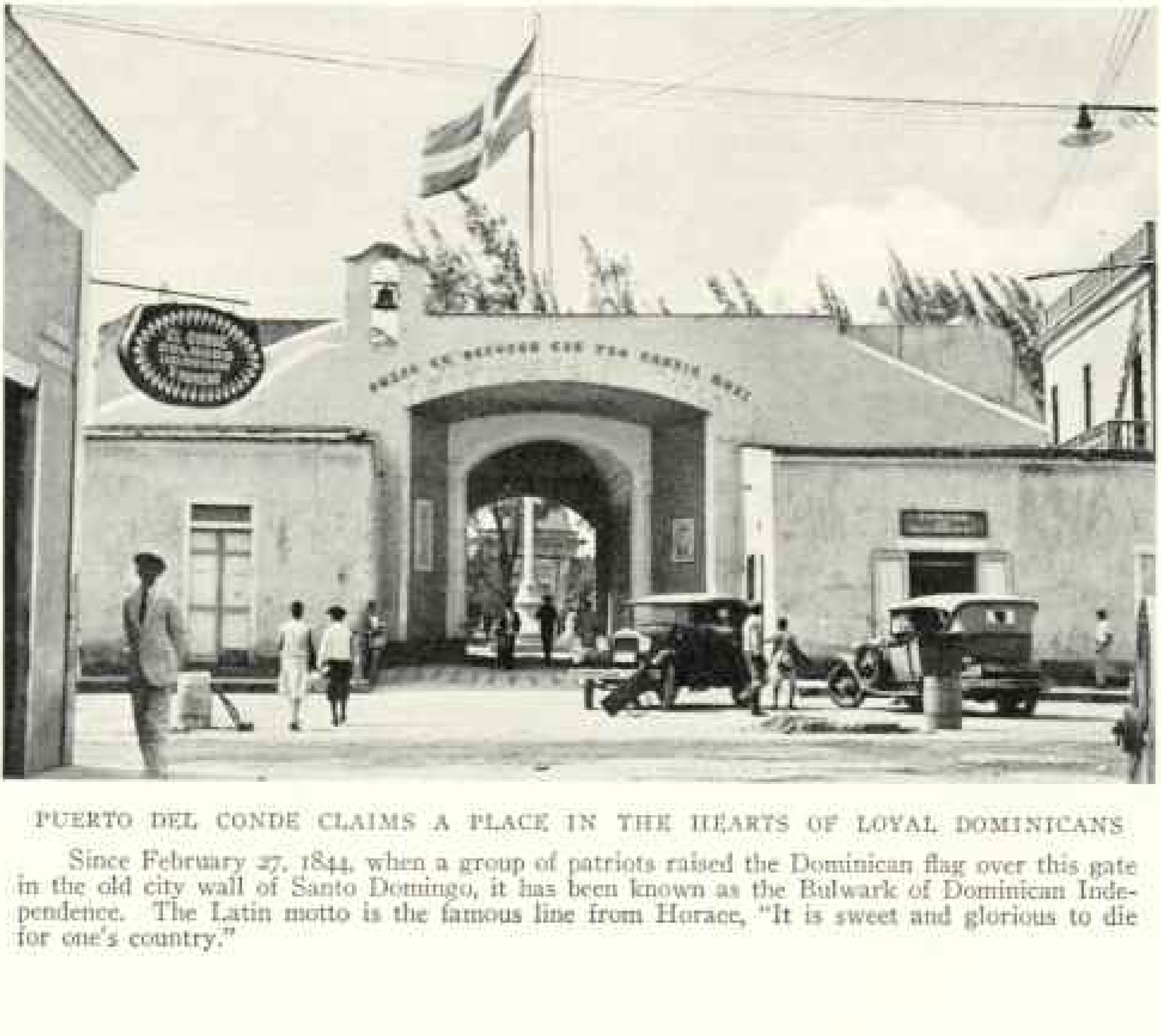
Many are the stories told of the democratic Don Ricardo Limardi, governor of the province, who temporarily surrendered his official post to serve in the capacity of guide, philosopher, and friend of the National Geographic Society's photographer in his rambles round about Puerto Plata. Familiarly known to the humblest laborer as "Don Bubul"—this from a certain rotundity of figure—it is said that some of his peasant henchmen were puzzled when his real name first appeared under a governor's proclamation. The theory was finally advanced by one of them that the new governor couldn't be their beloved "Chunky" and therefore was probably his brother.

Another story concerns Don Ricardo's famous mustachio, whose military ferocity is quite belied by the twinkling blue eyes and kindly expression behind it. A wealthy friend once jokingly offered its proud possessor $500 for the cherished adornment—or rather its predecessor. Dragging his friend to the nearest barber shop, the good governor collected the money and, adding $300 from his own pocket, established a public playground for his youthful constituents.

Thirty miles west of Puerto Plata is the site of old Isabela, the first organized settlement made by the Spaniards in Hispaniola. Christopher Columbus founded the town in 1493 and named it in honor of his patron queen. Isabela was the starting point of the expedition, led inland by Columbus, to see for himself whether this "Cipango, which the natives call Cibao," was really the Japan of Marco Polo.

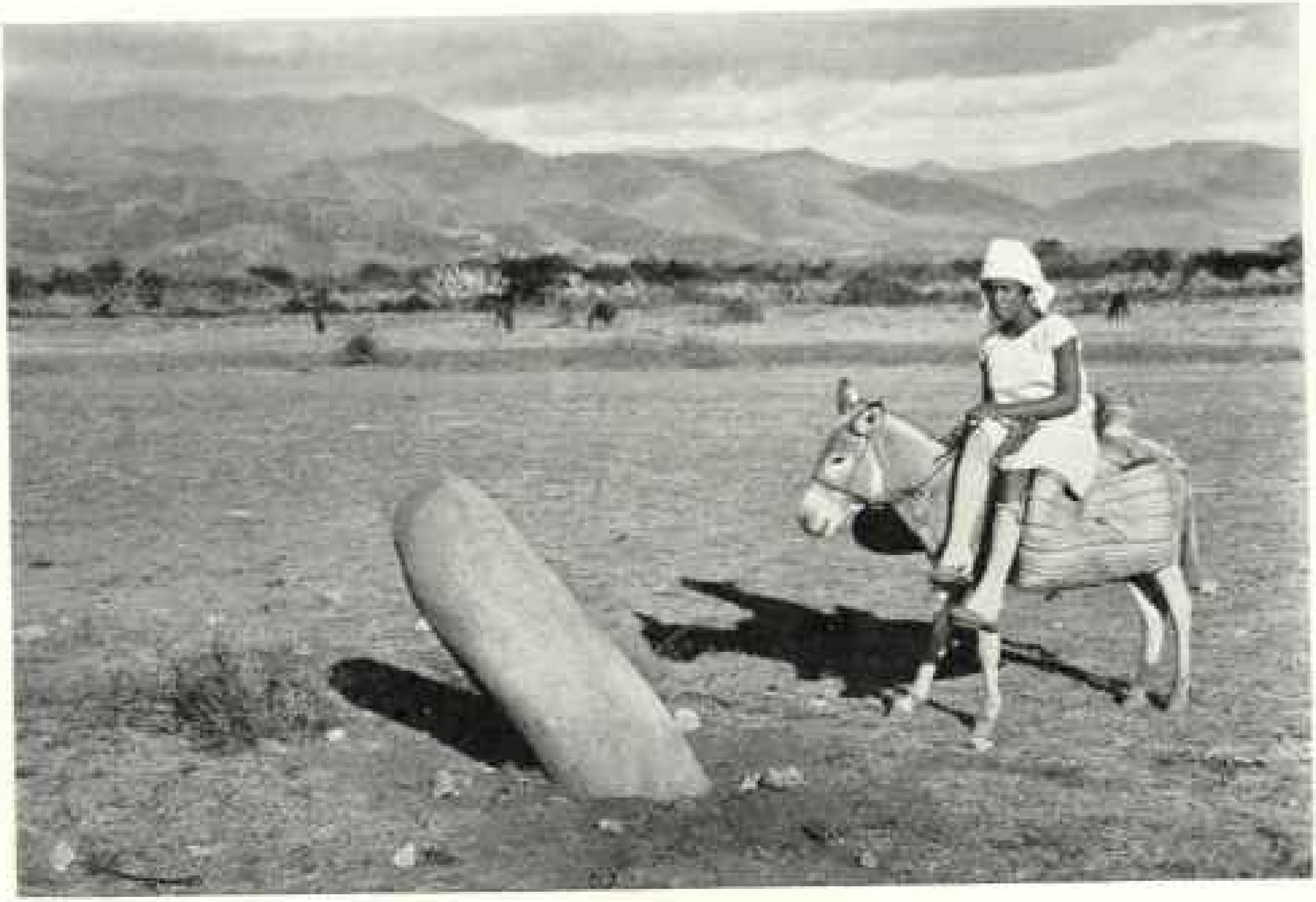
Within a very few years after its founding, Isabela became a ghost city, and its site, which seems to have been rather extensive, can be defined only with difficulty by traces of old foundation walls and scattered building stones. Local tradition credits the place with much buried treasure, but the many pits left by optimistic seekers seem to have yielded little except plenty

LOADING LIVE STOCK AT SAN PEDRO DE MACORIS



PUERTO DEL CONDE CLAIMS A PLACE IN THE HEARTS OF LOYAL DOMINICANS

Since February 27, 1844, when a group of patriots raised the Dominican flag over this gate in the old city wall of Santo Domingo, it has been known as the Bulwark of Dominican Independence. The Latin motto is the famous line from Horace, "It is sweet and glorious to die for one's country."



INDIANS CAME HERE TO MAKE MERRY IN PRE-COLUMBIAN DAYS

Before either white man or black had set foot on Hispaniola, the natives of the island were accustomed to gather in this field, near the present town of San Juan, for games and ceremonies. The large stone marks the center of a circle, around the half-mile circumference of which are two rows of similar bowlders, presumably placed to mark an ancient race course (see page 111).

of healthful exercise. Of greatest interest are the near-by quarries from which stone was obtained for building the town. Here, more than four centuries after they were made, the old saw-marks can still be plainly seen, and building stones half cut out from the quarry bear mute testimony both to the great plans for Isabela's future and to the suddenness with which those plans were abandoned (see Color Plate III).

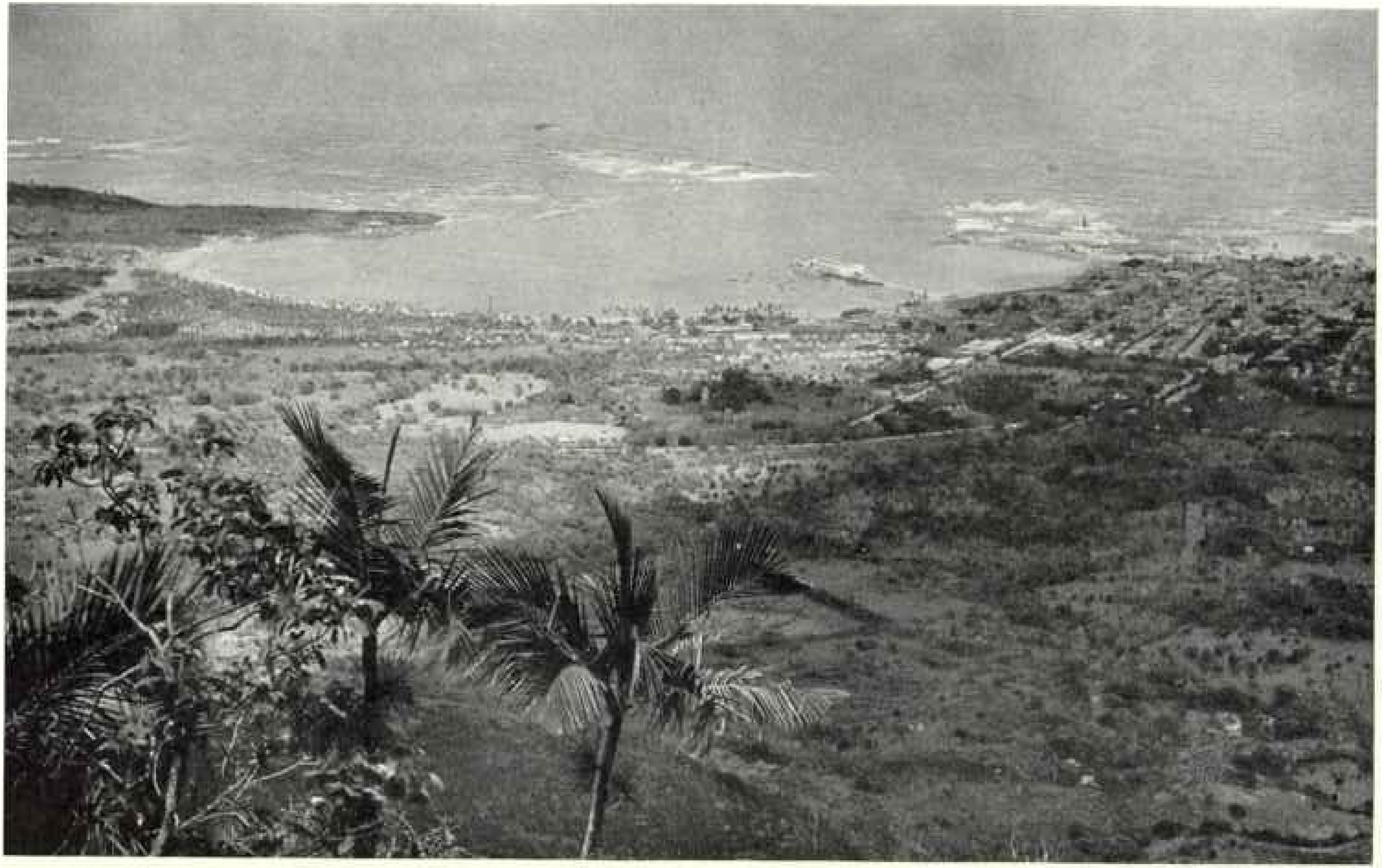
WET AND DRY SANTO DOMINGO

A line drawn across the map from Isabela to Point Nizao, on the south coast, roughly divides Santo Domingo into two distinct areas in respect to rainfall. At Puerto Plata one is kept busy dodging the frequent rainstorms which come roaring in from the Atlantic; at Monte Cristi, seventy miles to the west, it may not have rained for weeks.

This diversity of annual rainfall is plainly apparent from the flora of the countryside, which within an hour's travel may change from a lush tropical vegetation to the sparse cactus growth of the arid plain. Relief to the thirsty land is brought by the Yaque del Norte, which through its lower course flows through this arid northwest region. The soil is fertile, and wherever water is led to it by irrigation the desert is transformed into an oasis.

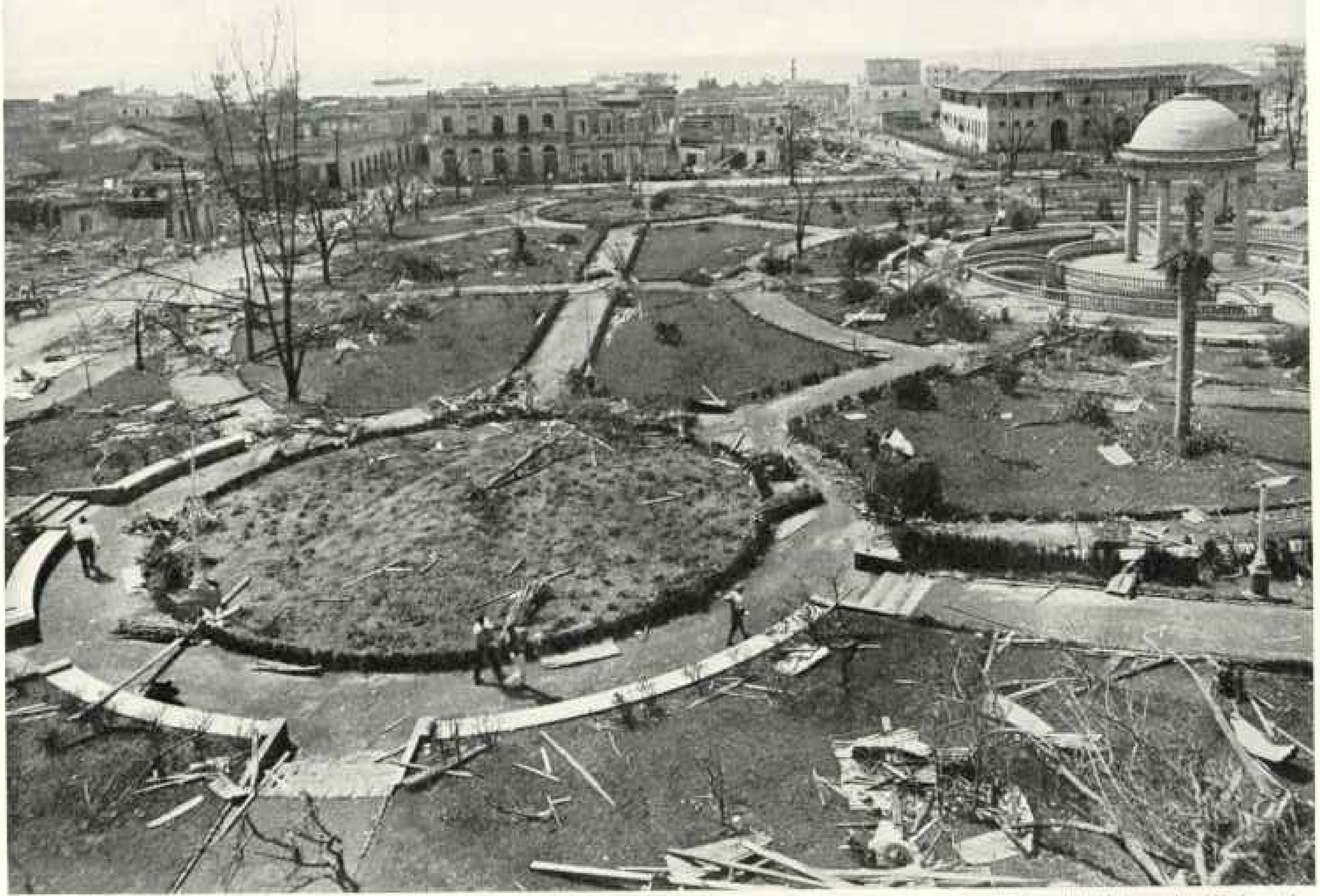
Along the western frontier the Dominican Government has established coöperative agricultural colonies. These are designed both to develop hitherto-unproductive land and to serve as bulwarks against the infiltration of Haitian settlers. In these colonies each family is assigned a twenty-acre tract which eventually becomes its own property. Santo Domingo is sadly underpopulated, and immigration, except of Haitians, is encouraged.

The Massacre River forms part of the boundary line between Haiti and Santo Domingo, and one wonders whether its gruesome name is anything more than a coincidence. The river is small and easily forded, but earlier difficulties with their neighbors are not forgotten by Dominicans



THROUGH THE "PORT OF SILVER" PASSES MUCH OF SANTO DOMINGO'S FOREIGN TRADE

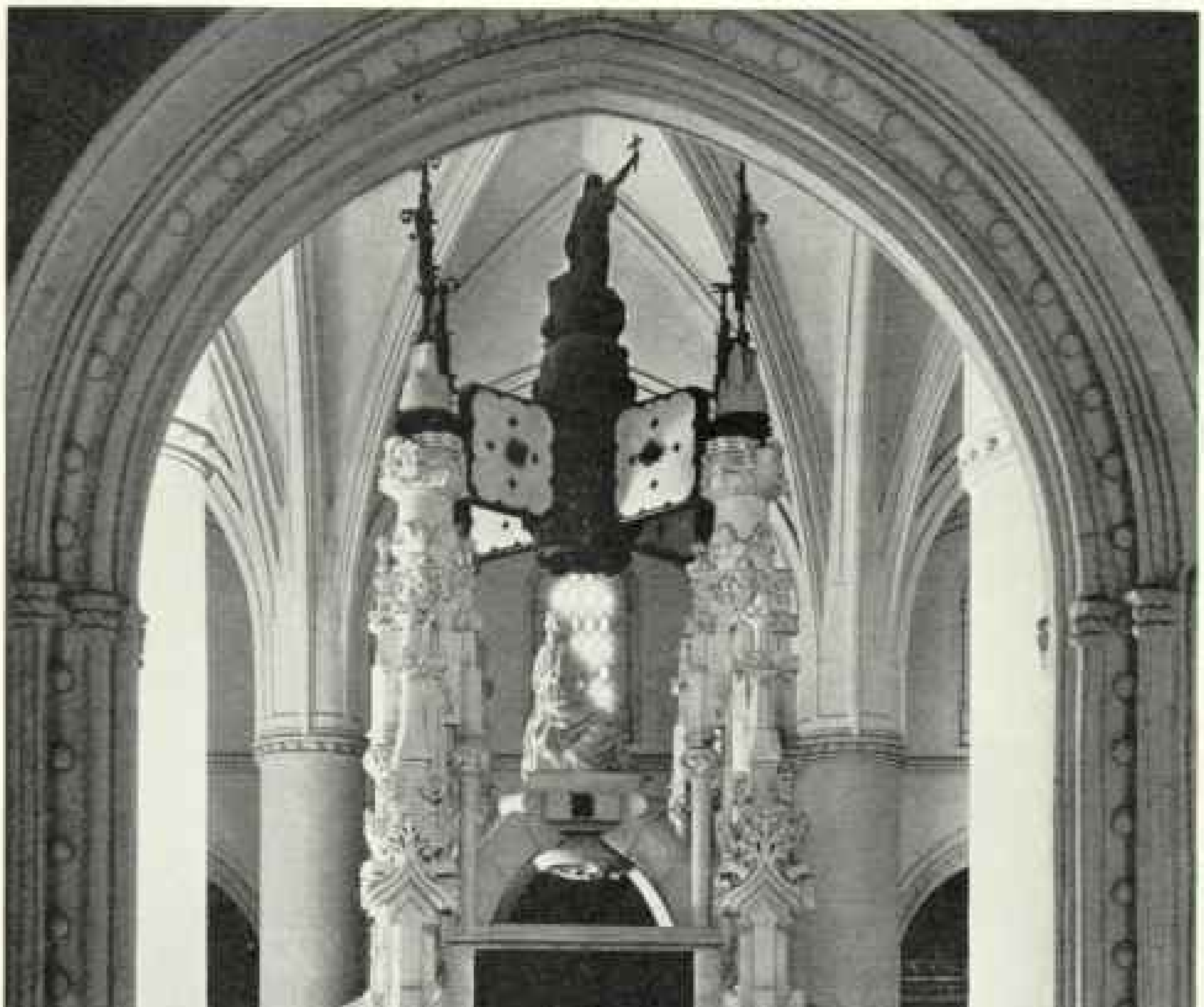
Founded originally soon after the island's discovery, Puerto Plata was abandoned in 1605, by royal decree, in an effort to prevent the activities of Dutch smugglers. About 1750 the site of the city was again occupied, and since then it has developed into one of the most attractive and important communities of the Republic.



Photograph by Underwood and Underwood

DEATH AND DESOLATION CAME ON THE WINGS OF SEPTEMBER'S HURRICANE

One of the worst storms ever recorded in the Caribbean broke with sudden fury on the Dominican capital in the late summer of 1930. Much of the city was demolished, and only heroic efforts on the part of the authorities and immediate and generous assistance from neighboring nations prevented a heavier toll of death and ruin. A view in the main residential section of the city, showing the débris in Independence Park after the hurricane had passed (see text, page 112).



A GRACEFUL MARBLE MONUMENT GUARDS THE GREAT ADMIRAL'S SHRINE

The handsome memorial in the nave of the venerable Cathedral of Santo Domingo reflects the respect and homage of the Dominican people for the discoverer of America (see, also, text, page 112, and Color Plate XVI).

and present a formidable barrier less easily passed than the shallow river.

The contrast between Santo Domingo and Haiti is so apparent, even at the very frontier, that it cannot fail to be noted by the most casual observer. This is well exemplified by the respective languages of the two countries. Throughout Santo Domingo a Spanish is spoken which in idiom and pronunciation is perhaps no farther from Castilian than is American from British-Isles English. Step, or, rather, wade, across the Massacre, and the ear is assailed by a patois which is an African woof threaded through a French warp.

The degree to which Santo Domingo and Haiti have retained the languages of their mother countries may well be taken as an index to their respective cultural traditions. In these Santo Domingo is Spanish, Haiti is Franco-Haitian.

The Sánchez Highway, the second of the Dominican Republic's great arterial roads, starts at Santo Domingo City, skirts the south coast to Azua, and then strikes northwest to the Haitian border, where it connects with the Haitian highway to Port au Prince.

CORTEZ WAS A NOTARY AT AZUA

Azua's chief claim to fame is the fact that the notarial shingle of Hernando Cortez adorned the town before the embryo conquistador of Mexico decided that his talents were being wasted here, and that the sword, if not mightier, was at least more profitable than his particular pen.

To the layman the most interesting relic left by Hispaniola's pre-Columbian inhabitants is the Corral de los Indios. This "Playground of the Indians" is situated on the flat prairie near the town of San Juan. It can best be described as a circular race track about one-half mile in circumference. The "track" is about fifteen feet wide and is defined by two rows of large bowlders. From the tradition that the Indian queen Anacaona viewed field games of her subjects from a throne in the center of the inclosure, it is also known as "Anacaona's Circus" (see illustration, page 107).

The traveler in Santo Domingo finds its people among the most kindly and courteous of the Western World. Whether up through the mountains to Puerto Plata and Monte Cristi or along the coast to Azua, or following the Mella Highway, it is the universal custom to pass the time of day with those one meets along the way. "Saluda" is the customary expression, as common as the "howdy-do" of our own horse-and-buggy days.

One learns much of the temperaments and outlooks of the travelers he meets on the highways by the way saluda is uttered. It often implies much more than the literal "good health." It may be abbreviated to "s'lud," which might be translated as a curt "hello," but is more often sung out in a more expansive manner. Here comes a dusty traveler whose lilting "salu-u-u-u-da-a-a-a" gives us the impression that here is a born optimist, whose heart is as light as his baggage. In the three long-drawn-out syllables he amply conveys the idea of "Well, for the land's sakes, howdy! You're sure looking fine. Grand weather we're having."

The motor buses on the highways of Santo Domingo to-day have not the respectability of those we know at home, but rather possess the standing of our almost-forgotten jitneys of a decade or so ago. They are known colloquially as "guaguas"—a term that means "bargains." No one with the slightest sense of caste to maintain would think of risking his reputation by being seen in one of them.

MOTOR-BUS TRAVEL SUPPLANTS HIKING

Intercity travel by these buses has become so cheap that the old-time cross-country hiker has almost disappeared, so that only occasionally one sees walking groups; but when they are encountered you may be sure that each hiker has his sleeping hammock neatly rolled and slung over one shoulder. This is a badge of respectability—a visible means of support, so to speak. He may be barefoot and ragged, but so long as he carries a hammock he escapes the suspicion of being an irresponsible tramp.

Voodooism seems never to have found fertile soil in Santo Domingo. There are some customs, however, which make one wonder as to their origin. One of these is the habit of adorning plants of the Spanish bayonet type with eggshells (see page 95).

At the Massacre River, on the Haitian frontier, my chauffeur filled a little bottle with water and put it in a side pocket of the car. When we got back to Santo Domingo, as he slipped it into his own pocket, he was taxed with the time-honored jest about its being a present for his sweetheart. He made no reply, but his giggle of delight indicated that it might be a love charm after all.

THE ASHES OF COLUMBUS

The chief pride of the Dominicans is their faith that the ashes of Christopher Columbus rest within their Cathedral at Santo Domingo City. In 1795, Spain, having ceded Santo Domingo to the French, removed what its officials believed to be the ashes of the Great Discoverer to Havana. Upon the evacuation of Cuba by Spain in 1898, the Spanish Government moved the Havana remains to Seville, Spain.

But in 1877, while the Santo Domingo Cathedral was being remodeled, another vault containing a leaden casket was found. As soon as the casket's surface appeared everything was sealed, and in the afternoon the President and his Cabinet, the members of the Diplomatic Corps, the Bishop and Apostolic Delegate, and many others assembled to witness the completion of the excavation and the opening of the casket (see page 110 and Color Plate XVI).

Outside and inside were found inscriptions which bear alike the name and the titles of Christopher Columbus. All present, including even the Spanish consul, joined in a notarial affidavit of the circumstances of the opening of the vault and casket and the description of their contents. No exhumation of the remains of any individual has ever been attested by a larger or more representative body.

The late American Minister, Thomas C. Dawson, pronounced the evidence complete, and the late American Secretary of State, Philander C. Knox, on his visit to Santo Domingo in 1912, declared that any impartial court would sustain the contention that all that is mortal of the Founder of the New World rests within the Cathedral at Santo Domingo City. Hon. Charles G. Dawes, United States Ambassador to Great Britain, while in Santo Domingo in 1929 as the head of a commission to work out a budget system for the Dominican Government, made a study of the evidence and reached the same conclusion as Minister Dawson and Secretary Knox.

DEVASTATION OF SEPTEMBER'S HURRICANE

One of the most tragic experiences in the history of Santo Domingo occurred in the afternoon of September 3, 1930, when a hurricane swept over the capital. Outside the walls of the stricken city the devastation was practically complete; inside the walls 70 per cent of the buildings were damaged and practically all of the 4,000 smaller homes were destroyed. Upward of two thousand people were killed and six thousand were injured.

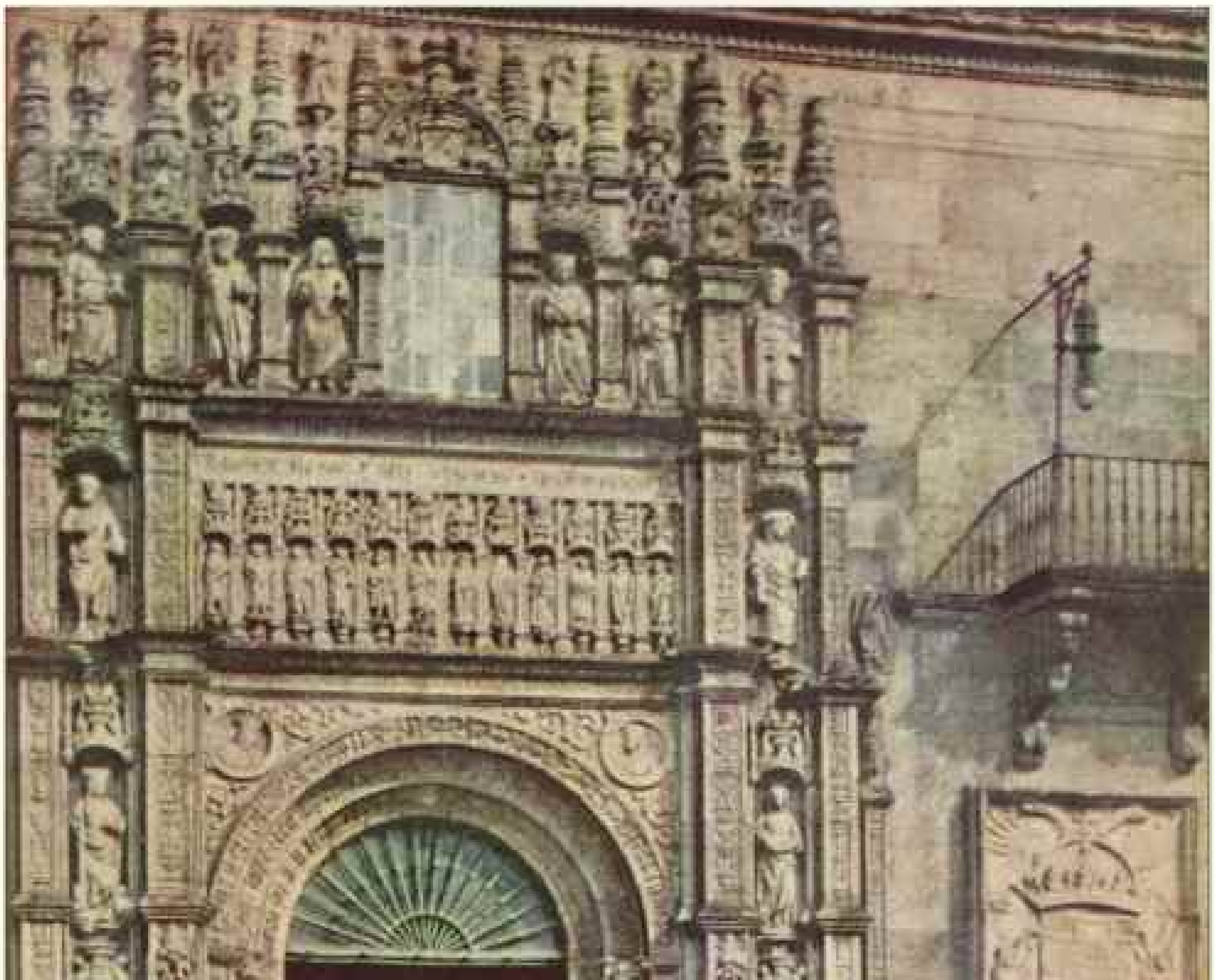
In many features the storm resembled a tornado. Its path was 20 miles wide, the heart of it sweeping over the city itself. After blowing for several hours, it abated, the sun came out, and the people began to take stock of the damage; but 20 minutes later it started again and blew with increasing fury, carrying in every direction tin roofs, corrugated iron timbers, and stone.

Thoroughly helpless, the city was prostrate; but through press associations and the American Red Cross the world soon learned of the disaster and succor was rushed to the stricken capital from every point of the compass.

Eighteen thousand people were fed daily for the time being and 12,000 were inoculated against typhoid fever.

As soon as the immediate specter of hunger was laid and epidemic prevention measures had been taken, Santo Domingo set itself grimly to the task of rebuilding.

Hurricanes come and hurricanes go, but Santo Domingo, best-loved land of the Great Discoverer, rallies after each cruel blow. Many of the treasured old structures of the Republic still stand, scarred and stained but firm, and continue to speak to the generations that follow one another across the stage of events of the advent of European civilization to the Americas.

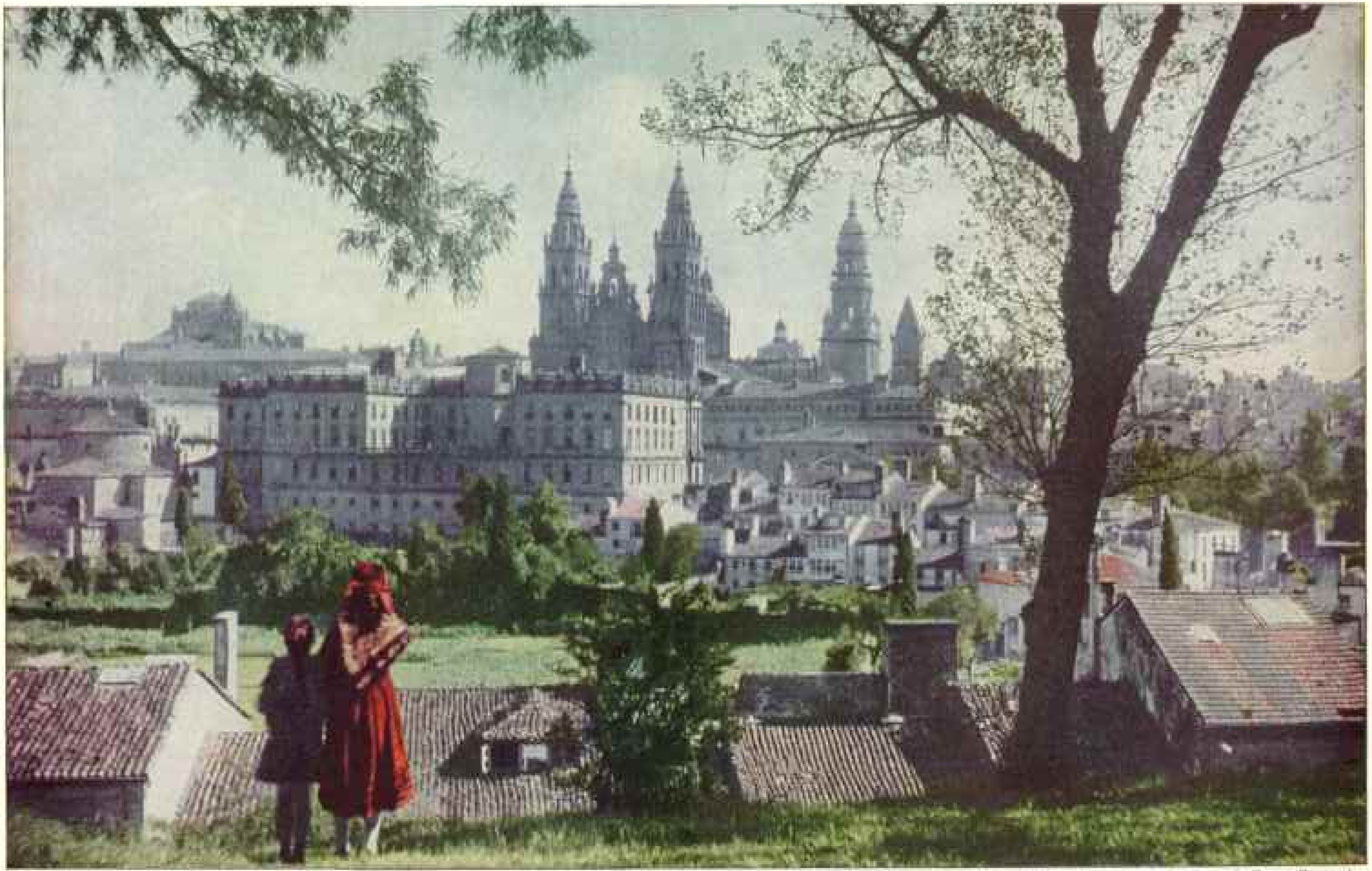


© National Geographic Society

Natural-Color Photograph by Gervais Courtellemont

FERDINAND AND ISABELLA FOUNDED THE ROYAL HOSPITAL AT SANTIAGO

Completed about 1510, this magnificent building originally served as a hostelry for pilgrims to the shrine of Saint James (see Color Plate II). Now it is used as a hospital and is connected with the medical school of Santiago University. The fine plasteresque portal is the entrance from Cathedral Square.

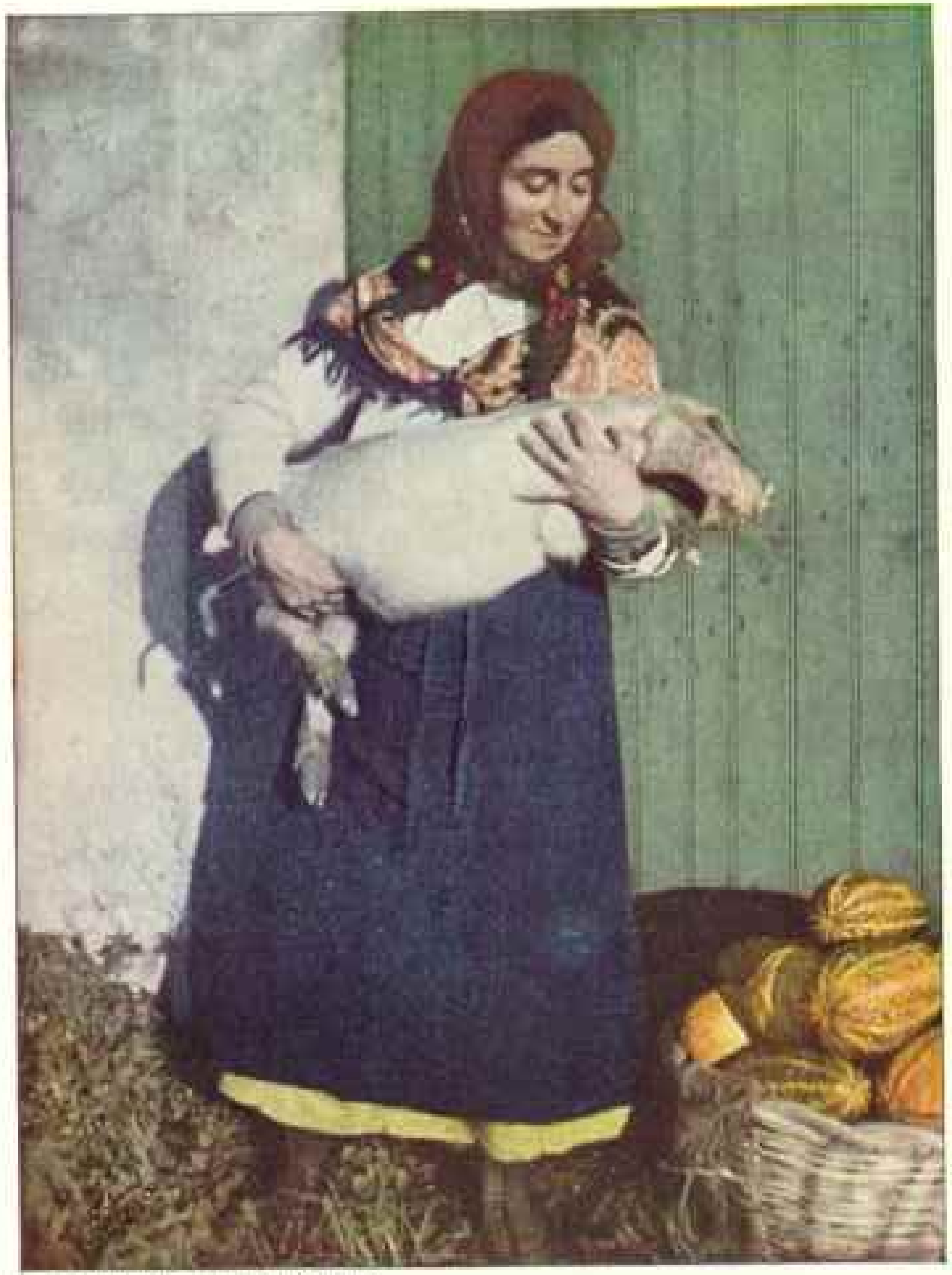


© National Geographic Society

Natural-Color Photograph by Gervais Courtellemont

SANTIAGO'S CATHEDRAL SPIRES GREET THE TRAVELER FROM AFAR

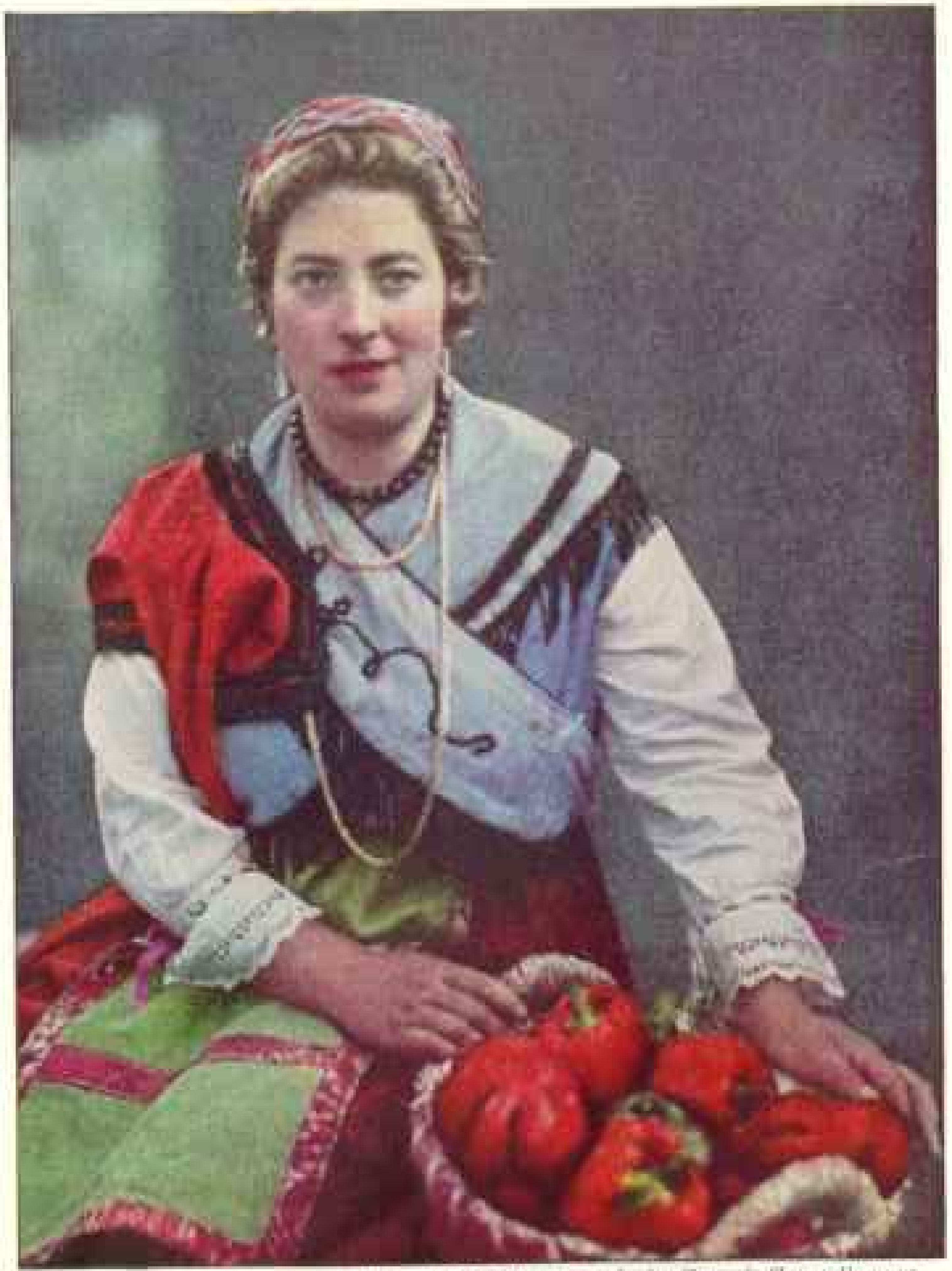
Probably no shrine in all Spain is more sacred than the 13th-century church reputed to contain the bones of the Apostle James the Greater, patron saint of the Nation. Pilgrims flock here from far and near and in medieval days many prostrated themselves on coming in sight of the city and completed the journey on their knees. Santiago is a quiet, beautiful old city, the seat of both a lay and an ecclesiastic university. The building directly in front of the Cathedral is the City Hall.



© National Geographic Society

CASH AND CARRY IN GALICIA

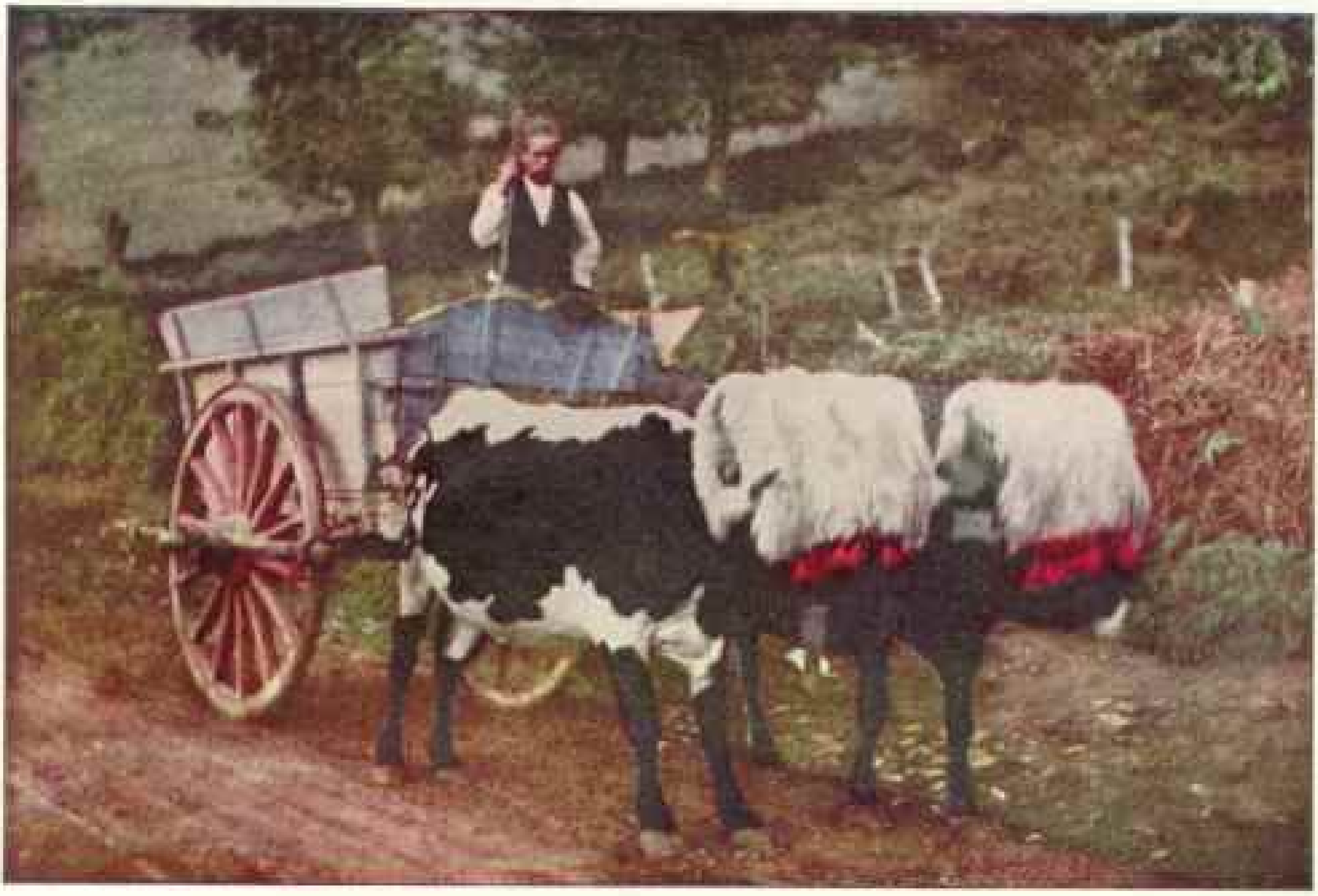
There is no delivery system, so the recently purchased family pig is carried home in the housewife's arms.



Natural-Color Photographs by Gervais Courtellemont

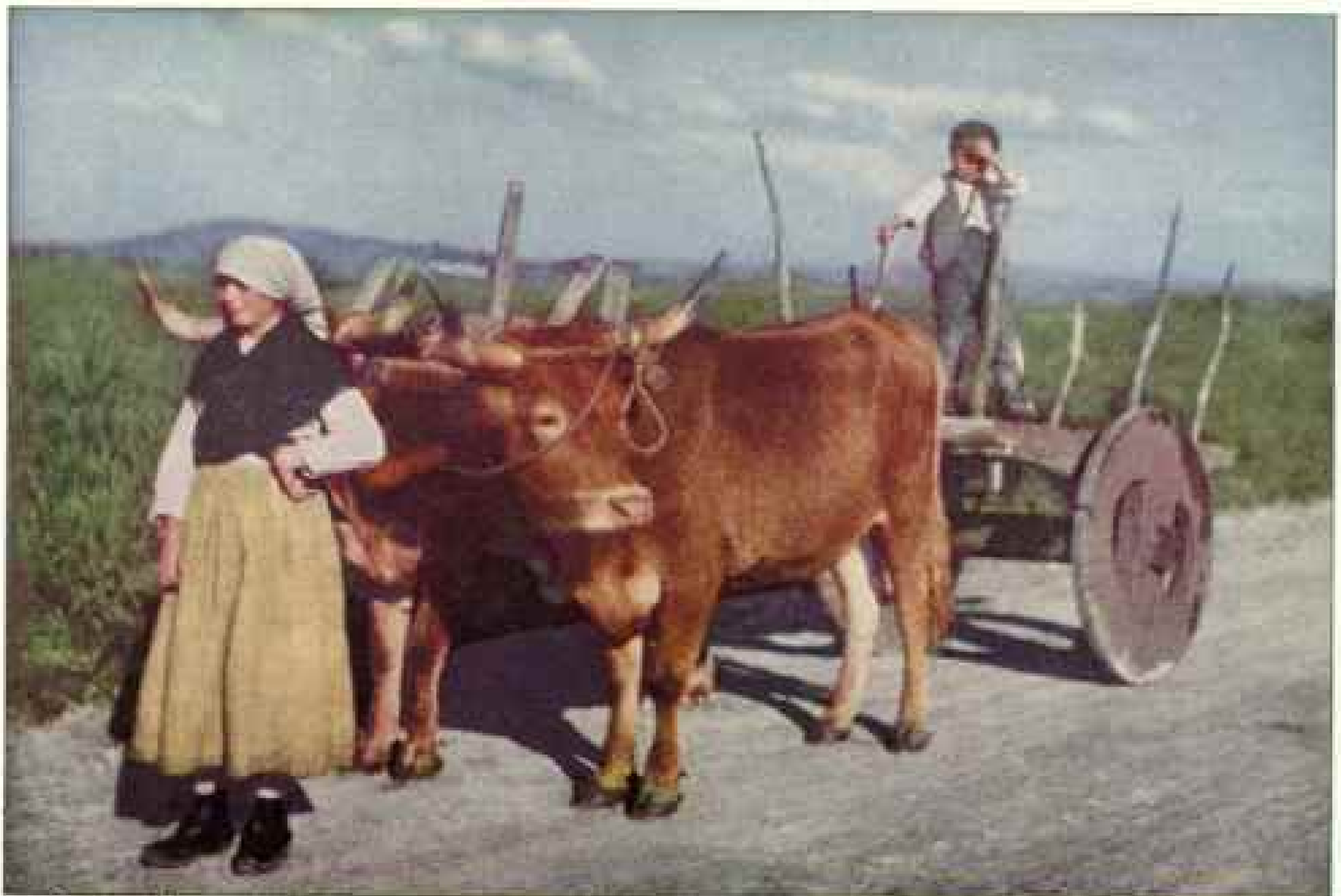
HOLIDAY ATTIRE IN ASTURIAS

People of this province are proud of the purity of their ancient lineage, admitting no large-scale racial intermixture since the Visigoths came into Iberia.



CATTLE WEAR "WIGS" ON THE ROADS OF ASTURIAS

An old custom in this part of Spain equips the draft oxen with sheepskin head covers which serve both as decoration and as protection from insect pests.

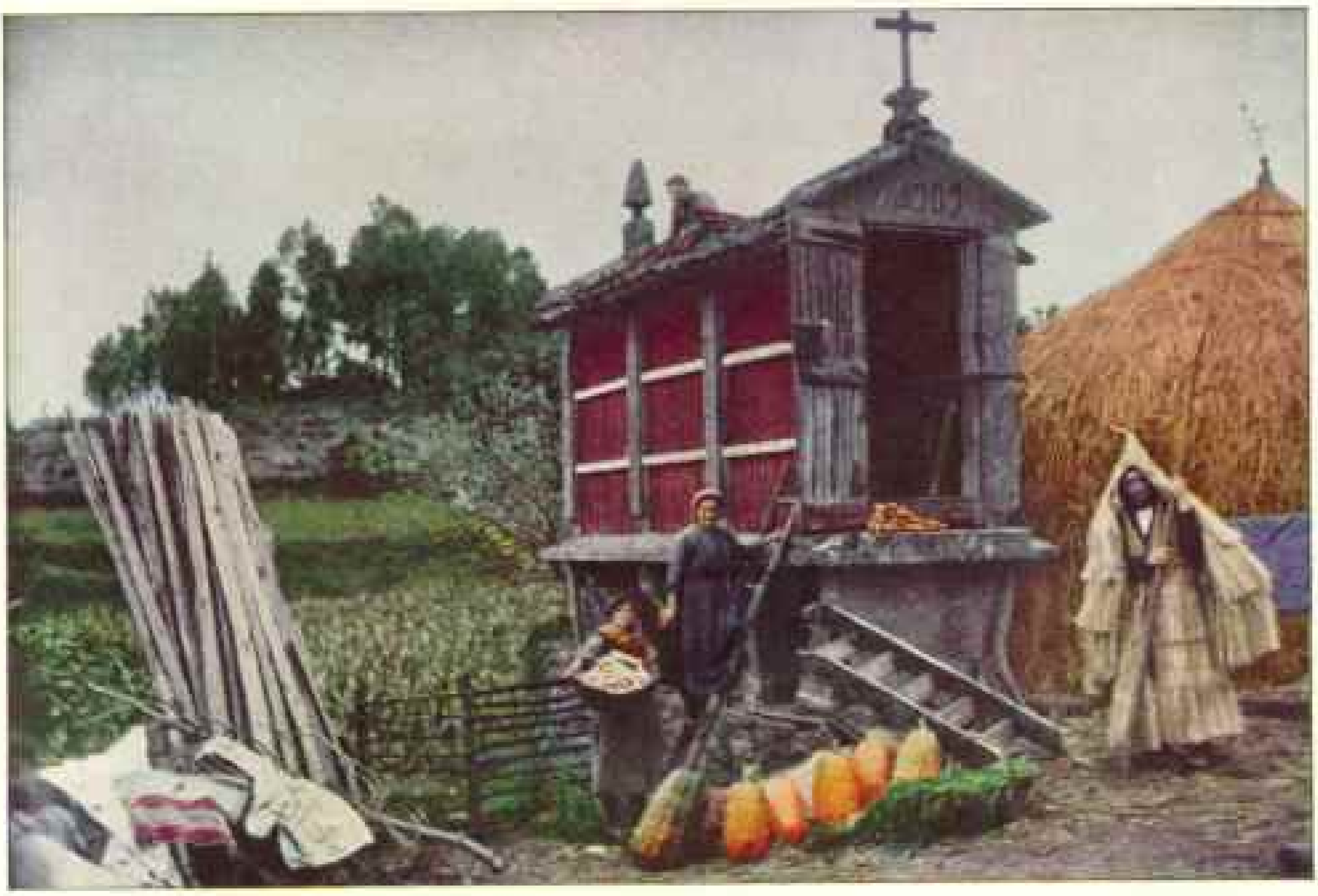


© National Geographic Society

Natural-Color Photographs by Gervais Courtellemont

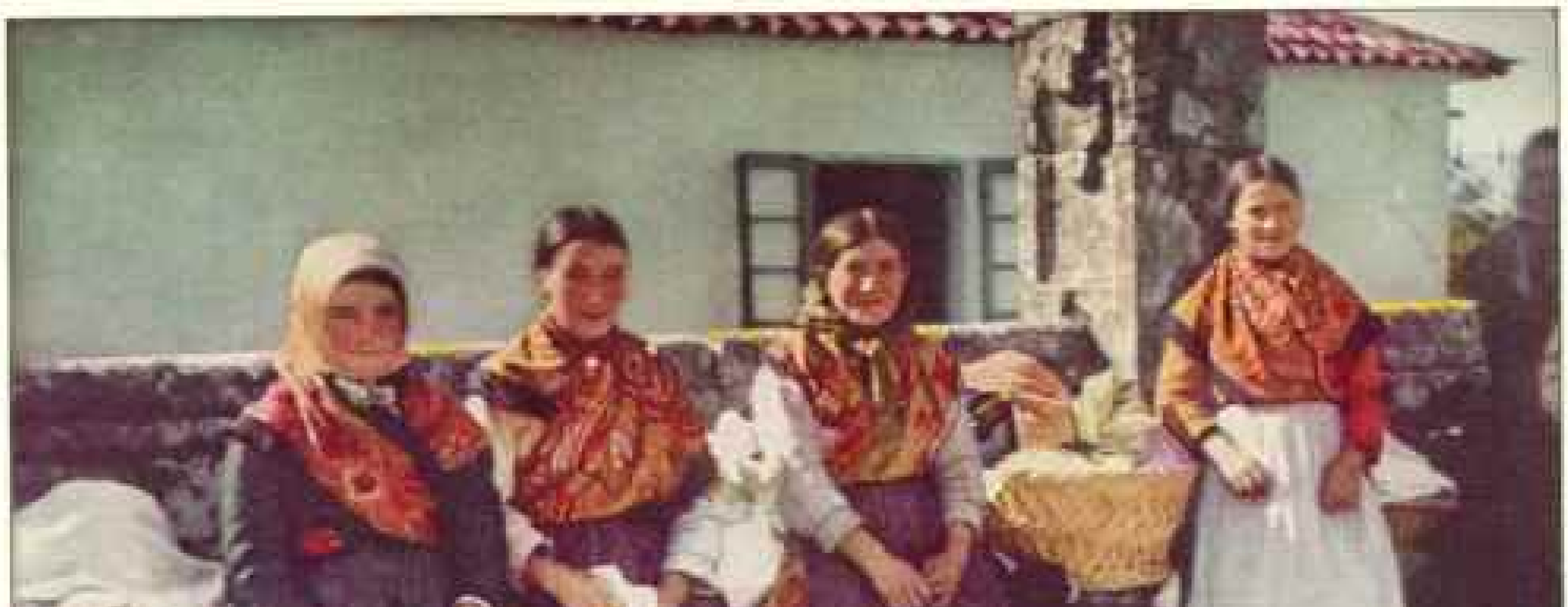
TRAFFIC MOVES SLOWLY IN RURAL SPAIN

The Galician farm runabout has lots of power and the fact that it lacks speed makes little difference, for time is of small moment to the average peasant.



STORING THE SEASON'S HARVEST

Galician *hórreos*, or miniature corncribs, are frequently surmounted by a symbolic cross. The man at the right is exhibiting a homemade straw raincoat.

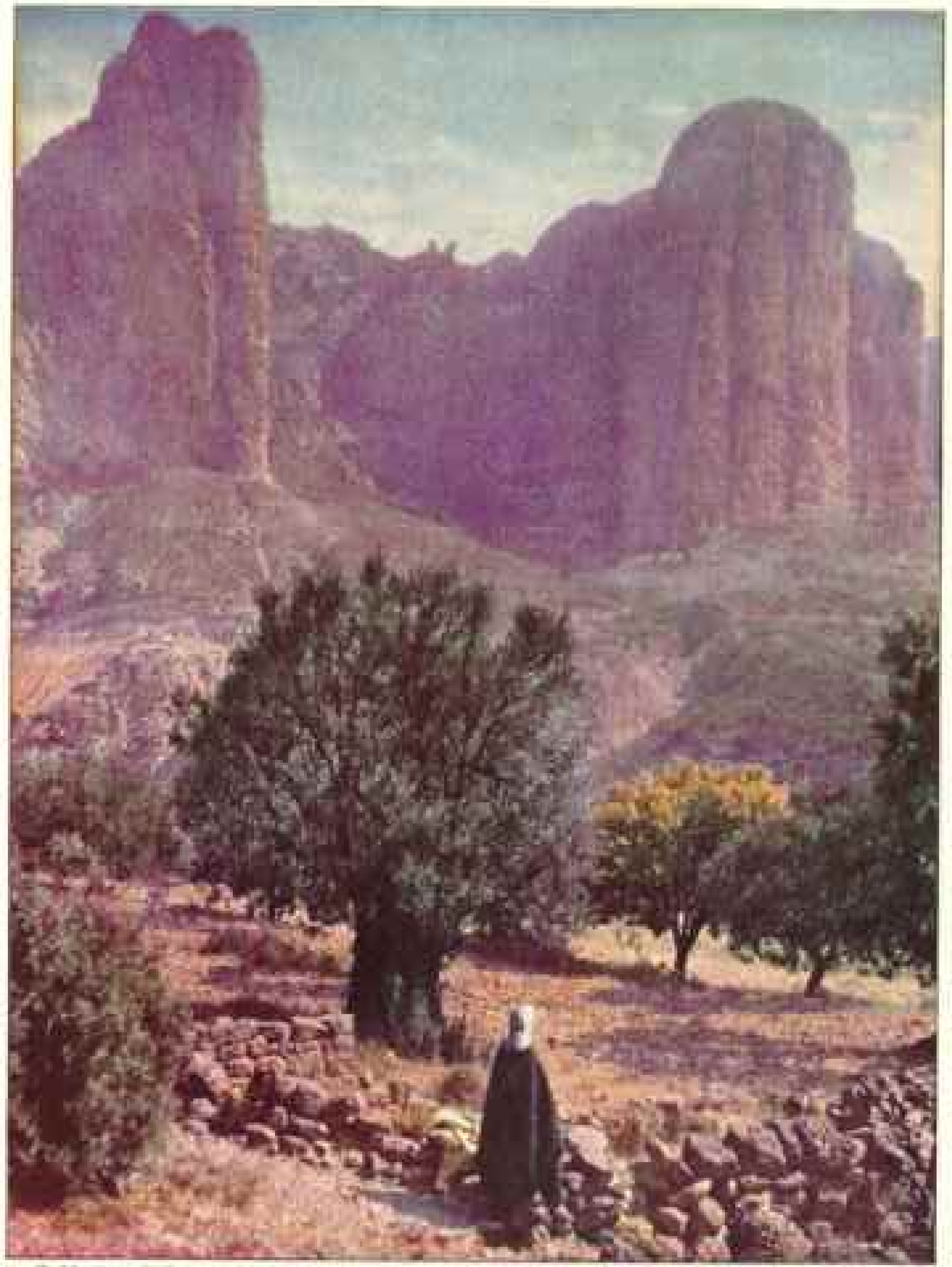


© National Geographic Society

Natural-Color Photographs by Gervais Courtellemont

HARD WORK DISTINGUISHES GALICIAN WOMEN

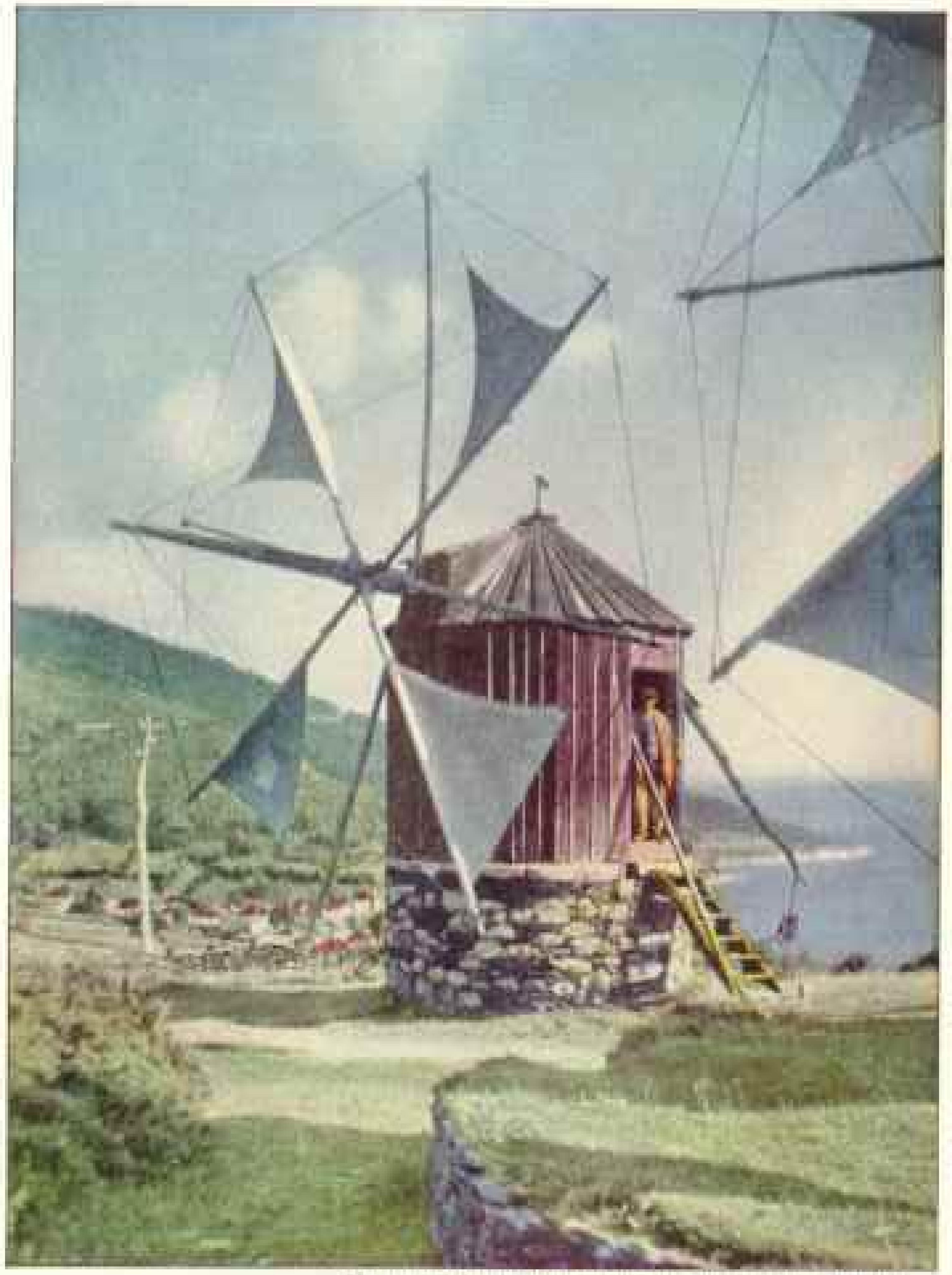
Besides performing a major share of the toil in field and home, they maintain a careful control over the family purse strings.



© National Geographic Society

GIGANTIC CLIFFS TOWER ABOVE THE RIVER GÁLLEGO

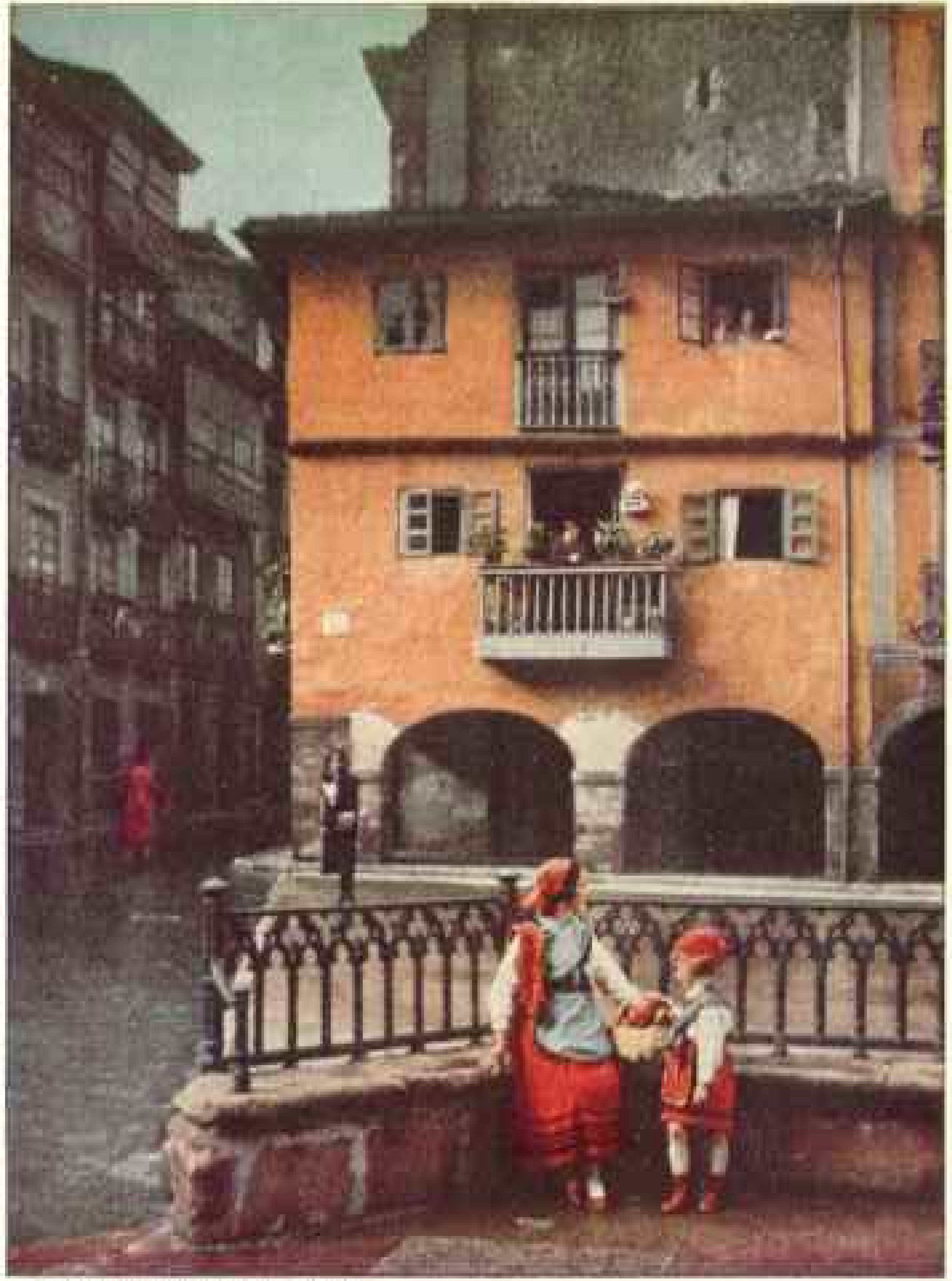
The fluted, perpendicular formations of red rock near the village of Riglos, in Aragón, are known locally as *Los Mallos* (The Ninepins).



Natural-Color Photographs by Gervais Courtellemont

DON QUIXOTE DID NOT CONQUER ALL SPAIN'S WINDMILLS

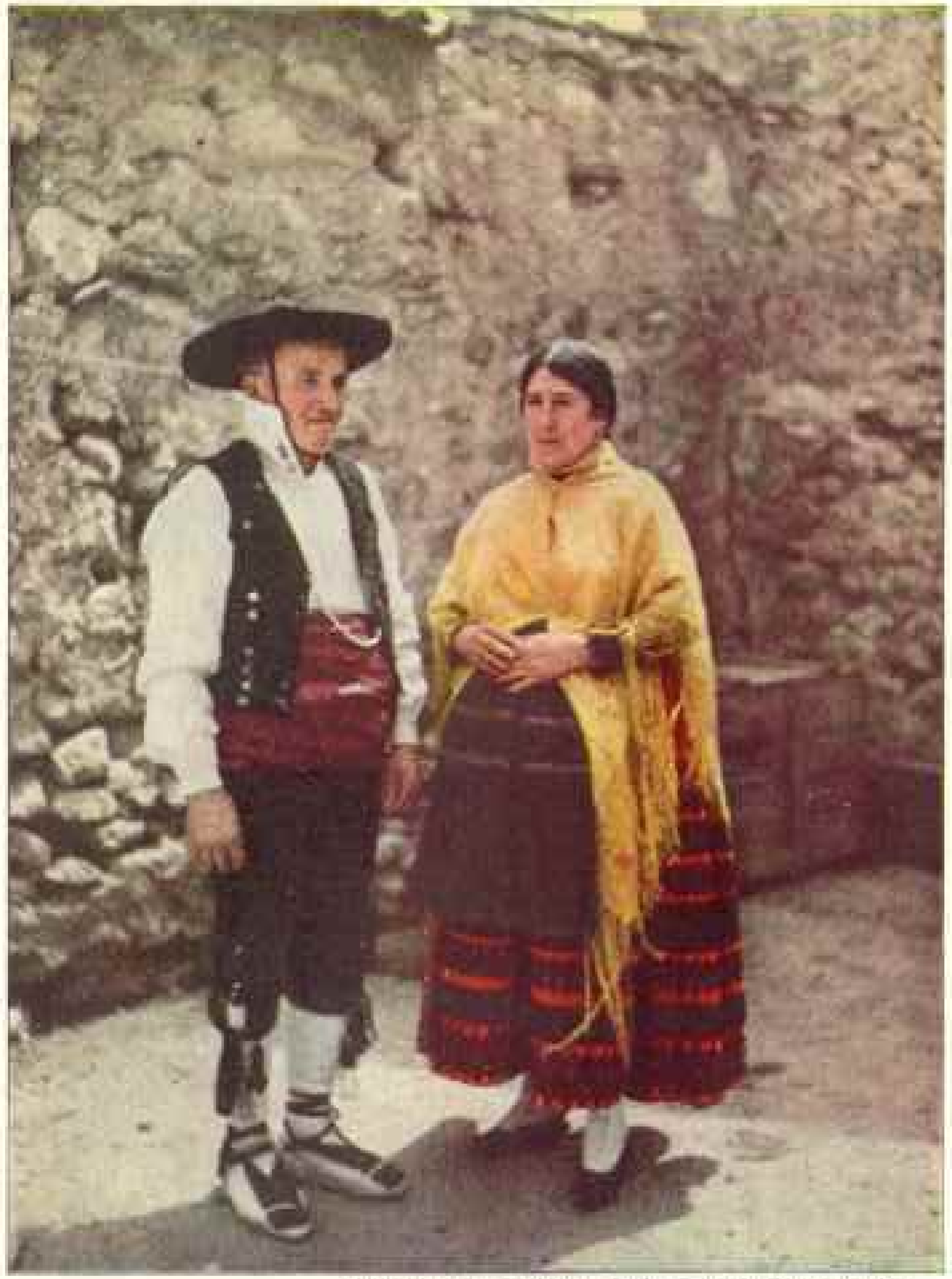
However, hydroelectric power is rapidly accomplishing the downfall of those which Cervantes' hero left untoppled.



© National Geographic Society

THE SUCCESSFUL RECONQUEST OF SPAIN FROM THE MOORS BEGAN HERE

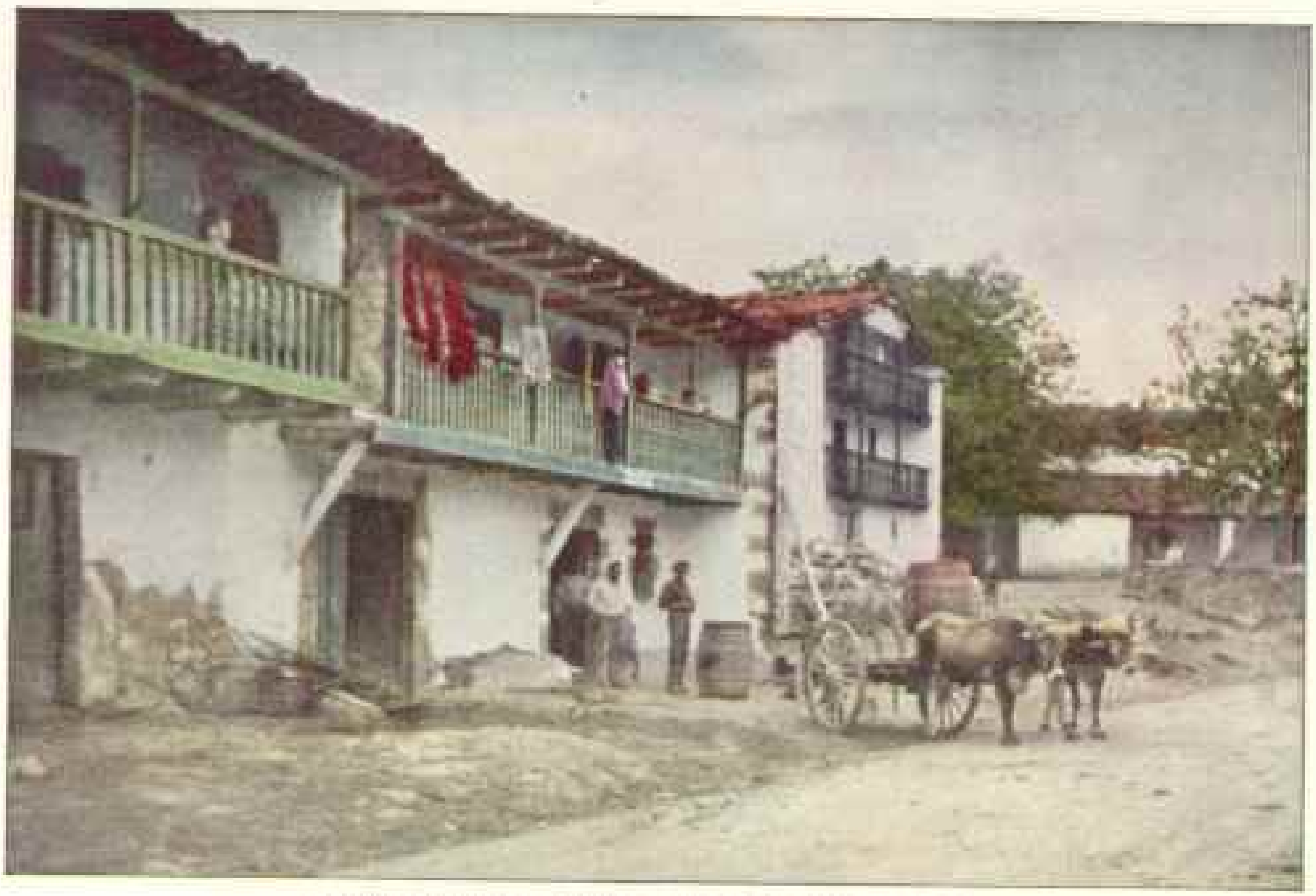
Oviedo, capital city of Asturias, was founded in the eighth century. It successfully resisted the tide of Moorish invasion which engulfed so much of Spain and launched the Christian drive which pushed the Moslems back into Africa. A corner of Cathedral Square.



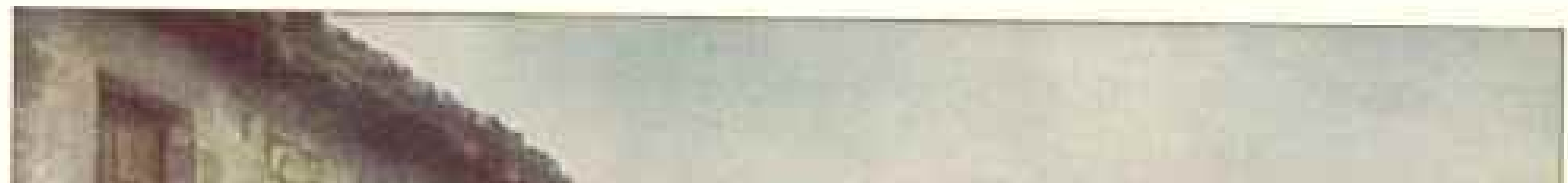
Natural-Color Photographs by Gervais Courtellemont

ON RARE OCCASIONS OLD COSTUMES ARE STILL FOUND IN SEGOVIA

Each province and many cities and villages once had distinctive costumes of their own. Of late years these have tended to give way to more commonplace modern dress, but in the Queen City of Old Castile the change has not been complete.



IN THE VILLAGE OF RASINES, SANTANDER PROVINCE



© National Geographic Society

Natural-Color Photographs by Gervais Courtellemont

REMINDERS OF A PASSING AGRICULTURAL AGE

The wooden plow and primitive cart are much like those used by the Iberians in Roman days. They are gradually disappearing, however, as modern methods and machinery reach farther and farther into the provinces. The structure raised on piles is for grain storage. An Asturian village between Santander and Oviedo.

PURSUING SPANISH BYPATHS NORTHWEST OF MADRID

By Harry A. McBride

Author of "On the Bypaths of Spain," "The Land of the Basques," "The Land of the Free in Africa," etc., in the National Geographic Magazine

WE—the artist and myself—had been wandering among the delightful bright little towns of Andalusia—along the Mediterranean coast from Málaga to Alicante. But one must naturally arrive sooner or later at Madrid. Madrid—the Capital, the "Corte," the pride of every Spaniard.

Here one revels among the bright cafés, the theaters, the animated streets and boulevards, and, perhaps best of all, among the wonderful Murillos and Goyas at the Prado. But this modern, delightful capital was not our objective, for we were headed Galicia-ward, in the far northwest.

From Madrid the main railway line toward the north gets as far as Villalba, and there it branches, one line proceeding through Segovia and the other running farther west through Ávila. These two lines join again at Medina del Campo, and then the route continues north through Valladolid, Burgos, and San Sebastián to the French frontier.

Segovia, though on a main railway artery, is often passed by, the tourist getting only a glimpse as the train hurries over a seemingly endless rolling plain, almost a desert in parts, and brings one within sight of this marvelous old Roman town. The approach is somewhat like that to Toledo, though more startling. One suddenly sees, rising abruptly out of the flat plain, just as Gibraltar rises out of the sea, a rocky hill more than 300 feet in height, perched upon the top of which are the battlemented towers, the domes, belfries, and spires of walled-in Segovia, jutting up like the masts and fighting tops of some huge man-of-war.

SEGOVIA HAS TRAINED SPAIN'S ARTILLERY OFFICERS

We collected our hand baggage, wished our fellow passengers in the compartment a "buen viaje" in the polite Spanish fashion, and climbed down onto the roofed-in Segovia station.

The usual railway station dinginess was brightened by good-looking young fellows, strolling up and down, in the natty uniform of the Spanish artillery, tight-fitting jackets and trousers of dark blue with red stripes, the insignia being a grenade on each side of the collar. The colorful uniform is now giving way, however, to the drab khaki.

Until a year or so ago, at Segovia was located the Artillery Academy of Spain, where about 1,000 cadets were in attendance, boys of 17 and upward. They were free from classes at 6 in the afternoon, and then were accustomed to forgather in dozens at the Café del Comercio, in the Plaza Mayor.

Until very recently, military instruction in Spain had been divided among the Academy of Infantry at Toledo, Engineers at Guadalajara, Cavalry at Valladolid, Artillery at Segovia, and the Quartermaster Department at Ávila. Now, however, all branches are joined in a general academy at Zaragoza.

A ROMAN AQUEDUCT IS SEGOVIA'S CHIEF GLORY

The most interesting feature of Segovia is the old Roman aqueduct, dating from the time of Augustus. This structure, built of solid squared blocks of granite, green with age, simply set together without cement or mortar, is 900 yards long and consists of 119 arches, some of them nearly 100 feet in height. Perched on the top for about a third of the length is a second tier of arches.

The whole structure is a stupendous reminder of the excellence of Roman engineering. It passes directly over the streets and the market place of the town.

Under one of these arches stood a picturesque Segovian shepherd, rolling a cigarette. He was old and bent, his face deeply lined by sun and wind, and on his chin was a gray stubble of at least a week's growth. His feet were incased in thick

Photograph by Angel Rubio

THE HIGH-POWERED SALESMAN CAN USUALLY DRAW A CROWD

Excellent talkers, they stand on a table and extol the virtues of anything from toothpaste to razors. As in all countries, the ubiquitous small boy wriggles his way to the front of the crowd.

wool and in place of shoes he wore sandals with large heavy soles strapped on with stout leather thongs.

His ankle-length trousers were large and baggy, made of thick, shiny brown leather. A woolen, collarless shirt was visible inside his bright leathern vest. The coat was of white sheep's wool, somewhat dingy with wear, set off around the collar and cuffs with green velvet. Over all this he wore a heavy black cape which trailed to the ground. His hat was black, too, soft and wide, with upcurved brim and tied under his chin with a leather strap.

CATHEDRAL AND ALCÁZAR LEND LUSTER TO SEGOVIA

Some few years ago—in 1522, to be exact—the Segovians decided to build themselves a new cathedral to replace their old one. The result is a masterpiece of Gothic design, rearing up in rich yellows and browns to the high domed tower.

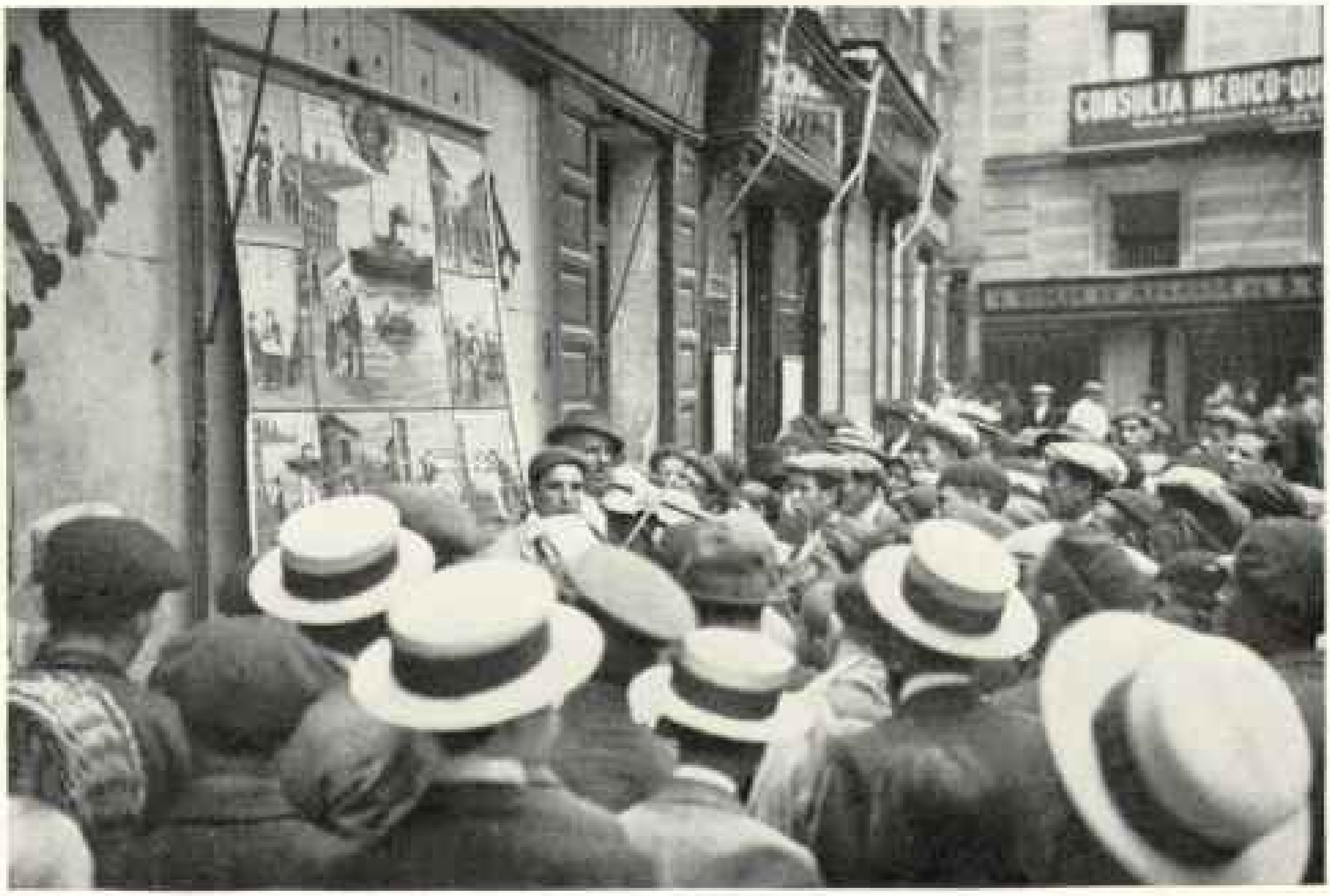
But artist folk all seek first the famous Alcázar, a castle built in the 11th century by Alfonso VI and restored in 1352-58. Its charm lies in two things: first, the setting, on a high, sharp cliff, sloping away abruptly on both sides, a setting exceedingly theatrical; second, the beauty of the structure itself, a perfect Old World stronghold of turrets, battlements, and towers.

Never to be forgotten is a view of the Alcázar from below, where one may look up at the graceful spires piercing the blue, late-afternoon sky, with the sun's reflected glow turning the old walls to deep orange and magenta.

Rare is the day upon which at this spot some artist has not pitched his easel near the little stream, endeavoring to transfer the enchantment to his canvas.

At the end of one of Segovia's narrow streets is an ancient house of two stories. There are three balconied windows along the front above, but from the street level there is only one break in the solid wall—the arched doorway.

The front wall is of large square blocks of stone, but, instead of being cut with a smooth surface, the outward face of each block is cut like a pyramid, with the point projecting toward the street. It gives the



Photograph by Angel Rubio

THE STORY-TELLER ALWAYS HAS AN APPRECIATIVE AUDIENCE

Pictures, instead of books, have most appeal to certain elements of Madrid's population, for many of them lack sufficient education to enjoy printed matter.

effect of being the inside of a gigantic waffle iron. This was formerly a fortified mansion, and the townspeople have appropriately named it the Casa de los Picos. A friend had taken us to see this peculiar building, and later, from a higher place of vantage, he pointed southward and said:

"Do you see that range of mountains? Look well at the profile against the sky. We Segovians call it 'The Dead Woman'."

There was indeed a striking resemblance in the mountain line to a woman lying in death.

THE AGE OF CÆSAR LINKED WITH THE AGE OF DETROIT

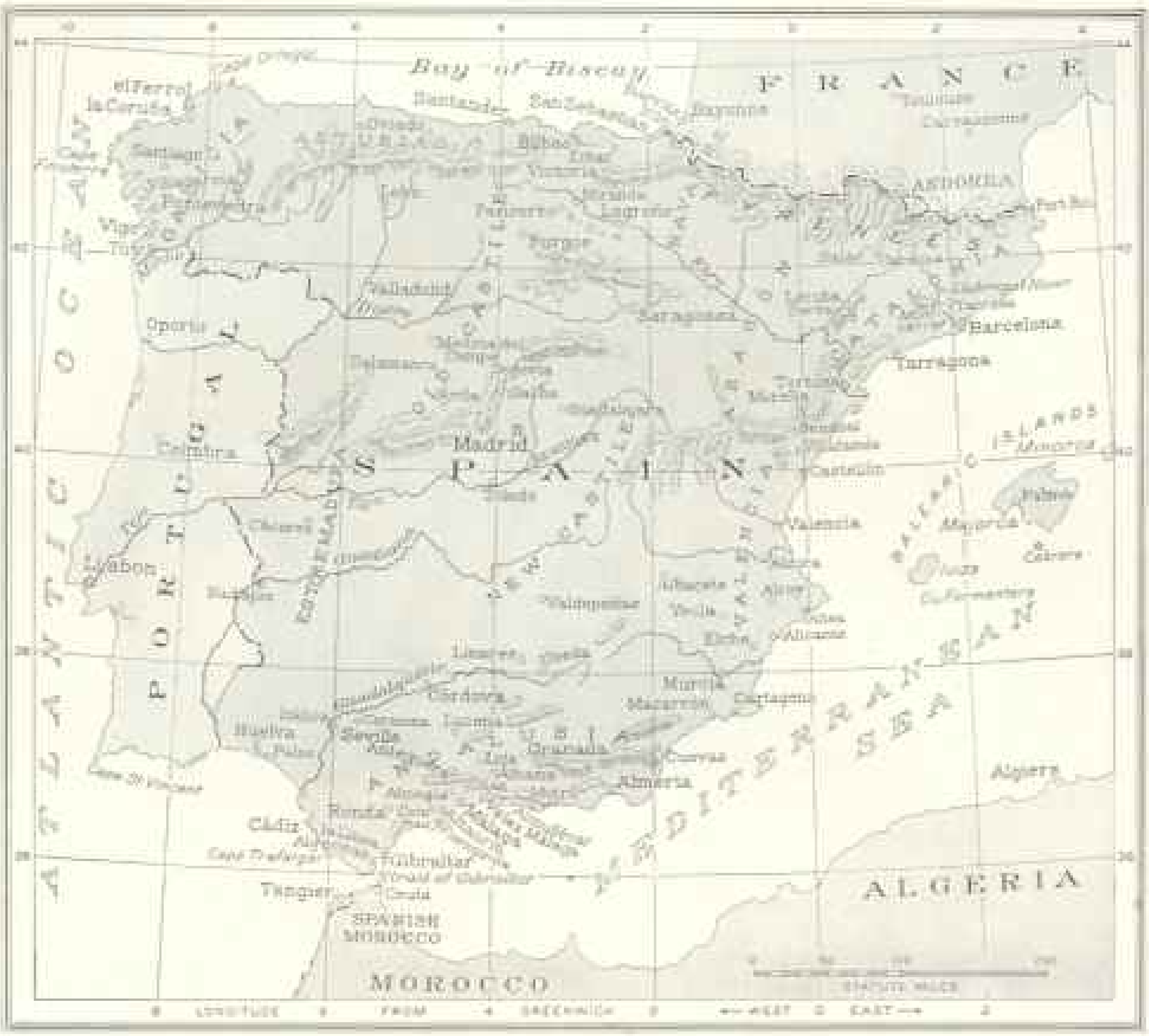
The motor bus is the easiest way to get cross-country from Segovia to Ávila, and this modern conveyance starts its journey from beneath one of the arches of the old Roman aqueduct, thus linking the age of Cæsar with the age of Detroit. The bus evidently would not withstand the centuries as the Roman work had done, because it was already quite dilapidated. After getting under way in leisurely fashion half an hour after schedule time, we found the road to be in a similar condition. The wind-swept plain was monotonous, but the holes and ruts in the road made the trip exciting if not comfortable.

How may one describe Ávila? One may sing all the poets' songs of famous Carcassonne and still not do it justice; for Carcassonne has been repaired and rebuilt, while Ávila lies, a tranquil old lady, secure in her unmatched antiquity, largely as the Middle Ages left her—a veritable mirage in the center of a treeless desert.

Such a picture of the ancient times can be found nowhere else. The old walls surround the town with quaint, sturdy battle towers jutting up at regular intervals—marvelous ramparts rebuilt in 1090.

The ancient stone cathedral seems more a stronghold than a religious edifice. Even the houses, packed closely together in the limited space within the walls, are cold and austere in their granite strength.

But, instead of knights in armor clanking across the cobbled square, we hear the soft pid-pad of donkeys' feet. Astride is a barefoot peasant lad flopping his legs at each step. Strapped on each side is a


Bay of Biscay
FRANCE
Bayonne
Santander
San Sebastian
Bilbao
Vitoria
Logroño
Burgos
el Ferrol
la Coruña
Santiago
Pontevedra
Vigo
Tuy
ASTURIAS
Oviedo
León
Valladolid
Oporto
Salamanca
Segovia
Avila
Madrid
Toledo
Guadalajara
Saragossa
Lérida
ANDORRA
Port Bou
Barcelona
Tarragona
Tortosa
Castellón
Valencia
Coimbra
SPAIN
PORTUGAL
ATLANTIC OCEAN
Lisbon
Badajoz
Cáceres
ESTREMADURA
Valdepeñas
Albacete
Alcoy
Elche
Alicante
Murcia
Cartagena
Linares
Córdoba
Huelva
Palos
Sevilla
Granada
Almería
Málaga
Ronda
Cádiz
Cape St. Vincent
Cape Trafalgar
Algeciras
Gibraltar
Strait of Gibraltar
Tangier
Ceuta
SPANISH MOROCCO
MOROCCO
BALEARIC ISLANDS
Minorca
Majorca
Palma
Cabrera
Iviza
Formentera
MEDITERRANEAN SEA
Algiers
ALGERIA
STATUTE MILES
LONGITUDE FROM GREENWICH
← WEST 0 EAST →

Drawn by A. H. Bumstead

THROUGH MOUNTAINOUS PROVINCES TO THE BAY OF BISCAY

Bypaths northwest of Madrid lead to such picturesque medieval strongholds as Segovia and Avila, and to the great shrine city of Santiago de Compostela.

wicker pannier, over the top of which is fastened a rope net. Through the holes in the net protrude the heads of protesting hens and roosters bound for market.

In Avila the sunlight is always intense, but in summer it seems actually to quiver. The eyes are slightly dazzled, causing outlines to become vague and colors to blend into one another.

THE ANCIENT THRESHING FLOOR IS STILL IN USE

The next day there was again one of those violent contrasts so frequent in Spain. We took a modern motor car to see an operation of labor the methods of which have not advanced in this region since Spain was a Roman province.

We went just outside the town to a threshing floor, where farmers were laboriously separating wheat from its straw. Each farmer had his little space of hard, level ground, each his piles of unthreshed grain. Oxen, drawing a heavy sledge around in a well-formed circle about 100 feet in diameter, trample and thresh the grain for two days before it is winnowed. Then it has to be gone over repeatedly by hand, the final work being the sifting in a large, round hand sieve.

The bottom of the heavy wooden sledges is filled with inserts of chipped flint knives let into the wood. Each sledge must contain nearly a thousand such inserts. Practically all the implements used by the farm hands are hand-wrought.

The grain is piled high upon cumbersome two-wheeled carts and hauled along the roads by oxen, which turn aside slowly at the honk of an automobile horn. The scene is unusual in color, having all graduations of browns, ochers, and yellows.

We journeyed by rail to Galicia. One could not be farther from the Mediterranean and still be in Spain! Galicia is a region between Portugal's northern frontier and the Bay of Biscay. Its Cape Finisterre, jutting out into the Atlantic, is Spain's "Land's End."

Once the mountains of León are passed, one enters a different country, unlike anything else in Spain, but still Spanish. It is mountainous and rugged, but with a ruggedness of the north, more Tyrolean in its tree-covered heights and green valleys, showing abundant rainfall. Many deem it the most beautiful part of Spain.

Its mountain ranges zigzag erratically all over the country, forming an enchanting patchwork of peaks and ridges. Its seacoast is dented with deep inlets almost like Norwegian fjords, and these provide large and safe harbors, such as Vigo, La Coruña, Pontevedra, and El Ferrol.

WITH THE MOUNTAIN FOLK OF GALICIA

The people seem, after the quick, vivacious Andalusians, to be slow and heavy-witted; but they are a good-natured folk, temperate and hard-working. They cultivate small patches of land, grow fruit, and raise cattle; yet with all their industry they have remained poor.

Their greatest income is from fisheries; but this trade is overcrowded, so the menfolk go farther afield and serve as seamen. Not only are they found on Spanish ships, but they have made the sea their business, and many are the American steamers whose fires are stoked by hard-working Galician firemen.

Thousands who did not care for the sea have emigrated, formerly to the United States, but since our doors have been partly closed to the mighty European influx, they go to Argentina and other parts of South America. They are more robust than other Spaniards, and during the construction of the Panama Canal were much sought after, as among the best laborers obtainable.

Like many other mountain folk, the Galicians cannot live happily in other environments, and many return from abroad after having saved a modest fortune. These returning emigrants, no matter in what country they have been, are known as "Americanos," and their influence has been considerable in recent years in effecting little improvements here and there—betterments they have learned in foreign countries.

LA CORUÑA SAW THE SAILING OF THE INVINCIBLE ARMADA

La Coruña is the most important city of the region, a busy seaport of some 65,000 inhabitants. One sees in the harbor big liners of Spanish, French, British, and German nationality, making this a port of call on their way from Europe to Cuba, South America, and Africa.

On the heights stands the Old Town, partly surrounded by walls; below, along the water front, is the New Town. Above are the narrow, crooked streets of ancient times; below, the wide, well-paved avenues of modernity, lined with trees and fine buildings. Here the iron balconies of the south are not so much in evidence; they are replaced by large sun windows.

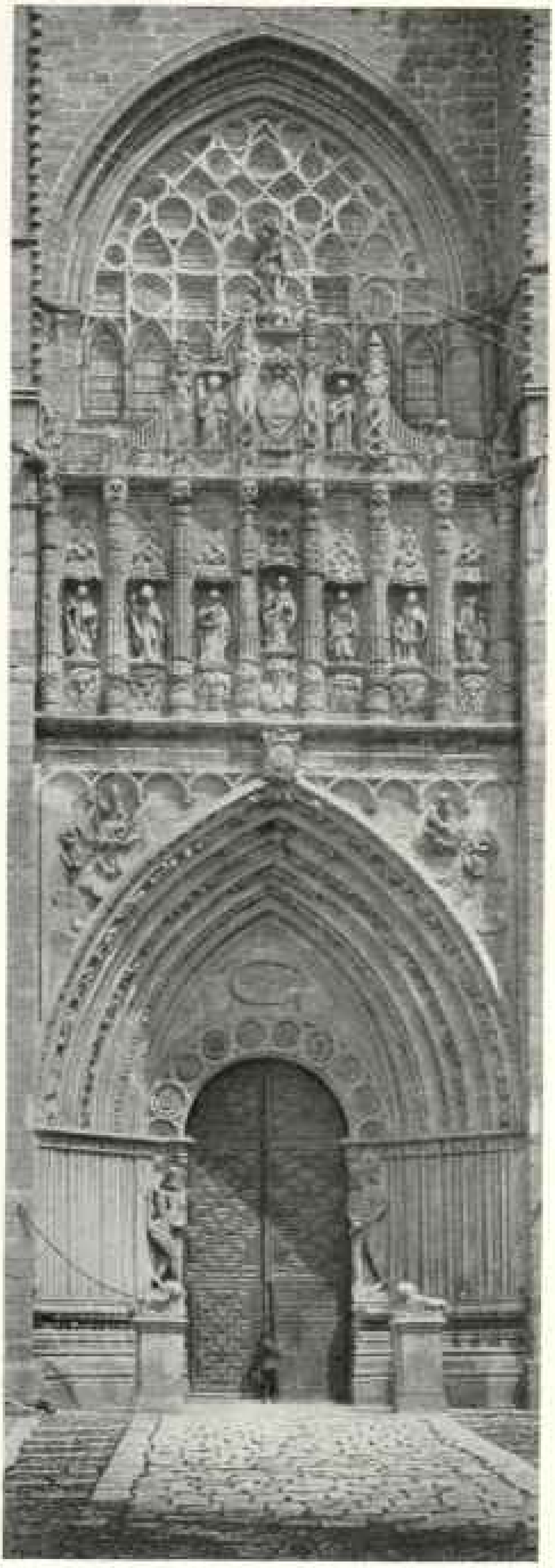
The old broken walls saw Philip II embark in 1554 for England on no less an errand than to wed Queen Mary. In 1588 they saw part of one of the greatest flotillas the world had ever known—130 warships, transports, and smaller boats, with a force of some 30,000 men, the ill-fated "Invincible Armada"—sail in here to refit before setting out to conquer England. Later they saw Drake burn the city, and beheld many another historical event.

The New Town sees the younger folk of modern times, well dressed in styles of London and Paris, gathering for the thé dansant on the terrace of the Atlantic, La Coruña's fine hotel, situated between the waters of the bay and the trees of the park; or assisting at the festivals of the Sporting Club.

Local poets liken the Calle Real, with its luxurious casinos, its fine shops, and its cafés, to the famous Calle de las Sierpes in Seville.* There is a difference, however: Seville's street is given over almost entirely to men, their ladies, after the old Moorish custom, seldom leaving home;

---

* See "Seville, More Spanish than Spain," in the NATIONAL GEOGRAPHIC MAGAZINE for March 1929.



© E. M. Newman

A PORTAL OF ÁVILA'S CATHEDRAL

It dates from the 16th century, but the Cathedral as a whole is a beautiful example of early Gothic architecture. Two wild-looking granite mace-bearers guard this entrance.

whereas in the Calle Real the women, freer than their Andalusian sisters, may be said to predominate.

The Playa de Riazor in the summer time, with its gaily dressed throngs, its bathers and bathing huts, and its open-air café, takes on the appearance of a beach at Biarritz.

La Coruña has a distinctive charm. A Galician writer, Fernández Flórez, says that visitors sense the charm, but cannot define it. He claims that it comes simply from the fact that La Coruña is like a passenger liner de luxe.

In most cities people are divided into high, middle, and low classes, but in this city the inhabitants may be better divided into two categories—passengers and crew. The crew, or the workers, work out of sight or below deck; they are not noticeable, though they labor long and industriously.

A LUCKY LOTTERY TICKET CAUSES A SHIP TO BE DESERTED

Factories are not evident in La Coruña, just as the boilers are not seen on the liner. The passengers do nothing but stroll around and amuse themselves, having paid for their passage and now having nothing to worry about except the tip at the end of the voyage.

In Bilbao, Santander, and other northern cities one sees a man rushing to his place of business.

"There goes a man hunting a dollar," the Spaniards say.

But in La Coruña one sees a vagabond sitting on a rock on the seashore. Making a low estimate, there will be three dollars' worth of delicious shellfish around him, which he could gather with little effort, but to which he pays not the slightest attention. It is quite true, though, that no beggars are seen on the streets of Galicia's metropolis.

Along the docks there are generally groups of poor peasants with bags and bundles, ready to embark on the South American-bound steamers.

In and out among the people, as well as in the streets, cafés, and gathering places throughout all Spain, wends the seller of lottery tickets, often a blind old man led by a barefoot boy.

Year before last, at La Coruña, a vender sold his last ticket in small shares to a considerable group of these intending emigrants. The steamer arrived the day the lottery was drawn, and this number won the second prize, 10,000,000 pesetas. Great was the rejoicing; passages were immediately canceled, the happy peasants returned to their farms, and the steamer left with many a vacant bunk in its steerage.

Farther south lies famous Santiago de Compostela, formerly the capital of Galicia (see Color Plates I and II).* This is a great religious center, a renowned pilgrim resort, and contains "no fewer than 46 ecclesiastical edifices, with 288 altars, 114 bells, and 36 pious fraternities."

The cathedral, begun in 1074, is in many ways the most interesting of French or Spanish Romanesque buildings. The western façade was built some seven centuries later. It is Churrigueresque in style, but so successful that it stands quite alone as an example of any movement tending to the baroque in architecture. Time, too, has heightened its beauty, for the granite of which it is built is now covered with delicate lichens in soft grays, greens, and rich oranges.

Here and there native flowering plants grow from between the stones, and in the sunset's glow the whole façade takes on the colors of deep molten gold.

Santiago's market place is always animated, rain or shine, and here it should be mentioned that there are more rainy days than fine ones. In drizzly weather the number of women sitting about the streets surrounded by their flat baskets of farm produce is perhaps smaller, but even during downpours some of them are on hand. The climate is like that of our Pacific Northwest. In summer it is delightful, but after November it rains—and rains.

Outside the town are innumerable beautiful vistas of mountains, pine-covered hills, and little farms.

Galicia is a land of granite. Its houses, fences, and outbuildings are constructed of this material, and at several places in the country, which is extremely fertile in some sections, we noticed that even supports for grapevines were made of granite. Wherever there is an extent of arable land, the district is densely populated. Thus the farms are very small and produce little more than enough to supply the immediate family.

In other parts of rural Spain there were always noticeable the picturesque regional costumes of the peasants, but not so in Galicia, where there seems to be no distinguishing mark of this sort. The men working in the tiny fields looked about like their counterparts in England.

Throughout the country one sees numerous crosses of granite topped by figures representing the Crucifixion and giving proof of the pious nature of the Galician farmer folk.

The railway to the south carries one through more of this enchanting alpine picturesqueness, with mountains near and far, the ever-present pines, the little stone farmhouses. It winds in and out, over rivers, giving every now and then little pictures of the Atlantic in pretty frames through rocky cliffs. It takes one through the lovely village of Villagarcia on the Ria de Arosa, a fjord with rocky islets dotting its entrance. Many Galicians have their summer homes here, where they may enjoy the sea bathing.

VIGO WOMEN CARRY SPAIN'S HEAVIEST BURDENS ON THEIR HEADS

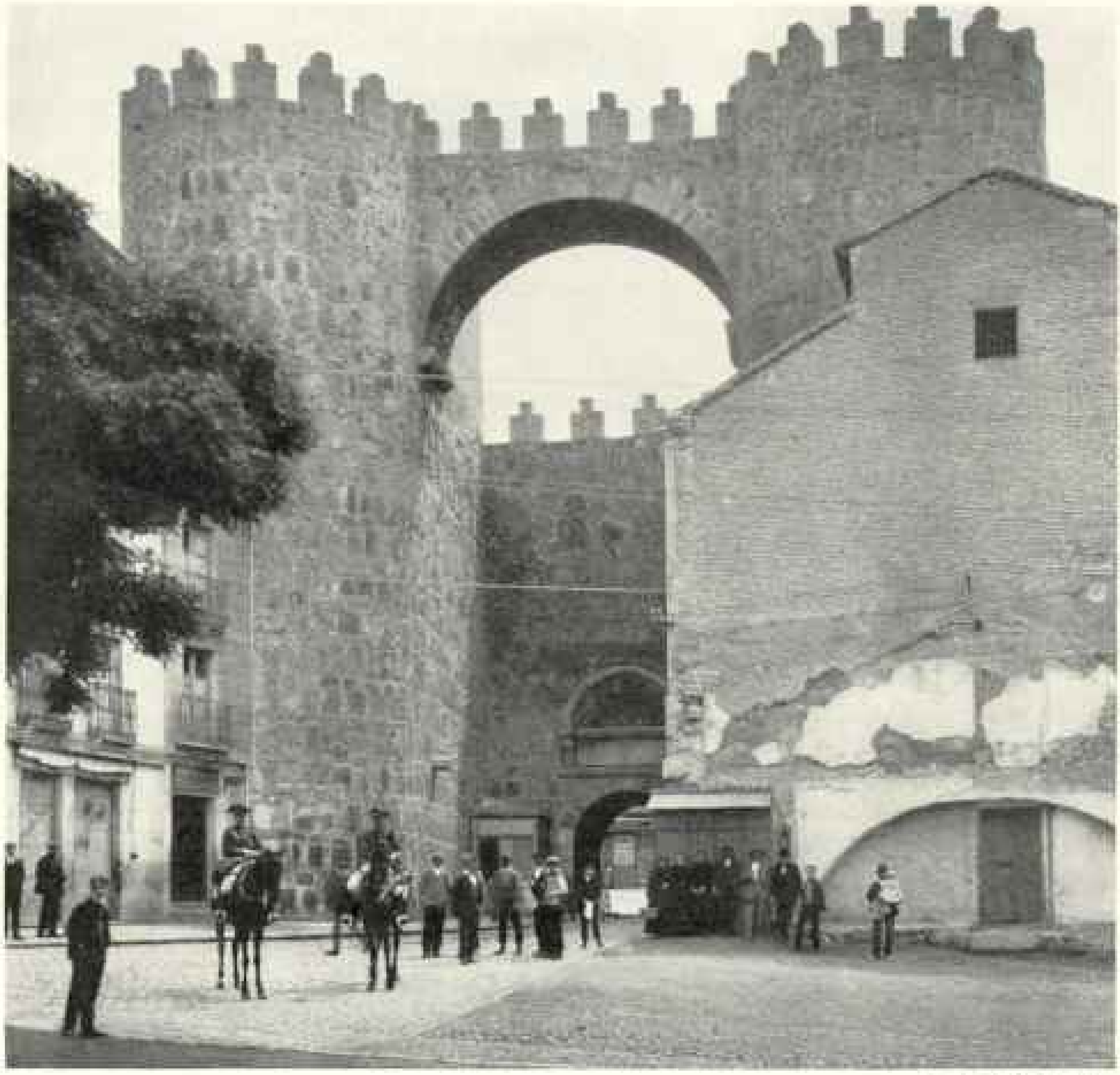
Again the road leaves the sea, and the rather small-sized engine puffs up mountain grades, around curves, coasts downhill, and arrives at Pontevedra, also situated at the end of a fjord, where there are fisheries and sawmills.

Once more our train crosses the rocky ground between two fjords and, exhausted from its strenuous four hours' effort, stops wearily in the station of Vigo, after bringing us in that time only 66 miles from Santiago de Compostela.

A broad street, rather than a crooked one, leads us from the station into the newer part of the town. Vigo is commercially picturesque and some of the little streets in the old quarter are exceedingly interesting. They are tortuous in their zigzags, always crowded with a busy throng of laborers and women padding over the irregular pavement of granite blocks. These streets are mostly steep and the pavement slippery and uncertain in the drizzling rain.

---

* Santiago (St. James) is a familiar city name in many Spanish-speaking countries—Cuba, the Dominican Republic, Chile, Colombia, Panama, Paraguay, Mexico, etc.



© E. M. Newman

STURDY GATES AND 86 TOWERS GUARDED MEDIEVAL ÁVILA

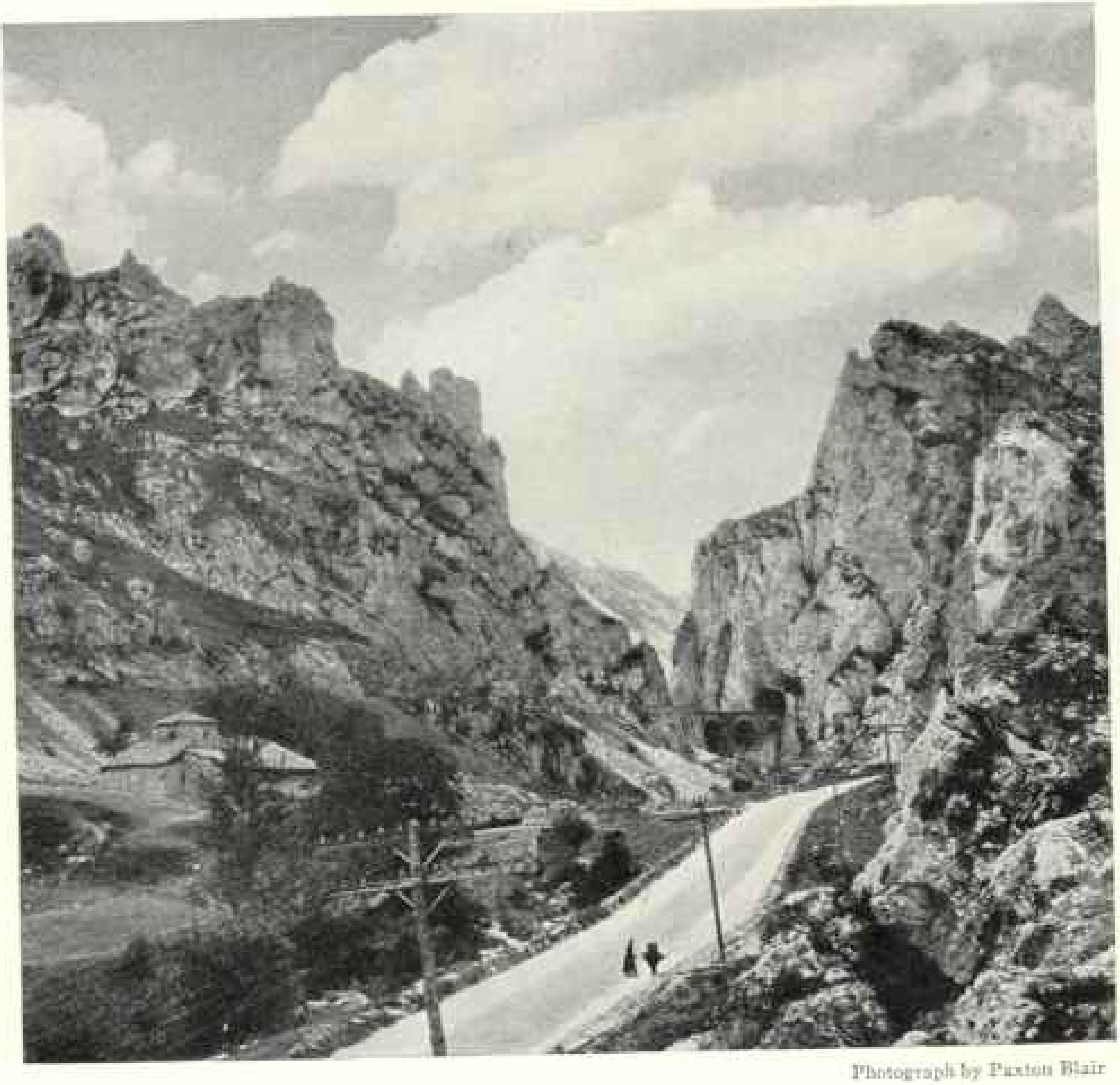
"The spirit of the old knightly Catholic Castile" breathes forth from the city's dark granite walls and the austere houses of the nobles. Its fortresslike Cathedral (see page 126) forms part of the walls, behind which many of the boy kings of Castile took refuge from the powerful barons.

Here there is a long row of arched-front houses in the fishing quarters, with flat fish baskets piled in front of the doors. Women appear to do more than their share of the heavy work. They carry seemingly impossible burdens on their heads—pails of water, huge baskets of vegetables, chickens, crated goods, bicycles, beds, and even coffins.

All over Spain the peasant women are expert carriers, but nowhere is this so strikingly evident as in Vigo.

The most important industry is fishing and fish packing, almost rivaling that of Bordeaux. The men do the actual fishing, but the women seem paramount from the time the catch is landed. They carry the fish in large flat baskets, and they also do a large part of the buying and selling. In the large market it is strange to see women buyers, representing the packing houses, bidding and bargaining for catches of sardines and anchovies. Vigo merchants claim that quantities of these varieties from Spanish waters are sent to France to appear on the market in French tins.

Near the town are several charming villages, nestling in the mountains or perched on the sea cliffs, all old and all built of



Photograph by Paxton Blair

JAGGED PEAKS AND ROCK TOWERS FROWN DOWN ON THE PASS OF PANCORBO

This is the narrowest part of the gorge of the Oroncillo of Old Castile. Tunnels and viaducts enable the railroad and motor highway to surmount its difficulties.

granite. They have the venerable stone church, the little plaza with its few trees. Into such towns the country people have for hundreds of years brought in their produce to the weekly market, and the scene to-day is probably little different from what it was when the world was supposed to be flat.

Besides the farm products, there are fish, and, to add to the commotion, itinerant merchants come with cheap piece goods, hand-forged and rather crude implements for working the soil, *alpargatas* (a kind of sandal) of cotton uppers but rope soles, and an endless variety of sweets and poorly made novelties. There is a brisk demand also for wooden shoes, much used because of the rainy climate.

These country markets are animated and colorful.

SPAIN GETS ITS CRATES AND BOXES FROM GALICIA

Our last point of interest was Túy, on the Spanish bank of the River Miño, which separates Galicia from Portugal, some 15 or 20 miles from the Atlantic. It is one of those small towns, so often encountered in Spain, which has its specialty. In the eighth century it was the capital of Witiza, King of the Visigoths, but to-day it is known mainly because of

Photograph by Ernest Peterffy

JOGGING TO THE SEGOVIA MARKET

the noise of its sawmills. So much of Galicia is covered by pines that it is natural it should have a lumbering industry of importance.

Throughout Spain immense quantities of wooden boxes are used for the packing of wines, almonds, raisins, fish, and other products. The owner of one of the Túy sawmills told us that 85 per cent of all these boxes are made in the Galician region. They are shipped to the buyers in knock-down form and nailed together by the users. The material is a soft white pine less resinous than our pitch pine.

The largest factory every year cuts up enough wood for a million boxes and crates.

Yet on the Miño float no large rafts of logs such as are to be seen in the United States. The trees are all cut by hand, with a powerful and expert Galician on either end of the long, heavy saw. The logs are hauled in carts, and there are no picturesque costumes to brighten the scene.

Little by little the cutting is being done farther and farther from the mills and railroads. There is a law providing for reforestation, but apparently it has not been strictly enforced. The supply is gradually becoming more scarce and more expensive, though by no means are Galician forests yet approaching exhaustion.

We had concluded our wanderings in the out-of-the-way beauty spots of Spain. On an imposing iron bridge over the Miño the train crossed into Portugal.

Notice of change of address of your NATIONAL GEOGRAPHIC MAGAZINE *should be received in the office 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 March number, The Society should be notified of your new address not later than February first.*

NATIONAL GEOGRAPHIC SOCIETY

GEOGRAPHIC ADMINISTRATION BUILDINGS
SIXTEENTH AND M STREETS NORTHWEST, WASHINGTON, D. C.

GILBERT GROSVENOR, President
JOHN OLIVER LA GORCE, Vice-President
O. P. AUSTIN, Secretary
GEO. W. HUTCHISON, Associate Secretary
JOHN JOY EDSON, Treasurer
HERBERT A. POOLE, Assistant Treasurer
FREDERICK V. COVILLE, Chairman Committee on Research

EXECUTIVE STAFF OF THE NATIONAL GEOGRAPHIC MAGAZINE

GILBERT GROSVENOR, EDITOR

JOHN OLIVER LA GORCE, Associate Editor

J. R. HILDEBRAND
Assistant Editor

RALPH A. GRAVES
Assistant Editor

FREDERICK SIMPICH
Assistant Editor

FRANKLIN L. FISHER
Chief Illustrations Division

WILLIAM JOSEPH SHOWALTER
Chief Research Division

MELVILLE BELL GROSVENOR
Asst. Chief Illustrations Division

ALBERT H. BUMSTEAD
Chief Cartographer

MAYNARD OWEN WILLIAMS
Chief Foreign Editorial Staff

CHARLES MARTIN
Chief Photographic Laboratory

BOARD OF TRUSTEES

JOHN JOY EDSON
Chairman of the Board, Washington Loan & Trust Company

DAVID FAIRCHILD
Special Agricultural Explorer, U. S. Department of Agriculture

C. HART MERRIAM
Member National Academy of Sciences

O. P. AUSTIN
Statistician

GEORGE R. PUTNAM
Commissioner U. S. Bureau of Lighthouses

THEODORE W. NOYES
Editor of The Evening Star

GEORGE K. BURGESS
Director U. S. Bureau of Standards

RAYMOND S. PATTON
Director U. S. Coast and Geodetic Survey

CHARLES EVANS HUGHES
Chief Justice of the United States

JOHN J. PERSHING
General of the Armies of the United States

C. M. CHESTER
Rear Admiral U. S. Navy, Formerly Supt. U. S. Naval Observatory

J. HOWARD GORE
Prof. Emeritus Mathematics, The George Washington University

FREDERICK V. COVILLE
Botanist, U. S. Department of Agriculture

GEORGE SHIRAS, 3d
Formerly Member U. S. Congress, Faunal Naturalist and Wild-Game Photographer

JOHN OLIVER LA GORCE
Associate Editor National Geographic Magazine

ROBERT V. FLEMING
President Riggs National Bank

CALVIN COOLIDGE
Formerly President of the United States

CHARLES G. DAWES
American Ambassador to Great Britain

JOHN BARTON PAYNE
Chairman American Red Cross

A. W. GREELY
Arctic Explorer, Major General U. S. Army

GILBERT GROSVENOR
Editor of National Geographic Magazine

GEORGE OTIS SMITH
Director U. S. Geological Survey

O. H. TITTMANN
Formerly Superintendent U. S. Coast and Geodetic Survey

JOHN FOOTE, M. D.
Dean and Professor of Pediatrics, Georgetown University

ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

TO carry out the purposes for which it was founded forty-two 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 which the Magazine can use, generous remuneration is made. Contributions should be accompanied by addressed return envelope and postage.

IMMEDIATELY after the terrific eruption of the world's largest crater, Mt. Katmai, in Alaska, a National Geographic Society expedition was sent to make observations of this remarkable phenomenon. Four expeditions have followed and the extraordinary scientific data resulting given to the world. In this vicinity an eighth wonder of the world was discovered and explored—"The Valley of Ten Thousand Smokes," a vast area of steaming, spouting fissures. As a result of The Society's discoveries this area has been created a National Monument by proclamation of the President of the United States.

AT an expense of over $50,000 The Society sent a notable series of expeditions into Peru to investigate the traces of the Inca race. Their discoveries form a large share of our knowledge of a civilization waning when Pizarro first set foot in Peru.

THE Society also had the honor of subscribing a substantial sum to the expedition of Admiral Peary, who discovered the North Pole, and contributed $55,000 to Admiral Byrd's Antarctic Expedition.

NOT long ago 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 of California were thereby saved for the American people.

THE Society's notable expeditions to New Mexico 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 have solved secrets that have puzzled historians for three hundred years. The Society is sponsoring an ornithological survey of Venezuela.

TO further the study of solar radiation in relation to long range weather forecastings, The Society has appropriated $65,000 to enable the Smithsonian Institution to establish a station for six years on Mt. Brukkaros, in South West Africa.

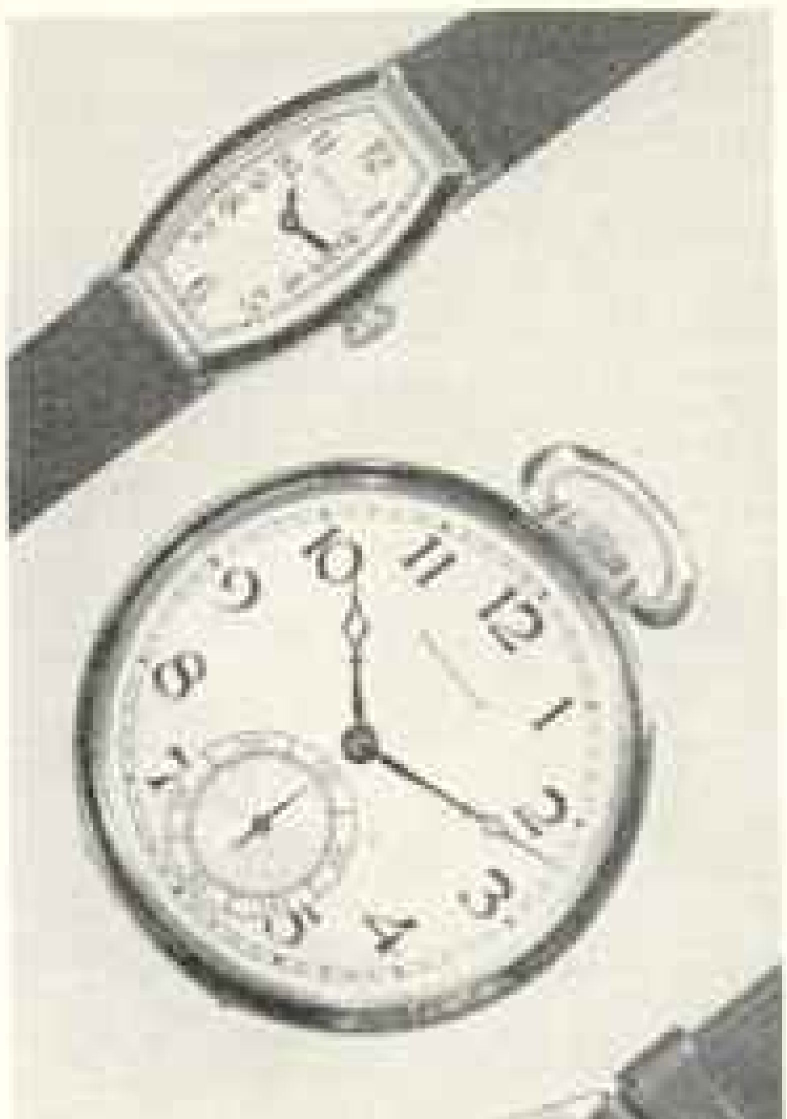
Copyright, 1930, by National Geographic Society, Washington, D. C., in the United States and Great Britain. All rights reserved. Entered at the Post Office at Washington, D. C., as Second-Class Mail Matter. Acceptance for mailing at special rate of postage provided for in Sec. 1103, Act of October 3, 1917, authorized July 1, 1918. Cover design and names registered in United States Patent Office. Marca Registrada.

SHOOTING THE SUN . . .

at the headwaters of the mystic Orinoco!

Hamilton journeys to a treacherous spot never before glimpsed by a white man!

Wide World



SIX MONTHS away from civilization, the Dickey Orinoco Expedition searched the remote wilderness of South America for the source of the mighty Orinoco River!

Menaced by Guaharibos Indians . . . tortured by excessive heat and humidity . . . the party pushed on *fifty miles farther than any white man had ever gone,* ascended the murderous upper reaches of the Orinoco and planted the flag close to the headwaters!

Dr. Dickey and his party knew their position day after day by relying solely on Hamilton Watches. Each "shot of the sun" for the time was checked by Hamilton's unerring accuracy!

Hamilton also went with both Roy Chapman Andrews to the Gobi Desert and Commander Richard Byrd to the South Pole. It times the country's fastest flyers—on the rails and in the air. It is the only watch known as "the Watch of Railroad Accuracy."

Let us send you "The Timekeeper," a booklet telling how this fine watch is made and picturing the New Year Hamilton models. Address Hamilton Watch Company, 882 Columbia Avenue, Lancaster, Pennsylvania.

Top—Chevy Chase, Model A. In 14k natural or white gold, with plain dial and inlaid enameled numerals, plain case, $75. *Center*—Marshall—14k natural or white gold, $75. *Bottom*—Perry—14k filled gold, natural or white, $55; with raised gold figure dial, $63. Other Hamiltons for men and women from $40 to $685.

HAMILTON

The Watch of Railroad Accuracy

CHOOSE . . . FROM THESE FINE TRANSATLANTIC TRAVEL VALUES

United States Lines offers you luxurious passage on the mammoth LEVIATHAN, World's Largest Ship . . . a large, beautifully appointed First Class stateroom . . . the amenities of the gorgeous Club Leviathan . . . Ben Bernie band of entertainers . . . first-run "Talkies" . . . ship-to-shore telephone service . . . Pompeian Pool . . . magnificent cuisine . . . flawless service . . . 5 day 6 hour speed . . . for as low as $272.50. "Grade A" Tourist Third Cabin LEVIATHAN—$216 Round Trip. Or superfine service from those palatial cabin liners — George Washington, America, Republic, President Harding and President Roosevelt—$132.50 to $155. Or sailings every Thursday, New York to London direct on one of the five fine American Merchant Line ships . . . one class . . . selective list . . . $100. Yes, this is the season of American transatlantic values — choose your ship!

●

DE LUXE 16-DAY WEST INDIES CRUISES $175, *including shore excursions*

Convenient sailings to select from . . . Jan. 10, Jan. 28, Feb. 15 and Mar. 7! Your ship the magnificent REPUBLIC. Sail from Philadelphia . . . 4,000 miles of tropical seas . . . four famous pirate ports . . . Nassau, Kingston, Cristobal, Havana. Marvelous shore excursions. No passports required.

For information, literature, deck plans, etc., communicate with your local steamship agent or our nearest office.

UNITED STATES LINES

PAUL W. CHAPMAN, PRESIDENT

For complete information see your local agent or our offices: New York, 45 Broadway; Atlanta, 714 Healy Building; Boston, 75 State St.; Chicago, 216 N. Michigan Ave.; Cleveland, Hotel Cleveland Building; Detroit, 1514 Washington Boulevard; St. Louis, Jefferson Hotel; Philadelphia, 1600 Walnut Street; San Francisco, 691 Market Street; Los Angeles, 756 South Broadway; Minneapolis, 312 Second Ave., South; Seattle, 1337 Fourth Avenue; Pittsburgh, 705 Liberty Avenue; Washington, 1027 Connecticut Ave.; Little Rock, Wallace Building; New Orleans, Hibernia Bank Building; Berlin, Unter den Linden 9; Hamburg, Cor. Alsterthor and Ferdinandstrasse; London, 14 Regent Street, S. W. 1; Paris, 10 Rue Auber. THESE LINES OFFER A COMPLETE FREIGHT SERVICE—SPECIFY AMERICAN SHIPS FOR YOUR FOREIGN TRADE!

"Bound to Please"

THE NATIONAL GEOGRAPHIC MAGAZINE

Until May 1

Only $1.50 *Per Volume Plus Postage*

After May 1

$1.75

This Permanent
De Luxe Albrecht Cover
for Your Geographics
Opens Flat

Your whole family will thank you for turning the clutter of loose magazines into beautiful and usable bound volumes. Send your Geographics to one of the 28 associated binders listed below. Until May 1 for only $1.50 per volume, plus postage, he will bind them with Albrecht Super-Covers—brown, richly embossed, 22kt. gold on backbone, oversewed for extra strength, made of strong material, durable, waterproof. They will be "Bound to Please."

Also, Loose-Leaf Covers

In same design for temporary binding of six current Geographics, only $1.50 each, plus postage.

Atlanta, Ga., Nat. Library Bndg. Co., 311-19 Spring St. N.W.
Austin, Tex., Thrift Book Binding Co., 413 Congress Ave.
Baltimore, Md., Joseph Ruzicka, 606 N. Eutaw St.
Boston, Mass., F. J. Barnard & Co., Inc., 368 Congress St.
Brooklyn, N. Y., Chivers Bookbinding Co., 33-47 Nassau Ave.
Chicago, Ill., Brabandt & Valters Bookbinding Co., 3827-29 E. Ravenswood Ave.
Denver, Colo., Dieter Bookbinding Co., 1130 23rd St.
Des Moines, Iowa, Hertzberg Bindery, Inc., East Grand Ave.
Detroit, Mich., Mack & Orth, 1036 Beaubein St.
E. Cleveland, O., Nat. Library Bndg. Co., 1766 E. 133rd St.
Greensboro, N. Car., Joseph Ruzicka Bindery, 224 S. Greene St.
Independence, Kans., William Wade, So. 10th and Country Club Drive
Indianapolis, Ind., Nat. Library Bndg. Co., 546 S. Meridian St.
Los Angeles, Pacific Library Bndg. Co., 770 E. Washington St.
Louisville, Ky., Kentucky Book Mfg. Co., 319 W. Liberty St.
Muskogee, Okla., Motter Bookbinding Co., 129 Times Place
New Orleans, La., Walter W. Eckert Co., 941 Lafayette St.
New York, N.Y., Dess & Talan Co., Inc., 213-221 E. 144th St.
Philadelphia, Pa., Nat. Library Bndg. Co., 224 N. 15th St.
Pittsburgh, Pa., Andrew G. Wirth, 302 Sandusky St., N. S.
Portland, Ore., Davis & Holman, 111 Second St.
St. Paul, Minn., Waldorf Bindery, 502 Prior Ave.
Salt Lake City, Utah, Utah Library Bindery, 363 6th East St.
San Francisco, Calif., Foster & Futernick Co., 444 Bryant St.
Spokane, Wash., V. J. Languille Co., 611 W. Third Ave.
W. Springfield, Mass., Nat. Library Bndg. Co., 271 Park St.
Falkirk, Scotland, Dunn & Wilson, Ltd., Bellevue Bindery
Canada, W. A. Bressey, The Bookshelf Bdy., Ridgetown, Ont.

Price, $1.85 in Canada; ***after May 1,*** **$2.00**

Covers Manufactured and Guaranteed by

THE ALBRECHT COMPANY

Baltimore, Md.

"Bound to Please"

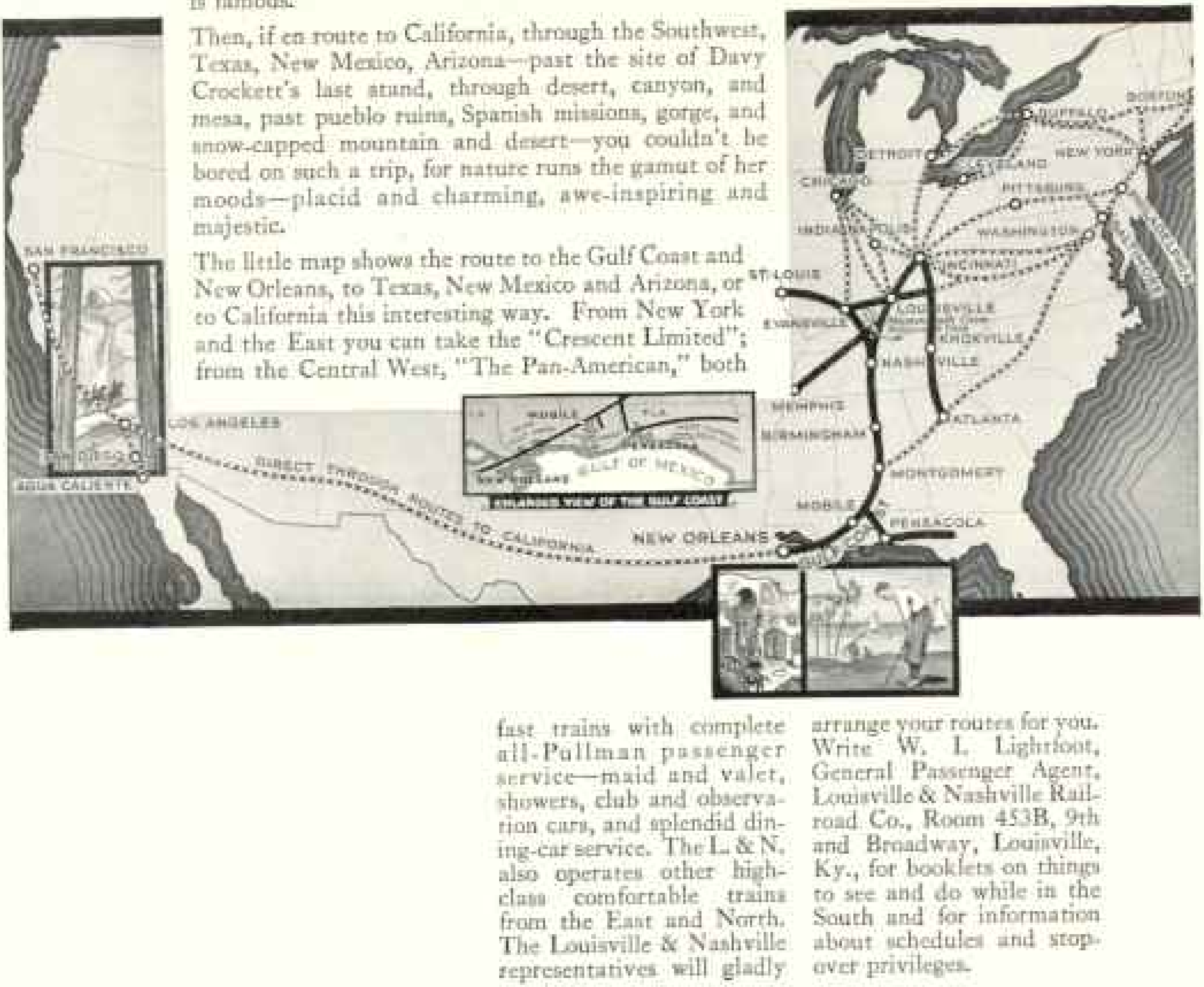
Each day the traveler wakens to new pleasures on the **GULF COAST,** *at* **NEW ORLEANS** . . . or on this warm-weather way to **California** . . . .

From the minute you begin your journey to the South you will be charmed with its attractiveness. Down from a land of ice and snow you come to the Gulf Coast, a region of vivid beauty and all-year outdoor sport. There is beauty in the warm sunshine and sparkling blue water, in the tree-canopied roads and gardens bright with green foliage and flowers, in the soft, pine-scented air that exhilarates and invigorates.

Or to New Orleans, where winters are mild and lively. Old landmarks, legacies of the French and Spanish, to see, quaint shops to poke about in, Mardi Gras revelries to take part in (Mardi Gras is February 17th this year), the horse races to visit, and restaurants and hotels to drop in for some of the dishes for which New Orleans is famous.

Then, if en route to California, through the Southwest, Texas, New Mexico, Arizona—past the site of Davy Crockett's last stand, through desert, canyon, and mesa, past pueblo ruins, Spanish missions, gorge, and snow-capped mountain and desert—you couldn't be bored on such a trip, for nature runs the gamut of her moods—placid and charming, awe-inspiring and majestic.

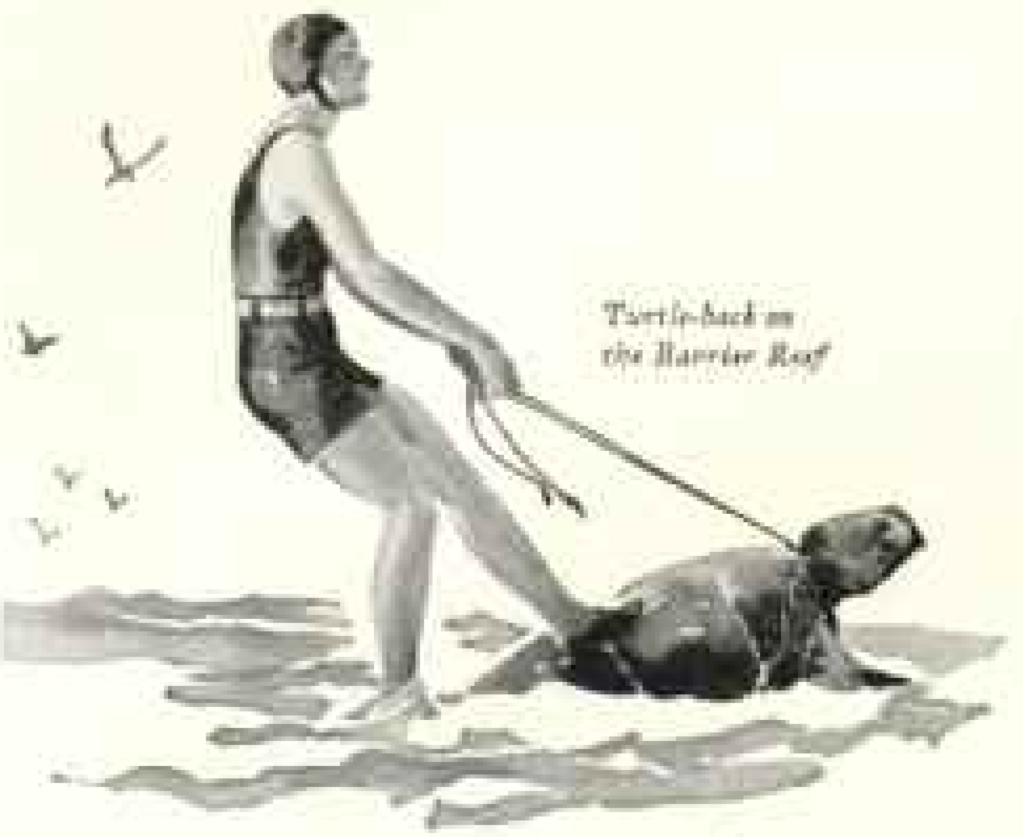
The little map shows the route to the Gulf Coast and New Orleans, to Texas, New Mexico and Arizona, or to California this interesting way. From New York and the East you can take the "Crescent Limited"; from the Central West, "The Pan-American," both fast trains with complete all-Pullman passenger service—maid and valet, showers, club and observation cars, and splendid dining-car service. The L. & N. also operates other high-class comfortable trains from the East and North. The Louisville & Nashville representatives will gladly arrange your routes for you. Write W. L. Lightfoot, General Passenger Agent, Louisville & Nashville Railroad Co., Room 453B, 9th and Broadway, Louisville, Ky., for booklets on things to see and do while in the South and for information about schedules and stop-over privileges.


SAN FRANCISCO
LOS ANGELES
SAN DIEGO
AGUA CALIENTE
DIRECT THROUGH ROUTES TO CALIFORNIA
MOBILE
FLA.
GULF OF MEXICO
NEW ORLEANS
ENLARGED VIEW OF THE GULF COAST
BOSTON
BUFFALO
DETROIT
CLEVELAND
NEW YORK
CHICAGO
PITTSBURG
INDIANAPOLIS
WASHINGTON
CINCINNATI
ST. LOUIS
LOUISVILLE
EVANSVILLE
KNOXVILLE
NASHVILLE
MEMPHIS
BIRMINGHAM
ATLANTA
MONTGOMERY
MOBILE
PENSACOLA
NEW ORLEANS

LOUISVILLE & NASHVILLE RAILROAD

WHEN IT'S
WINTER HERE
IT'S SUMMER IN

Australia



Turtle-back on the Barrier Reef

HAS your travelling ever taken you across the equator, beneath the Southern Cross, into the land where seasons are upside down and winter turns to summer?

No? Then here is a *new* travel experience. Strange ports and dreamy tropical islands dot the way to Australia — Hawaii, Tahiti, Fiji, Pago-Pago in Samoa, Rarotonga, New Zealand — the very names invite you to break the old routine and roam *new* seas.

Or sail from England or the Mediterranean, from the Orient, Egypt, Ceylon, Singapore or Cape Town. Visit your steamship or travel bureau office and trace the route to Australia that best fits your plans.

YOUR TRAVEL BUREAU KNOWS

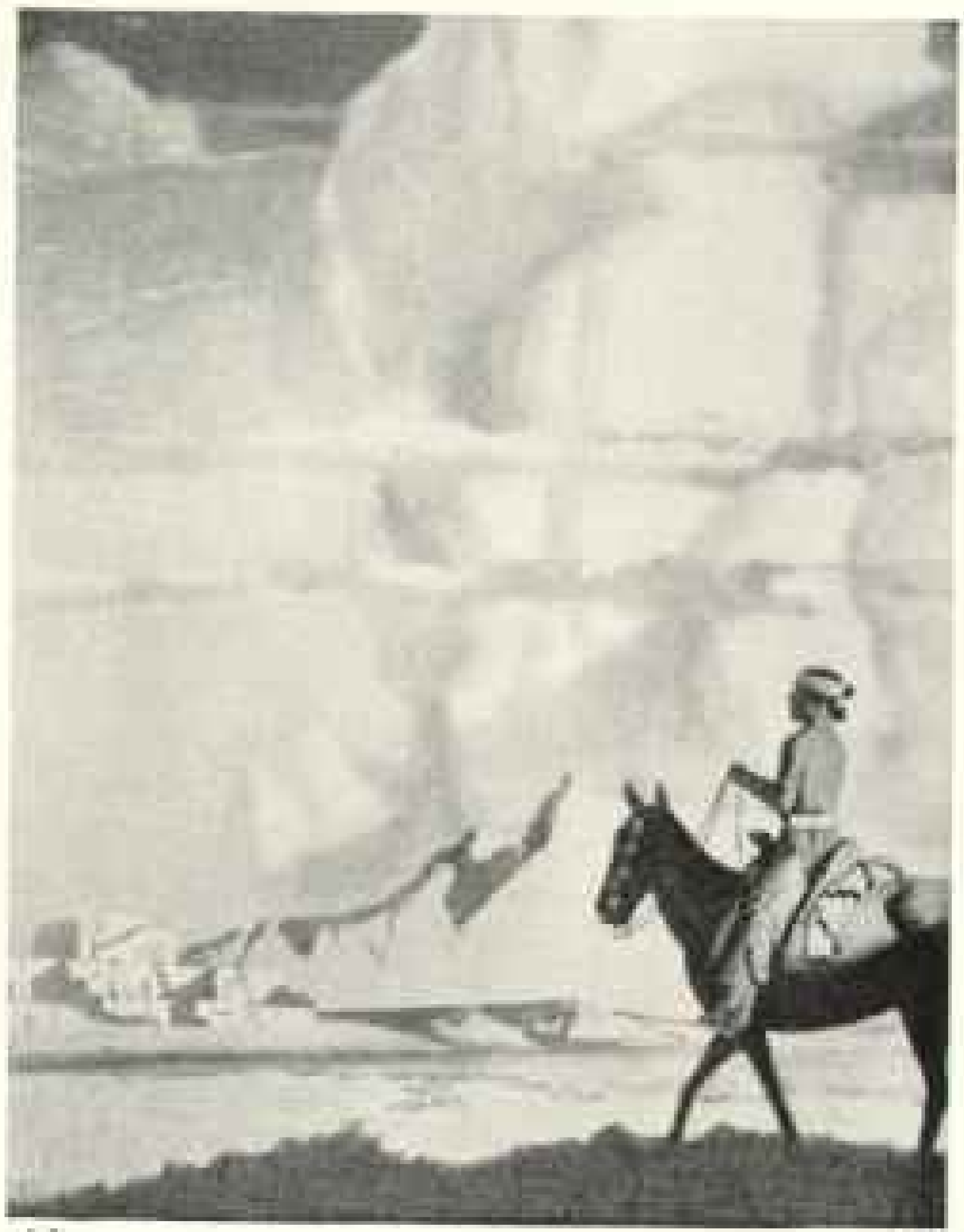
Australia will delight you with its distinctive scenery, world-known cities, matchless bathing beaches gaily thronged, its aboriginal tribes and strange wild life. You will find much to interest you in the illustrated booklet this coupon brings you.

AUSTRALIAN NATIONAL
***TRAVEL* ASSOCIATION**
552 ADAM GRANT BLDG., SAN FRANCISCO, CAL.
or GRAND BLDGS., TRAFALGAR SQUARE, LONDON

Name ______

Street ______

City ______



the Indian-detours

Supreme distinction in far southwestern motoring for those who would play — for days or weeks — along Santa Fe rails to or from California and southern Arizona. Every intriguing corner of the Spanish-Indian southwest is conveniently accessible. Off and on the Santa Fe at Lamy, N. M.

Frijoles-Puyé Indian-detour
TWO DAYS—$40.00

Harveycar limousine to Frijoles Canyon, Puyé cliff-dwellings, San Ildefonso and Santa Clara Indian Pueblos. Room with bath at La Fonda, Old Santa Fé, New Mexico.

The Taos Indian-detour
THREE DAYS—$65

Two nights at La Fonda, one at Don Fernando de Taos. Frijoles Canyon, Puyé cliff-dwellings, San Ildefonso, Santa Clara and Taos pueblos. 350 magnificent miles by Harveycar limousine.

Also a one-day Detour at nominal cost

There are a score of other Harveycar cruises, daily or by arrangement

clip and mail coupon

HARVEYCAR INDIAN-DETOURS, 900-A,
Santa Fé, New Mexico
Please send free copy of Indian-detours booklet and map.

Name ------------------------

Address ------------------------

MAKING
NEW FRIENDS
AND KEEPING
THE OLD

An Earnest Purpose, Earnestly Pursued

To make every car so sound and good that it will inevitably make a friend. . . . Such is the guiding spirit of the entire Oakland-Pontiac organization. . . . It is the spirit of the executives, of the engineers at their drawing boards, of Oakland-Pontiac sales and service representatives. . . . It is not a studied, artificial atmosphere, but the policy of men who sincerely prefer to serve well—who have a model plant and unlimited resources to aid them—who believe in endowing their products with that extra goodness and reliability which are the real key to making new friends and keeping the old. . . . You find pleasing evidence at your local dealer's of how fully Oakland and Pontiac cars reflect this spirit. Your dealer offers these fine automobiles in Fisher body types which embody the same ideals of quality and value as the Oakland and Pontiac chassis mechanisms.

OAKLAND 8 PONTIAC 6

with Bodies by Fisher

PRODUCTS OF GENERAL MOTORS

THESE DAYS . . . MORE THAN EVER

WATCH YOUR HUSBAND

Days of business tension . . . market calculations. Days and nights of nervous strain, unceasing worry. Now, more than ever, watch your husband. Where worry fails, a winter respite wins. Sail away on a colorful, restful cruise by *White Star* or *Red Star Line* . . . with your husband.

MEDITERRANEAN CRUISES

by *White Star Line* in cooperation with Thos. Cook & Son.

HOMERIC—The *Cruise Supreme* on the *Ship of Splendor*, Jan. 24, 45-57 days, $850 up, 1st Class. Calling at points of principal interest, including Madeira, Cadiz, Gibraltar, Algiers, Naples, Athens, Istanbul, Holy Land, Egypt, etc.

BRITANNIC—Also the great new motor liner *Britannic*, sailing from New York Jan. 8, 46 days, $750 up, 1st Class. Tourist 3rd Cabin on both cruises, $420-$454. All rates include shore program.

WEST INDIES

12 to 19 days—Colorful itineraries, including Port au Prince, Kingston, Colon, Vera Cruz, Havana, Nassau, Bermuda. *Britannic* (in cooperation with Thos. Cook & Son) and *Lapland* during February and March. $123.50 up. *The only cruises to visit Mexico.*

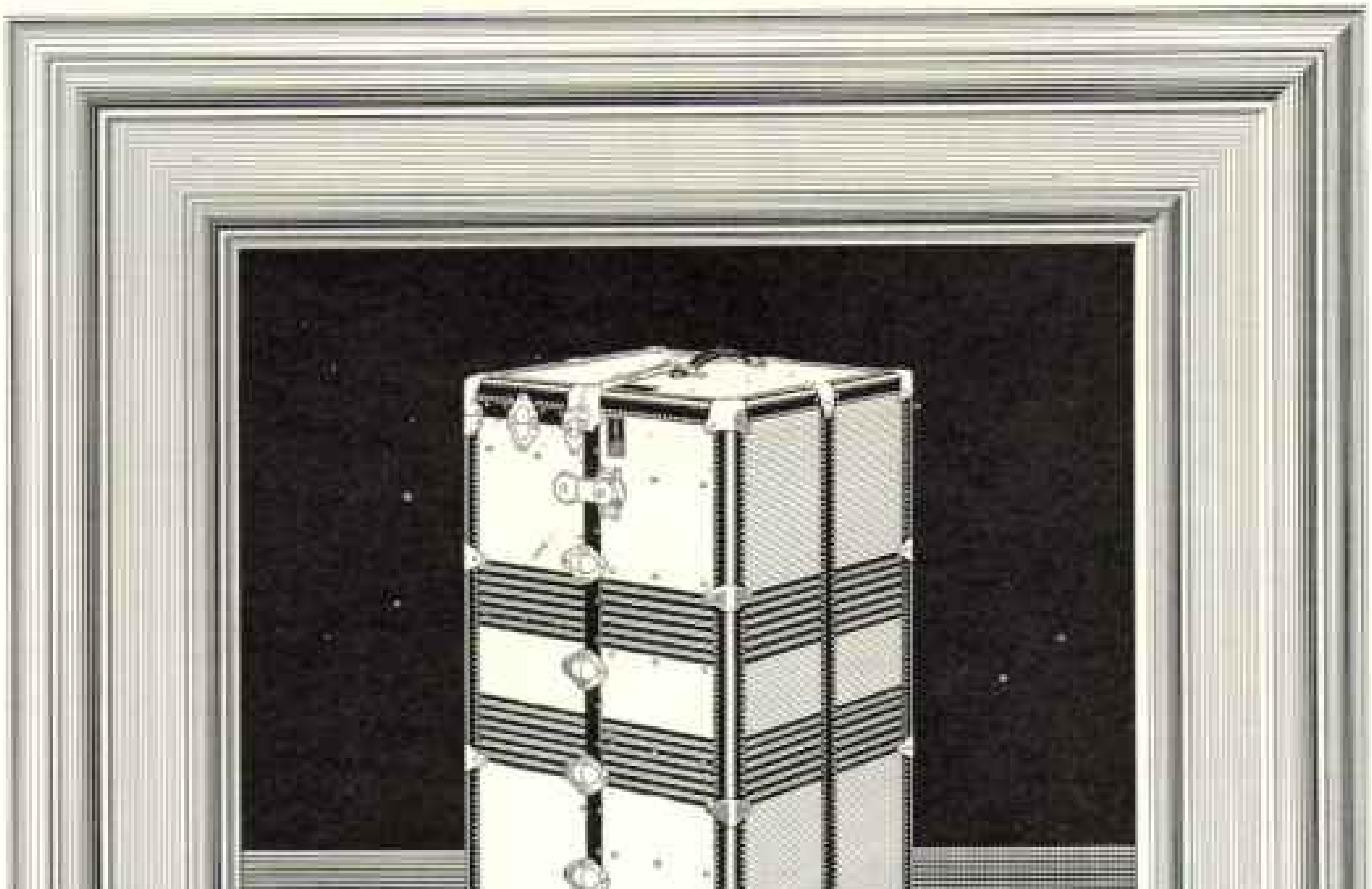
Write to Desk A, No. 1 Broadway, New York, for the unusual travel booklet, "Watch Your Husband," telling about these wonder voyages. 30 principal offices in the United States and Canada. Authorized agents everywhere.

WHITE STAR LINE • RED STAR LINE

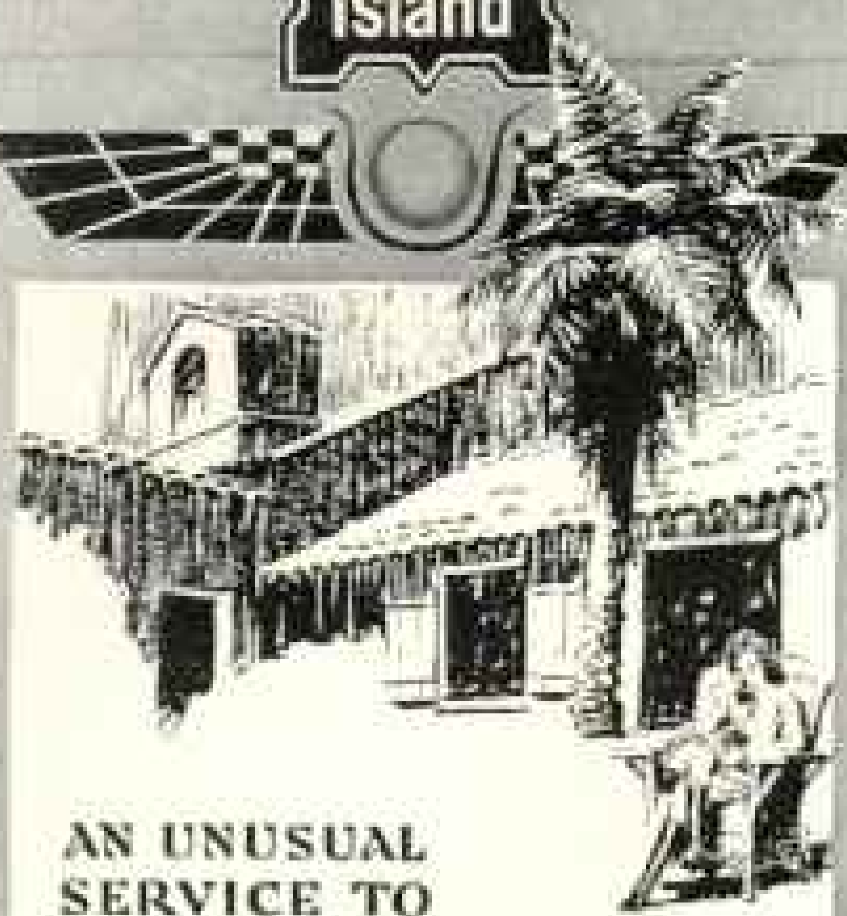
International Mercantile Marine Company

People who are tired of advertising superlatives sometimes think Oshkosh Trunks couldn't possibly be as good as we say they are. But when they have actually travelled with an Oshkosh, they find that we were understating the case after all! Write for booklet. Oshkosh Trunk Company, Oshkosh, Wisconsin.

OSHKOSH TRUNKS



Rock Island



AN UNUSUAL SERVICE TO

an Unusual Land

de luxe

GOLDEN STATE LIMITED

ARIZONA·CALIFORNIA

THIS WINTER . . . the sunshine of oleander-land! More romance, more color, more pleasure in golf, tennis, polo, bridle paths! Luxurious hotels and ranches amid orange groves, scenic mountains and cactus-picketed deserts.

Service that shortens the hours to the land of flowers!

EVERY TRAVEL LUXURY

NO EXTRA FARE

Rock Island-Southern Pacific . . . low altitude warm winter way . . . through service to Agua Caliente, San Diego, Los Angeles, Santa Barbara. Minimum daylight hours en route . . . only two days Chicago-California . . . three days Coast to Coast. Direct main line . . . quickest by hours . . . Chicago to El Paso-Juarez, Tucson, Chandler, Phoenix, Indio, Palm Springs, Agua Caliente. Through Service from Chicago, St. Louis, Minneapolis and St. Paul.

For further information, mail this coupon

ROCK ISLAND

L. M. ALLEN, Vice Pres. and Pass'r Traffic Manager
716 La Salle St. Station, Chicago, Ill. [illegible]

Please send me literature checked below:

☐ Golden State Route
Garden of Allah

☐ El Paso—Juarez
Carlsbad Caverns

☐ Apache Trail
Picture-land Southwest

☐ Tucson
Phoenix—Chandler
Guest-Ranches

☐ Palm Springs
Agua Caliente
San Diego
Southern California

Name..

Address..

BY MOTOR THROUGH

EUROPE

ALL EXPENSES $395

See the quaint countryside as well as the great capitals. Motor through England, Belgium, Holland, Germany and France for $395; including round trip ocean passage, hotels, meals, guide service, motoring in Europe, admissions, even your tips! Other tours from $250 to $1102. Itineraries to every country in Europe.

Write for Free Booklet "E-33"

The Travel Guild, Inc.

180 North Michigan, Chicago
521 Fifth Avenue, New York City

PLAY

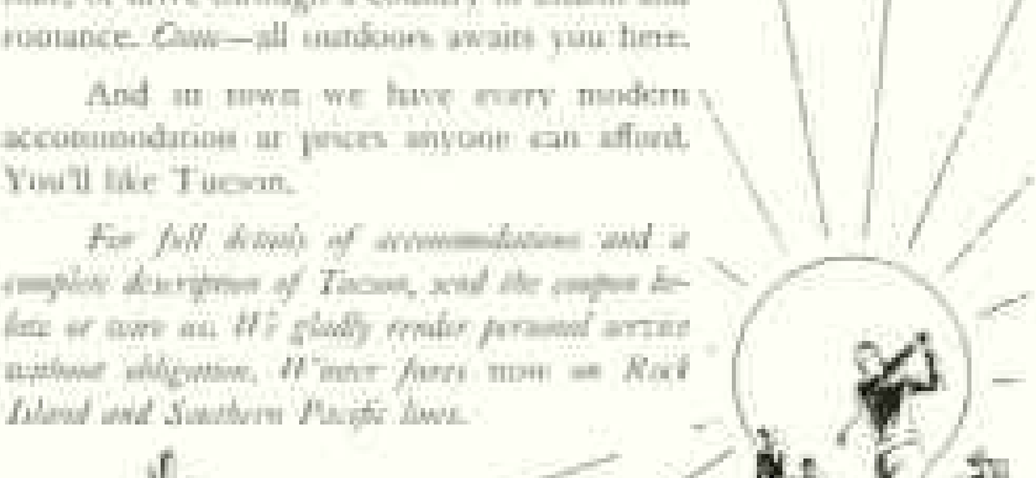
TENNIS . . . GOLF

in warm mid-winter sunshine

Don't give up sports this winter—come to Tucson! Play through sunny days 'neath blue skies. Golf every day if you wish . . . on green grass courses. Enjoy tennis or polo. Ride, hike, or drive through a country of charm and romance. *Come*—all outdoors awaits you here.

And in town we have every modern accommodation at prices anyone can afford. You'll like Tucson.

For full details of accommodations and a complete description of Tucson, send the coupon below or wire us. We'll gladly render personal service without obligation. Winter fares now on Rock Island and Southern Pacific lines.



Advertisement authorized by Pima County Development Commission

TUCSON

Sunshine-Climate Club

ARIZONA

1004-E Old Pueblo Bldg., Tucson, Arizona

Please send me the free "Sunshine Booklet"

Name ______________________________

Address ______________________________

THIS IS THE FOURTH OF A SERIES OF ADVERTISEMENTS DEALING WITH ULTRA-VIOLET RADIATION IN THE HOME

Questions *and* Answers

about the GENERAL ELECTRIC SUNLIGHT MAZDA LAMP

Question Why do we have "sun starvation" in winter?

Answer Because no matter how brightly the winter sun may shine, it contains only a very small percentage of the normal beneficial ultra-violet found in summer sunlight. This is due to the fact that in winter the sun is at relatively low altitudes, and consequently the sun's rays must penetrate a greater mass of atmosphere to reach us.

Question Why does General Electric in its advertising stress the need of ultra-violet for growing children?

Answer Because ultra-violet radiation develops Vitamin D—the sunshine vitamin. This is the antirachitic vitamin and during the pre-natal and the growth years of life, *it is an absolutely essential element for building strong bones and for sound healthy development.*

Question What about older children and the "grown-ups" of the family? Can they benefit by ultra-violet radiation?

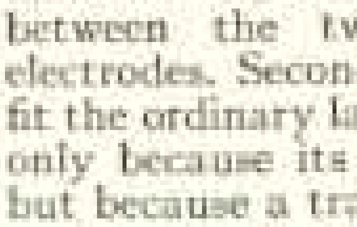
Answer Every member of the family needs sunlight. Though ultra-violet rays penetrate the skin no deeper than the thickness of this sheet of paper, they work deep changes through the entire body. They aid in maintaining health by building up resistance to disease.

Question Why does General Electric emphasize the safety of its G. E. Sunlight Mazda Lamp (Type S-1)?

Answer Because the bulb of the G. E. Sunlight Mazda Lamp is made of special glass which filters out, as does the atmosphere in Nature, nearly all radiation not found in the best summer sunlight.

Question How does the G. E. Sunlight Mazda Lamp differ from the ordinary Mazda Lamp?

Answer Though it embodies the simplicity and economy of the modern Mazda Lamp, the G. E. Sunlight Mazda Lamp differs markedly from the incandescent lamp in the following respects: It contains a pool of mercury (see illustration) a part of which vaporizes when the filament heats and forms an arc between the two button-like electrodes. Secondly, it will not fit the ordinary lamp socket, not only because its base is larger, but because a transformer is required to adapt the voltage in your home to that required by the lamp. Standards or fixtures designed for the use of the G. E. Sunlight Mazda Lamp are made by General Electric and a number of other manufacturers and are offered for sale at your nearest electrical or department store.



Mercury is one of the most important and unique features of the G. E. Sunlight Mazda Lamp. Every bulb contains a small free pool of this element. When the lamp filament is lighted a portion of this mercury is vaporized and an arc is formed between the electrodes just above the V of the filament. This arc furnished the ultra-violet rays so necessary to glowing health.

But the G. E. Sunlight Mazda Lamp adds safety to ultra-violet efficiency by carefully filtering out by means of a special glass bulb, practically all radiations not found in the best midsummer sunlight.

Look for the pool of mercury when buying any sunlamp equipment as well as the General Electric Trademark (GE) in a circle.

Question May the G. E. Sunlight Mazda Lamp be used as a reading lamp or for other lighting uses?

Answer Yes, indeed. Not only does the G. E. Sunlight Mazda Lamp give an unusually fine light for reading, sewing, and similar occupations, but each member of the family may be irradiated as he goes about the ordinary pursuits of the day. Children may be irradiated as they dress in the morning. Men may shave under this "sunlight." Women find the G. E. Sunlight Mazda Lamp the ideal sewing light. Its soft, warming radiance is equally desirable for relaxation. Adults often like to "treat" themselves while reading in bed.

Question Because of these many additional advantages, is the G. E. Sunlight Mazda Lamp lacking in ultra-violet?

Answer Decidedly not. At a distance of three feet the G. E. Sunlight Mazda Lamp provides the same ultra-violet effectiveness as is found in mid-day, midsummer sunlight.

Question What does the medical profession think of the General Electric Sunlight Mazda Lamp?

Answer Ask your family physician. The General Electric Sunlight Mazda Lamp is sold in accordance with requirements of the Council of Physical Therapy of the American Medical Association. Many physicians are prescribing units using this lamp, for shut-ins, pre-natal cases, and children, as well as a tonic for well people—that they may remain well.

Question Where may I learn more about the G. E. Sunlight Mazda Lamp and its many advantages?

Answer By writing to the Incandescent Lamp Department of General Electric Company, Nela Park, Cleveland, Ohio, or by visiting your nearest department or electrical store, or local lighting company.

The Incandescent Lamp Department
of General Electric Co., Nela Park,
Cleveland, Ohio.

Please send me, without any obligation, full information about the General Electric Sunlight Mazda Lamp.

Name ____________________

Address ____________________

City ____________________

GENERAL ELECTRIC
SUNLIGHT MAZDA LAMP

Join us in the General Electric Program, broadcast every Saturday evening over a Nation-wide N. B. C. Network.

to MIAMI AND HAVANA

A POCKET-SIZE ocean voyage—three spangled nights, not quite three days that grow bluer as your smart liner drives south . . . All the frills of a round-the-world cruise—sports, tea on deck, dancing, concerts, wireless news . . . Two of the gayest destinations in the world—Miami and Havana . . . Go for the winter—with summer clothes . . . Or go for a busy man's breathing space that brings you back at the top of your form!

Direct Express Service New York to Miami Wednesdays and Saturdays. Connections with overnight steamers Miami to Havana, allowing a gorgeous Florida stop-over for a day on through tickets to Havana. Also sailings New York to Jacksonville (calling at Charleston) every Tuesday, Thursday and Saturday. All-expense tours to Florida, Havana and other Southern resorts.

Automobiles Carried

Offices: 545 Fifth Avenue or Pier 36, North River, New York; Boston, 50 Franklin St.; Philadelphia, 1001 Chestnut St.; Chicago, 323 Marquette Bldg., or Authorized Tourist Agent.

CLYDE-MALLORY Lines

AGWI LINES

THE LUXURY CRUISE

MEDITERRANEAN

PALESTINE
EGYPT

Greatest Program in History of this Famous Cruising Steamer

ROTTERDAM

Leaves New York

FEB. 5, 1931

under Holland-America Line's own management

71 days of delight

A trip to the "Eternal City," Rome, without extra charge

AMERICAN EXPRESS CO. in charge of shore excursions

The Rotterdam was recently entirely modernized. You will find her a model of modern comfort. Swimming pool, gymnasium and many spacious public salons. Excellently ventilated and spotlessly clean. Service and cuisine are the last word in perfection. Enjoyable and jolly entertainment.

For choice accommodations make reservations now.

Rates from $955

Write for illustrated Booklet "N"

HOLLAND-AMERICA LINE

21-24 State Street, New York
Branch Offices and Agents in all principal Cities

This Winter

—enjoy your favorite sport here *at less expense*

Head south for *Treasure Isle.* A new experience awaits you . . delightful, but not costly. Your favorite sport—golf, boating, horseback riding, tennis, swimming—whatever you love best to do. Fine beach hotels at varying rates, and a climate restful and invigorating. Come!

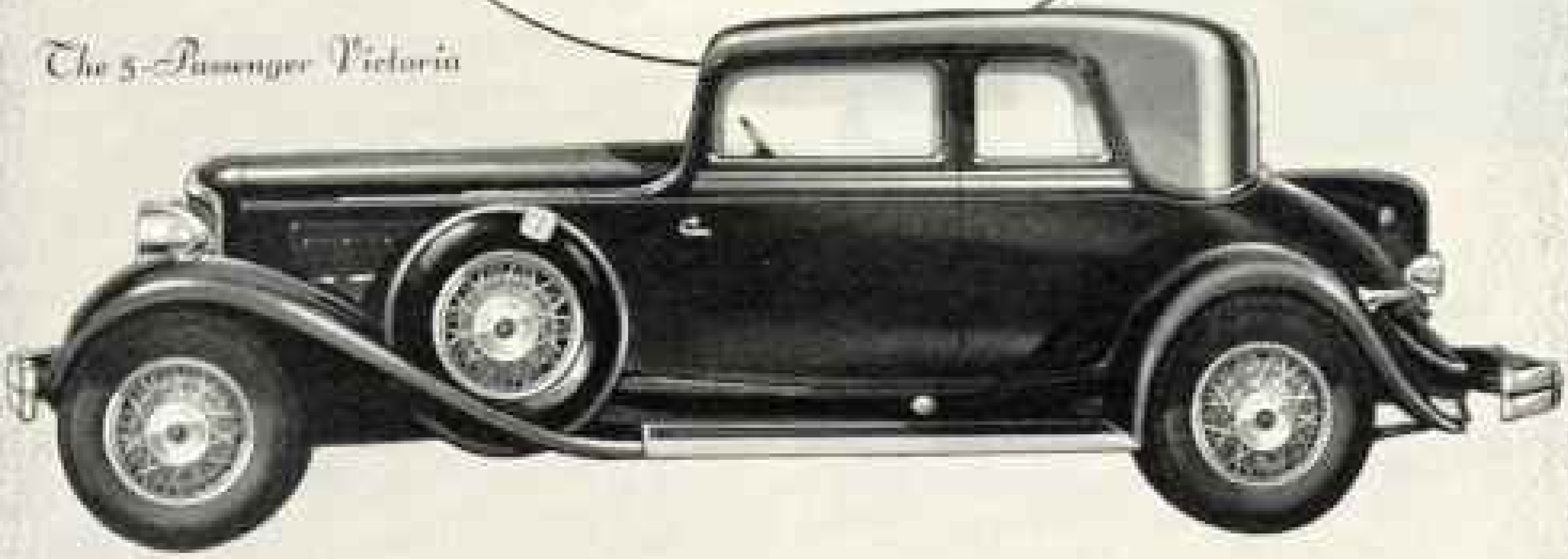
Write Department NG-1, Chamber of Commerce, Galveston, Texas, for beautiful descriptive booklet of joys in store for you.

GALVESTON

. . . . . ON THE GULF

THE
Reo-Royale
EIGHT

The 5-Passenger Victoria

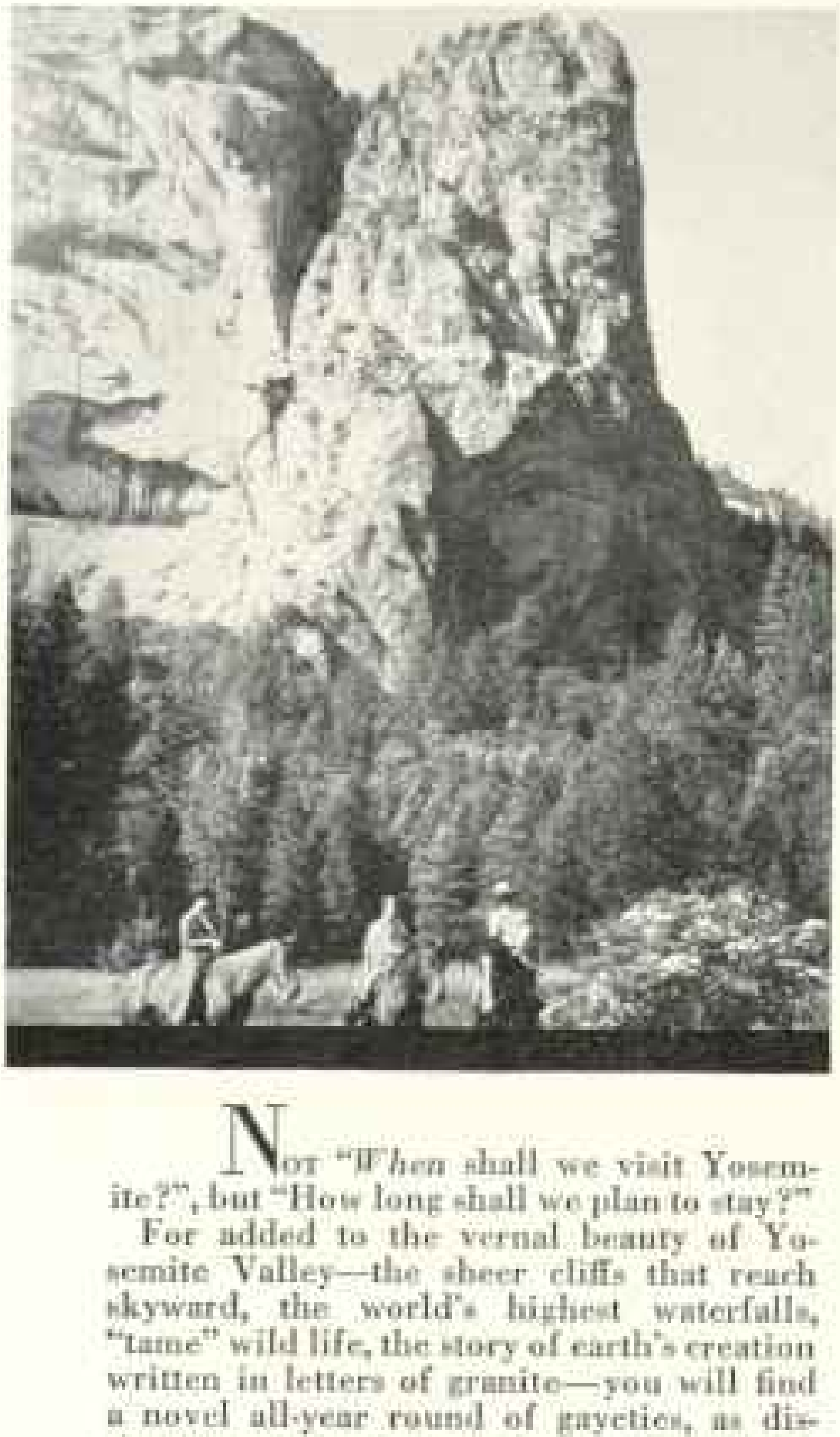


Introducing a stunning new fashion in fine car design: with interiors that mark a new era in luxury and good taste.

REO MOTOR CAR COMPANY, LANSING, MICHIGAN

SIERRA MARVEL

....“IN SEASON” all year



NOT “*When* shall we visit Yosemite?”, but “How long shall we plan to stay?”

For added to the vernal beauty of Yosemite Valley—the sheer cliffs that reach skyward, the world’s highest waterfalls, “tame” wild life, the story of earth’s creation written in letters of granite—you will find a novel all-year round of gayeties, as distinctive as their setting, that begin early on hotel verandas and bring you back late to downy nights in a vast stillness.

WORTH A WEEK

You’ll want a week, at least, for sightseeing and play, but if time *should* be short there are 2- to 4-day All-Expense Tours, from $23 to $77.50.

Ultrafine living at the great, granite Ahwahnee, $10 a day upward, American Plan; city comforts in moderately priced cabin colonies, or at even less cost, housekeeping. Ask any travel agent, and write today for scenic folders: Yosemite Park and Curry Co., Box 170, Yosemite National Park, Calif.

Yosemite
NATIONAL PARK

CRISTOBAL
5 DAYS
LIMA
9 DAYS

21 DAY ALL-EXPENSE CRUISE TO PERU

$395 **FIRST CLASS,** *including sightseeing and hotel expenses en route.*

THE mere thought of visiting such romantic countries as Panama and Peru sets the senses tingling and the imagination swelling with dazzling visions of the wonders of South America. You can add Colombia and Ecuador to this trip on a leisurely “Santa” boat in 32 days at no extra cost.

Luxurious “Santa” liners let you off at hospitable ports for glorious days among the wild ruggedness of the towering Andean Range. Glamorous nights under splendrous tropical skies urge you to seek adventure. From faint color-tinted dawn to fascinating sunset the thrills of the old world unfold before your marveling eyes.

Plan to go to South America this year. Every week a “Santa” ship sails from New York. Interesting illustrated booklets are available. Write for them.

GRACE LINE

10 Hanover Square • New York
140 So. Dearborn St. • Chicago

MEDITERRANEAN BORDERLANDS BY MOTOR

For smart travel this winter the famous “*Europe by Motor*” service is available in Italy, Sicily, North Africa and the Riviera. The de luxe cars and experienced drivers of Franco-Belgique make this service the last word in leisurely, carefree travel. We will gladly help you plan a special trip, or will send our book “*Europe by Motor*,” full of suggested itineraries . . . Ask for booklet 15.

RECREATION TOURS TO EUROPE

Here is a delightful new way to do Europe. In addition to all the sightseeing and educational features of an escorted trip, these tours provide *evening entertainment*, the theatre, night trips, and sporting features. All inclusive prices range from $395 to $925. Regular sailings between April 15 and August 19. Write for booklet 14, “*Recreation Tours*.”

INDEPENDENT TRAVEL

We make arrangements for independent travel *to any part of the world*. Our personal interest in providing a satisfying service will save you time and worry, and make your trip efficient and economical. Write us for suggestions.

AROUND THE WORLD

$10.50 a day for 104 days. “Special Class” accommodations, reserved exclusively for Franco-Belgique parties, provide spacious staterooms equipped with comfortable beds. Next sailings on S. S. President Johnson, March 26 and July 16; S. S. President Fillmore, April 9 and July 30. Twenty ports of call. All inclusive rate $1095. Booklet 12 with sailing schedule sent on request.

FRANCO-BELGIQUE TOURS CO., INC.
551 FIFTH AVENUE NEW YORK, N. Y.

California–

this year!

The summer trip you've so looked forward to. Plan it now for this summer's vacation!

On Lake Tahoe's sunny beach, a mile high in the Sierra.
Upper left: One of San Francisco's sidewalk flowerstands. Below: Waterfalls, Yosemite National Park.

Plan glorious days at Yosemite and Lake Tahoe, days in the Redwood Empire and on the clean white sand beside the blue Pacific. Plan mild, warm days in San Francisco's Chinatown, above the Golden Gate and out along the beach . . .

No city in the world can help you crowd two weeks or so, with such a wide variety of pleasures . . . For no other city lies in the midst of such a sparkling, varied outdoorland. Name the kind of sport or scene you find most satisfaction in . . . San Francisco finds it for you and throws in your next ten choices. *That is San Francisco's way.* Name rivers, she'll show you those and mountain lakes and sea. Name golf or fishing—you've those at once, and swimming, hiking, riding and almost every other sport that man enjoys. Ask for a fine Italian restaurant, she'll show you that and then a hundred other places—French, Russian, German, Chinese, so on, on and on . . .

Let us help you plan this best-vacation-yet. Send your address and we'll mail you (free) an illustrated book about this great vacationland. We'll tell you just what you can do in the number of days that you'll have. And approximately what it will cost.

Send the coupon below.

SAN FRANCISCO

IN CALIFORNIA–"WHERE LIFE IS BETTER"

CALIFORNIANS INC., Dept. 501, 703 Market Street, San Francisco
I would like the book CALIFORNIA VACATIONS, without obligation, of course.

Name

Address

To **BALACLAVA**

. . . of the charge of the Light Brigade

ODESSA & RUSSIAN RIVIERA

RAYMOND-WHITCOMB

MEDITERRANEAN SPRING CRUISE

FOR the first time . . . a Mediterranean cruise that includes the Black Sea! ● With visits to the great Russian port, Odessa . . . and to the Crimea, with Sevastopol and Balaclava and the sunny seashore that is known as the Russian Riviera and was the favorite summer resort of the Czars and old Russian nobility.

In the Mediterranean itself the Raymond-Whitcomb Spring Cruise will visit prehistoric cities and classical shrines in Greece . . . besides Athens, Constantinople, Naples, Algiers, and other usual cruise ports.

Take it for a complete spring holiday . . . only six weeks from New York to New York. Or for a prelude to travel in Europe . . . a four weeks' voyage through the Mediterranean and the Black Sea to Naples.

The rates include return passage at any time . . . $725 and upward. To sail April 14 on the S. S. *"Carinthia."*

Send now for the booklet — "MEDITERRANEAN SPRING CRUISE"

NORTH CAPE CRUISES

TWO summer cruises to the land of the Midnight Sun . . . with identical routes and identical programs.

They will include Russia without extra charge . . . with two days in Moscow, the capital, for each cruise and two more in Leningrad, the capital of the Czars.

To sail on June 24 on the S. S. *"Franconia,"* and on June 30 on the S. S. *"Carinthia."* Rates, $800 and upward . . . with homeward passage at any time.

Land Cruises to Mexico and California
Tours to Europe — Independent Trips

RAYMOND-WHITCOMB

126 Newbury Street, Boston, Massachusetts

New York, 670 Fifth Avenue; *New York*, 225 Fifth Ave.
Boston, 165 Tremont St.; *Philadelphia*, 1601 Walnut St.
Chicago, 176 N. Michigan Ave.; *Detroit*, 421 Book Bldg.
Los Angeles, 423 W. Fifth St.; *San Francisco*, 230 Post St.
Agents in the principal cities

SOME DAY YOU'LL WANT TO TRAVEL..INVEST SAFELY NOW

SEND for our new booklet, "Building Financial Independence," which explains simply and concisely the principles of safe investing. It places you under no obligation whatsoever.

S. W. STRAUS & CO.

ESTABLISHED 1882 *INCORPORATED*

INVESTMENT SECURITIES

Dept. N-127 565 Fifth Ave., N. Y. C. PLAza 4200

NORWAY

Midnight Sun Trips by Pleasure Cruiser

Stella Polaris

FIVE cruises during June, July and August, visiting Fjords, North Cape, Spitzbergen, etc. For particulars apply local steamship agent or write Dept. A.

B. & N. LINE

280 Broadway **New York**

COMPLETE WATER-RAIL CRUISES---

NEW YORK to CALIFORNIA

with 2½ days at PANAMA CANAL

$390 up round trip. A cruise-tour to remember always. 9 days ashore—19 days afloat. One way water, one way rail. From main line railroad points and back in either direction with stopover privileges. Meals and bed, first class, on steamer included.

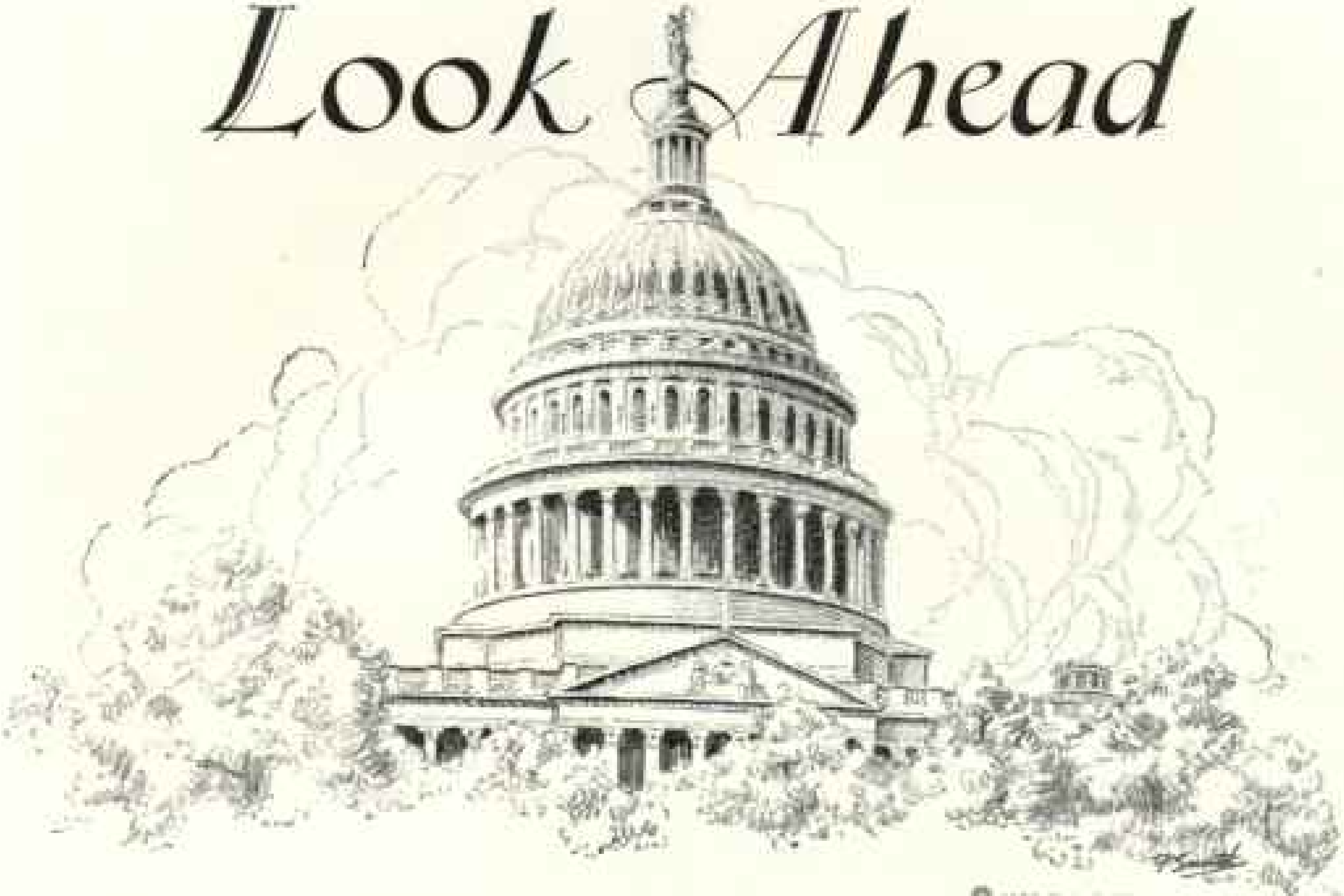
Visit 10 Romantic Foreign Ports

See the gruesome cruelties of the Inquisition House at Cartagena. Visit Balboa, Cristobal, Panama City. The quaint Spanish atmosphere of San Salvador and Guatemala City and the relics of an olden Indian civilization teem with romance. Dance beneath the Southern Cross. It's a joyous trip, for the memories of strange customs, strange places, under tropical skies will linger . . . Sailings every two weeks from New York or San Francisco. $250 up one way by water. Write for illustrated booklet.

PANAMA MAIL LINE

140 So. Dearborn St., Chicago 10 Hanover Sq., N. Y.

Look Ahead



© 1930 M. L. I. CO.

Men enjoy a good laugh at their childhood fears. One confesses he was afraid of the bogeyman, another was afraid of the dark, the next was always afraid of a policeman. They laugh about those old fears now.

Last year some of the grown-up children who had not studied too closely the history of business throughout the ages, and more especially the history of the United States, were frankly scared at the abrupt interruption of boom times.

Business depressions have always followed widespread, reckless speculation. The readjustment period is a trying time for even the wisest and most stout-hearted.

But while the United States has been in the doldrums again and again, a review of its history should make even the most pessimistic person optimistic. The prosperity which follows hard times comes sounder and stronger and the country keeps on growing richer.

It is no more sensible to worry over gloomy predictions concerning the business future than it was to worry about the bogeyman.

THE LIGHT THAT NEVER FAILS

From the time the country was founded, men have worried about its future and the ever-increasing scale of wages. John Jay, the first Chief Justice of the Supreme Court of the United States, was disturbed by the growing cost of living in 1784. He wrote, "Wages of mechanics and labourers which are very extravagant", at a time when skilled mechanics were paid sixty cents a day and laborers thirty-nine cents.

The history of panics and business depressions followed by mounting levels of prosperity, with higher wages and shorter working hours, is worth reading. The Metropolitan Life Insurance Company will be glad to send free a copy of "The Development of Prosperity in America." Ask for Booklet 131-N.

METROPOLITAN LIFE INSURANCE COMPANY

FREDERICK H. ECKER, PRESIDENT ~ ~ ~ ONE MADISON AVE., NEW YORK, N. Y.

A *nation-wide* FRESH *candy service*

AGENCY
Whitman's
CHOCOLATES AND CONFECTIONS

Whitman's candies have a true national distribution, which plays an important part in the satisfaction they give you.

Because they are known everywhere, sought for and purchased steadily, they enjoy a vital advantage of freshness.

Because Whitman's are sold by picked dealers everywhere, the Whitman sign on a store has been a guide to "a safe shop" for other things as well as candy.

Success begets success. Because they are most popular, Whitman's are most desirable — the safest candies to buy.

Every Whitman agency is supplied direct. Every package of Whitman's is doubly guaranteed. You must be pleased and satisfied.

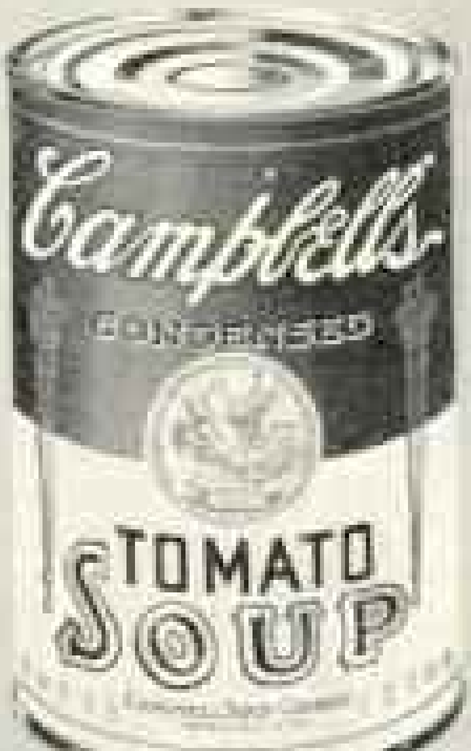
Whitman's
Whitman's
Whitman's
Whitman's Prestige
Whitman's Sampler
Chocolates & Confections

Whitman's
CHOCOLATES

For nearest dealer look under "Whitman's" in Bell Telephone Classified Directory. Any telegraph office will take your order with cash for Whitman's Candies, transmit the order and deliver anywhere in the United States.

© S. F. W. & Son, Inc.

The world's leading nation selects a favorite!



America is a young country. A vigorous country that draws its sustenance from food that builds brain and sinew. America is a discriminating country, with all the best in the world at its command. And its overwhelming favorite is Campbell's Tomato Soup! The racy, dashing, colorful soup that splendidly typifies our national tastes and character! Enjoy it regularly.

12 cents a can.

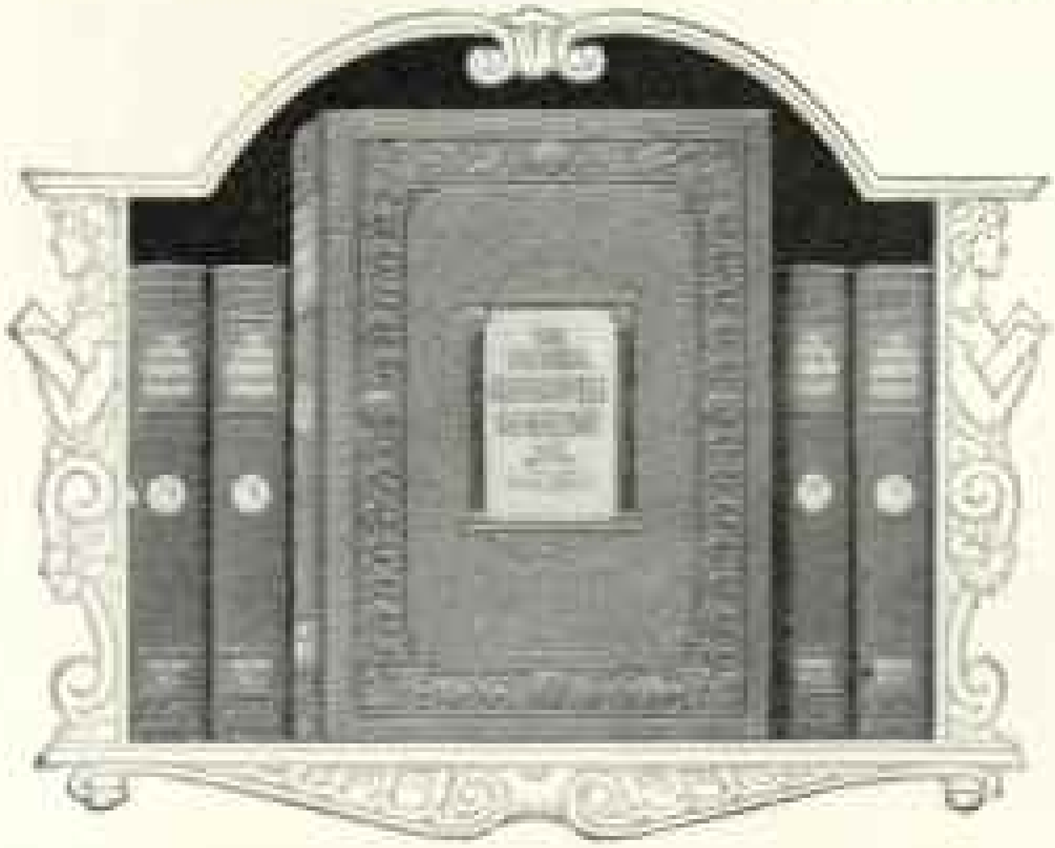
Your choice

- Asparagus
- Bean
- Beef
- Bouillon
- Celery
- Chicken
- Chicken-Gumbo
- Clam Chowder
- Consommé
- Julienne
- Mock Turtle
- Mulligatawny
- Mutton
- Ox Tail
- Pea
- Pepper Pot
- Printanier
- Tomato
- Vegetable
- Vegetable-Beef
- Vermicelli-Tomato

LOOK FOR THE
RED-AND-WHITE LABEL

MEAL-PLANNING IS EASIER WITH DAILY CHOICES FROM CAMPBELL'S 21 SOUPS

January
Starts a New Volume



Your Geographics Should be Placed in Molloy-Made Binders as You Receive Them for 1931—Now Ready

Beautifully embossed artificial leather in the Geographic design; two-tone brown with gold panel; backbone stamped in genuine gold. Each binder holds six issues; stiff, washable binders, in colors that will not rub off. Your entire Geographic library can now be placed in uniform bindings, whether you bind them yourself in Molloy Loose Leaf Covers or send them to any bookbinder for binding in Molloy-Made Covers.

Bind Them Yourself. With the improved Molloy device you can bind your own Geographics without sewing, gluing or shipping. Use the coupon below for ordering these binders.

Or Any Bookbinder will bind your Geographics into beautiful, permanent, flat-opening sewed volumes. No need to ship them to distant points! Any Bookbinder can now obtain Molloy-Made Covers in exactly the same design, colors and finish with the same guaranteed fine appearance and wearing quality as Molloy Loose Leaf Binders heretofore supplied. Look for trade-mark on back cover. Insist on genuine Molloy-Made Covers. Supplied for all years back to 1910.

Use coupon for free inspection of Molloy Loose Leaf Binders anywhere in the United States.

THE DAVID J. MOLLOY COMPANY
2863 North Western Avenue, CHICAGO

THE DAVID J. MOLLOY COMPANY
2863 North Western Avenue, Chicago, Ill., U. S. A.

Please send on approval................ pairs of Molloy Geographic Loose Leaf Binders, Volumes.......... Years..........

Within ten days I will pay for them at the regular price of [illegible] a pair, or [illegible] a single binder, or return the binders to you.

Name ....

Address ....

Postage prepaid in United States, Canada, and Mexico. Full payment and postage must accompany foreign orders (weight two pounds per pair). Remittances refunded on return of Binders if not satisfactory.

NASSAU The Isle of June. 60 hours from New York on fast steady Munson liners. Weekly sailings. Overnight from Miami.

Royal Victoria Hotel—Now open... quaint, homelike, charming. Finest of golf, bathing, cuisine.

New Colonial Hotel—Magnificent, modern, 70% of its rooms face the sea. Opens Jan. 19.

BERMUDA Twice weekly sailings. A fast and comfortable service via steady *S. S. Pan America* and famous Munson South American liners. Broad deck spaces, airy, outside rooms. **Round trip $70 and up.** All-expense tours arranged.

NASSAU • MIAMI • HAVANA—12-day all-expense cruise—*S. S. Munargo* fortnightly from New York. The ship your hotel. 2 days in Nassau—2½ in Havana with two sightseeing trips—2 days in Miami. Exceptionally low rates.

NASSAU • KINGSTON • HAVANA—13 days round trip. S. S. *Evangeline* fortnightly commencing Jan. 9 from New York to Nassau—to Kingston—to Havana—to Nassau—to New York.

SOUTH AMERICA—Fortnightly sailings to Rio de Janeiro, Santos, Montevideo and Buenos Aires... cool, airy, outside amidship rooms, mostly with beds. Excellent cuisine and service. Go now—it's Summer south of the Equator!

Write for Booklet 32 or see local tourist agent

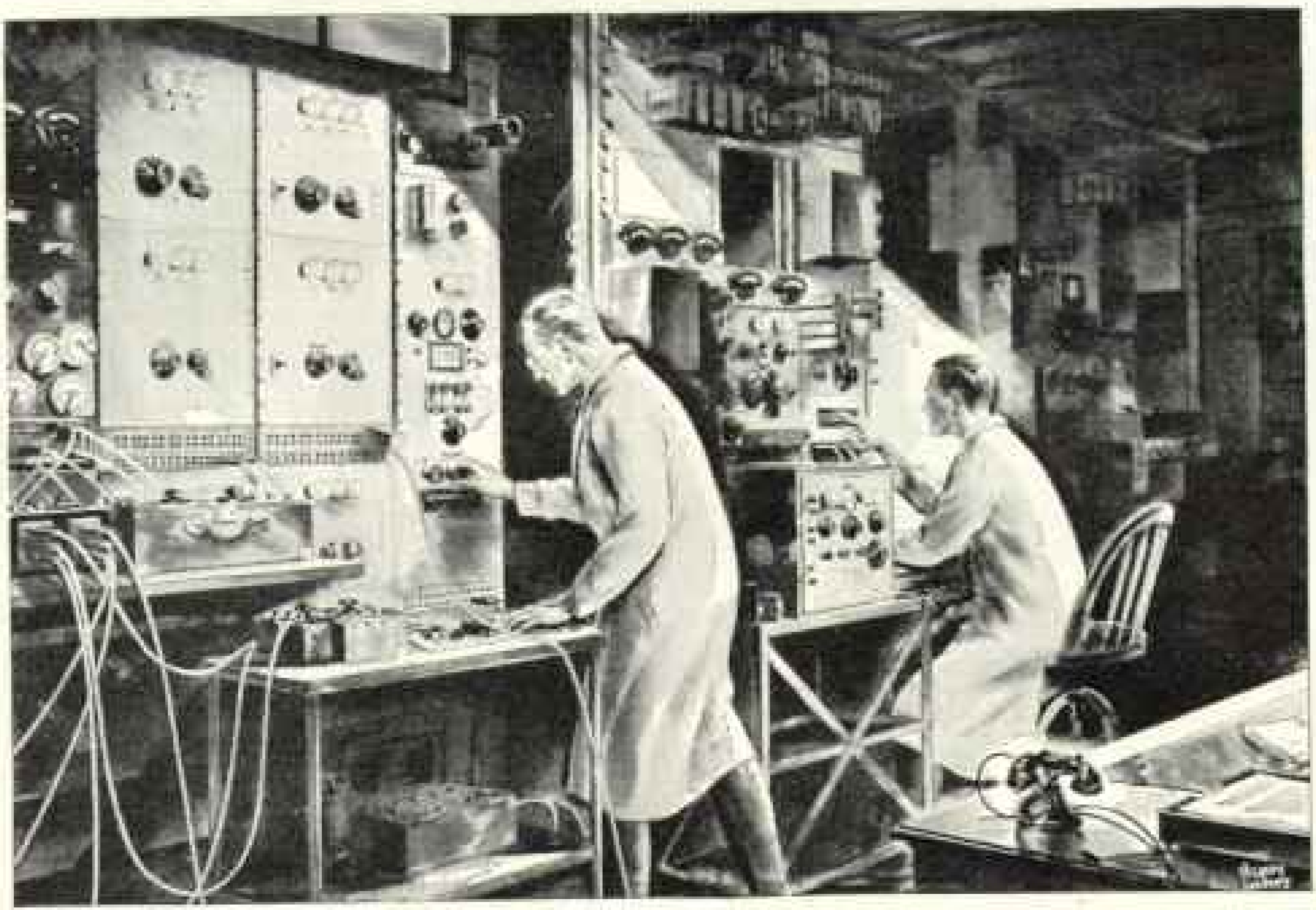
MUNSON STEAMSHIP LINES
67 Wall Street, New York City

JAMAICA, B. W. I.

The tropical paradise to visit in 1931

The New Constant Spring Hotel opens January at Kingston. A fascinating booklet on this West Indies resort is yours—Write United Hotels, Niagara Falls, N.Y.

New
CONSTANT SPRING
KINGSTON, JAMAICA *Hotel*



THE STEADY SCIENTIFIC PROGRESS OF THE BELL LABORATORIES SHOWS IN THE EVER-INCREASING QUALITY AND SCOPE OF YOUR TELEPHONE SERVICE

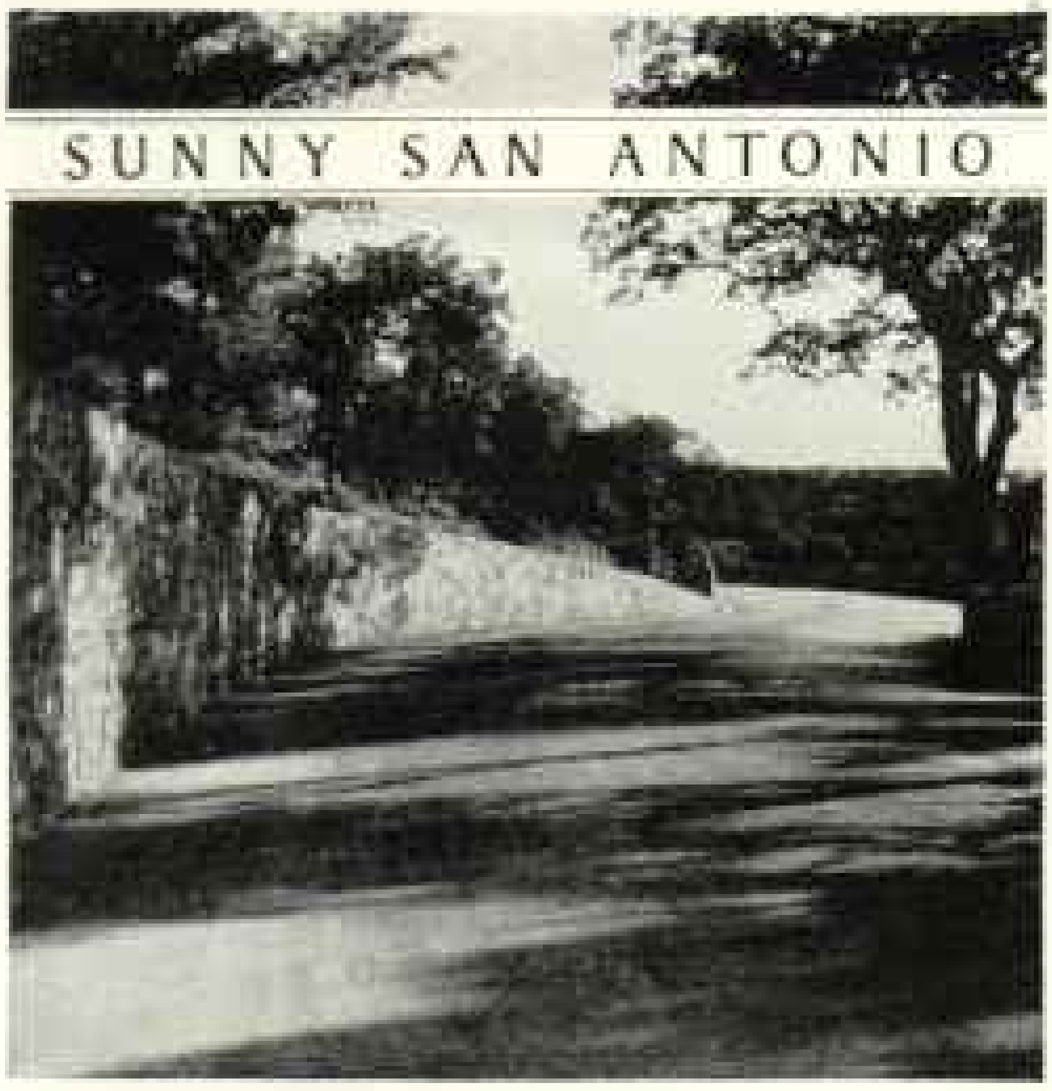
To clear all barriers for the human voice

An Advertisement of the American Telephone and Telegraph Company

Bell Telephone Laboratories, Incorporated, is the scene of a progressive conquest of natural forces that aims to let you speak clearly, quickly and cheaply to any one, anywhere in the land and even to distant countries. More than 5000 scientists and assistants are busy there and elsewhere in the Bell System studying the problems of sound transmission. Its work is the growing foundation of the telephone art; and it has, besides, helped to make possible the radio, sound pictures and special apparatus for the medical profession.

Among its achievements are the underground cables which make city telephone service possible, better and faster long distance service, service to ships at sea, and to millions of telephones beyond the seas. The steady scientific progress of the Bell Laboratories shows in the ever-increasing quality and scope of your telephone service. Its new developments in every type of equipment clarify and speed up your telephone talks and give you more and better service at low rates. Every advance it makes is available throughout the Bell System.

The Bell System is an American institution owned by more than 500,000 stockholders. It places before you the benefits of its technical achievements and the coordinated efforts of more than 400,000 trained workers. It accepts its responsibility to further the development and welfare of the nation by furnishing the public the best of telephone service at the least cost consistent with financial safety.



Explore South Texas

Do you know the wonderland of South and West Texas....the smiling bays of its gulf coast....the glossy green of its citrus groves....the miles of winter vegetable gardens stretching to the Rio Grande....the cedar-crested hills where goats and sheep roam?

Have you waked to a winter's morn when the blue Texas sky was cloudless and the air like rare old wine.... have you cantered along a singing river in the sun-dappled shade of a wooded park....do you know the thrill of viewing the gray walls of ancient Spanish missions silvered by soft moonlight....have you seen harvesting at its height in January?

Then come, *this* winter, and explore South and West Texas from its cosmopolitan capital—sunny San Antonio!

San Antonio

For Free, Illustrated Booklet, Write Dept. 58
MUNICIPAL INFORMATION BUREAU
Aztec Building San Antonio, Texas

WEST INDIES

"Cruises of Enchantment"

ELEVEN enchanting days, dancing . . playing . . taking life easy amidst the modern luxury of the "Coamo" or the "San Lorenzo." You live aboard ship during the entire cruise, leaving it for absorbing visits at San Juan and Santo Domingo City, where you are taken on motor tours through narrow city byways and tropical countryside. And the one low cost includes all!

ALL EXPENSES FOR ELEVEN DAYS
$150 and up

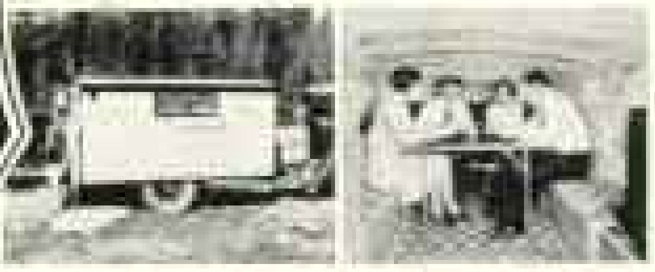
AGWI LINES

A sailing every Thursday. Apply Cruise Department, Ft. of Wall St., or 535 Fifth Ave., N. Y. City, or any authorized tourist agency.

PORTO RICO LINE

More Fun than Camping

NOW YOU CAN TRAVEL IN SOLID COMFORT!



The Covered Wagon is ready in 10 seconds! Good beds with spring mattresses, for 4 adults; electric lights; stove with hood; ice box. No tent or canvas extensions. Good ventilation—4 large windows and door, with screens, roll shades and weather strip. Well built of Prestwood insulating board. Cool in summer, warm in winter. New, exclusive, patented features. Visit the places you've read about. Ideal for long tours, hunting or fishing trips or for use as summer cottage. New folder mailed FREE. Write today.

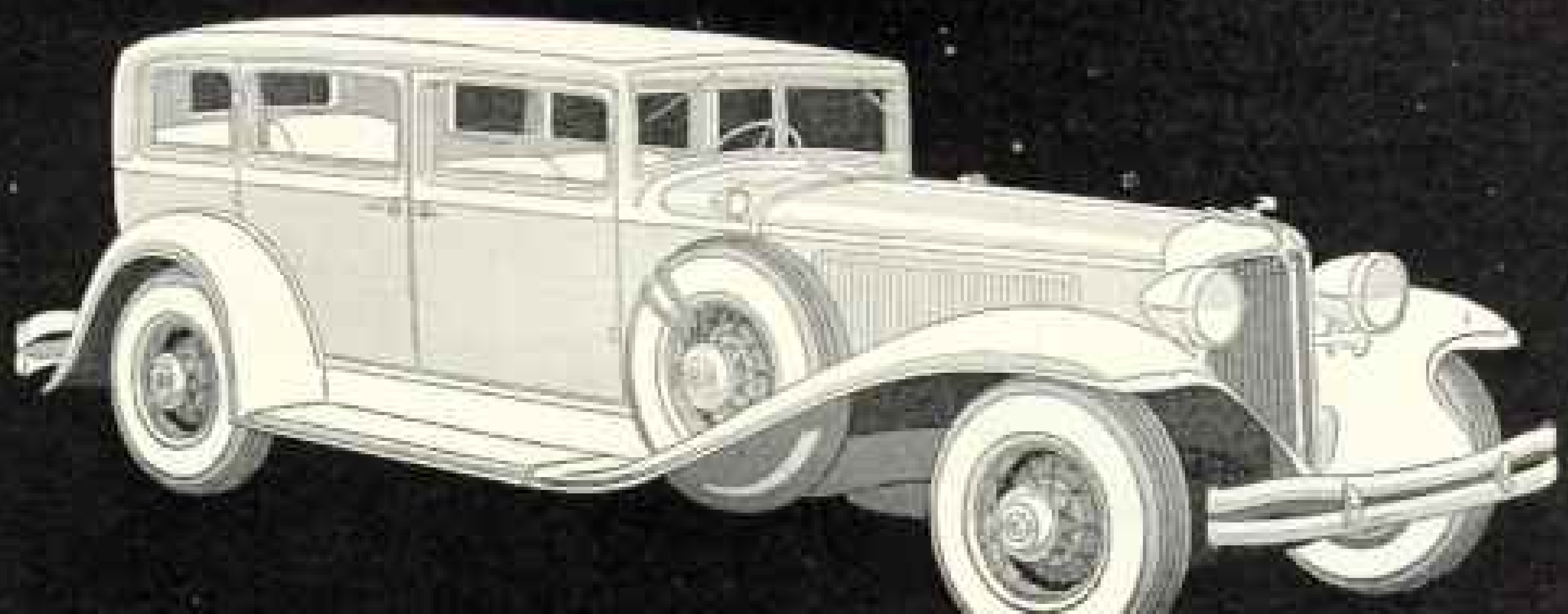
The Covered
Wagon Co.
14024 E. Jefferson Ave.
Detroit, Mich.

FREE FOLDER

AROUND THE WORLD in 80 HOURS

A miracle . . . possible for you in the city of miracles, Paris . . . at the International Colonial and Overseas Exposition . . . May through October, 1931 . . . the mighty drama of the empire builders laid before your eyes . . . African pygmies . . . Nautch girls . . . Senegalese warriors . . . Icelandic huts . . . Buddhist Temples . . . for full information, inquire of French Line, any tourist agency, or American Committee, 4 East 52nd St., New York City.

CHRYSLER
STRAIGHT EIGHTS



CHRYSLER STRAIGHT EIGHT DE LUXE SEDAN

STYLE FAVORITES . . .

WITH SPECTACULAR DUAL HIGH PERFORMANCE . . .

OUTWARDLY, these new Chrysler Eights fulfill in appearance the very spirit of swift motion. Inwardly, they suggest the quiet luxury of a richly-appointed drawing room. Extreme lowness of chassis design perforce creates extreme smartness—and likewise the unusually low center of gravity inspires a sense of safety at all speeds not to be experienced in conventional motor cars of needless height.

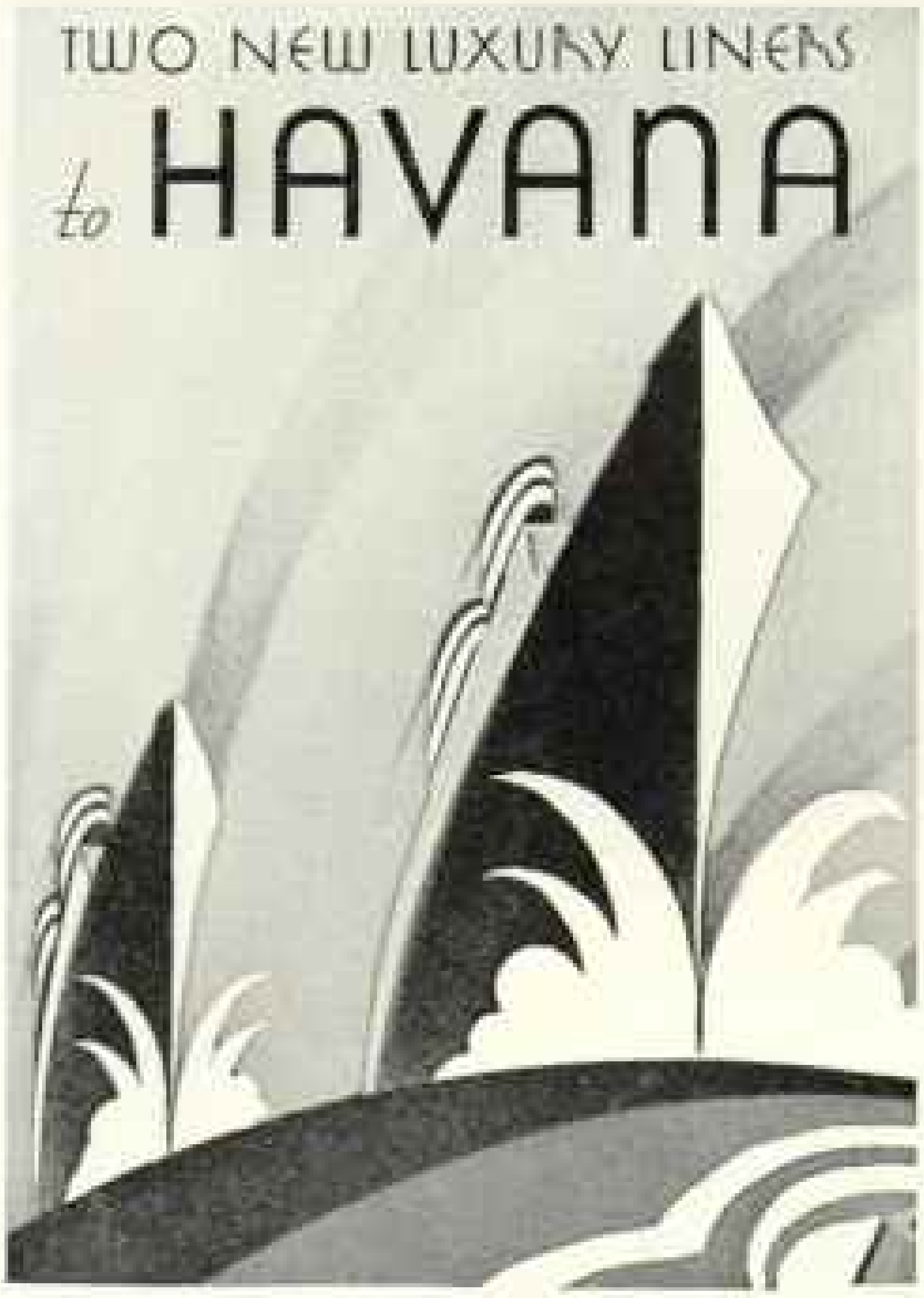
In the quick starts and sprints of traffic, these Chrysler Eights flash superbly away from everything around them. Their responsive power and getaway, their smoothness, flexibility and effortless speed make them most fascinating to drive. Superior performance is due not only to their superlatively engineered high-compression straight eight power-plants, but also is the result of an exclusive Multi-Range 4-speed transmission and quick, quiet gear shift, with the great advantage of *dual high* gears—one for normal city driving, flashing getaway and speedy hill-climbing; the other for the open road.

Furthermore, in a Chrysler Eight, safe and positive control is assured under all conditions and at all speeds by weatherproof internal hydraulic brakes—easy to operate, sure, always equalized. Because of what these Eights are, and what they have, and what they do—everybody is surprised by their moderate prices. Great values as well as great cars!

CHRYSLER EIGHT—*Coupe (with rumble seat) $1495; Sedan $1525; Convertible Coupe $1665; Roadster $1495. Six wire wheels, $80 extra. Sport Roadster (including six wire wheels and trunk rack) $1595.* CHRYSLER IMPERIAL EIGHT—*5-Pass. Sedan $2745; Close-Coupled Sedan $2845; 7-Pass. Sedan $2945; Sedan-Limousine $3145.* IMPERIAL CUSTOM EIGHT, *bodies designed by LeBaron—Coupe $3150; Roadster $3220; Convertible Coupe $3320; Phaeton $3575. F. O. B. Factory.*

•

Chrysler Eight and Chrysler Imperial Eight closed cars are factory-wired for immediate installation of Transitone, the pioneer automobile radio. Other models will be equipped on order.



"MORRO CASTLE"
"ORIENTE"

THESE gorgeous debutantes are the latest ships to fly the American flag . . . up to the minute and beyond. Speed that puts Havana hours nearer to New York . . . vibrationless motion . . . turbo-electric drive . . . Twice the deck space that used to be thought enough. New chefs . . . already getting compliments three times a day.

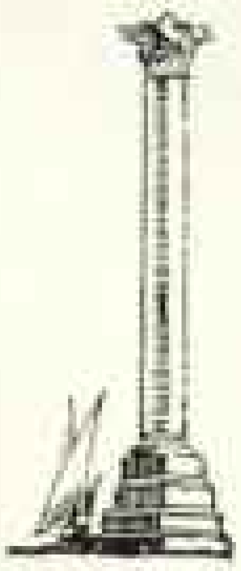
Sail on the new "MORRO CASTLE" or "ORIENTE" for one of those marvelous Ward Line All-Expense Tours. You stop at the "Plaza" or the "Ritz" . . . and four sightseeing trips hand you the keys of the city . . . with the Ward Line's compliments . . . How do they do it for so little money? Ah, that's their cleverness . . . and your good luck!

9 Days—$145 up ★ 10 Days—$150 up

INCLUDING ALL EXPENSES

For Literature and Reservations address General Passenger Dept., Foot of Wall St. Uptown Ticket Office, 545 Fifth Ave., New York, or Any Authorized Tourist Agent.

WARD LINE
AGWI LINES



S. S. EXCALIBUR
Sailing January 24, 1931
S. S. EXOCHORDA
Sailing February 25, 1931

On their Maiden Voyages in An Improved Express Service to

EGYPT and the HOLY LAND

Via Marseilles and Naples

At very attractive rates, these entirely new ships offer you wonder winter voyages that take you into the glowing warmth and Old World charm of the Mediterranean. Of the many new features, the four veranda decks on each ship are ideally private for small congenial parties.

Outside cabins only, all limited to two passengers if desired. An interesting wonder-voyage, New York and return from $600.00.

Secure booklets, information and reservations from local agents or

AMERICAN EXPORT LINES
THE EXPORT STEAMSHIP CORPORATION
Dept. 301, 25 Broadway, New York
Chicago: The Rookery

Boston: 126 State St.
Detroit: 1427 1st Nat'l Bk. Bldg.
Baltimore: Keyser Bldg.
Philadelphia: 408 Bourse Bldg.

DREER'S
GARDEN BOOK

Winter nights in summer gardens! There's fascinating reading in our 1931 Garden Book, with its hundreds of illustrations of flowers and vegetables, helpful cultural articles and descriptions of fertilizers and garden tools.

For a free copy mention this publication and be sure to address Dept. Y

HENRY A. DREER
1306 Spring Garden St.
Philadelphia, Pa.

EUROPE 33 DAYS $255

250 All Expense Tours

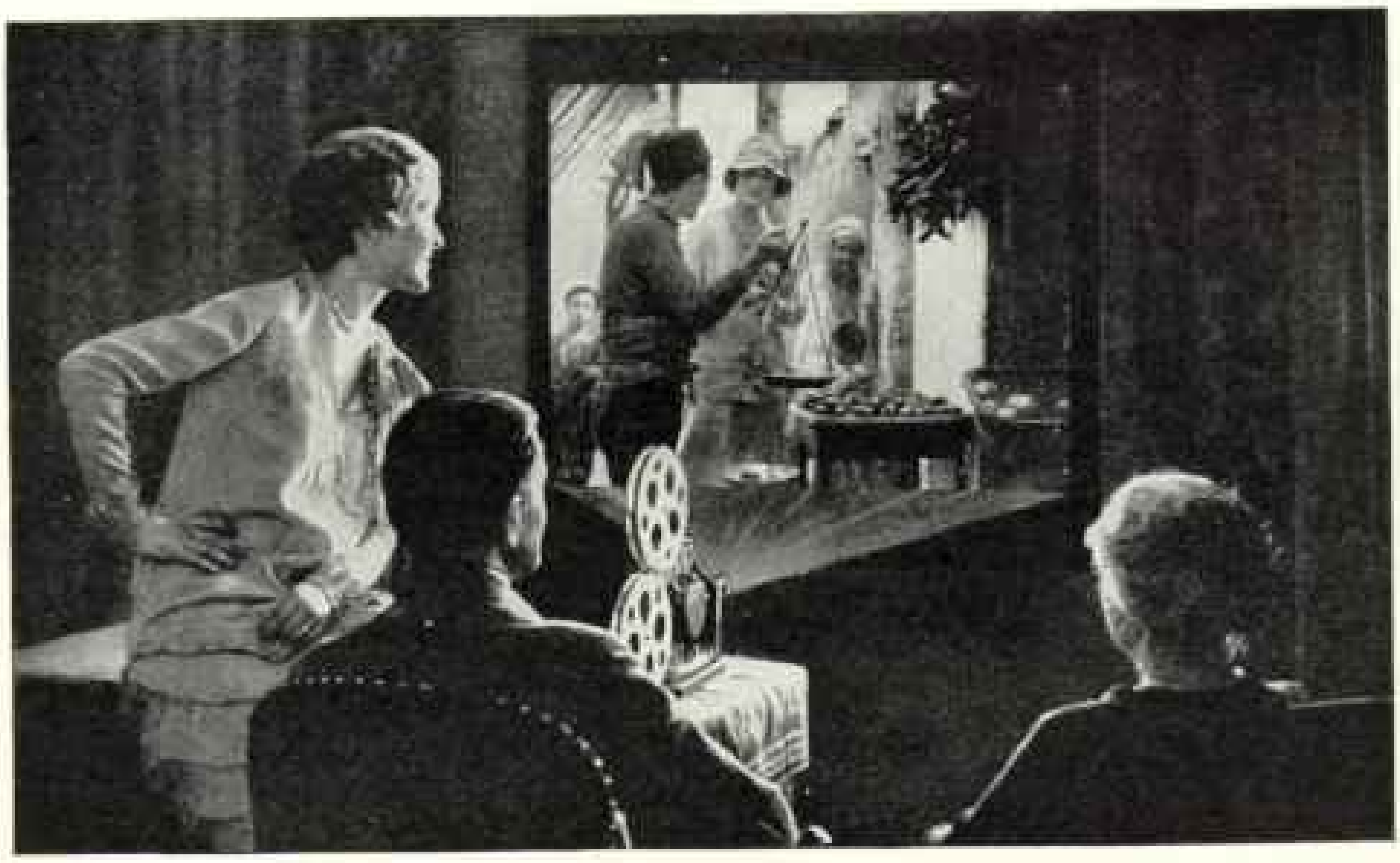
Foremost Student Tours

OVER five thousand satisfied members in 1930. For students, professional and cultural people generally. Small congenial groups, conducted by expert couriers, first class hotels, more motor travel. Price includes all expenses sea and land.

College Travel Club [illegible] BOYLSTON STREET BOSTON MASS.

Please send Booklet of 250 All Expense Tours

Name ____________________
Address ____________________



Snap the Switch . . .

and you're back in Egypt

Keep Your Travels in Home Movies with this new $75 Ciné-Kodak

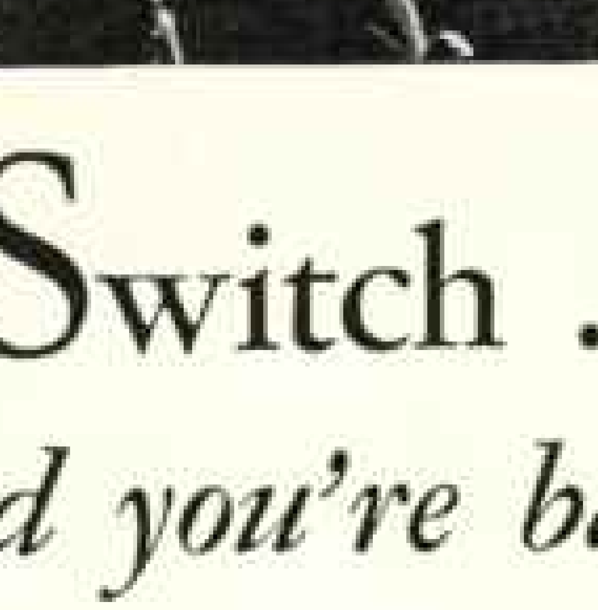
What a thrill! All the vivid details of your journey . . the sights you saw . . people you met . . flashing on the movie screen at home.

There's nothing like home movies to keep travel memories fresh. And there's nothing like a Ciné-Kodak for simplicity.

You look through a finder and press a lever—that's all there is to it.

With equal ease your films are shown. Switch on your Kodascope projector and instantly the screen becomes alive with action.

There, parading before your eyes, are the movies of your travels—movies that you made yourself. People, places, events—real as life, just as you saw them.



Ciné-Kodak, Model M, *is only $75, with case. Lightest camera made for 100 feet of 16 mm. film.*

At tourists' favorite points abroad, you will find Ciné-Kodak processing stations. There, Eastman experts will finish your Ciné-Kodak films without extra charge.

Your Ciné-Kodak dealer will gladly show you typical movies made with a Ciné-Kodak. And tell you how you can buy a complete outfit on easy terms, if you wish.

Ciné-Kodaks as low as $75. Kodascope projectors as low as $60. Eastman Kodak Company, Rochester, New York.

Ciné-Kodak

SIMPLEST OF HOME MOVIE CAMERAS

STOP THOSE UNDER DOOR DRAFTS

with CHAMBERLIN weather strips and IN-DOR-SEALS

65% of this season's heating expense—weather experts say—is still before you. Over half of your comfort and heating problems are still to be solved. Then why suffer—for another day—the cold-breeding discomfort of window and door drafts? Why not enjoy at once even, comfortable temperatures in every room—in every nook? Stop throwing away fuel; stop wasting money. Let the world's largest weather strip company—Chamberlin—make your home permanently draft-proof—much healthier—cozier—easy to heat.

CUT FUEL BILLS 20% TO 40%

In two to five years—fuel savings alone will more than pay for Chamberlin protection—and these savings continue undiminished *for the life of your building.*

INSTALLED BY EXPERTS

There are 100 Chamberlin factory branches—and Chamberlin experts install Chamberlin Weather Strips. Only Chamberlin gives a nation-wide, factory-direct-to-consumer service to insure the best in workmanship and maximum satisfaction.

LOW COST—EASY TO PAY

Chamberlin Weather Strips are really an investment and they can be purchased on convenient terms.

Telephone your local Chamberlin branch, or mail coupon direct to factory. Do it today.

Mail today

CHAMBERLIN WEATHER STRIPS

SINCE 1893 - THE STANDARD

CHAMBERLIN METAL WEATHER STRIP COMPANY, INC., Detroit, Michigan

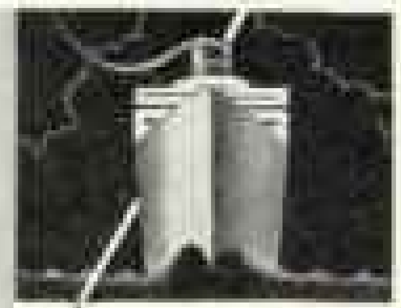
Send booklet "Better Homes and Weather Strips"—

and a FREE estimate for______doors,______windows.

*Name*____________________

*Address*__________________ PC4-31

SOUTH AMERICA

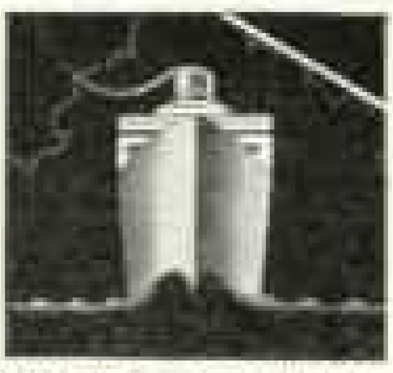


The Four Princes

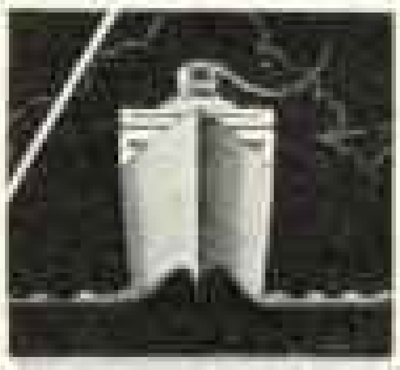
DIRECT TO RIO

12 DAYS

NO INTERMEDIATE STOPS



THE Four Princes for the fastest time, as well as a safe, luxurious voyage to Rio de Janeiro, Santos, Montevideo and Buenos Aires. Most modern system of ventilation provides utmost comfort in tropical waters.



FORTNIGHTLY SAILINGS

Accommodations for first-class passengers only. Reservations and literature at authorized tourist agents or Furness Prince Line, 34 Whitehall St. (where Broadway begins), or 565 5th Ave., N. Y. C.

'ROUND WORLD TOURS
108 Days—23 Ports—$680

Prince Line Service has been continuous between New York and South America for thirty-five years.

FURNESS *Prince* LINE

NORWAY, SWEDEN, DENMARK

AND SIX OTHER COUNTRIES IN EUROPE

EIGHT WEEKS

$985

The land of the Vikings! Castles, fjords, scenes from Hamlet, the Hans Christian Andersen country. Then to the bustling capitals and quaint villages of Continental Europe. Five nights in Paris. Liberal sight-seeing.

Spring tours, other European tours, and intercollegiate tours giving college credit $295—$1500.

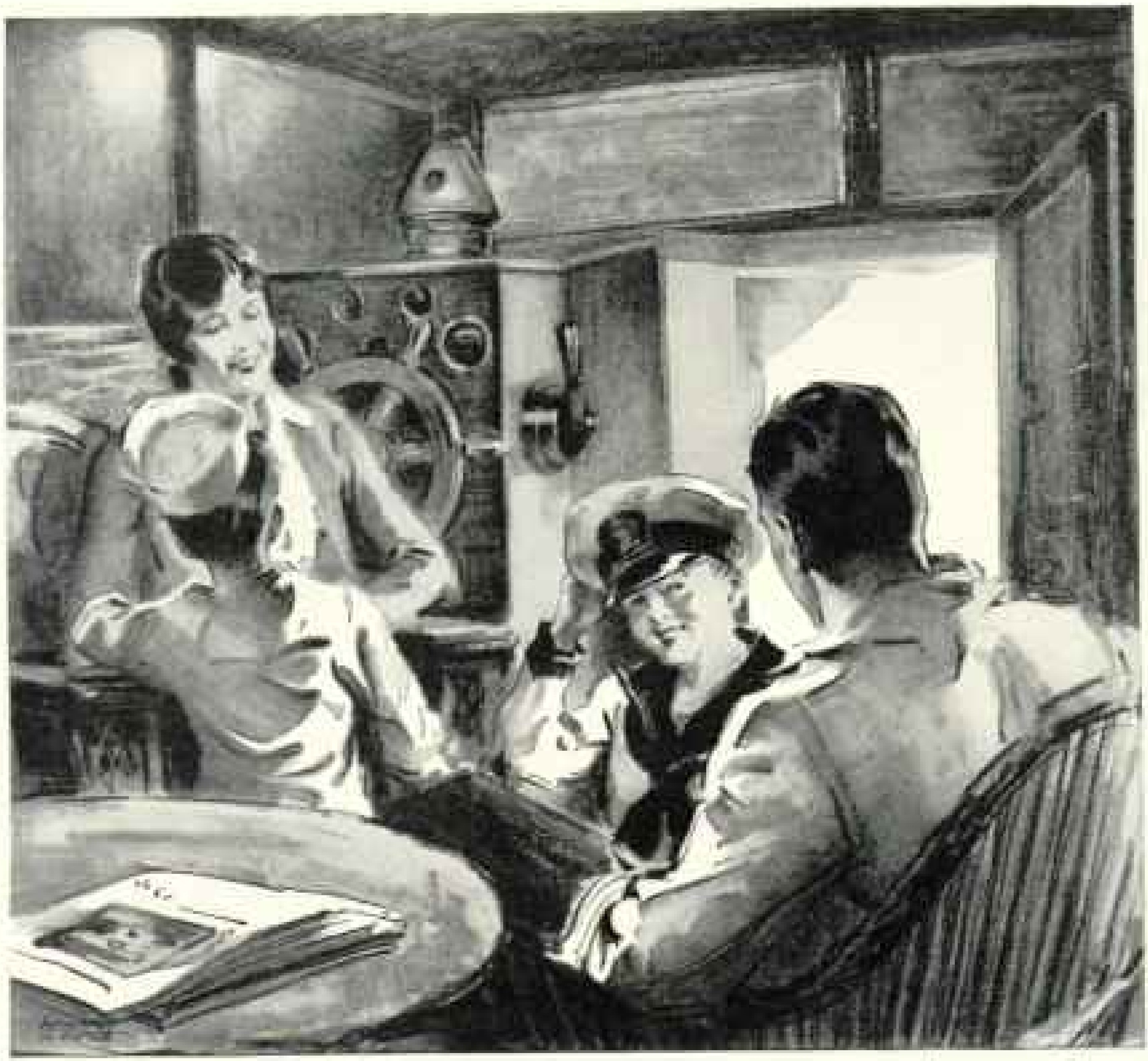
TEMPLE TOURS

441 Park Square Building, Boston, Mass.

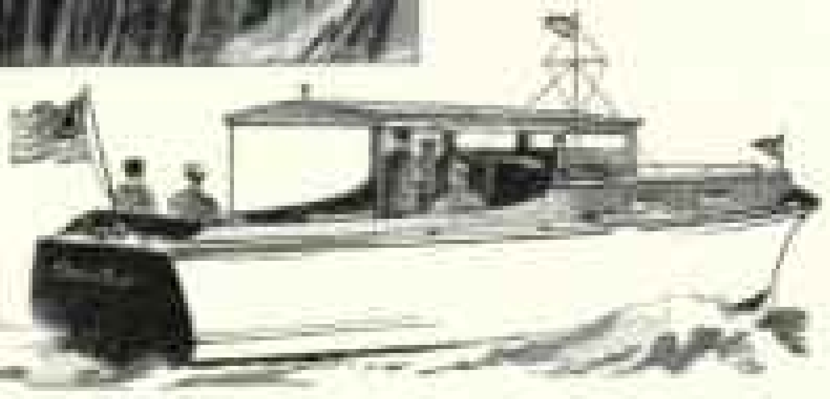
New York, Chicago, Columbus, San Francisco, Philadelphia

WRIGLEY'S
SPEARMINT
THE PERFECT GUM
THE FLAVOR LASTS
MINT LEAF FLAVOR

Good and Good for You.



Chris-Craft family cruisers in 31 and 36 foot lengths; single and double cabin models with open or enclosed bridge.



*H*ome is where the anchor drops

Who can still find pleasure on crowded highways . . . or rest and recreation in the endless parade of traffic? ⚓⚓ Why not, instead, long, lazy evenings under an offshore moon . . . nights of dreamless sleep, to a lullaby of lapping waves . . . days of adventuring where every breath's a tonic and every hour is health? ⚓⚓ Forget that cruising was once a rich man's sport. Within these sleek hulls Chris-Craft has packed more of recreation . . . of health and sheer enjoyment . . . than you ever dreamed boats of their size could carry. Yet Chris-Craft has priced them for moderate incomes. ⚓⚓ Beneath their trim, slim beauty, the new Chris-Craft family cruisers are staunch, sturdy boats . . . fast, seaworthy and safe. Three generations of master boat builders have given these craft every possible luxury and convenience. ⚓⚓ Up anchor and away, this year. Now is the time to inquire and to place your order . . . remembering that the Chris-Craft financing plan enables you to buy out of income. See your nearest Chris-Craft merchant today.

© C-C Corp., 1930 (101)

Chris-Craft

RUNABOUTS . . . SEDANS . . . COMMUTERS
CRUISERS . . . YACHTS

CHRIS-CRAFT CORPORATION—701 DETROIT ROAD, ALGONAC, MICHIGAN
NEW YORK DIRECT FACTORY BRANCH—1 WEST 52ND ST., AT 5TH AVENUE

Rin-tin-tin's FOOD

To perform well, Rin-Tin-Tin, most valuable movie dog, must always be in perfect physical condition. Rin-Tin-Tin is fed Ken-L-Ration exclusively. Like all other dogs, Rin-Tin-Tin requires a *balanced* food... and Ken-L-Ration is correctly *blended* and *balanced*, containing fresh, pure meat, cereals, cod-liver oil and charcoal in the right proportions. Perfectly cooked and canned, ready to feed, without muss or bother. Do not accept substitutes. Ken-L-Ration is for sale in more than 100,000 stores. Ask for it by name. Write for free sample can.

CHAPPEL BROS., Inc.
89 Peoples Avenue
Rockford, Ill.

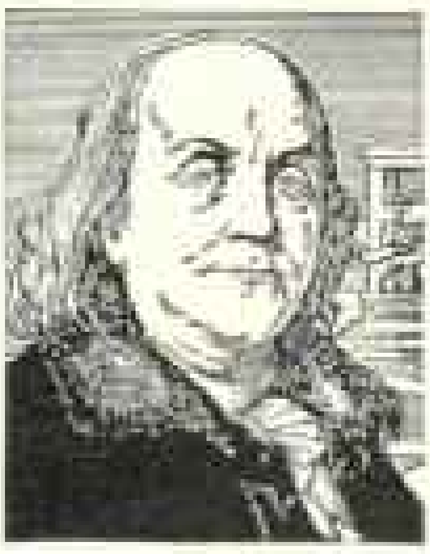
Send for FREE Sample

KEN-L-RATION

THE DOG FOOD SUPREME

JOHN HANCOCK SERIES

Follow a great man's advice



Ben Franklin

The Apostle of THRIFT said:

"If you know how to spend less than you get, you have the philosopher's stone."

It is easy to manage your income, so that it will cover expenses and leave something over for savings and investment, if you have a John Hancock Home Budget Sheet. Let us send you a copy.

John Hancock
MUTUAL
LIFE INSURANCE COMPANY
OF BOSTON, MASSACHUSETTS

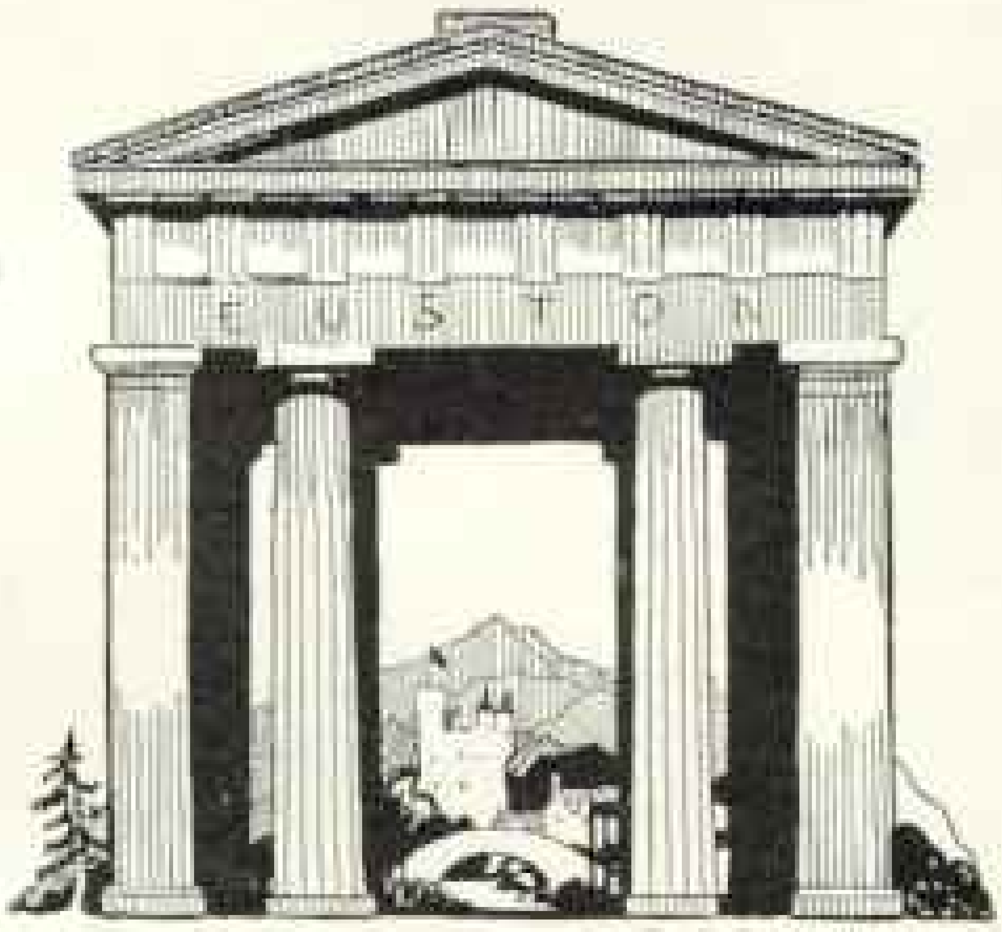
Inquiry Bureau, 197 Clarendon St., Boston, Mass.
Please send me the John Hancock Home Budget Sheet.
(I enclose 2c to cover postage.)

Name ____________________

Address ____________________

N. G.

OVER SIXTY-SEVEN YEARS IN BUSINESS



EUSTON STATION LONDON—

the starting point of your tour through Britain

When you get to London go straight to Euston Station and get tickets to take you to the most famous parts of the British Isles. Euston is the way out of London to the Shakespeare country; Euston is the way out to the Lake District — the home of the great Lake Poets; Euston is the way to the mountains of Wales; Euston is the way to Scotland — the most romantic land in the world; Euston is the way to Ireland with its delightful people and customs.

Remember it's Euston Station you want. Go there and arrange your circular tours through the most beautiful parts of Great Britain and Ireland.

L M S

LONDON MIDLAND & SCOTTISH
RAILWAY OF GREAT BRITAIN

Illustrated pamphlets from T. R. Dester, Vice-President—Passenger Traffic (Dept. A30), L M S Corporation, 200 Fifth Avenue, New York City. Or from any L M S Ticket Agent.

THE FARM THAT HAS MADE AMERICA'S FINEST SAUSAGE SINCE 1834
Dots show principal centers of distribution

JONES DAIRY FARM SAUSAGE

Over 2000 Jones Dealers selected from the better markets all over America supply this delicious Breakfast and Luncheon delicacy fresh from the Farm.

JONES DAIRY FARM
Fort Atkinson, Wis.

In Wisconsin's great dairy center—owned and operated by the Jones Family since 1834.

On winter nights . . .

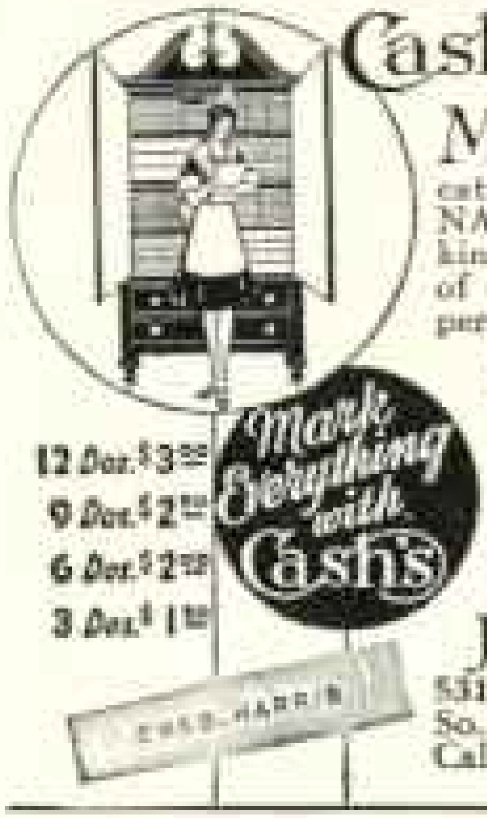
NEARLY every one likes an extra bite to eat just before going to bed. Usually, you raid the refrigerator and fill up on foods that overtax your digestion and keep you awake.

How much better it is to help yourself to a crisp Kellogg Cereal! Easy to get ready — all you have to do is to pour them out of the package and float them in milk or cream. Easier on your stomach — because they are so light and easy to digest.

Just as a trial, start with Kellogg's Corn Flakes. Try this bedtime snack soon. They're full of appetite zest. And they'll send you off to bed — contented and ready for a full night's sleep. Made by Kellogg in Battle Creek.

Kellogg's

Corn Flakes, Rice Krispies, ALL-BRAN, PEP Bran Flakes, Kellogg's Whole Wheat Biscuit, Wheat Krumbles, Kaffee Hag Coffee—the coffee that lets you sleep.



Cash's Names

MARK your clothes and linen for safety from losses, easy identification, good appearance. CASH'S NAMES are far superior to any other kind of marking—give you a choice of many styles and colors—neat—permanent—economical. Woven on fine cambric tape—"Fast to the finish." Order from your dealer or write.

Trial Offer Send 10c for one dozen of your own first name woven in fast thread on fine cambric tape.

J. & J. CASH, Inc.

531st St., So. Norwalk, Conn., or 6435 So. Gramercy Place, Los Angeles, Calif., or 131 Gray St., Belleville, Ont.

Get The Best

The "Supreme Authority"

Universally accepted and used in courts, colleges, schools, business offices, and among government officials . . .

WEBSTER'S NEW INTERNATIONAL DICTIONARY

A Library in One Volume. In its 2,700 pages there are 452,000 entries, including 12,000 biographical entries, 32,000 geographical subjects, 100 valuable tables, over 6,000 illustrations. **Get The Best.** See it at any bookstore, or send for illustrated pamphlet containing sample pages . . . FREE, if you mention this magazine.

G. & C. MERRIAM COMPANY **Springfield, Mass.**

The Greatest Convenience for Your Home

WITH **Moore Push-Pins,** Glass Heads, Steel Points, 2 sizes, or **Moore Push-less Hangers,** the Hanger with the Twist, 4 sizes, you can easily hang up or frequently change the position of pictures, charts, trophies, decorations, etc., without marring wall paper, plaster or woodwork. Keep a packet in every room.

10c Packets Everywhere

MOORE PUSH-PIN CO. **PHILADELPHIA**

Vertex File Pockets
VERTICAL – EXPANDING

are firm, durable, expansible filing containers. Placed in any vertical filing system in the place of the overcrowded folders, they will demonstrate at once—

—how to keep your files in a neat, orderly condition.

—how to save clerks' time in filing and finding.

—how to save filing space.

If there is room for improvement in your files, there is room for "Vertex" Pockets. Send the coupon below for a Free Sample.

——— CUT HERE ———

Please send me for trial in my files a free sample of the Bushnell Paperoid "VERTEX" File Pocket as described in January, 1931, National Geographic.

Name of Firm ....

Address....................

Name and Position of Person Inquiring

....

Letter Size or Legal Size Desired? ....

To ALVAH BUSHNELL CO., Dept. G
13th & WOOD STREETS PHILADELPHIA

In Perfect Harmony....

HARRISON Memorials are designed to harmonize with their surroundings. The artistic genius of our craftsmen insures the creation of a fitting memorial . . . a perfect unit in the whole broad landscape.

Booklet "G" on Request

Harrison Granite Co., Inc.

MONUMENTS MAUSOLEUMS

4 E. 43rd Street, at Fifth Avenue, New York City
Branch Offices:
Chicago, Detroit, Pittsburgh, Minneapolis
Works: Barre, Vermont

HARRISON MEMORIALS
COUNTRY-WIDE SERVICE

DUES

Annual membership in U. S., $3.00; annual membership abroad, $4.00; Canada, $3.50; life membership, $100. Please make remittances payable to the National Geographic Society, and if at a distance remit by New York draft, postal or express order.

RECOMMENDATION FOR MEMBERSHIP

IN THE

NATIONAL GEOGRAPHIC SOCIETY

The Membership Fee, Which is for the Calendar Year, Includes Subscription to the National Geographic Magazine

PLEASE DETACH AND FILL IN BLANK BELOW AND SEND TO THE SECRETARY

.............................193

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 ....

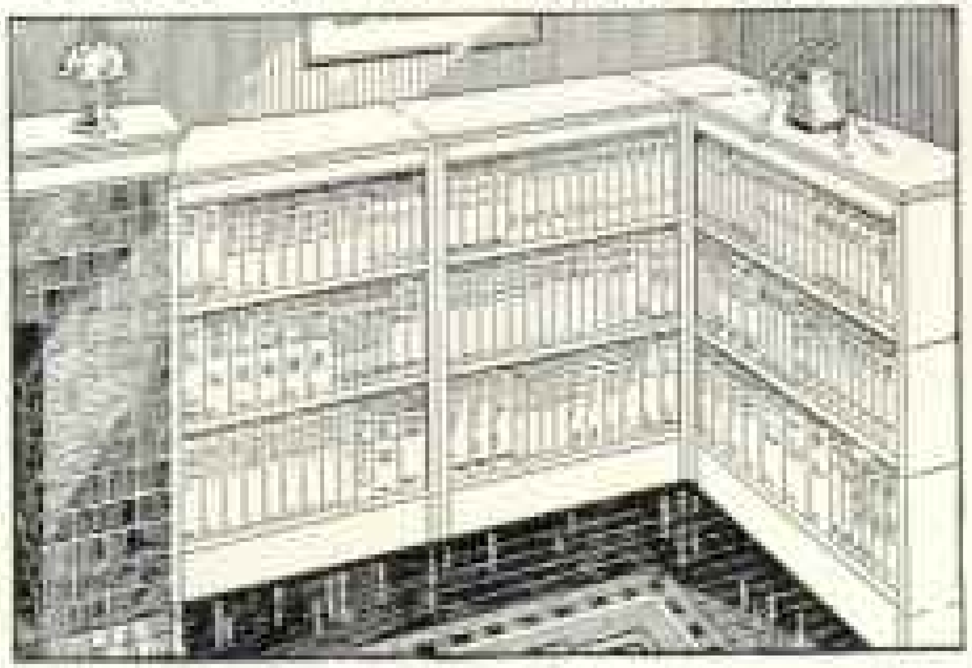
.... *for membership in the Society.*

....

....
Name and Address of Nominating Member

1-31

Like a "BUILT-IN" Bookcase yet Sectional and Portable



Per Section: Lacquer **$4.00** Unfinished **$3.00**

Lundstrom

IT GROWS WITH YOUR LIBRARY

SECTIONAL BOOKCASE

Most desirable and economical bookcase for home or office. Sectional; never too large or too small; fits odd spaces and **grows with your needs.** Price of single three book section stack with top and base, style shown above, unfinished (for home painting), **$12.00;** imitation mahogany or walnut, **$13.25;** colored lacquer, **$16.50.** Other styles in oak, mahogany, walnut, etc., with doors, **at correspondingly low prices.** Shipped **direct from factory on approval** at a big saving TO YOU. Write for Catalog No. 86.

THE C. J. LUNDSTROM MFG. CO., Little Falls, N. Y.
Manufacturers of Sectional Bookcases since 1899
New York Show Room, 130 West 42nd Street

HIS TAIL WILL WIG-WAG "THANKS"

THE FAMOUS FOOD OF CHAMPIONS

★ Thanks for overflowing energy! Thanks for a strong body, for good bone, clean teeth and healthy gums . . . for verve and vim and vast vitality! The dog fed on a daily diet of Spratt's Foods has much to be thankful for . . . for Spratt's crisp biscuits contain wholesome meat . . . energizing wheat . . . and all the other nourishing ingredients a dog needs. That is why veterinarians recommend Spratt's Foods. That is why fine dogs the world over are Spratt's-fed pets.

Stop feeding your dog haphazardly. Discontinue giving him sloppy foods. Feed him a balanced fare . . . give him Spratt's Foods! Refuse substitutes! For your dog's sake, look for the name "Spratt's" on every package of dog foods you buy! Sold at grocery, seed, feed, and drug stores. And at pet shops!

★ FREE DOG BOOK: *A valuable handbook on feeding, breeding and training. Also samples of Spratt's Foods. Write SPRATT'S PATENT LTD., Dept. N-4, 18 Congress St., Newark, N. J.—1186 Howard St., San Francisco, Cal.* ©S. P. L. 1930

SPRATT'S DOG BISCUITS

VIOLA ROOT CAMERON

Genealogist

ESTABLISHED IN 1913

FAMILY HISTORIES COMPILED AND PUBLISHED

COATS OF ARMS

CORRESPONDENCE INVITED

521 FIFTH AVENUE, NEW YORK

56, FAUBOURG SAINT-HONORE
PARIS

57 CHANCERY LANE
LONDON

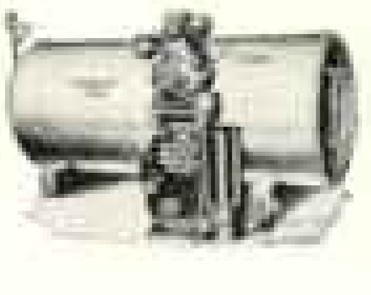
RUNNING WATER NOW—with Gas Engine Power—*easily changed to* Electric Power *later on*

Pump Builders Since 1870

YOU can have the convenience of running water at your country or suburban home without waiting for electric service. MYERS Water Systems are built to be quickly and economically convertible from gasoline power to electric power. Get one of these handy, modern, gasoline-powered water systems now. It is a lot easier to start the safe little engine that pumps your supply of fresh water for delivery at the turn of a faucet, than to carry daily an endless succession of buckets. Should electricity become available later, your MYERS dealer can furnish a motor that directly replaces the engine, making the system completely automatic.

MYERS Pumps and Water Systems are built for deep or shallow wells for operation by hand, wind mill, pump jack, engine or motor. Capacities 150 to 10,000 gallons per hour. Write for booklet and name of nearest dealer.

MYERS Self-Oiling Water Systems

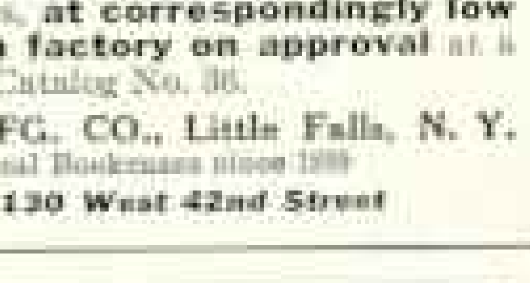


The F. E. Myers & Bro. Co.
90 Orange St., ASHLAND, OHIO
Pumps, Water Systems, Hay Tools, Door Hangers

Take Off Your Hat to The MYERS

(R-4)

A sure way to protect signatures and writing upon all important records and documents is to use



Is safe from the obliterating action of age, air, sunshine, heat, moisture and chemical eradicators.

At all Dealers 10¢

HIGGINS' Eternal black writing Ink

[illegible]

For Steel Pens & Fountain Pens

Made by Chas. M. Higgins & Co., Inc., 271 Ninth St., Brooklyn, N. Y.
Makers of Higgins' American Drawing Inks for Half a Century

★"WHAT YOU SEE, YOU GET"

This year everyone can take personal movies with a ★genuine Bell & Howell

FILMO

as low as

$92

● *Filmo Cameras range from $92 to $408.50; Filmo Projectors from $198 to $281; complete outfits to $1183. Outfit shown is $361 with case.*

You would like personal movies . . . of your travels, your holidays, the family and children. Certainly! Everyone wants them.

Then why don't you own a personal movie camera?

Perhaps you have hesitated, not wanting to buy a camera in which you didn't feel full confidence, and thinking, perhaps, a Filmo too expensive.

But Filmo isn't expensive! You can have a genuine Bell & Howell Personal Movie Camera for as low as $92. And as fine a camera as ever bore the Bell & Howell name! No matter what model Filmo you buy, it is the least expensive to own, for every Filmo is a *lifetime* camera.

It is amazingly easy to take movies with Filmo, even for the inexperienced. Yet the expert, too, finds here the perfection he seeks. For Filmo is made by Bell & Howell, makers for more than 24 years of the professional movie cameras used by the major film producers. Filmo Cameras use Eastman Safety Film (16 mm.) in the yellow box, obtainable everywhere. Filmo Cameras and Projectors may be equipped (under license of Eastman Kodak Company) for use of Kodacolor film for movies in full color.

See your dealer. Ask about his budget payment plan. Or write for the fascinating movie booklet No. 12. Bell & Howell Company, 1804 Larchmont Ave., Chicago, Ill. New York, Hollywood, London (B. & H. Co., Ltd.) Established 1907.

Bell & Howell Co., 1804 Larchmont Ave., Chicago, Ill.
Gentlemen: Please send me movie booklet No. 12—the fascinating story of Filmo Personal Movies.

Name ________________

Street ________________

City ____________ *State* ________

★Filmo Personal Movie Cameras and Projectors are made by Bell & Howell, world's leading manufacturers of professional movie studio cameras and equipment.

Questions that you should ask in selecting an electric cleaner

"Has this cleaner a separate cleaning method for each type of dirt?"

There are three kinds of dirt in floor coverings; surface dust, thread and lint, and deeply-embedded grit. Any cleaner you select should be expressly designed for the removal of each of these three kinds of dirt.

These requirements are met in The Hoover by three separate cleaning principles: suction for the removal of surface dust; sweeping to gather up thread and lint; beating—embodied in Positive Agitation—to loosen the deeply-buried grit. The most important of these—because it removes the most destructive dirt—is Positive Agitation, an exclusive, patented Hoover principle. Two thousand two-ounce taps per minute vibrate the rug on a cushion of air, shaking loose the tight-packed grit. This cleaning principle enables The Hoover to remove more *dirt per minute* than other cleaners, giving unmatched speed, ease and thoroughness of cleaning.

A wise precaution in the selection of a cleaner is to compare its action on your rugs with the cleaning performance of a Hoover. Let results alone guide you in your choice. Every Hoover dealer welcomes the opportunity to make such a comparative test. Telephone your Hoover dealer for a home trial of The Hoover. The New Hoover is only $6.25 down, complete with dusting tools; balance monthly. Liberal allowance for your old cleaner.

ONLY
$6.25
DOWN

THE HOOVER COMPANY, NORTH CANTON, OHIO

The oldest and largest maker of electric cleaners. The Hoover is also made in Canada, at Hamilton, Ontario

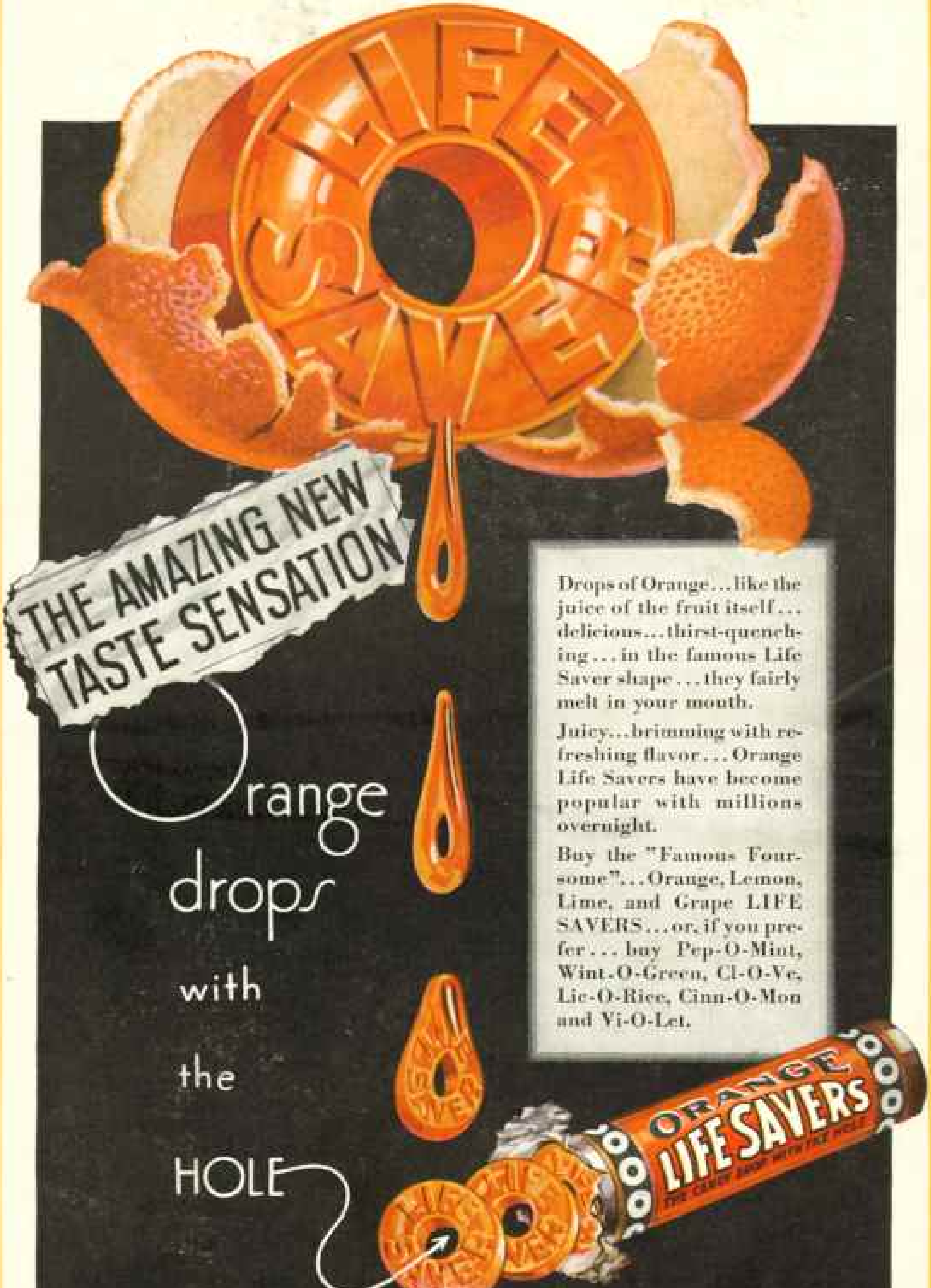
[There is a permanent Hoover representative in your neighborhood. He is bonded and trustworthy. In the near future he will call on you to give you a free inspection of your present cleaner. We ask you to see him when he arrives.]

The HOOVER

IT BEATS ... AS IT SWEEPS ... AS IT CLEANS
ON A CUSHION OF AIR

© 1931, The Hoover Co.

PRESS OF JUDD & DETWEILER, INC.
WASHINGTON, D. C.


THE AMAZING NEW TASTE SENSATION
Orange drops with the HOLE
ORANGE LIFE SAVERS
LIFE SAVER

Drops of Orange . . . like the juice of the fruit itself . . . delicious . . . thirst-quenching . . . in the famous Life Saver shape . . . they fairly melt in your mouth.

Juicy . . . brimming with refreshing flavor . . . Orange Life Savers have become popular with millions overnight.

Buy the "Famous Foursome" . . . Orange, Lemon, Lime, and Grape LIFE SAVERS . . . or, if you prefer . . . buy Pep-O-Mint, Wint-O-Green, Cl-O-Ve, Lic-O-Rice, Cinn-O-Mon and Vi-O-Let.

All candy products having the distinctive shape of Life Savers are manufactured by Life Savers, Inc.