

My Trip Through The Panama Canal

from the
ATLANTIC
to the
PACIFIC



By **The Panama Pacific Line**
The Coast to Coast Recreation Route
NEW YORK~CALIFORNIA

*A*N accurate Guide to the
Panama Canal.

Issued with the approval of
the Canal Administration.

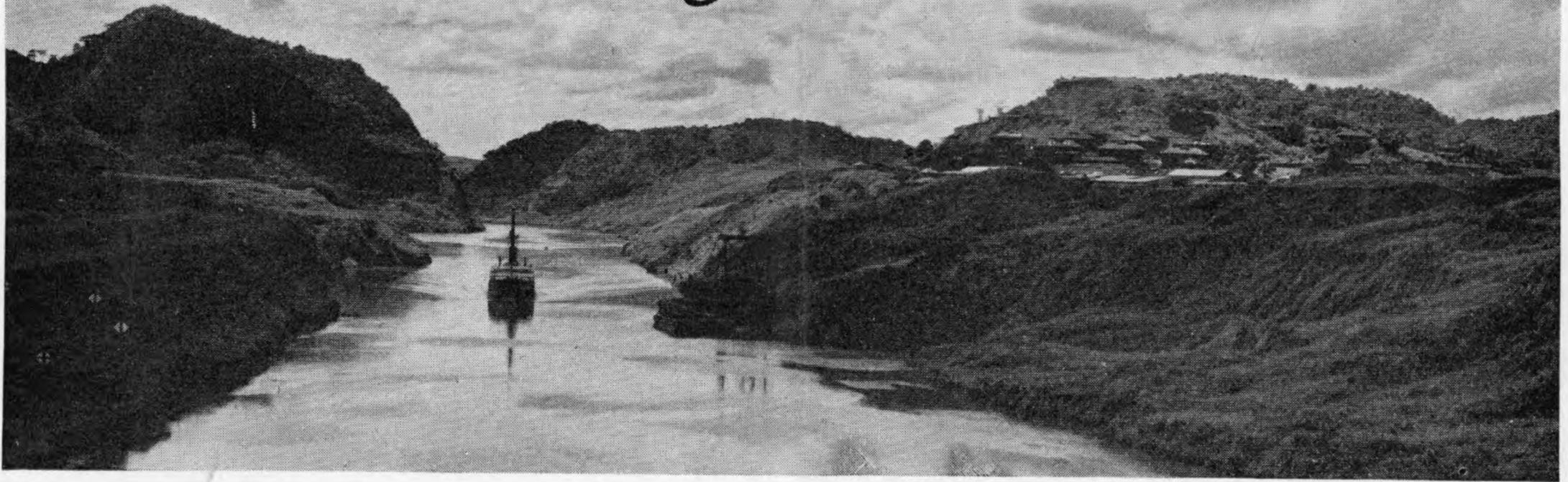
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Following the Flowing Road Through the Isthmus



One of the World's Greatest Travel Thrills

NOT even the pyramids of Gizeh, for centuries counted the greatest of man-made wonders, can compare with the Panama Canal in appeal to the interest and imagination of the traveler. The pyramids stand for the mystic past; the Canal is an imperishable tribute to the genius of the present.

Not alone its massive locks and walls of concrete, its cuts through rock and morass, or its artificial lakes, make it an object to marvel at. Back of its material form is the great and glowing thought that its flowing road connects the mighty seas of East and West; that it pierces the backbone of the Continent; that it materializes in fact the elusive, fabled strait by which Columbus and his followers sought the shortest road to the Indies.

Four hundred years after the coming of the Great Discoverer, the mountains that had baffled him looked down upon the union of Atlantic and Pacific by the man-made artery of the Panama Canal. The colossal nature of the work by which this miracle was wrought won for American engineers the plaudits of the world, and today the endless procession of ships through the Canal are eloquent evidence of its practical value.

Travelers are prepared for what they are to see of its great locks; of its ingenious methods of lifting ships, of its long course through artificial lakes, above the level of the oceans. But one thing that comes as a surprise is the beauty and magic charm of its natural setting. "I

had no idea it was so beautiful," is an exclamation often heard in a transit of the Canal. The deep, vivid verdure of islands and hillsides; the colors of flowers amidst the green along the shores; the waving foliage of shoreside banana plantations, each with its palm-thatched house; the purple slopes of the mountains in the Continental Divide, that seem to recede mile by mile as the ship advances; the red roofed military stations; the model, spotless towns in the Canal Zone, and finally the color and bizarre briskness of life in the Spanish cities of Colon and Panama—all these are things that one can know and feel only by actual passage of the Canal.

In its historical background the Canal appeals as much to imagination as its physical beauty does to the eye. The old Road of Gold across the Isthmus by which the Spaniards transported the treasure of Peru from Old Panama to Porto Bello, for shipment thence to Spain, lies but a short way from the Canal, while the Canal's channel, for more than half its length, is up the valley of the Chagres River, that was followed for generations by hardy adventurers—first the Spaniard, next the buccaneer who despoiled him, then the gold hunter, California-bound. When crossing Gatun Lake the traveler today is stirred by the knowledge that his ship's keel is passing over the very route along which these epic figures toiled in their canoes up the Chagres toward Cruces, there to take the trail for Panama.

The Transit of the Canal

From the Atlantic to the Pacific

THE ATLANTIC END

SHIPS enter and leave the Panama Canal at the Atlantic end by a dredged channel beginning at a point $\frac{2}{3}$ mile inside the breakwaters of Limon Bay (Colon Harbor). The West breakwater (on the right hand), extending from Toro Point $2\frac{1}{2}$ miles northeasterly, was built 1910-12 and contains 2,840,000 cubic yards of rock, the core being local stone and the faces harder rock from Porto Bello. Eastward is the East breakwater, of later construction and about a mile in length, the two giving complete protection to Colon Harbor.

Occupying a flat peninsula on the East side of Limon Bay is the city of Colon, belonging to the Republic of Panama (30,000 inhabitants), with the Canal Zone industrial section of Cristobal adjoining it on the harbor side and the residential district of New Cristobal on the East (see map).

The most prominent landmark on the waterfront of Colon is the white Moorish facade of the Washington Hotel. Along Washington Drive, which skirts the sea wall to the left of the hotel, are hospital and school buildings and various structures now or formerly occupied by the Canal administration, including the former residence of earlier superintendents of the Panama Railroad. Most of the buildings have settings of

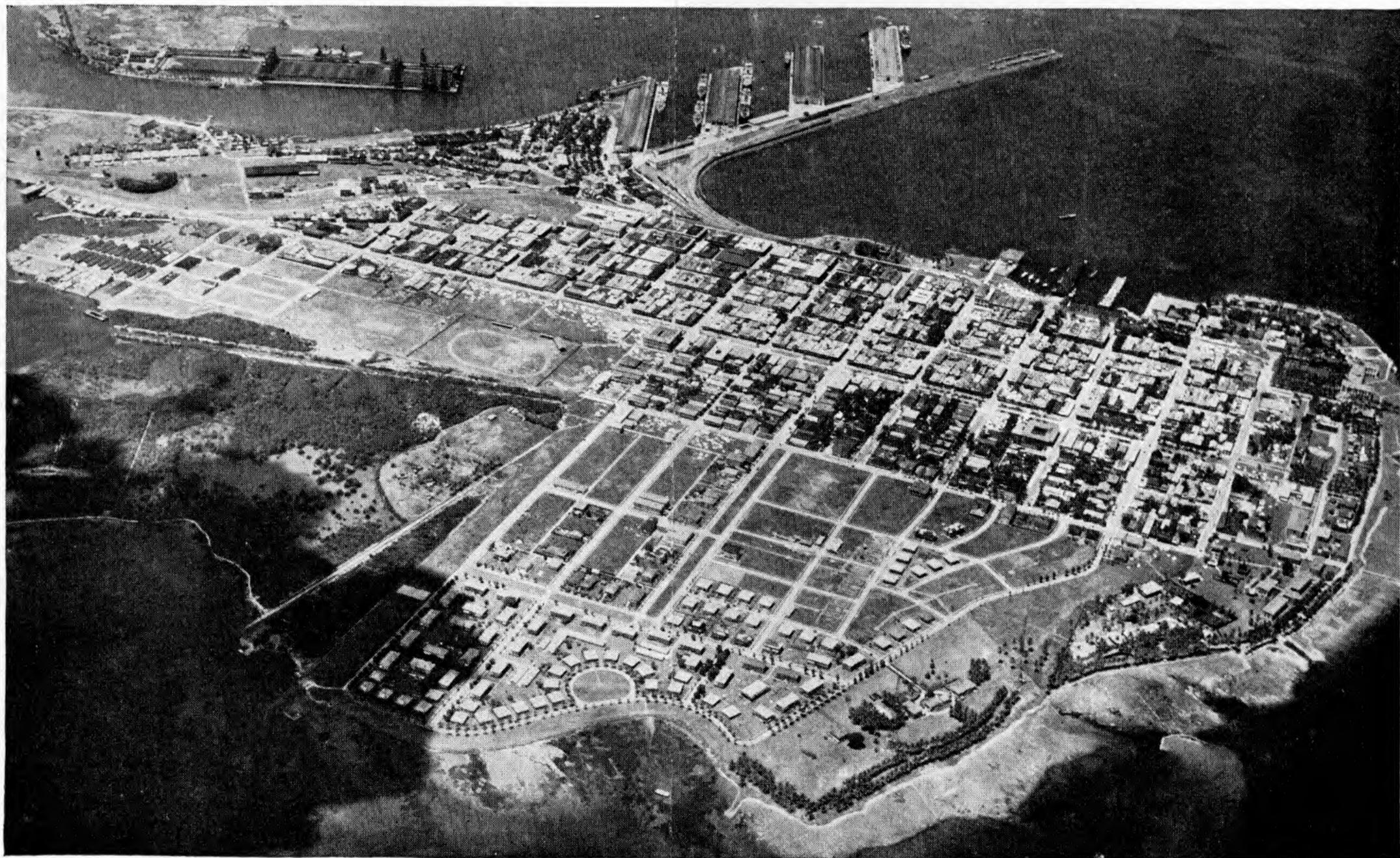
royal palms. Between the piers where steamers land and the coaling plant beyond them was the Atlantic entrance of the French canal, started in 1882.

The town of Colon proclaims its position at the "Crossroads of the World's Commerce" by business streets lined with shops selling anything from silk shawls to sheet anchors, and with strange places of refreshment and entertainment where men of all maritime nations may be seen.

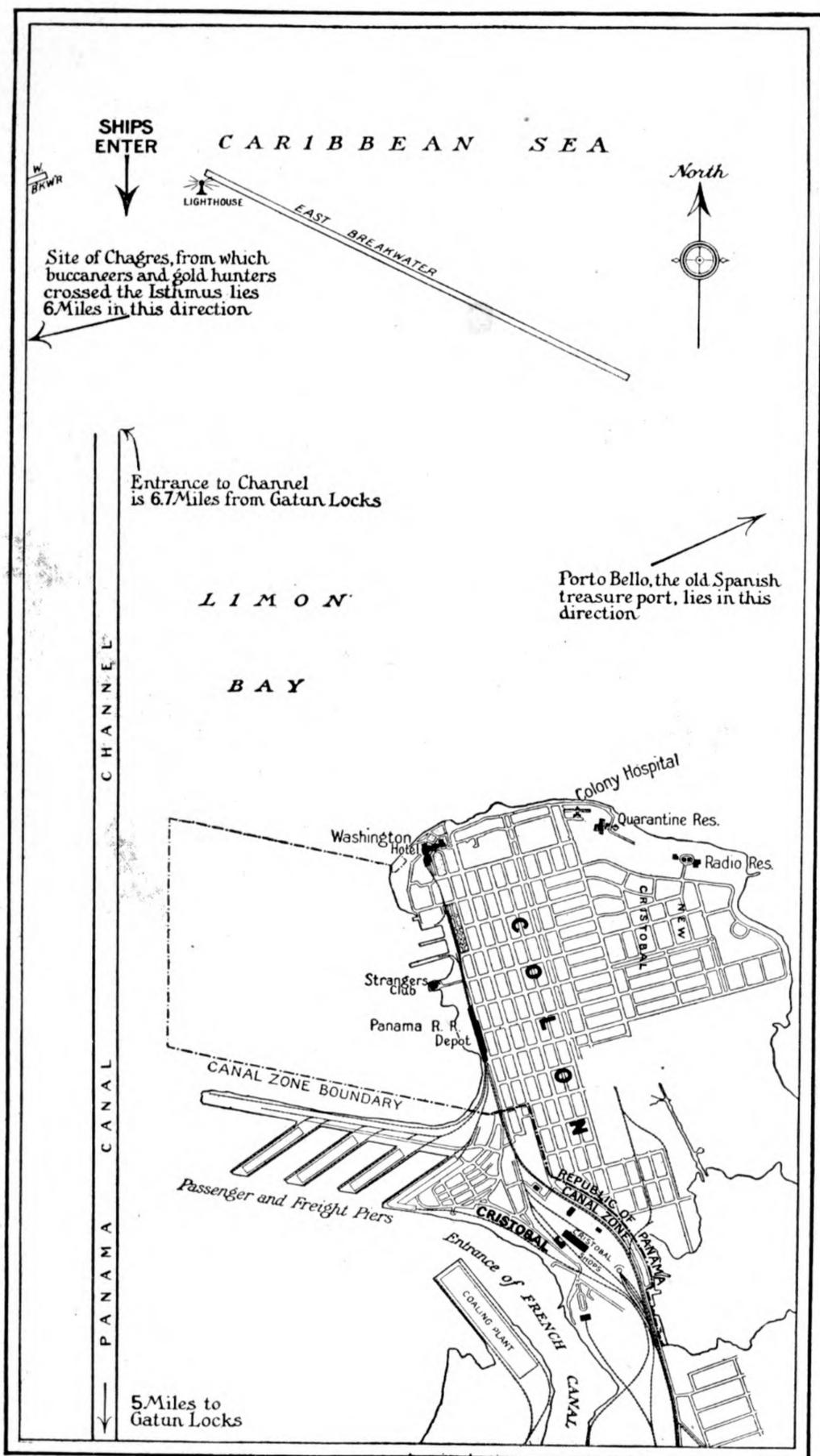
Panama Pacific steamers stop at the Colon piers eastbound, to take passengers for Havana and New York, but do not land passengers when westbound, stopping only in the channel, for inspection by port officials; westbound passengers are landed at Balboa. Agents, Andrews & Co.

Colon owed its first development to the building of the Panama Railroad across the Isthmus (1850-55), and was called Aspinwall, for William H. Aspinwall, one of the road's promoters. For some years it was the terminus of steamship lines from New York, whose passengers, largely gold seekers, at first crossed the Isthmus from Fort San Lorenzo at the mouth of the Chagres, by boat and on foot, and later by rail, to continue their journey to California by steamer from Panama. The French named the place Colon, and added Cristobal for the docks section, to complete the name of Christopher Columbus.

Travelers interested in the early history of the Isthmus before leaving Colon Bay should look eastward along the mountainous coast toward Porto Bello, which lies 20 miles away. The place was discovered by Columbus on his last voyage, 1502, and named by him "Har-



Colon and Cristobal from the air. (Photo courtesy U. S. Army Air Service.) In the upper left corner can be seen the entrance to the old French canal. The channel of the Panama Canal passes the docks at the upper right corner.



Colon, Cristobal and vicinity, showing Canal Zone boundary.

bor Beautiful." It became the shipping point for Spain's treasure from Peru, which was brought across the Isthmus on mule-back from Old Panama and loaded in galleons for the voyage to Spain. Porto Bello was sacked by Drake in 1572, again by Morgan in 1668, and was taken by Admiral Vernon in 1739. It is now a village of perhaps 500 people, but the student will find much of interest in the ruins of its forts, custom house, and church. A trip to Porto Bello and back may be made in a day from Colon by launch. Further east of Colon (75 miles), is the San Blas Indian country, where the natives live in primitive fashion. A steamer leaves Colon every Thursday for the Gulf of San Blas, returning Saturday.

The Canal channel from Limon Bay to Gatun Locks—the Atlantic sea level section—is $6\frac{2}{3}$ miles long and 500 feet wide. It lies due North and South, partly through swamp lands, where the attention of the traveler is arrested not only by the bright green of growth along the shores, including that of banana patches, each with its shacklike home on a knoll,

but also by the pungent, fragrant smell of the land, a grateful odor after some days at sea.

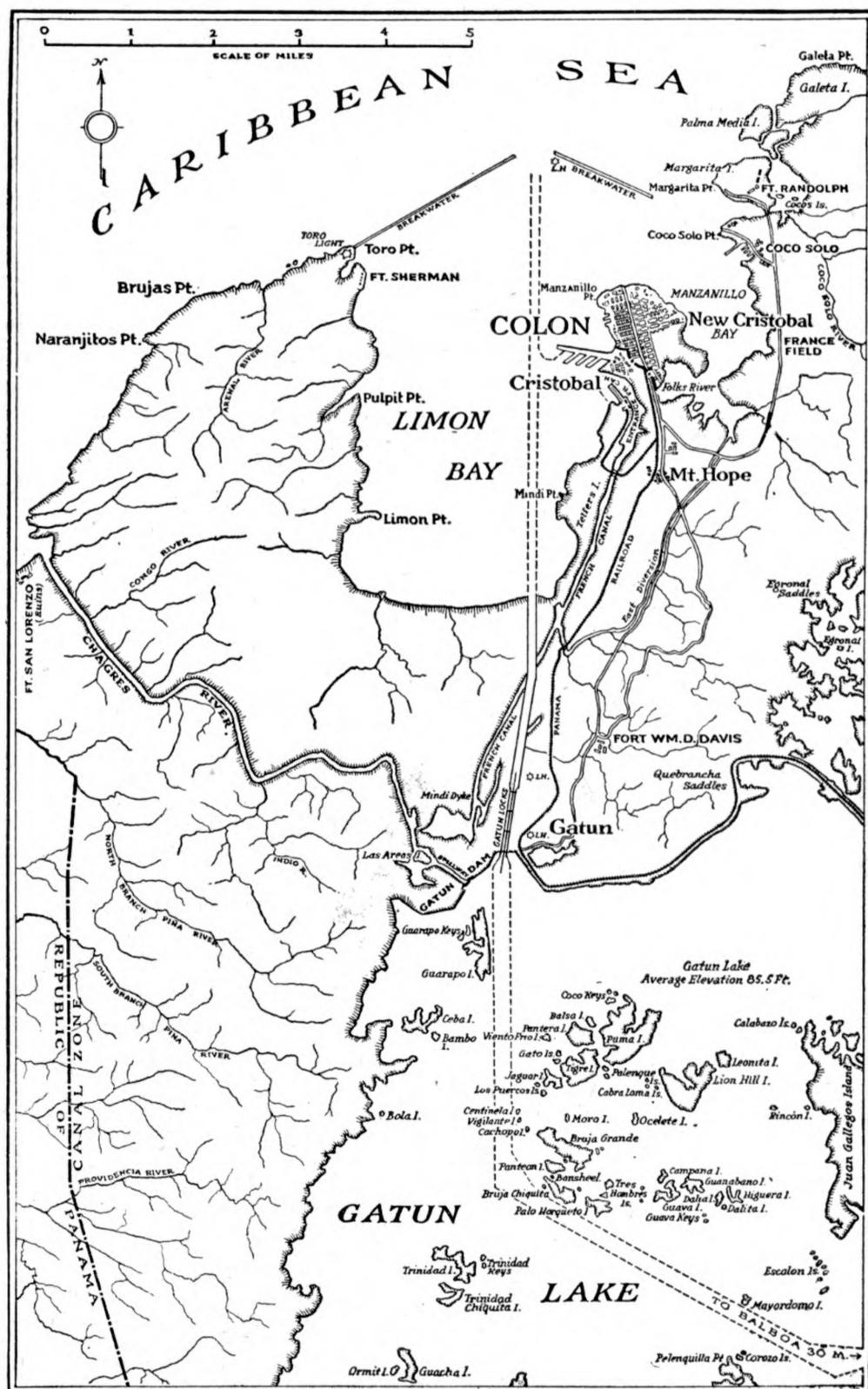
Less than a mile from Gatun Locks the channel crosses the course of the old French canal, which can be seen on either hand.

GATUN LOCKS AND DAM

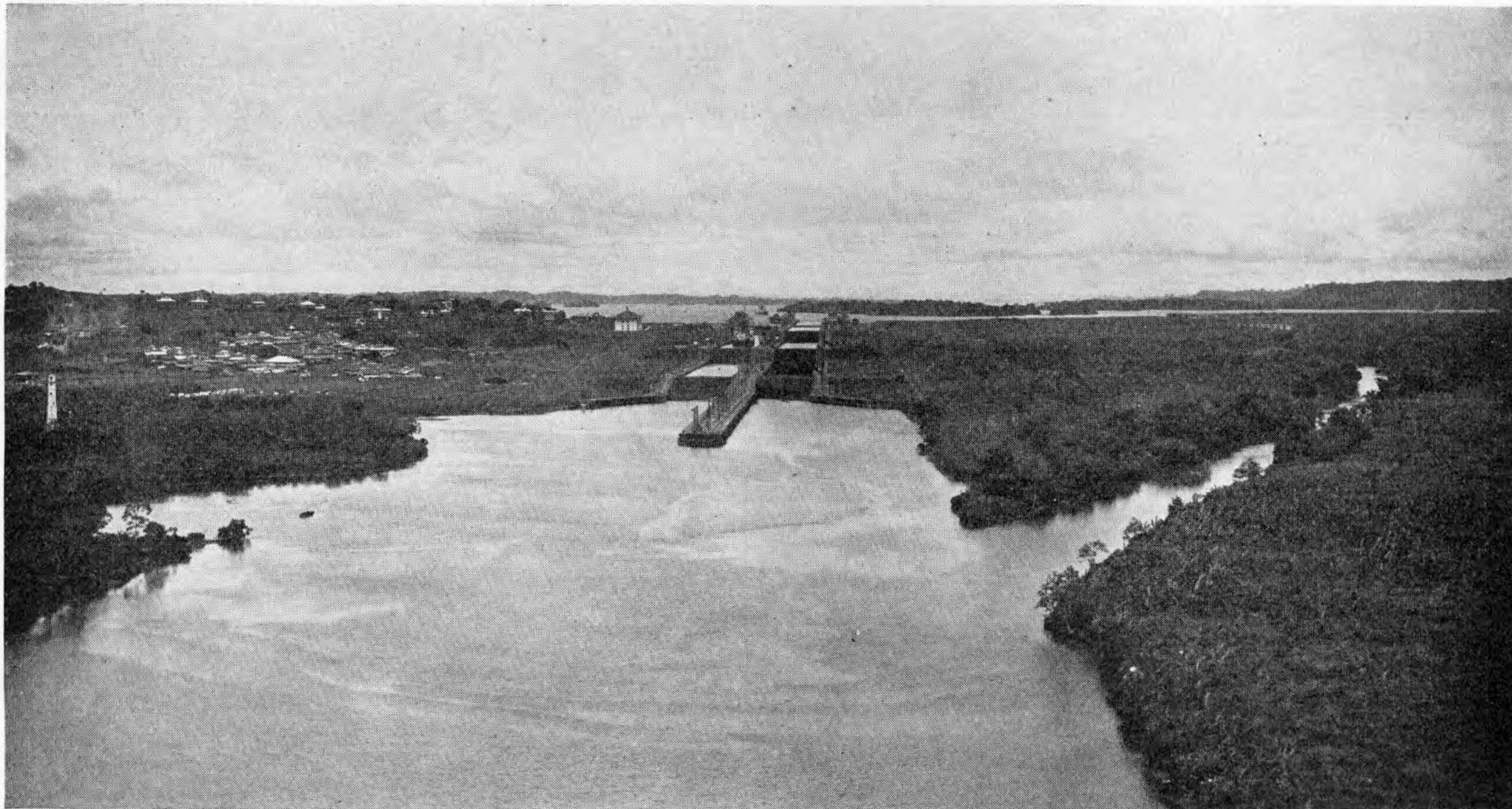
The largest and most impressive locks in the Canal are those at Gatun. Here vessels are lifted from the Atlantic level 85 feet in three steps—at the rate of 3 feet a minute—to Gatun Lake. Passage through the Gatun Locks takes about an hour.

The locks and their approaches, built of massive concrete, are $1\frac{1}{5}$ miles long. Each lock is 1,000 feet long and 110 feet wide, the standard for the six sets of locks in the canal. They are 70 feet deep. Their side walls are 45 to 50 feet thick at the bottom, tapering to 8 feet at the top. The center wall is 60 feet wide with sheer sides. Each wall contains a gallery for electric installation, and a passage for the use of employees.

Each chamber holds about 6 million cubic feet of water, and uses 3 million cubic feet at a filling. Though the scale on



Atlantic end of the Canal, Gatun Locks and channel in Gatun Lake.



Approach to Gatun Locks. On the right can be seen part of the old French Canal, and the slopes of Gatun dam. In the center are the locks, with Gatun Lake showing beyond them. On the left is the town of Gatun.

which the locks are operated is gigantic, the principle employed is the simple one of letting water run downhill. No pumps are employed. Three culverts, each about the size of a Hudson River tube, extend under the walls of each lock, one



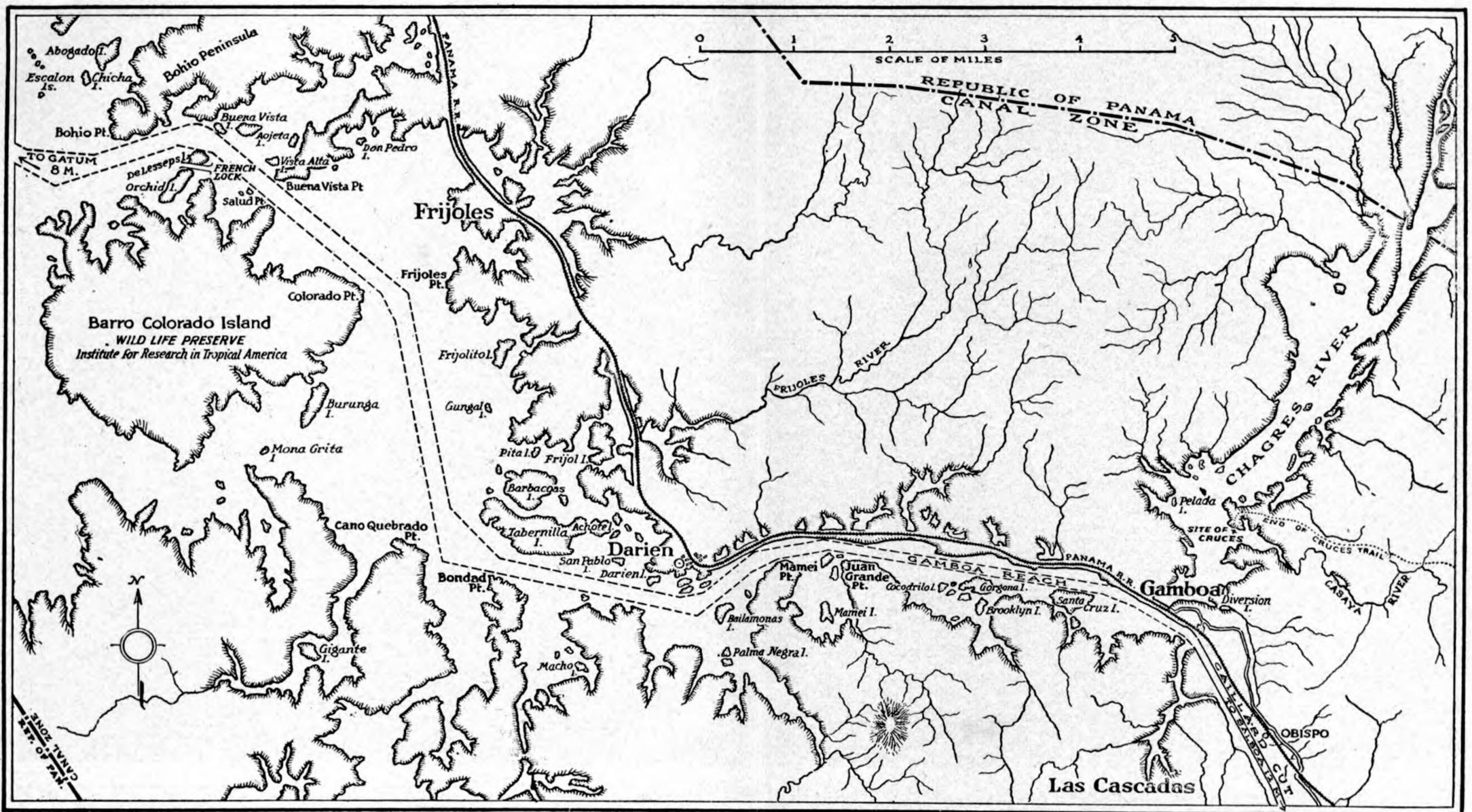
A scene in Cristobal.

on either side and one in the centre. Smaller culverts branch from them, and from these water enters the locks through many holes in the floor. The great valves controlling the flow of water are electrically operated as are also the gates.

Between the upper locks will be seen the control house. In this is a model of the locks, 64 feet long and 32 inches high with every feature indicated in metal or hard rubber, including the gate tops, which move as the gates themselves open or shut. Here is stationed an operator who, on receipt of a telephone message from the lock master in charge of putting a ship through, turns the water on or off as required by turning a small nickle handle on the control board, which turns on or off the electric machinery of the valves. When released, the water flows from a higher to a lower level, through the culverts, so rapidly that a lock can be filled and emptied in about 15 minutes. To empty a lock, the upper valves are closed and the lower ones opened. The water in the lock then flows into the lock below, until the level of the two locks is the same. The gates are then opened and the ship passes into the next lock.

The great gates of the locks are well worth study. Each leaf in a gate is 65 feet wide, 7 feet thick and about 70 feet high. They are built of steel, bolted to frame work and divided into an upper and a lower compartment, the lower being air tight to make the leaf buoyant in water, and take its great weight, about 400 tons, off its hinges.

Vessels do not pass through the locks under their own power, but are drawn through by powerful electric locomotives running on tracks with cogged center rails. Steel hawsers are passed to the ship from two to four of these "mules" on either side. The work of locking a ship proceeds with the utmost precision, and without noise. Accidents are rare, and are never serious, for there are many safeguards. No part of the electric machinery can be started until related parts have performed



Central portion of the Panama Canal showing channel through narrower part of Gatun Lake, Gamboa Reach, and upper section of Gaillard Cut; also the upper Chagres River, and beginning of the old Cruces trail.

their function. Chains that will be noticed across each lock are designed to stop any ship that might get out of control and endanger the gates. Each chain weighs 12 tons and each link 110 pounds. Should a ship strike the chain, automatic hydraulic releases will pay out the chain with resistance enough to bring the vessel to a stop. If a 10,000-ton ship should strike the chain when going four knots an hour, she would be stopped in 73 feet—less than the distance to the nearest gate. Should a gate be damaged, a second gate would prevent the escape of water.

At the entrances of the upper locks will be seen a bridge-like structure of steel. These are emergency dams, for use should the gates get out of order or when periodic repairs are made. They swing out over the lock on a pivot. A series of girders are lowered, and seated in iron pockets in the lock floor. Panels of steel are then lowered on these girders, until a dam has been constructed leaf by leaf that will check the flow of water

through the lock. On inspection, the steel leaves can be seen inside the truss of the dam.

CLIMBING GATUN'S WATER STAIRS

Climbing the three steps of the gigantic water stairs at Gatun Locks is one of the most interesting experiences in a transit of the Canal.

In the top lock, a passenger on the deck of a ship, has a view Northward of the docks at Cristobal; Eastward, of the village of Gatun, with its houses on the green hills for "gold" employees (Americans) and in the hollow for "silver" employees (colored); Westward over Gatun dam, with an 18-hole golf course on its velvety green slopes; and farther away, the valley through which the Chagres River pursues its course Northwestward from the spillway in the dam to the sea, 7 miles away. There the ruins of Fort San Lorenzo lie buried in the

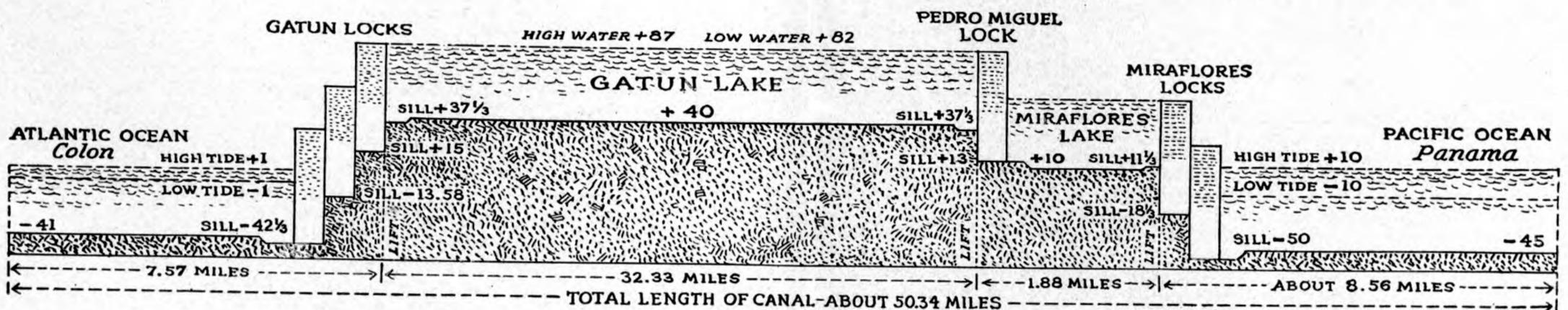


Diagram Showing Elevations of Canal



Where Gatun Lake follows the upper valley of the Chagres from the mountains. (Looking West). Near the end of the vista, where the channel turns to the left, is the Darien radio station.

brooding jungle, as they were left by Henry Morgan when he returned from the sacking of Old Panama.

In this striking view from the ship's deck, at an elevation of more than 100 feet above the sea, one may actually look down upon the treetops in the valley of the Chagres. Below the dam is seen a lagoon where the old French canal ends. Further along, as the ship leaves the locks, can be had a glimpse of the Chagres itself, below the spillway. Sportsmen find excellent fishing here for lively tarpon that come up the river from the sea to feed on fish from the lake.

Gatun Dam is 8,400 feet long and a half mile wide at its base. It is built of rock and earth. On the rock foundation of what was a small hill stands the spillway, to take care of the surplus waters of Gatun Lake. There are 14 gates, in a semi-circle 808 feet long, and a discharge channel 285 feet wide. Through these sluices may pass in a year more than 80 billion cubic feet of water, or as much as 50 per cent of the water impounded annually in the lake from a watershed 1,320 square miles. The inflow averages about 182 billion cubic feet a year. Loss of water in the lake by evaporation is, roughly, 10 per cent, the locks take 18 per cent, and the hydro-electric plant at the foot of the spillway 22 per cent. This plant furnished power for the entire Canal.

From Gatun Locks can be seen Gatun station on the Panama Railroad (left). Around the hill beyond Gatun the road turns sharply to the left, to follow the shore of Gatun Lake for several miles across the lake's upper arm, coming back to the Canal at Darien. (See map.) The road traverses the Continental Divide back of Gold Hill, its highest point being at Summit, 275 feet. The road as originally built followed the course of the Chagres from Gatun to Gamboa, and thence paralleled what is now Gaillard Cut, lying to the west of the present Canal route. With the building of the Canal, it was necessary to relocate the road for almost its entire length, placing it on the East side of the Canal. It is 47.61 miles long, is rock ballasted and has five-foot gauge. Its trains cross the Isthmus from Colon to Panama, with ten stops between, in one hour and forty-five minutes. There are three regular trains each way every week day.

GATUN LAKE, THE WONDERFUL

GATUN LAKE, formed by the dam across the Chagres, is the largest artificial lake in existence, its area, about 164 square miles, being equal to that of Lake Geneva, in Switzerland. It holds 183 billion cubic feet of water. Its level is 85 to 87 feet above the sea. Its shore line is very irregular and totals about 1,100 miles. The lake's greatest length is about 30 miles.

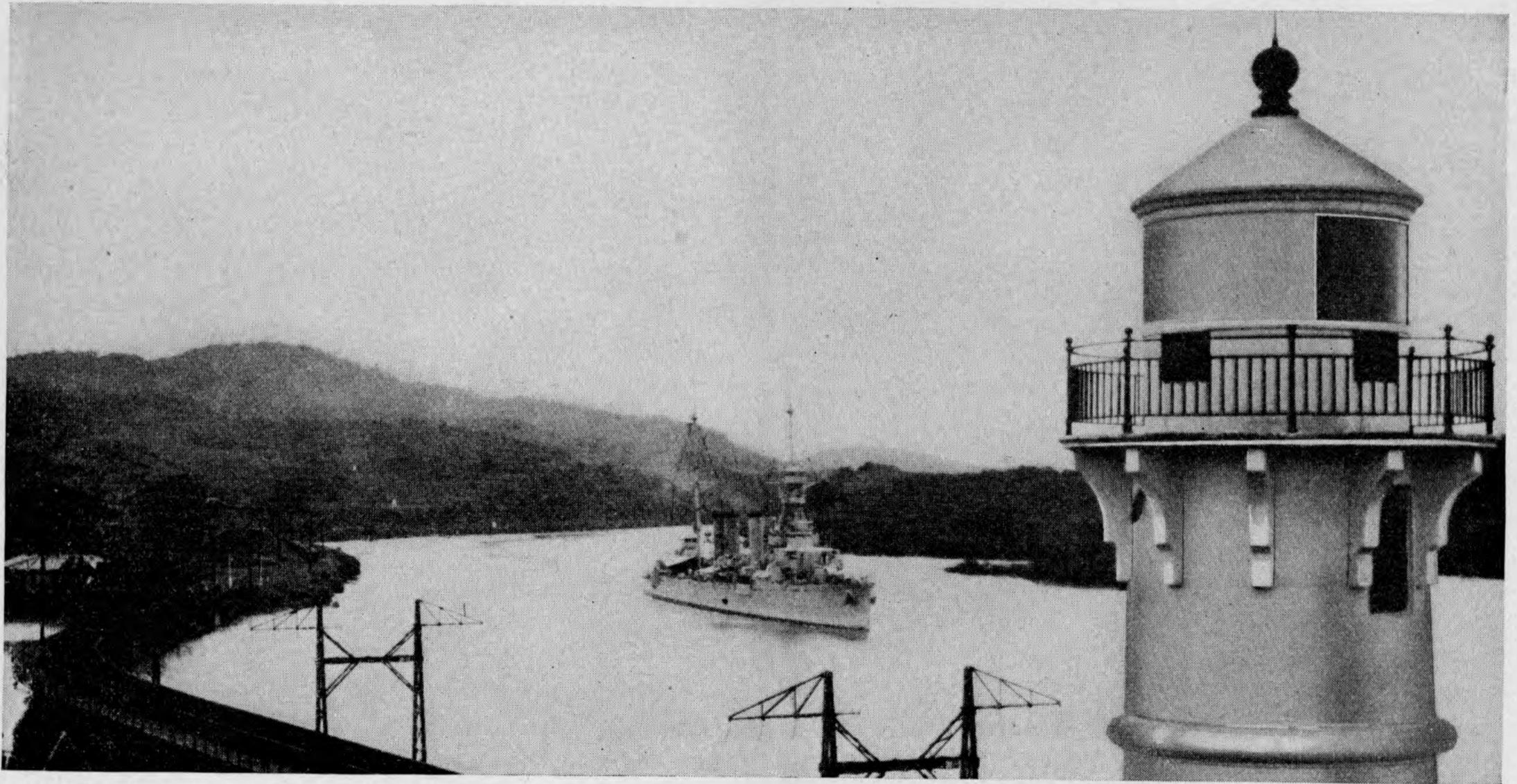
Following the old valley of the Chagres, the Canal crosses Gatun Lake in a generally southeast direction for $23\frac{3}{4}$ miles, in a channel from 45 to 85 feet deep, and 500 to 1,000 feet wide. The direction of the channel changes six times between Gatun Locks and Gamboa Reach, which is traversed to Gaillard Cut.

Near Gatun the lake is broad, with a vista of extensive bays, in which the skeletons of drowned trees still stand. Here are observed on either hand, on islands and headlands, numerous banana plantations, whose light green verdure contrasts with that of the dense forest growths around them.

Land in the Canal Zone is leased for banana culture and other agricultural purposes to residents of the Zone, on revocable licenses of indefinite tenure at \$5 a year per hectare, or about \$2 an acre. There has been steady development of banana culture in the Zone in the past few years, the crop for 1928 amounting to more than 2,000,000 bunches for Gatun area alone. The fruit is transported largely in boats to points on the railroad (East of the Canal) for transportation to tidewater and shipment north. Some vessels proceed to Gatun Lake to load bananas.

In traversing Gatun Lake a trace of the old French canal is seen at one point, North of Barro Colorado Island (see map), in the form of a cut where its first lock was to have been placed. This cut pierced a headland now named De Lesseps Island.

Many persons today believe the French engineers planned a water-level canal. Maps of their route show this was not the case, but that provi-



Where the Canal leaves the valley of the Chagres, at the beginning of Gaillard Cut. On the left is the railroad bridge over the Chagres. Three miles up the river from here was Cruces, starting point of the old Panama trail.

sion was made for eleven locks. The route of their canal was similar to that of the present Canal, following the valley of the Chagres to Gamboa, with practically the present route through the hills. Their plan did not contemplate the forming of Gatun Lake, but provided for diverting the waters of the Chagres and other streams at bends by means of artificial channels. Their second lock was near the entrance of Gamboa Reach, the third and fourth near Gamboa, the fifth at La Pita, the sixth at Cucaracha, the seventh and eighth near Paraiso, the tenth at Miraflores, and the eleventh at Corozal. (See map for the places mentioned.)

On leaving the open lake the Canal channel follows the shore of Barro Colorado Island (right). This is the largest island in the lake. Here the government has a wild life preserve with an institute for scientific research, in charge of a curator who makes scientists welcome. The dwelling of the curator can be seen in a clearing near the shore.

Whether Gatun Lake is crossed on a bright or a cloudy day, its vivid beauty delights and surprises the traveler. The blue peaks of the Continental Divide, through which one would say no ship could steam, are particularly impressive when viewed in conjunction with a foreground of lush green vegetation that meets the eye on every hand.

Throughout the passage of the lake the density and variety of the vegetation that lines the shores and clothes the islands, headlands and hills, often interlaced with vines or brightened by masses of blossoms, is a source of wonder and curiosity to the stranger. Owing to the variety of tropical trees, there being more than fifty useful kinds on the Isthmus, not counting minor growths, it is difficult from a steamer to distinguish species. It is also hard to tell the difference between a log on the shore and a crocodile sunning himself in the mud.

Bird life on the Isthmus quickly attracts the traveler's attention. In Limon Bay and along the sea-level channel of the Canal, pelicans that seem more bill than body sail heavily about or roost on the buoys. They are expert fishermen and bag their catch in a pouch under their bill. Along the waterfront at Panama City they furnish comedy by stealing fish from market boats. Also numerous are large frigate birds with black and long, bifurcated tail, that when sailing high look like a

monoplane. They have a long narrow bill with a hooked end and are so strong and quick they can rob a pelican of his catch. A species of small black crane is common along the Canal, and the shyer white crane can also be seen. Aigrettes from the latter birds are sold in the shops at Panama. In the woods along the Canal a glass will reveal many species of birds, some of bright colors, including parrots and parakeets, the latter traveling in flocks.

INTERESTING GAMBOA REACH

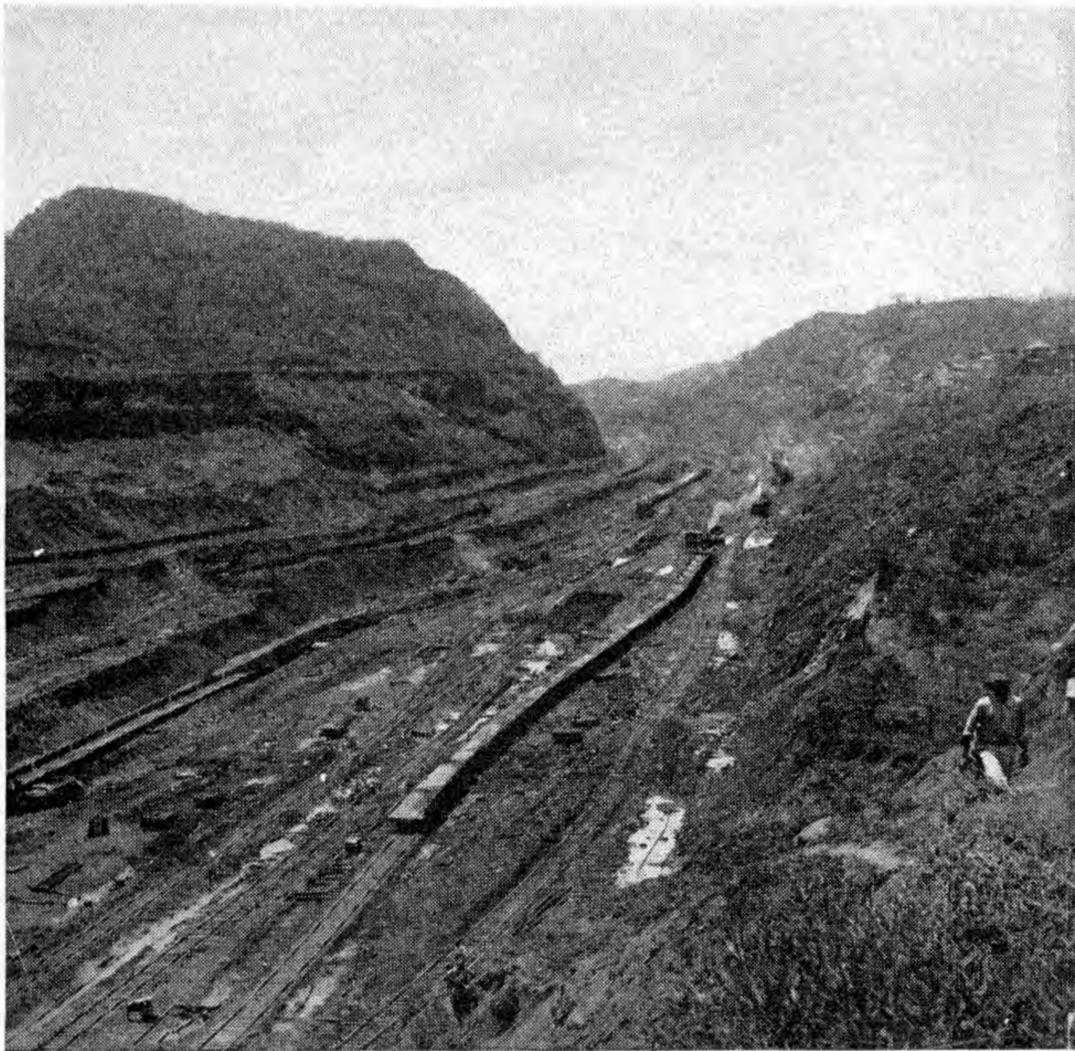
LYING between the broader waters of Gatun Lake and Gamboa, where the actual cut through the rock spine of the Continent begins, is Gamboa Reach, an estuary with numerous beautiful headlands.

Here, on the East bank (left) are seen the tall trestle towers of the Darien high-powered radio station, through which officials of the Canal Zone, the Army, and the Navy talk with Washington. The station is in charge of the Navy. The neat homes of the staff may be seen half-hidden in tropical growths, making a pretty picture.

The radio towers, which can be seen long before they are passed, mark the Northern end of Gamboa Reach, where, for a short distance, a ship bound westward actually steers a course North of East—a bewildering fact for landmen.

Gamboa has various landmarks easily recognized. Here the Canal quits the valley of the Chagres, the upper reaches of which can be seen on the left, spanned by a long steel railroad bridge. On a hill at the South end of the bridge is Gamboa signal station, from which traffic through Gaillard Cut is regulated. By a system of cones and balls hoisted on a staff, pilots are directed whether to proceed or hold up. A second station is at La Pita, a few miles South, and a third is opposite Gold Hill.

At the base of the signal hill at Gamboa can be seen the Canal Zone penitentiary, usually having between 70 and 80 inmates. On the sidehill to the left can be seen a fine grove of papaya, "the melon that grows on trees," a staple fruit of the



When they dug the great cut at Culebra. A scene in 1912. This is now Gaillard Cut. Gold Hill on left.



A Panama Pacific liner passing over the same ground 15 years later. Old town of Culebra on the right.

Isthmus, having all the characteristics of the melon, and a piquant flavor.

TRAIL OF BUCCANEERS AND 'FORTY-NINERS

The vicinity of Gamboa historically is one of the most interesting in the whole length of the Canal. Between Gamboa and Darien, on the west side of the channel (right) stood the construction town of Gorgona, where the French and later the American canal builders had repair shops for rolling stock. The site is now deep under water.

It was hereabouts, at the Village of Santa Cruz, over the site of which ships now pass, that Morgan's weary buccaneers, after a week's hot and hungry journey from the mouth of the Chagres, in January, 1671, halted to debate the wisdom of continuing their march on Old Panama. Some plotted mutiny, but thought better of it, and once more, in their canoes, or walking beside them, they splashed up the stream to Cruces (about three miles above the present railroad bridge) where navigation stopped. Esquemeling, historian of the trip, thus describes a crushing disappointment that awaited them here: "Being at a great distance as yet from the place, they perceived much smoke to arise out of the chimneys. The sight thereof afforded them great joy and hopes of finding people in the town and . . . plenty of cheer. They went forward in great haste, but found no person in the town, nor anything that was eatable wherewith to refresh themselves, unless it were good fires, which they wanted not." The residents had set fire to their houses, leaving only the "king's storehouse," where the buccaneers "found by good fortune 15 or 16 jars of Peru wine," and a leather sack full of bread. They proceeded to drink the wine, "when they fell sick, almost every man." They believed themselves poisoned, "but the true reason was their huge want of sustenance in that whole voyage and the manifold sorts of trash which they had eaten." After staying a day at Cruces to recover, the marauders pressed on. (For the sacking of Old Panama see page 19.)

Las Cruces (now under water) was the starting point of the old trail to Panama, that was followed many years later by the Yankee gold seekers bound for California, on leaving the boats that brought them from the coast. The older paved trail between Old Panama and Porto Bello, over which, to Morgan's time, the Spaniards sent forward the treasure from Peru, passed through the watershed of the Chagres farther up, traversing the towns of El Vigia and San Juan, on the Rio Pequeni, a confluent of the Chagres, 11 and 14 miles respectively, northeast of Gamboa. A new lake, to be formed by a dam across this river at Alhajuella, 10 miles above Gamboa, to impound a reserve of 23 billion cubic feet of water for Gatun Lake, will cover a dozen miles of this famous trail, which has long been buried in jungle growth. An Army officer led a company over the trail from coast to coast in 1925, but died of fever contracted on the march.

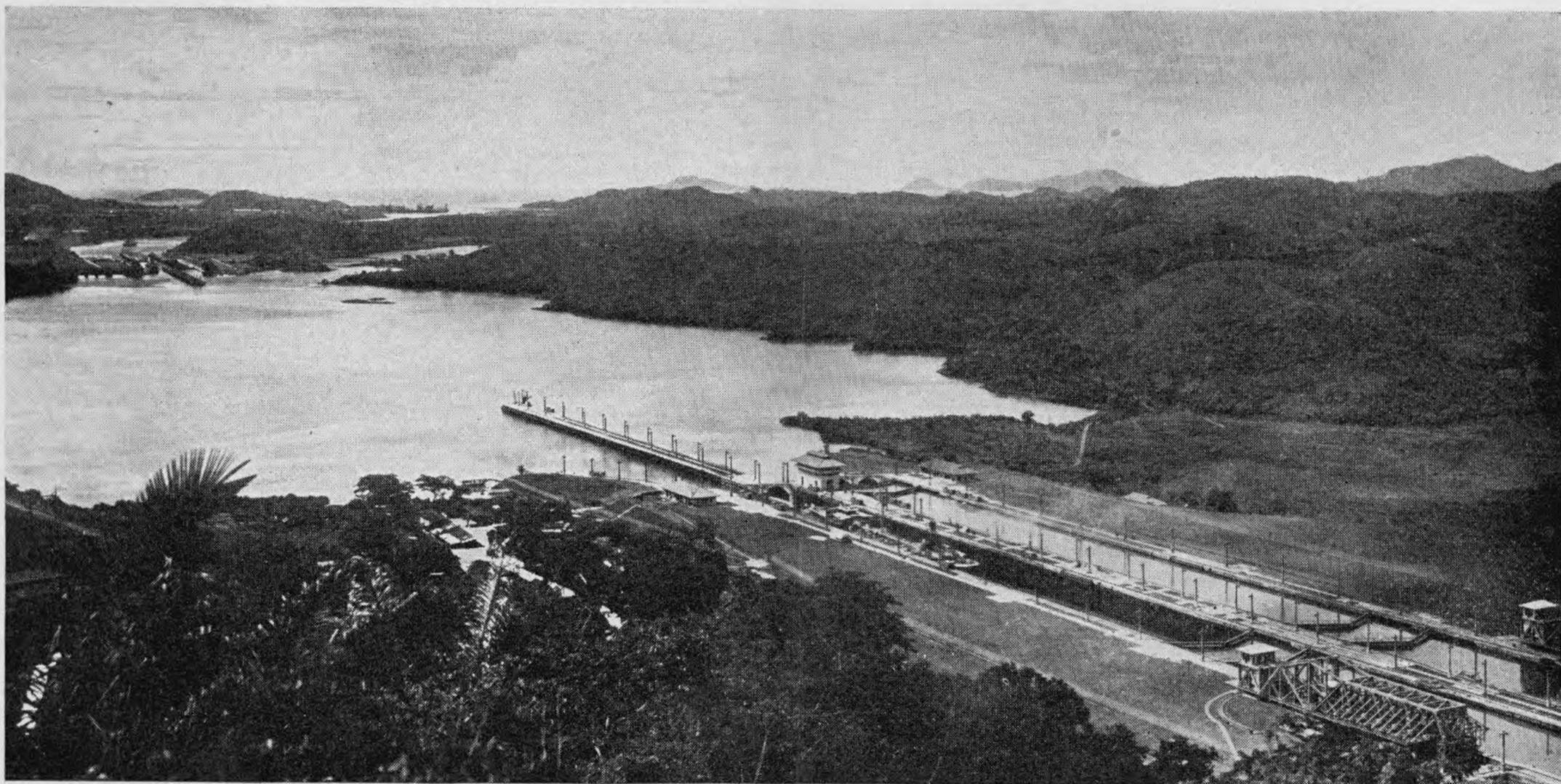
THROUGH FAMOUS GAILLARD CUT

FOR Southbound ships the actual passage of the Continental Divide begins at Gamboa, where the leafy shores of lake scenery give way to rock cuts, above which the banks rise abruptly, in grassy terraces, or steep-faced hills. Here is the beginning of Gaillard Cut (named for D. D. Gaillard, Army Engineer; formerly Culebra Cut). For nearly 8 miles in this cut the Canal is excavated through rock.

As the ship proceeds down the cut, the remains of disused towns, Empire and Culebra, can be seen high up on the right. On the right bank also can be seen the effect of hydraulic dredging, employed to straighten the channel by cutting the face off a bold point. Further South, on the East Bank (left) can be seen the largest waterfall in the Canal area. It carries off surface water from the hills and in the dry season (January, February, March) is nearly dry. In this part of the Canal travelers observe on both banks numerous diamond-shaped boards, marked in black and white. These establish ranges for the guidance of pilots. The largest, with a black cross, are about 30 feet high. When in range with each other they indicate the centre of the channel. Smaller boards with vertical stripes mark the sides of the channel. When possible, vessels follow the centre ranges.

Unquestionably the greatest interest of travelers in the transit of the Canal centres in the passage of Gaillard Cut. Here one actually steams through the spine of the Western Hemisphere. (The whole eight miles of the channel through the mountains is termed Gaillard Cut; the deepest and most interesting section is that part of the Canal passing between Gold Hill and Contractor's Hill.) Gold Hill, on the left, is 662 feet high. Contractor's Hill is 405 feet high. The ridge between them was 305 feet high in its lowest part. Where the slides occurred, near these hills the builders of the Canal had their sternest task.

Approaching the deepest part of the Cut, one may see high on the right bank the deserted houses of the once-busy con-



The locks at the Pacific side of the Continental Divide. In the foreground are Pedro Miguel Locks; across Miraflores Lake are the Miraflores Locks. In the distance can be seen the island of Taboguilla, in Panama Bay, off the Canal entrance.

struction town of Culebra. Here, in a house that has since been transferred to Balboa Heights, Colonel George W. Goethals, the engineer who completed the Canal, had his headquarters, at a point from which at a glance he could review the work for miles in the great cut. Recognizing the importance of this crucial point in the route across the Isthmus, the French engineers began their excavations here, and here they worked doggedly for years, with disease striking down their men on every side. Few today think to give them credit for what they did.

American engineers have taken out of this gigantic cut more than 150 million cubic yards of material, largely rock, including about 75 million yards attributable to slides, the locations of which can be recognized by hollows in the banks both North and South of both hills. Most of these slides were actually not slides at all, but upward and outward bulging of earth and rock along and below the Canal's level, caused by the weight of the hills pressing out softer material at their base. (The North face of Gold Hill was not reduced by blasting, as many assume, but by the rock falling off.)

Just south of Gold Hill is an uneven hollow known as Cucaracha Slide (pronounced kooka-racha). The oldest slide in the Canal, this began to move when the French were working here. When the water was let into the cut in October, 1913, this slide blocked the Canal, which was not opened to commerce until August 15, 1914. A safety basin that has been dredged out of the Canal bank at Cucaracha Slide has been effective in catching later slides without blocking the channel. Some of the most serious earlier slides took place on the north side of Gold Hill. In September, 1915, a simultaneous movement from both banks at this point completely blocked the Canal with rock and earth in a ridge 260 feet long and 65 feet above water level. Not less than 12,000,000 yards of material were removed from this slide, which kept the Canal closed to navigation until the following April. In 1920 a slide of rock from the face of Gold Hill was pushed into the channel, including one piece 60 feet in length, 30 feet wide and 20 feet deep, as large as a two-story house, and lying under 25 feet of water. Drills, blasters and dredges broke up and removed this huge obstruction in twenty-four hours.

At the South end of Gaillard Cut, on the left bank, will be

seen a station where ships may tie up. There are float fenders beside a rocky shelf of bank, and steel bollards for hawsers. Passengers here may obtain a close-up of papaya trees, and if the season is right, of their fruit, which grows at the base of the limbs.

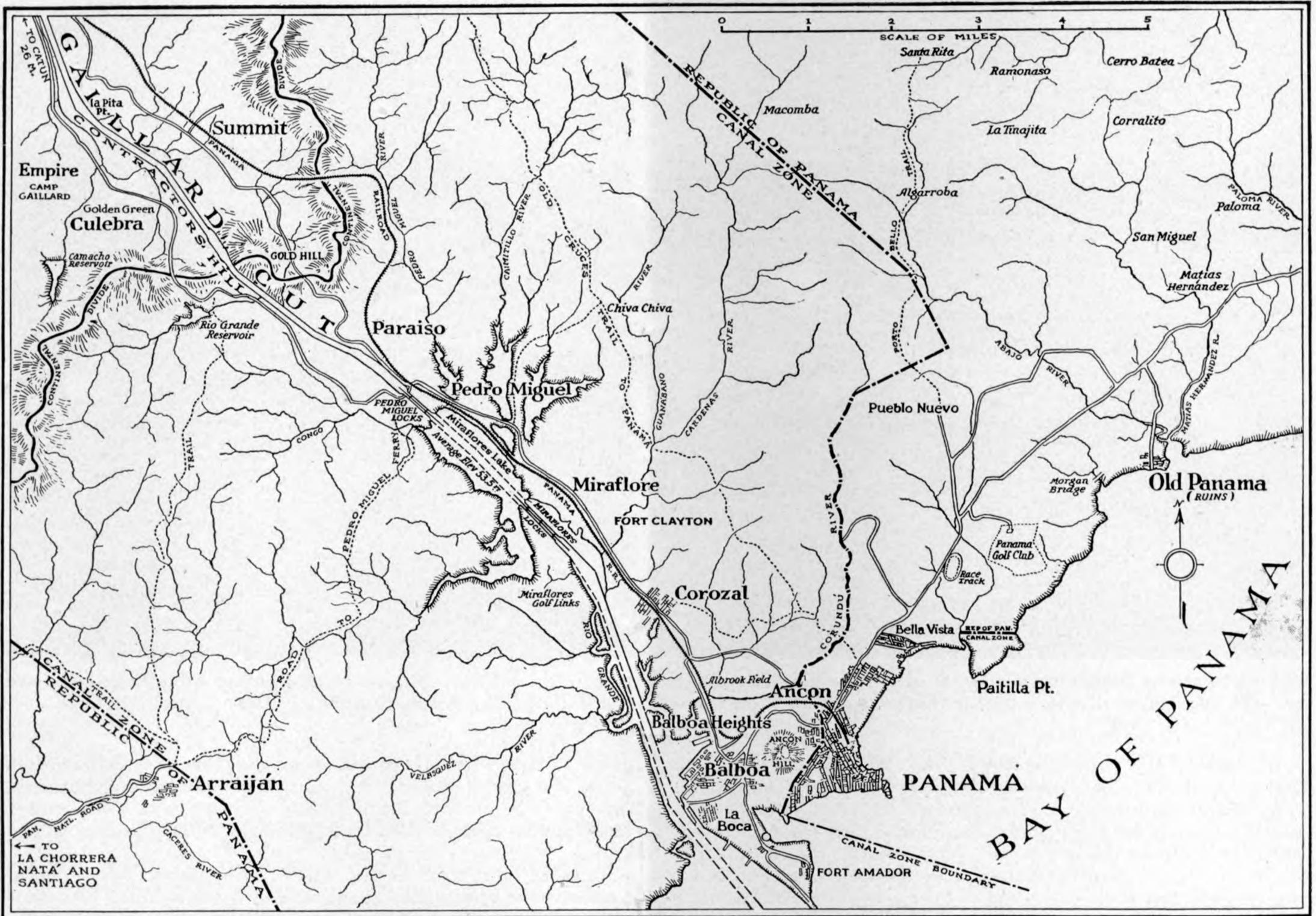
South of Gaillard Cut the country opens out into a region of cone-shaped hills, that in turn give way to a valley broadening toward the Pacific. In Paraiso Reach the channel of the Canal widens. On the left bank will be seen the village of Paraiso, repair base for tugs and dredges. Here are stationed two immense cranes, Ajax and the Hercules, used for heavy lifts. Each can lift 250 tons.

Below Paraiso are the Pedro Miguel Locks, the first step down to the Pacific.

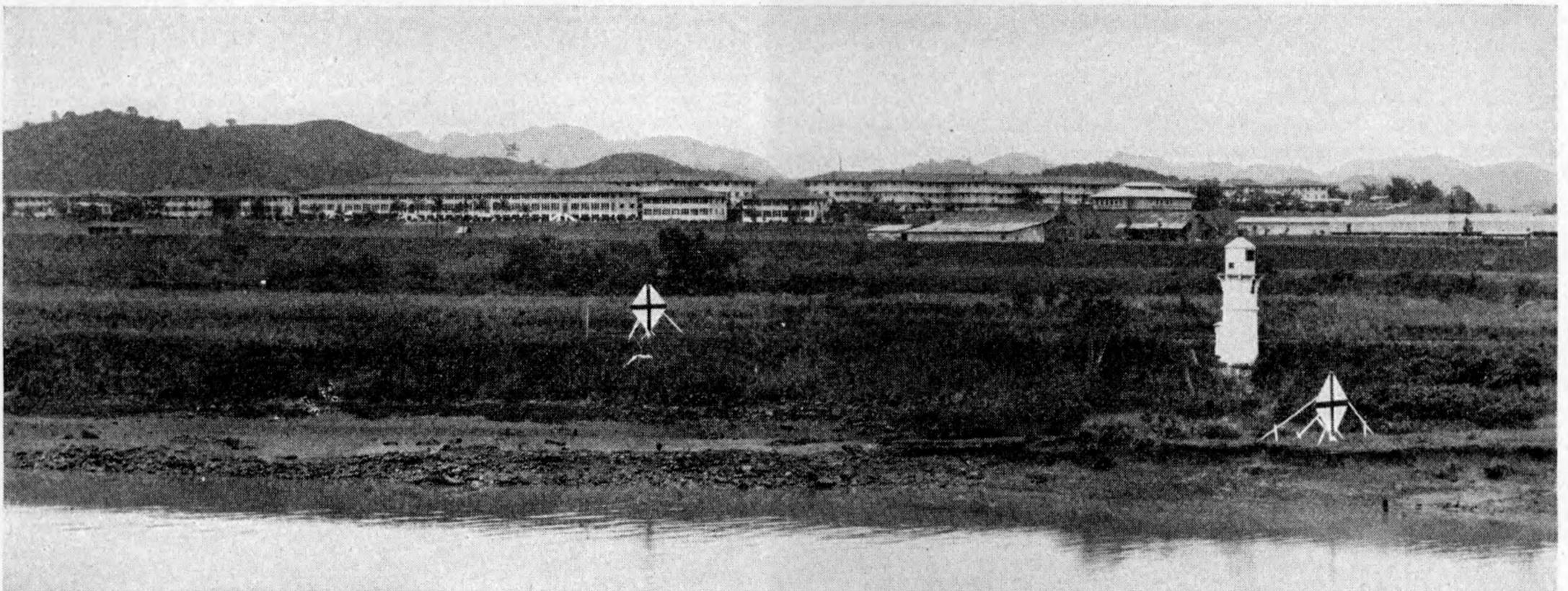
Above the locks is the only ferry across the Canal. (There are no bridges.) Here a scow, pushed by a tug, crosses the Canal at 8 and 10 A. M. and 4 and 5 P. M., conveying vehicles and foot passengers. The ferry connects with a military road to Culebra and Empire, and also with the only road from the Canal Zone into the western part of Panama.

Pedro Miguel Locks, which are $\frac{5}{6}$ mile long, with two lock chambers 1,000 feet long by 110 feet wide by 70 feet deep, are set in a valley between hills, with an earth fill half a mile long on the West side (right) and a concrete wall connecting with the hill on the East. But one set of locks was built here for want of rock foundation for the three sets needed to reach the level of the Pacific. Another rock base was found a mile further south, at Miraflores, and here the other two sets were built, the intervening valley being converted into Miraflores Lake, holding 878 million cubic feet of water. The lake receives the water of Rio Grande and several smaller streams. Nevertheless, it is partly salt, owing to a mixture in the locks of water from the Pacific.

Here it may be fitting to mention that the poetic idea of the meeting of the waters of the Atlantic and the Pacific by means of the Canal will never be realized. All the water between Miraflores Lake and Gatun Locks is fresh, and must always remain so.

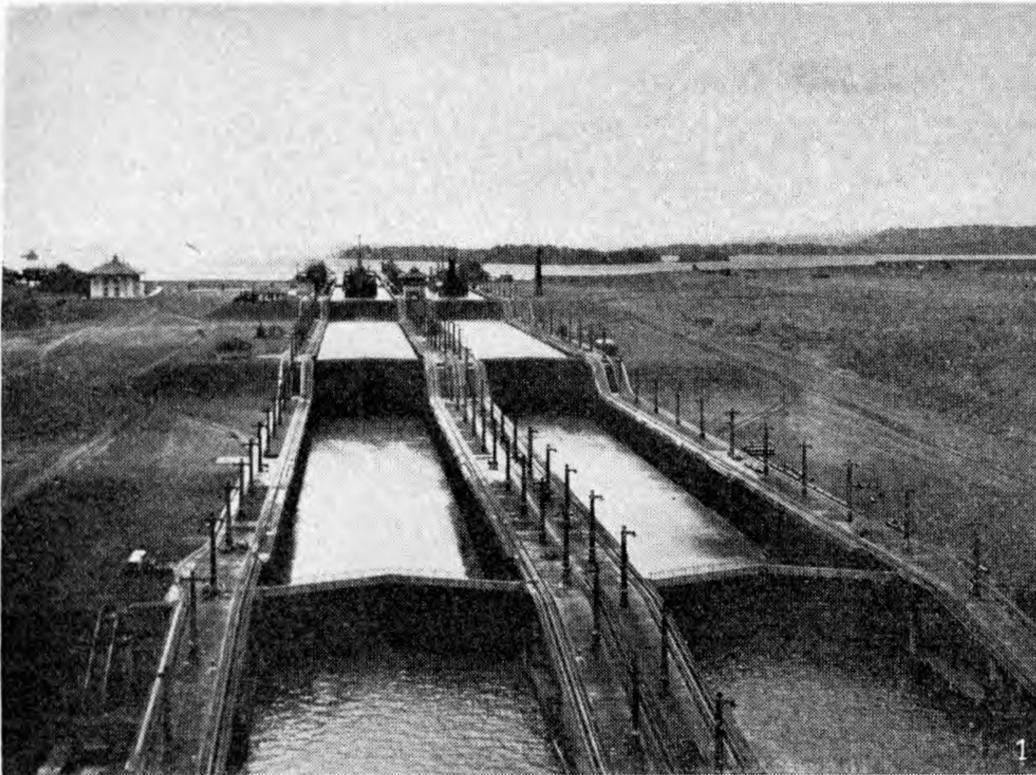


Where the Canal pierces the Continental Divide and reaches the Pacific. Topographical features of the Gaillard Cut section, and relative location of Balboa, Panama and the ruins of Old Panama. For map of Canal's Pacific end see page 16.

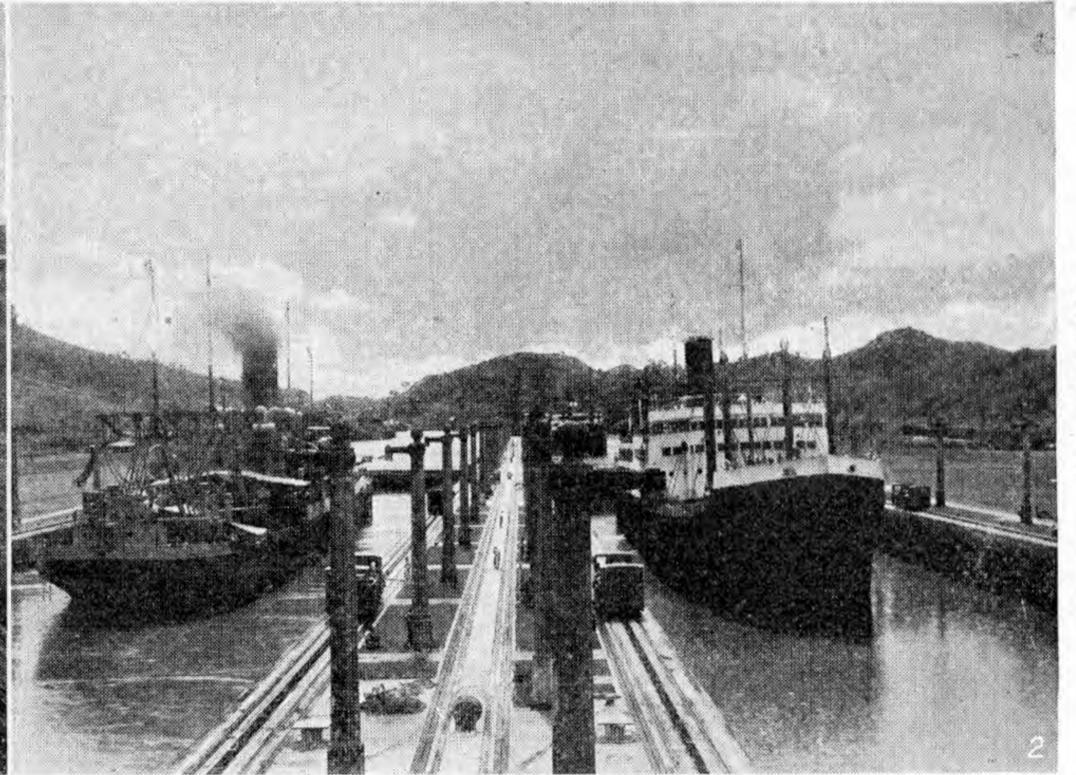


Fort Clayton, U. S. Army reservation, seen near the East bank, between Miraflores Locks and Balboa Basin.

Gatun's
Water
Stairs
(Text,
page 5)



How
Ships
Pass
in the
Locks
(Text,
page 3)

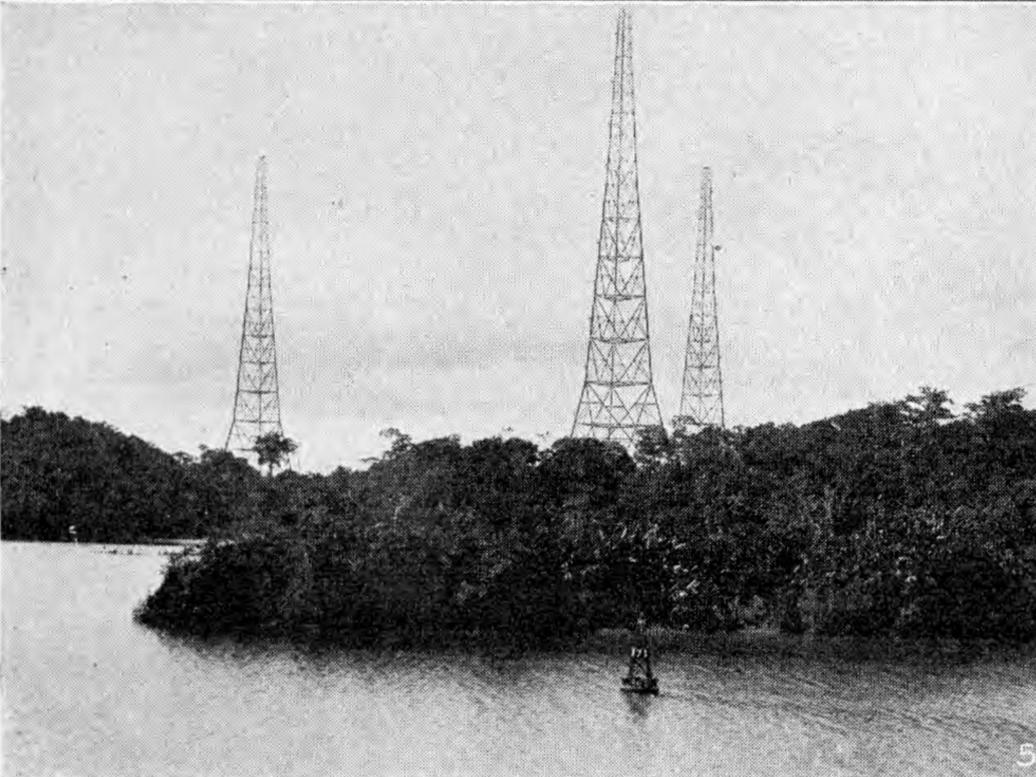


Bananas
beside
Gatun
Lake
(Text,
page 6)



Kroonland
Makes
Historic
Transit,
1915
(Text,
page 16)

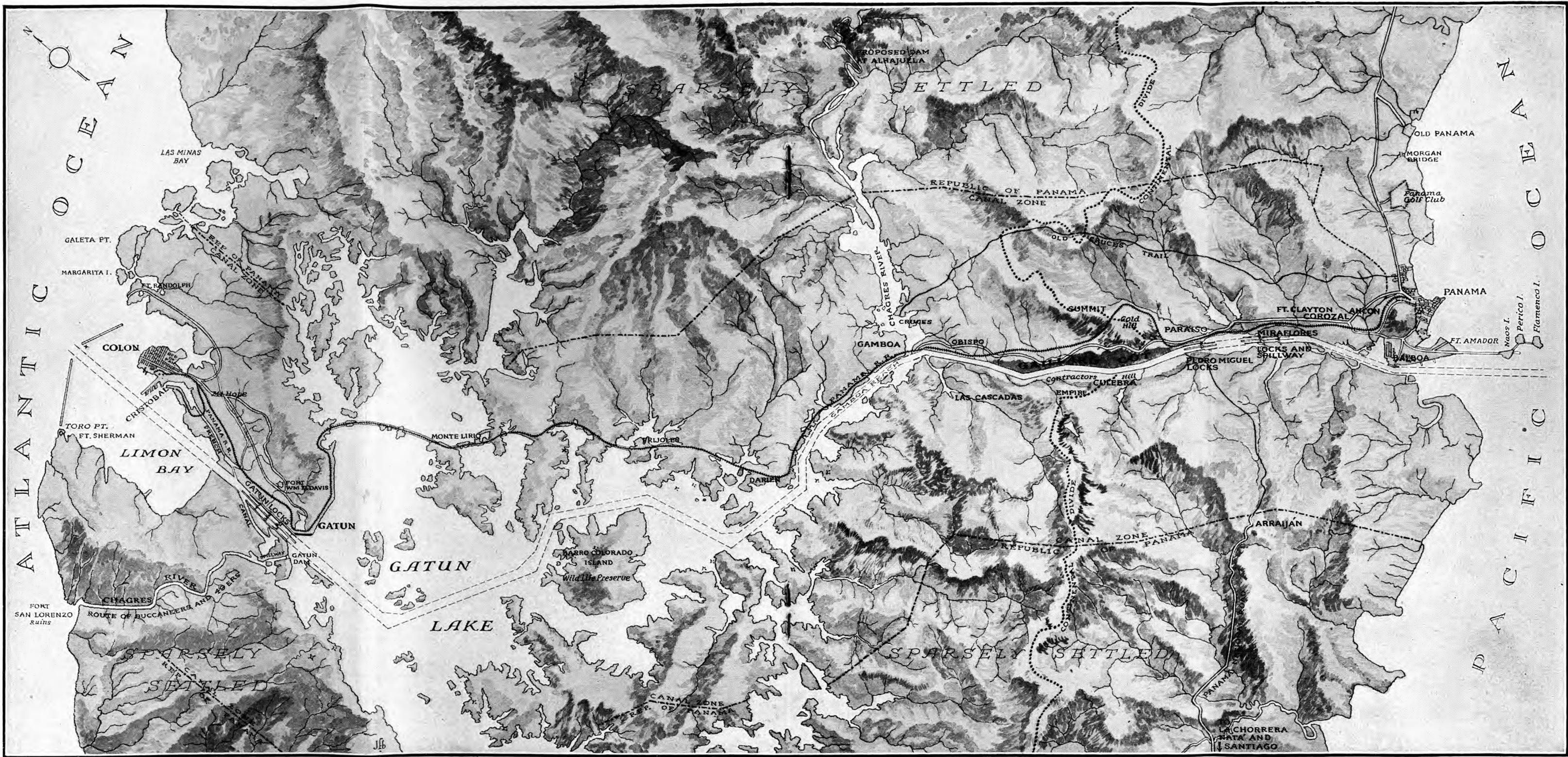
Spillway
in Gatun
Dam
(Text,
page 6)



Radio
Station
at
Darien
(Text,
page 7)



SOME INTERESTING SCENES IN AND NEAR THE CANAL



A BIRD'S EYE VIEW OF THE CANAL AND CANAL ZONE, FROM SEA TO SEA

At the point where the Canal was cut, the axis of the Isthmus runs from Southwest to Northeast. As the Canal was built almost at right angles to the Isthmus, its course, except for seven miles at the Atlantic end, therefore is generally Northwest and Southeast. At two points in the Canal the channel for a short distance lies almost East and West, and at these points a ship bound West (Southbound, in the official language of the Canal), steers about East, while a ship bound East (Northbound) steers almost West. At the end of the Canal the traveler, having made the transit from sea to sea, finds himself, when Westbound, 27 miles further East than when he left the Caribbean, and when Eastbound, 27 miles farther West on entering the Caribbean than he was on leaving the Pacific. These facts occasion some confusion to people not accustomed to orienting them-

selves readily in strange places. In using the above map, it is suggested that the book be turned slightly by lowering the right side. The compass will then be at the top of the map. This will make the direction of the Canal easier to understand. In this map will be found not only the correct direction of the Canal but the principal features of adjacent country, boundaries of the Canal Zone, and principal roads and rivers. The course of the lower Chagres, shown at the left, was the original route of the buccaneers and later of the '49ers. From Gatun Dam to Gamboa, the valley of the Chagres was flooded to form Gatun Lake. It is also flooded for some distance above Gamboa railroad bridge. Near the top of the map will be seen the proposed site of a dam at Alhajuela, where additional water will be impounded for hydro-electric purposes, and to supply Gatun Lake in the dry season.

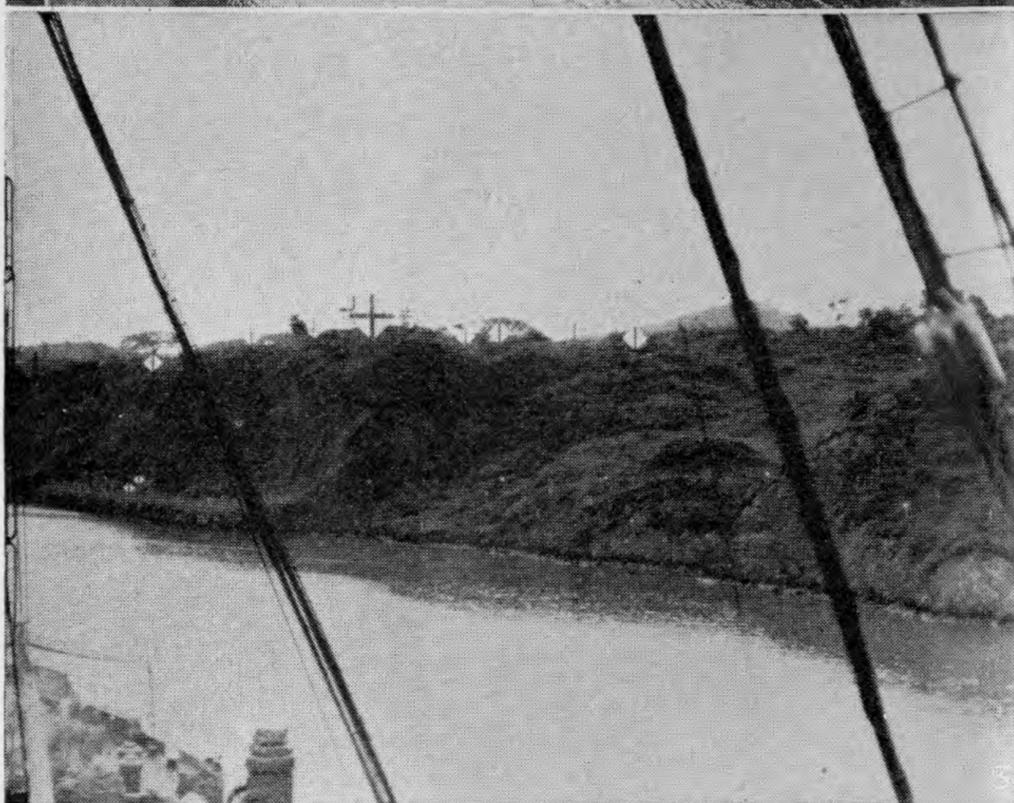
How the
Locks are
Filled
(Text,
page 4)



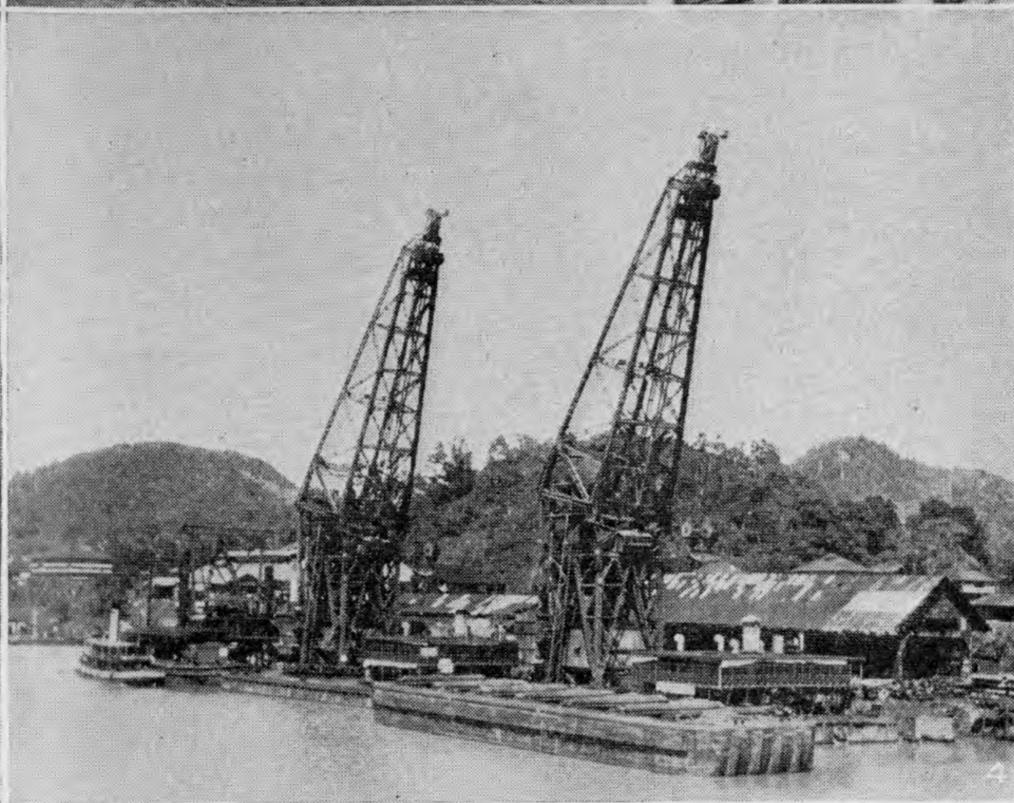
Swinging
Dam
for use
in
Emer-
gency
(Text,
page 5)



Range
Guides
for the
Pilots
(Text,
page 8)



Giant
Cranes
for
Great
Weights,
(Text,
page 9)



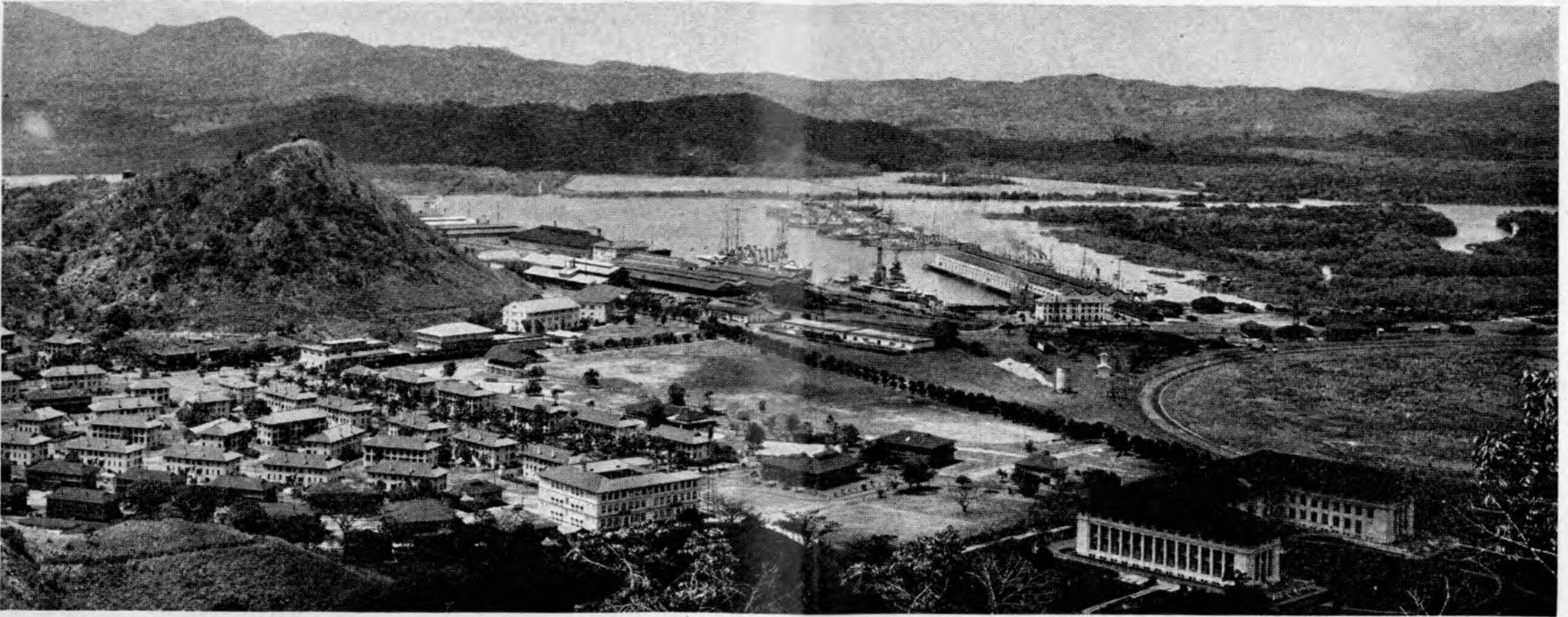
Dam and
Water
Plant at
Mira-
flores
(Text,
page 15)



Balboa,
Canal
Head-
quarters
(Text,
page 15)



PHOTOS TELL A STORY OF THE CANAL'S OPERATION



Balboa, the Basin and the Canal, from Ancon Hill, looking West. In the right foreground is the Administration building, on the left Sosa Hill, and in the middle distance Balboa docks and basin, with the Canal beyond.

Miraflores Locks, two in number, by which vessels are lowered 54 feet to the level of the Pacific, are built between two dams. That on the right is a broad earth dike half a mile long, covered with velvety lawn, and the site of a few houses, quarters for Canal employees. That on the left is of concrete, with a spillway having eight gates, through which flood water is released.

The highest gates and the highest lock walls in the Canal are those of the lower lock at Miraflores, 82 feet. This is due to the tides in the Pacific, which have an average rise and fall of 12½ feet and sometimes rise 21 feet. The gate leaves here are the heaviest in the whole Canal, weighing 730 tons each. The lock chambers have the standard length of 1,000 feet each, and width of 110 feet. (For method of controlling the gates and water refer to page 4.)

Westward of Miraflores and Pedro Miguel Locks are several hills of moderate height that have been cleared by the Canal Commissary department for use as pasturage for cattle. In these pastures, and others near Gamboa and Darien, along Gatun Lake, there are 50,000 acres, where as many as 6,000 head of cattle have been kept at one time. About 8,000 head were purchased in 1928, in Colombia and Venezuela, for fattening here. A slaughter house is maintained at Mt. Hope, near Gatun, and cold storage plants at Colon and Balboa, for supplying ships and Canal Zone commissary stores. Meat is advertised for sale as low as nine and a half cents a pound for fore quarters and twelve cents a pound for hind quarters.

From the locks at Miraflores, looking down the Canal toward the Pacific, one can see the blue peak of Taboga Island, 12 miles off the Canal entrance, and nearer and to the left, the wooded top of Ancon Hill, lying between Balboa and Panama City, with the red roof of the Canal Administration Building showing at its base. The building seen on the side of the hill is the Shrine Mosque, a Masonic temple.

On a terraced bank east of the Miraflores Locks (left), are the picturesque red-roofed buildings of the Miraflores water works, or purification plant. The water supply comes 11 miles through pipes from the Chagres River at Gamboa. At Miraflores plant it first enters an aeration basin, where it is sprayed 15 to 20 feet, to remove vegetable odors and taste. It then passes through the head-house (left) where it is chemically treated, to extensive basins, where sediment is removed. It then goes through the filter building (right), where it passes through filters (14 in all) each containing 4 feet 6 inches of graduated sand and gravel. Chemically pure and as clear as crystal it next passes to a well holding 900,000 gallons, from which it is pumped to two reservoirs on Ancon Hill. Gatun and Colon each has a similar though smaller purification plant. Consumption of water in the Canal Zone amounts to about 3 billion gallons a year. Panama City takes about 1 billion 200 million gallons; Colon 600 million gallons, and ships 1½ million gallons.

THE PACIFIC END OF THE CANAL

THE Pacific end of the Panama Canal consists of a tidal channel 8 miles long, extending from Miraflores Locks to deep water in Panama Bay. Below the locks for 3 miles, the channel follows the old valley of the Rio Grande, a winding stream that formerly came to the sea at the present harbor basin of Balboa.

Below Miraflores Locks there are several interesting things to see. Back from the East bank (left) is an extensive army post, Fort Clayton, with many red-roofed buildings. Beyond is Corozal, a base for Army engineers and signal corps. The buildings have dark roofs. Officers' quarters, with red roofs, are seen nearer at hand, surrounded by beautiful trees, including giant bamboos, the royal poinciana and the cabbage palm. On the left of the buildings can be seen a model coconut grove.

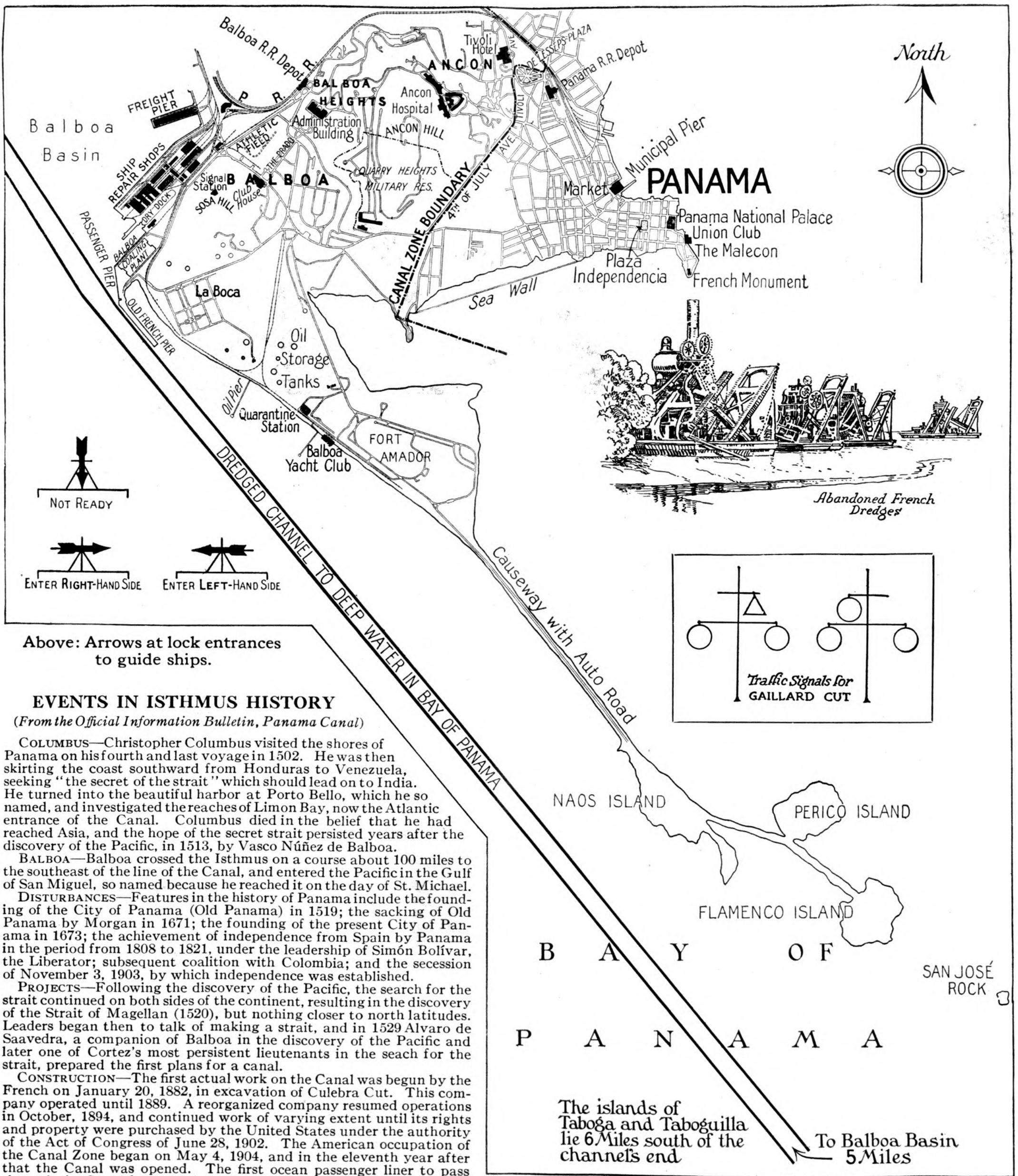
Half a mile from Balboa Basin, on the left, in a creek indenting the East channel of the Canal, can be seen the remains of four of the largest dredges used by the French at the Pacific end of the Canal. The Canal Administration building at Balboa can be seen above them. On the West shore, opposite Balboa Basin, can be seen the wrecks of other French dredges.

Balboa Basin is a harbor for all sizes of ships. Here, from early times, was a small settlement called La Boca (the Mouth) with a harbor in the Rio Grande for vessels of moderate tonnage. Back of the village were a creek and marsh, that were filled in to make the site of Balboa docks and the lower part of the town. (The present La Boca, South of the Basin, was laid out to house West Indian employes, and has no relation to the old village.)

Near the edge of the channel at Balboa Basin, on the West side, will be seen a row of very large steel buoys. These are for the use of ships as moorings. Along the upper edge of the flats can be seen a mangrove swamp, common to tidal waters on the Isthmus. The trees have roots above the bottom equal in length to the rise of the tide where they grow. Dredges are at work here deepening the Channel from which 6,500,000 cubic yards of material, mostly rock, will be taken.

Although ships do not as a rule navigate the Canal at night, the great waterway is most carefully lighted, every mile being marked by lighthouses or lighted buoys. The tallest lighthouse towers are at Gatun. The small white towers seen at various points along the channel

(Continued on page 17)



Above: Arrows at lock entrances to guide ships.

EVENTS IN ISTHMUS HISTORY

(From the Official Information Bulletin, Panama Canal)

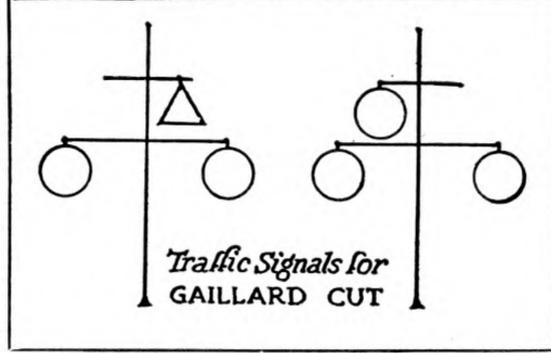
COLUMBUS—Christopher Columbus visited the shores of Panama on his fourth and last voyage in 1502. He was then skirting the coast southward from Honduras to Venezuela, seeking "the secret of the strait" which should lead on to India. He turned into the beautiful harbor at Porto Bello, which he so named, and investigated the reaches of Limon Bay, now the Atlantic entrance of the Canal. Columbus died in the belief that he had reached Asia, and the hope of the secret strait persisted years after the discovery of the Pacific, in 1513, by Vasco Núñez de Balboa.

BALBOA—Balboa crossed the Isthmus on a course about 100 miles to the southeast of the line of the Canal, and entered the Pacific in the Gulf of San Miguel, so named because he reached it on the day of St. Michael.

DISTURBANCES—Features in the history of Panama include the founding of the City of Panama (Old Panama) in 1519; the sacking of Old Panama by Morgan in 1671; the founding of the present City of Panama in 1673; the achievement of independence from Spain by Panama in the period from 1808 to 1821, under the leadership of Simón Bolívar, the Liberator; subsequent coalition with Colombia; and the secession of November 3, 1903, by which independence was established.

PROJECTS—Following the discovery of the Pacific, the search for the strait continued on both sides of the continent, resulting in the discovery of the Strait of Magellan (1520), but nothing closer to north latitudes. Leaders began then to talk of making a strait, and in 1529 Alvaro de Saavedra, a companion of Balboa in the discovery of the Pacific and later one of Cortez's most persistent lieutenants in the search for the strait, prepared the first plans for a canal.

CONSTRUCTION—The first actual work on the Canal was begun by the French on January 20, 1882, in excavation of Culebra Cut. This company operated until 1889. A reorganized company resumed operations in October, 1894, and continued work of varying extent until its rights and property were purchased by the United States under the authority of the Act of Congress of June 28, 1902. The American occupation of the Canal Zone began on May 4, 1904, and in the eleventh year after that the Canal was opened. The first ocean passenger liner to pass through the Canal from the Atlantic to the Pacific was the *Kroonland*, of the Panama Pacific Line, February 2, 1915.

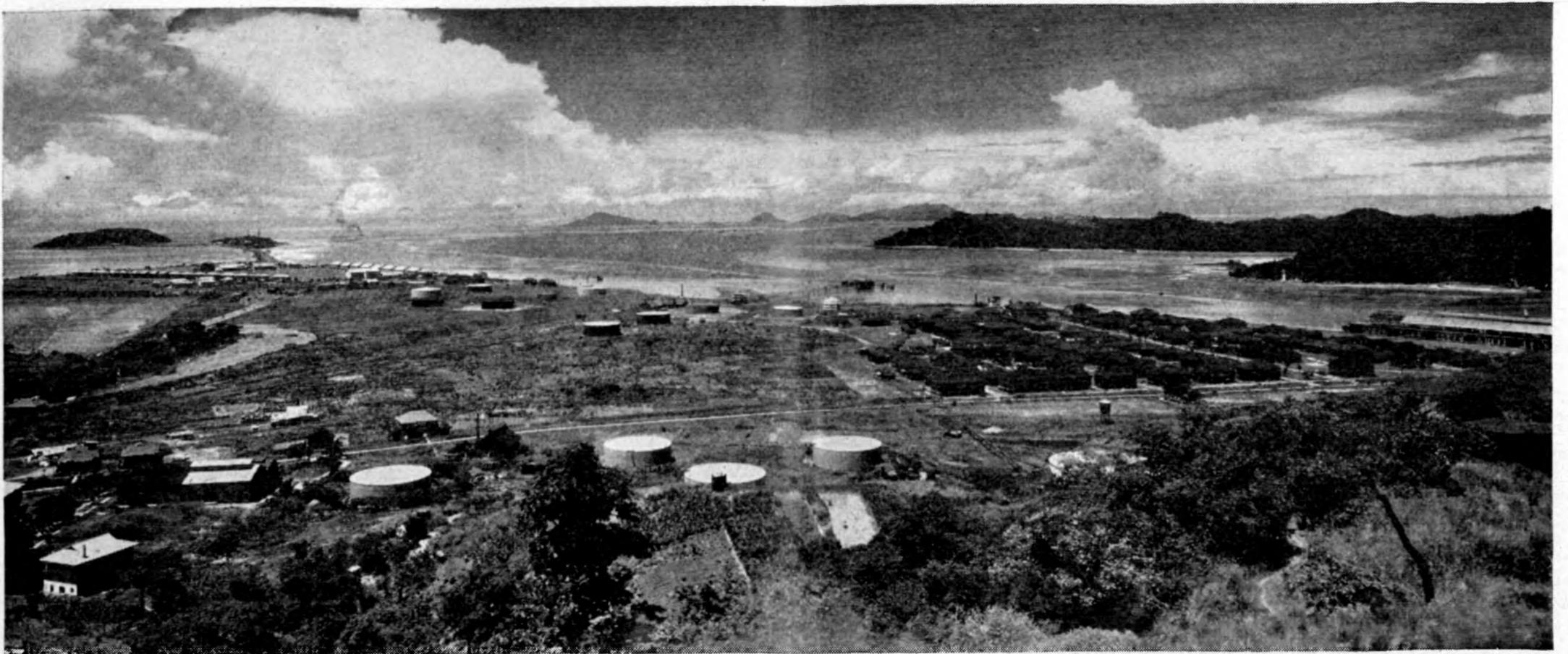


NAOS ISLAND
PERICO ISLAND
FLAMENCO ISLAND
SAN JOSÉ ROCK

B A Y O F
P A N A M A

The islands of Taboga and Taboguilla lie 6 Miles south of the channels end
To Balboa Basin 5 Miles

Pacific End of the Canal, Panama City and Balboa.



Panorama of the Pacific End of the Panama Canal, from Ancon Hill, looking south. In the foreground are tanks for oil storage, and beyond them, at the left, three fortified islands. In the distance are the islands of Taboga and Taboguilla. On the extreme right can be seen the old French pier at the Canal entrance.

(Continued from page 15)

are range lights, set in pairs, some distance apart, the two lights when in range indicating the course a ship must follow. The front lights are fixed white, and the rear lights flash, on all the ranges. Buoy and pier lights may be red, white or green. At the entrance of each pair of locks is a large red arrow, which at night is lighted by electric bulbs, and indicates to a pilot which lock he shall enter, or if he shall hold off.

At Balboa the Canal administration maintains a first class port, with one of the world's largest dry docks (1,000 feet), machine shops, foundries, repair shops, boiler shops, cranes, coaling docks, commissary stores, water and oil supply, and extensive piers for passengers and freight.

As one approaches Balboa Basin, dominating landmarks are two hills lying East of the harbor. On the grassy top of the smaller, Sosa Hill, near the docks, is a signal station for pilots. The higher is Ancon Hill, which physically separates Balboa town—a model American settlement—from Panama City. The hill shows on its West face the scars of quarrying, for it provided much rock for use in building the Canal. On its lower West side are the army headquarters of Quarry Heights. At its base is the administration building, headquarters of the Canal, looking down on the orderly town of Balboa, which has broad streets, airy homes, a community clubhouse with swimming pool, a commissary department store, and many other features to make life easier.

On the far side of Ancon Hill, facing Panama, and not seen from the Canal, is Ancon Hospital, a model of its kind, under the control of the Health Department, Panama Canal. The French founded a hospital here in 1883, in a reservation of 80 acres, but as they did not understand the character of the fever-carrying mosquito, whose extermination in the Canal Zone was one of the great triumphs of the American Canal builders, they failed to screen their buildings. As a result, the hospital became a breeding place of disease, with a tragic record of deaths. The Americans took over the hospital in 1904, and rebuilt it. All the old buildings were replaced in 1915-19, with tile and concrete construction, at a cost of \$2,000,000, and \$1,000,000 more was spent on equipment.

On the slopes of Ancon Hill also are the homes of many Canal employes. Ancon, the American residence district, and Panama City, actually touch elbows on the South and East slopes of the Hill, where two streets, Fourth of July Avenue and Tivoli Avenue, become boundaries. One side of the street is Panama, with Spanish speech and ways, on the other side a community wholly American.

Of the Americans living on the Isthmus, Colonel Jay J. Morrow, former Governor of the Canal Zone, has said:

From the beginning the job (of building the Canal) appealed to the imagination and it attracted and held Americans of a high type who felt they were working not only for themselves but for their country and for the world. The pioneers of 1904 and 1905 assumed the risk of death and disease and the certainty of discomfort and privation in an undeveloped tropical country. But even in those early days the morale of the force was excellent. . . . The traditions of construction days has been carried over into the period of operation. . . . What was originally an expeditionary force has become a permanent colony. The Canal community is one of typical Americans, living according to American traditions and American standards.

Seaward from Ancon Hill the colorful roofs and towers of Panama City stretch away to the Pacific. Beyond the city on the East lie the curving beach and attractive villas of the suburb of Bella Vista, with a modern hospital (Panamanian) and a statue of Balboa, presented by the King of Spain. Further on are the links of the Panama Golf Club, and beyond them the ruins of Old Panama, 7 miles out by the auto road.

On leaving Balboa Basin for the Pacific, a ship passes on the left a long, rusty steel and concrete pier, another relic of the French canal builders. Further down the shore is a pier where oil is landed for a "tank farm" that can be seen on the left. Here the government and several oil companies maintain storage tanks, there being 26 in all, with a combined capacity of 1,215,000 barrels of crude and refined oils. There are similar storage facilities at Colon with 23 tanks.

Southward and a little Westward from Panama is the course of the Canal channel through Panama Bay to the sea. Paralleling part of the channel is a long point on which is situated a U. S. Army Post, Fort Amador. Over it is a panoramic view of Panama City, with Ancon Hill rising at its back. Extending from Fort Amador Eastward is a stone breakwater, nearly 3 miles long, connecting the mainland and three fortified islands, Naos, Perico and Flamenco. South of the channel, and a little to the West, are the lofty islands of Taboga and Taboguilla, from which buccaneers in the 17th century cast hungry eyes at the city and shipping of Panama. The smaller of the islands, Taboguilla, lies 6 miles from the channel's end, and when the ship outbound passes it, she is in the deep waters of the Gulf of Panama, which is the Pacific.



An air view of the City of Panama, looking North. (Photo courtesy U. S. Army Air Service.) The sea wall on the point in the foreground, now a promenade, stands on rock that is bare at low tide. On the left can be seen Ancon Hill, with its military road.

VACATIONS AT THE ISTHMUS

CLIMATE—Novel, interesting and healthful vacations may be spent at the Isthmus of Panama at any season of the year. The climate, though tropical, is equable. It is always summer at Panama. Cyclones are unknown. The variation of temperature between January and July is scarcely one degree. The average temperature for a year is 79 degrees on the Pacific side and 80 degrees on the Atlantic side. The two coolest days in 1926 were January 13 with 70 degrees and August 8 with 71 degrees. The hottest day in the year was May 13, with 95 degrees, about the temperature of a "hot spell" in the United States.

Although the Isthmus has a reputation for being a rainy place, weather reports show that 47 per cent of the daylight hours are sunshiny on the Pacific side, and 52 per cent on the Atlantic side. A majority of days are partly cloudy, a condition that tempers the heat of the sun. January, February and March are the dry season, when there is scarcely any rain. In the other nine months rain falls on an average forty minutes a day. A steady all-day downpour is rare. Showers, some heavy, some light, make up the rainfall. They pass quickly, and are usually followed by a burst of sunshine. There is rarely a day without a breeze—the prevailing winds are north-west and moderate—and wherever there is an air stirring,

and shade, one may keep cool. The nights invariably are cool, and some bed covering usually is needed.

By avoiding unnecessary exertion in the heat of the day, when everybody is expected to take a siesta, the average visitor to the Isthmus can make himself comfortable at all times.

HEALTH—The Isthmus is healthful. Visitors who observe the rules of health need have no fear of unusual illnesses. Colds and throat affections brought from the North quickly yield to the mild climate. There is little danger of contracting tropical diseases while in or near the Canal Zone towns. Mosquitoes, carriers of fever, have been exterminated (by scientific methods, based on drainage of swamps and oil spraying of breeding places.) The extensive screening of all houses in the Canal Zone, conveying the idea that insects are troublesome, is a precautionary measure. In Panama City there are no screens, nor even glass in the windows, which are shaded by blinds, and one might live a month with blinds wide open without seeing a mosquito or a fly. Strict precautions are taken against giving mosquitoes a chance to breed, and a Zone housewife who leaves a bucket of water on an unscreened porch is fined if detected. Malaria no longer is troublesome. In a total population of more than 28,000 people in the Canal Zone, an average of less than 100 cases a month are reported. In a year's record (for 1928) not a single death was reported of an employee from this disease. As sanitary control of Panama



An air view of the ruins of Old Panama. (Photo courtesy U. S. Army Air Service.) In the middle foreground is seen the Cathedral's ruins, and on their right those of the convent of Santo Domingo. The white gable in the left distance is that of San José church, the only structure that escaped destruction by fire when Morgan sacked the city in 1671. Many of the other ruins are concealed by jungle growth. (See map on page 20.)

and Colon is in the hands of the Canal authorities, those cities also are healthy. They have modern sewerage systems, brick paved streets and a pure water supply, furnished from the Canal Zone purification plants.

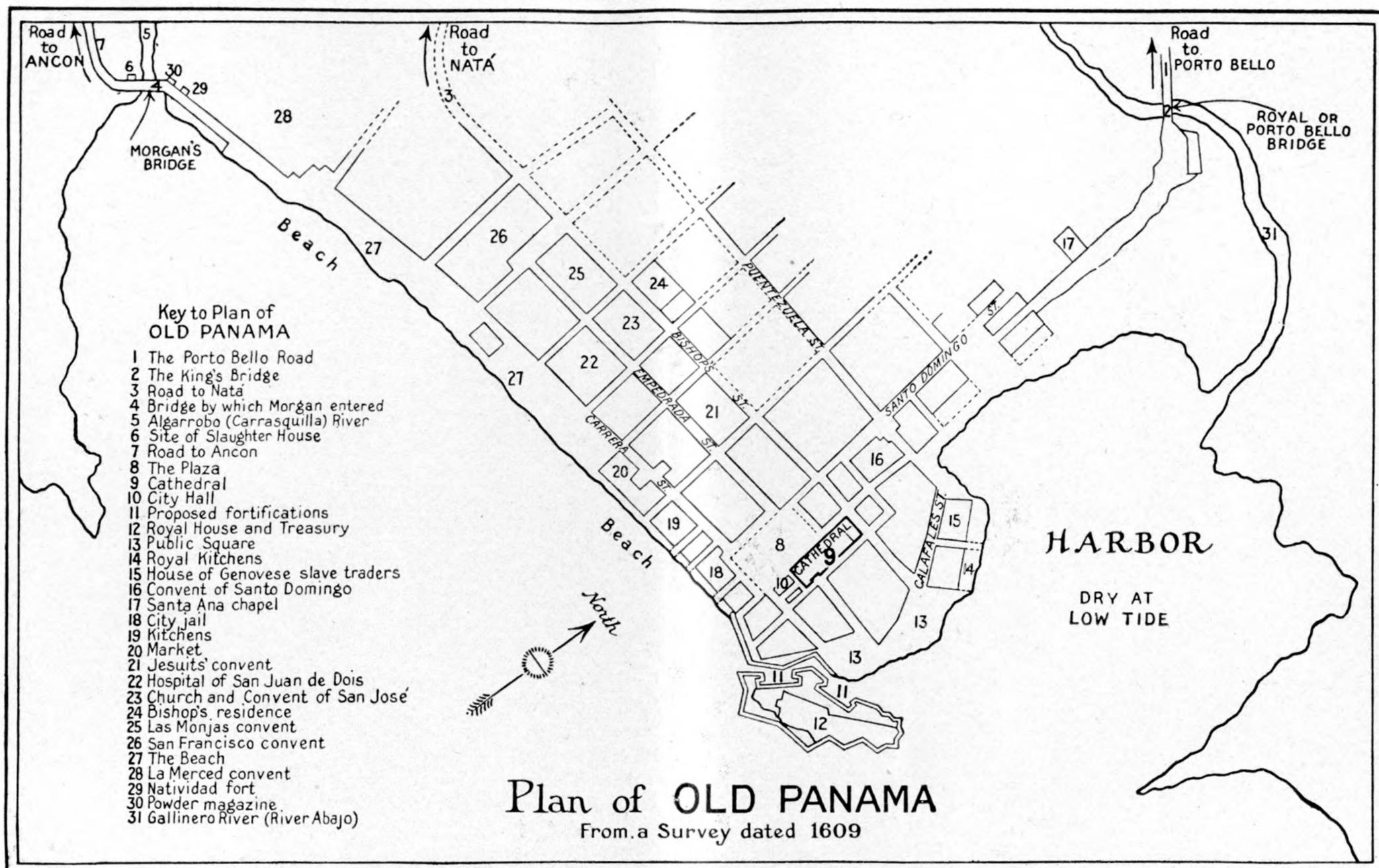
THE CANAL—What does one do on a vacation at the Isthmus? As an attraction to most visitors, the Canal comes first. Travelers in transit proclaim it one of the world's greatest sights. Vacationists remaining on the Isthmus from a week to a month find it a daily source of interest, and they have besides opportunity for continued observation of how well the great work is managed by the Canal staff.

Visitors may view the Canal from several different angles. Passage through, from Balboa to Colon, may be had on Panama Pacific Line steamers for \$10 a person. A rail trip across the Isthmus (1 hour, 45 minutes), \$2.40, affords several interesting views of the Canal. The same is true of an auto trip to certain points. From Panama and Balboa there is a fine auto road to Gamboa (17 miles) passing near the locks at Miraflores and Pedro Miguel and over the Continental Divide back of Gold Hill. On the west bank there is a road from Pedro Miguel to Culebra, the old construction town where General Goethals had his headquarters when completing the Canal. Here one may look down on traffic passing through the

Gaillard Cut. From Colon, at the Atlantic end, there is a fine road to Gatun Locks (7 miles).

OLD PANAMA—Next to inspection of the Canal, a visit to the ruins of Old Panama is a high spot in a stay, long or short, at the Isthmus. These ruins, seven miles by auto road from Balboa or Panama, are unlike any others in the world. They are the remains of a city that passed out of existence from a single attack by a small but desperate band of adventurers, the buccaneers under Henry Morgan. The city was rich, the seat of a diocese, with an ornate cathedral, several other churches, monasteries, shops, warehouses and probably 20,000 inhabitants. It was the depot for transfer of the treasure from Peru that was sent annually to Spain. It was this treasure, vast and alluring, that led to Morgan's attack, and destruction of the city from fires set by its own defenders, to cheat the enemy of their spoils. But Morgan and his men succeeded in taking back to their ships 176 mule-loads of gold and silver—treasure worth millions.

The most conspicuous of the ruins of Old Panama is the cathedral tower, with the City Hall beside it. The jungle has covered much of the city, but the crumbling walls of other churches and monasteries, of the city market, of the house where the men of Genoa dealt in slaves, the remains of paved



Old Panama was founded in 1519. When burned by its inhabitants at the time of Morgan's raid in 1671 it covered thirty blocks, extending 1400 yards east and west and 480 yards north and south. The principal buildings were of stone, but dwellings were of wood.

streets and the still perfect arch of the bridge by which Morgan entered the city, may be seen by the persistent visitor with plenty of time. There were two bridges at Old Panama, and the King's Bridge, at the east end of the city, is passed by the highway followed by automobiles. The other can be reached only by a walk of nearly a mile down the beach. (See map.) The Panama government has made some progress in clearing the ruins of late, but much remains to be done. Access to the cathedral tower, which alone is well worth a visit, is never impeded.

AUTO RIDES—Although there is no highway entirely across the Isthmus, the roads in the Canal Zone, and at Panama and Colon, are so good that one is tempted to make free use of public autos, which are available at fixed rates, the standard being 15 cents a zone. Cars can be hired by the hour for \$3 for the first hour and a diminishing scale for subsequent hours, for four persons.

The longest auto tour that can be taken on the Isthmus is into the country west of the Canal that is reached from the ferry at Pedro Miguel. There is a macadam road in the interior, passing through lovely scenery to several old towns, 175 miles to Santiago. Arrangements can be made through the Panama Pacific Line agents for a two or three days' trip into this country, with an English-speaking driver, at reasonable rates. On such a trip the seasoned American tourist will get fresh impressions, both of scenery and people.

DIVERSIONS—Dancing is popular at the two hotels maintained by the government, the Tivoli and the Washington. There is a first-class golf club at Panama, with an 18-hole

course and a novel "19th hole" in a thatched house, for which visitors may obtain cards at their hotel. There is also an 18-hole course at Gatun which is open to guests of the Washington Hotel.

Swimming is a sport followed by all ages among Americans at the Isthmus. There is a fine pool at the community club at Balboa, open to visitors, and another connected with the Washington Hotel at Colon. Surf bathing is available at Bella Vista, Panama, where an exclusive shore club is being built (Club Miramar) to which, on its completion, cards will be available for Panama Pacific Line travelers.

Other amusements at Panama include horse racing throughout the year, on Sundays; dog racing on a special track, evenings in the winter season; the weekly drawing of the National lottery, on Sunday mornings at the Bishop's Palace, and the great annual fiesta of four days preceding Lent.

Everyday diversions include morning visits to the city market beside the beach, where many odd boats unload cargoes of fruits, vegetables and fish; strolls in the old, balconied streets or along the sea wall promenade of the Malecon; evening concerts in the city squares, by excellent brass and reed bands, to which the whole town turns out; visits to the shops—many kept by Hindus and Chinese have a strangely foreign air—afternoon calls at the Canal Zone community clubhouses, where one becomes the guest of Uncle Sam, and not least, observation of American soldiers and sailors out for a lark in the noisy pleasure palaces along the Avenida Central.

SPORT—For the fisherman and the hunter, Panama is virgin territory. Duck shooting and deer hunting both yield gratify-



Scenes at Old Panama. Left, the Cathedral tower, showing position of a spiral staircase of brick. Centre, the bridge by which Morgan and his men entered the city by the back door. Right, inside the Cathedral. Begun in 1626, the Cathedral had three wide naves and two lateral chapels. There were 10 windows and a tile roof supported on cedar columns. The tower had six bells. The altar was richly decorated.

ing results. Fishing in the Bay of Panama produces incredible catches, including sea monsters of great size—sharks, sawfish, sail fish, jewfish and ray, some attaining a ton in weight.

Crocodile hunting in rivers a few hours away along the coast by launch, tests the skill of the best rifle shot, while sea turtle hunting is not without its rewards. Comfortable cruising launches, in charge of experienced American captains, can be arranged for through Panama Pacific Line agents, for hunting and fishing parties.

Tarpon fishing in the swift water below the spillway at Gatun on the Atlantic side has attracted many fishermen from the North. There is a Tarpon Club at the spillway, with a comfortable clubhouse, where visitors with cards (procured at the Washington Hotel) are made welcome.

SIGHTS—Panama City has a number of objects of interest to the visitor, all of which can be seen in an hour's ramble. At the point of the sea wall is a Pantheon (Las Bovedas) built over the dungeons of an ancient prison, that is dedicated to the French canal builders, with a shaft for those who died for the work and busts of engineers. Inside the wall the history of the Canal is told on massive tablets of stone. In the city, nearby, are the ruins of Santo Domingo Church (burned in 1737) containing a flat arch of brick that is an architectural curiosity; San Jose Church, with a gilt altar, revered as a relic of old Panama, the Cathedral, and numerous handsome buildings, including a National Theatre. The principal nations have embassies at Panama, those of Great Britain and Spain being the most handsomely housed.

HOTELS—The government hotels at the Isthmus are conducted as first-class houses. Their rates are lower than those of the best resort hotels in the United States. At the Washington, in Colon, rates vary from \$2.50 for room without bath in summer to \$8 for room with bath in winter. At Colon there are two other hotels patronized by travelers, the Imperial and the Miramar, that are well spoken of. Their rates are from \$4 a day upward for room with board.

The Hotel Tivoli, at Ancon, stands in extensive grounds, overlooking a section of Panama City, and eastward the Savannas, with a distant view of the Pacific. It has 222 rooms. Its winter rates are from \$2.50 a day for a single bedroom without bath to \$6 a day for room with bath (parlor and bedroom \$12).

In Panama City, facing the Cathedral, is the Central Hotel, conducted by Andrew Johnston, formerly manager of the Tivoli. Its rooms are large and airy, with modern baths, the table good, and rates moderate, either on the American or European plan. The staff speak English.

Facing the railroad station is the International Hotel, conducted by Mr. John McEwen, also a former manager of the Tivoli, which is patronized by Americans, and is known for its good cooking and Spanish wines. The staff speak English.

Either of these two hotels on brief notice will provide Spanish dinners for parties from Panama Pacific Line ships stopping at Balboa.

There are several smaller hotels (including the Metropole with cabaret) and numerous restaurants in Panama and Colon, while at Balboa, Ancon and Cristobal, Canal Zone restaurants welcome visitors.

MONEY—United States paper and coin are the currency of the Isthmus and are accepted everywhere in Panama and Colon, where Panamanian currency has disappeared from circulation.

LANGUAGE—English is the language of the Canal Zone, Spanish of Colon and Panama City; but English is spoken generally by taxi drivers, hotel staffs and shop attendants throughout the Isthmus.

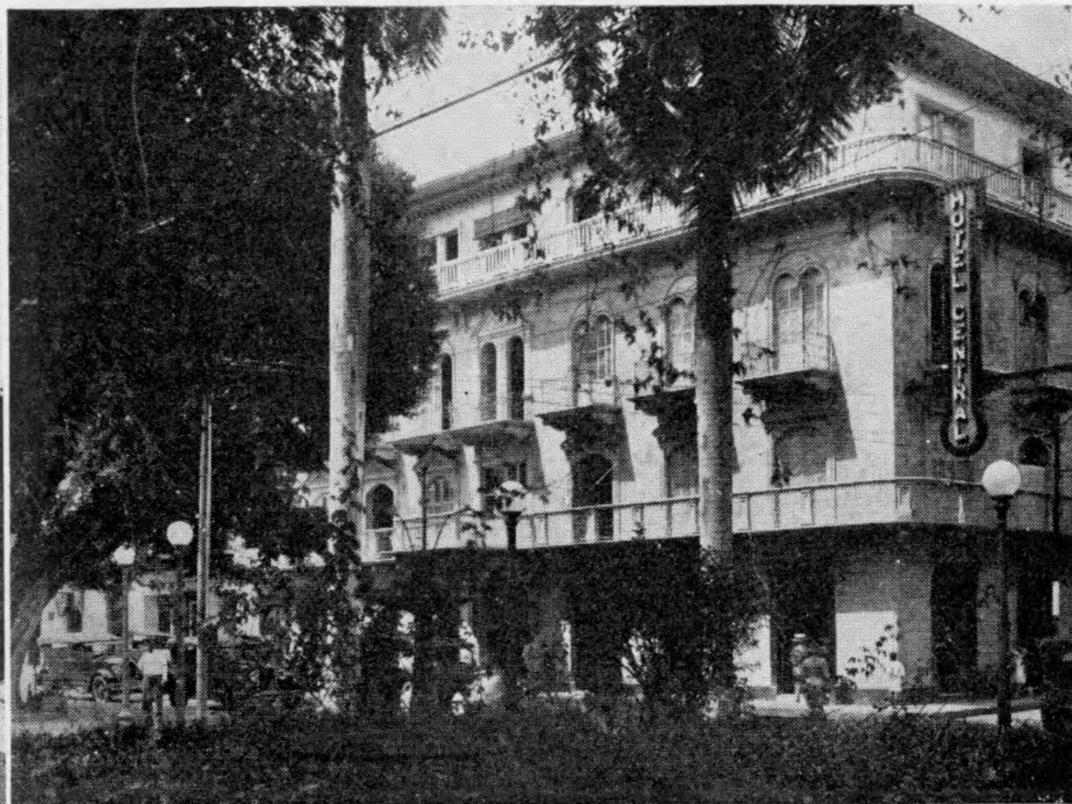
OF SERVICE TO TRAVELERS IN PANAMA CITY

American Consul: Central Avenue and H Street.
 Banks: National City Bank, No. 19 Central Avenue; Chase National, Cathedral Square.
 Books and Maps: Benedetti Hermanos, Central Avenue and 3rd Street.
 Chinese Goods: Chong Kee & Co., Central Avenue and A Street; New China, No. 27 Central Avenue.
 Department Stores: The French Bazaar, Central Avenue and 8th Street; the American Bazaar, No. 25 Central Avenue.
 Ice Cream Parlor: Preciado's, Central Avenue and 8th Street.
 Panama Hats: Sabas A. Villegas, No. 163 Central Avenue; C. A. Lupi, No. 41 Central Avenue.
 Perfumery: The Maduro Company, No. 21 Central Avenue.
 Photographs of Panama Scenery: Lewis Photo Service, No. 1 Fourth of July Avenue, opposite Ancon Postoffice.
 Photographic Supplies, Kodaks, etc.: I. L. Maduro, Jr., No. 24 Fifth Avenue. (Also curios and Spanish shawls.)
 Spanish Shawls: Antonio's, No. 30 Central Avenue.
 Steamship Ticket Agents: Fidanque Brothers, Panama Pacific Line, No. 17 8th Street.

(There are numerous shops in Panama and Colon, kept by Hindu merchants, that feature Eastern goods. Prices are regulated by the skill of the buyer. Chinese shop keepers expect to make slight concessions in prices. The shops listed above sell at fixed prices.)



The Government-operated Tivoli Hotel.



The Central, Largest Hotel in Panama.

VARIOUS FACTS ABOUT THE CANAL

LENGTH of the Canal, from deep water to deep water, 50.76 statute miles, length of sea-level approaches 15.02 miles, of lake and locks sections, 35.74 miles, airline distance across the Isthmus, shore to shore, 34 miles.

Depth of the Canal: Atlantic channel 42 feet at mean tide; Pacific channel 45 feet (being deepened); lake and cut sections 45 to 85 feet. Bottom of Gaillard Cut above mean sea level, 40 feet (least width 300 feet.)

In the month of February the mean level of the Atlantic and that of the Pacific at the Isthmus are the same. In other months the Pacific is 8 inches higher than the Atlantic, except in October, when it is 1 foot higher. The variation is caused by winds and currents in the Pacific.

Excavations from the Canal (about 350,000,000 cubic yards) represent as much material as would come from a hole 15 feet square driven clear through the earth. This material would make a cube 2,132 feet on each side, and would build 106 pyramids as large as the largest at Gizeh.

Not less than 4,500,000 cubic yards of concrete, requiring the same number of barrels of cement, were used in building the Canal locks.

About 38 billion cubic feet of water is required annually to operate the Canal locks. All water in the Canal above the locks at Gatun and Miraflores comes from the watershed of the Chagres River, which yields about 185 billion gallons in a normal year. There is an unavoidable waste of flood water through the Gatun spillway which will be lessened when a projected storage basin is created in the upper watershed of the Chagres, by means of a dam at Alhajuela, ten miles above Gamboa.

Average time required for transit of Canal, eight hours. (Panama Pacific ships at times make the transit in six hours.)

In the fiscal year of 1928, 1,811 commercial vessels made 6,456 transits of the Canal, carrying 29,630,709 tons of cargo and 160,000 passengers. Travelers disembarking at the Isthmus totaled 40,000 more, and those embarking 38,000. Those remaining on board ships touching at Balboa or Colon and not transiting the Canal totaled 18,000.

The capacity of the Canal is estimated at 17,000 transits a year, or about three times as many as were made in 1928. It is believed, however, that the Canal locks must be enlarged in thirty years, and the water supply in Gatun Lake increased in five years.

Traffic through the Canal from East to West is led in volume and value by manufactures of iron and steel, with refined petroleum second. Traffic from West to East is led by crude petroleum, with lumber second and wheat third. Fruit is seventh.

Tolls are levied on the net tonnage of the ships, which is the interior spaces which can be devoted to the carriage of cargo or passengers. The rate for laden ships is \$1.20 per net ton, Panama Canal measurement, and the rate for ships in ballast, 72 cents per net ton; with the proviso that the amount collectible shall not exceed the equivalent of \$1.25 per net ton as determined under the rules for registry in the United States, or be less than 75 cents per net ton on the same basis. Each net ton is 100 cubic feet. Average tolls for bulk cargo are about 65 cents per ton of 2,240 pounds. The heaviest tolls paid for a single transit of the Canal have been \$22,399.50 on the British battleship *Hood*.

Investment in the Canal at the beginning of 1928 was \$388,000,000, of which \$275,000,000 was chargeable to commercial use and \$113,000,000 to national defense. Depreciation charges provide for the amortization of the Canal investment aside from profits in 100 years.

Earnings of the Canal for the year ending June, 1928, were \$47,473,667 of which tolls amounted to \$26,944,499.77. A surplus of \$10,835,925 resulted, to be applied to wiping out deficits of previous years. In the fourteen years of its existence up to June, 1928, the Canal showed a nominal excess of earnings over expenses of \$90,000,000 but this was without charging interest against the commercial investment, which at three per cent would amount in that time to \$115,000,000.

Population of the Canal Zone includes several thousand soldiers at the various U. S. Army posts, crews of naval vessels stationed at the Canal, and a civilian population of 28,000, composed chiefly of Canal employees and their dependents. There are about 3,000 skilled ("gold") employees, and about 10,700 unskilled ("silver") on the Canal and Panama Railroad payroll, which amounts annually to about \$14,500,000. "Silver" employees are natives and West Indians, formerly paid in Panama silver dollars, or pesos, worth 50 cents each in American money. Prices in silver are double those in gold.

Distances saved by ships using the Canal over old routes are very great. Between New York and San Francisco the distance of 13,135 nautical miles by way of the Strait of Magellan has been reduced to 5,262 miles by way of the Canal, a saving of 7,873 miles.

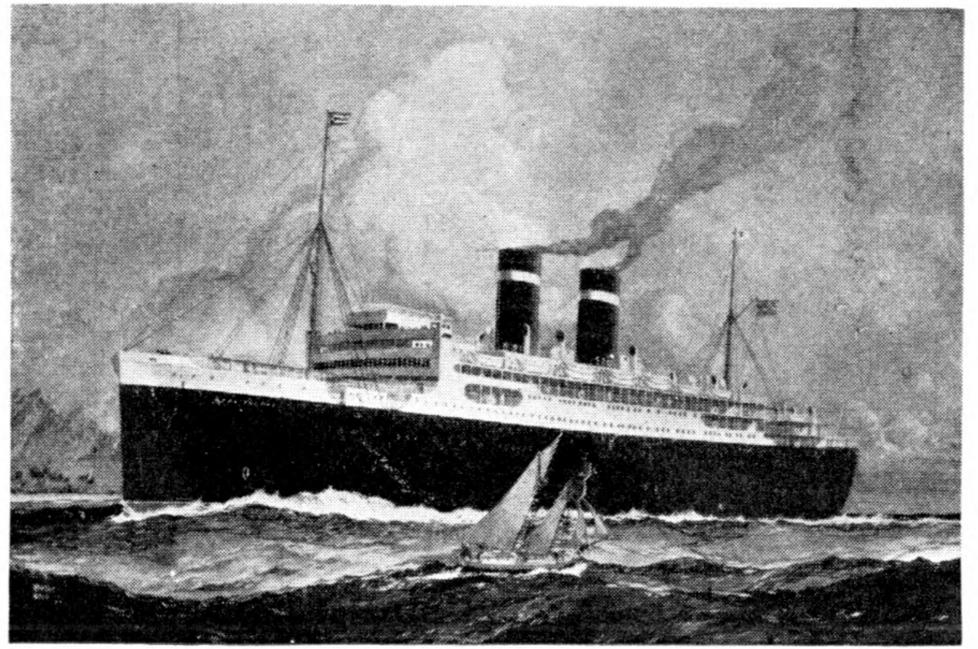


Under the Panama Pacific Line's One-way-water, One-way-rail routing plan, passengers residing in any part of the United States or Canada can make a single booking that will cover a complete journey from their home town back to their home town, in which the Panama Canal trip will be the outstanding feature. Motorists may drive to the nearest Panama Pacific Line port, make the Canal trip with their car on the same ship—checked as baggage—and after completing their sea voyage, drive home

The Canal and National Prestige

AS A matter of National prestige, the Canal is a wonderful investment. . . The Canal and the community connected with its operation are the finest expression of American thoroughness in engineering, public health and Community life that I have ever known. . . Engineers come from everywhere to study our engineering work. . . In every part of Latin America, when a question arises as to American thoroughness and skill comes the answer: "The Panama Canal."

JAY J. MORROW
Colonel U. S. Army
Former Governor, Panama Canal



S. S. California ~ S. S. Virginia
in regular service
S. S. Pennsylvania
(now being built and scheduled to enter service in the
Fall of 1929)

THE largest and fastest steamships making the transit of the Panama Canal in regular Coast to Coast service are those of the Panama Pacific Line.

At the head of the fleet are the new *California* and *Virginia*, each of 32,000 tons displacement, the largest American-built liners and the world's largest electrically-driven steamships.

Under construction at Newport News, Va., is a third vessel of similar type and size to be ready in 1929.

On any of the vessels in this service the 5,500-mile voyage, lasting a little more than two weeks, is thoroughly delightful. No other sea trip affords a greater variety of interests, nor a higher average of perfect days. The course is always near land. The sea, blue and brilliant under sub-tropical skies, rarely is rough enough to cause the slightest concern to the most timid sailor. A holiday spirit pervades the whole ship, making the trip a true recreation cruise.

One week from New York, with a half-day stop at colorful Havana, takes the traveler by this delightful route to the Isthmus of Panama. Part of a day is spent in making the transit of the Canal and is followed by sightseeing at Balboa and Panama City, with an evening free to dine ashore and see the vivid street life of the old Spanish town.

Sailing from Balboa before midnight the ship next morning will be off the blue mountain ranges of northern Panama. A week of steaming, often in sight of wonderfully beautiful, mountainous land, ends in the harbor of San Diego. Los Angeles harbor is entered next morning, and a day after leaving that port, the liner enters the Golden Gate, to end her voyage at San Francisco.

The best evidence of the popularity of this premier Panama Canal route from Coast to Coast is the numbers who take the trip and afterward glowingly recommend it to their friends. Particular attention should be called to the fact that a single booking will cover a journey from home town to home town, anywhere in the United States, the tickets to include rail journey either across the Continent in either direction or from any interior point to New York, San Francisco or Los Angeles, the Coast to Coast voyage in either direction by the Panama Pacific Line, and rail to point of departure. Illustrated literature regarding these tours and the Panama Pacific Line ships, with cabin plans, sailing schedules and rates, will be sent to any address on request to a company office, or any authorized steamship agent.

THE PANAMA PACIFIC LINE

1 Broadway, New York 460 Market St., San Francisco
715 West 7th St., Los Angeles

Panama Pacific Line Offices in the United States and Canada

The Panama Pacific Line is one of the constituent lines of the International Mercantile Marine Company, which has offices at the following points in the United States and Canada:

NEW YORK..... 1 Broadway
ATLANTA..... Haas-Howell Building
BALTIMORE..... 308 North Charles Street
BOSTON..... 84 State Street
CALGARY, ALBERTA..... Land Building
CHICAGO..... 180 North Michigan Avenue
CLEVELAND..... 1000 Huron Road
DALLAS..... Cotton Exchange Building
DETROIT..... Majestic Building
GALVESTON..... Cotton Exchange Building
HALIFAX..... 126 Hollis Street
HAVANA..... 75 Obispo Street
HOUSTON..... Cotton Exchange Building
LOS ANGELES..... 715 West Seventh Street
MINNEAPOLIS..... 121 South 3rd Street
MOBILE..... 7 St. Michael Street
MONTREAL..... McGill Building
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TORONTO..... 55 King Street, East
VANCOUVER..... Pacific Building
WASHINGTON..... 1419 G Street, N. W.
WINNIPEG..... 224 Portage Avenue

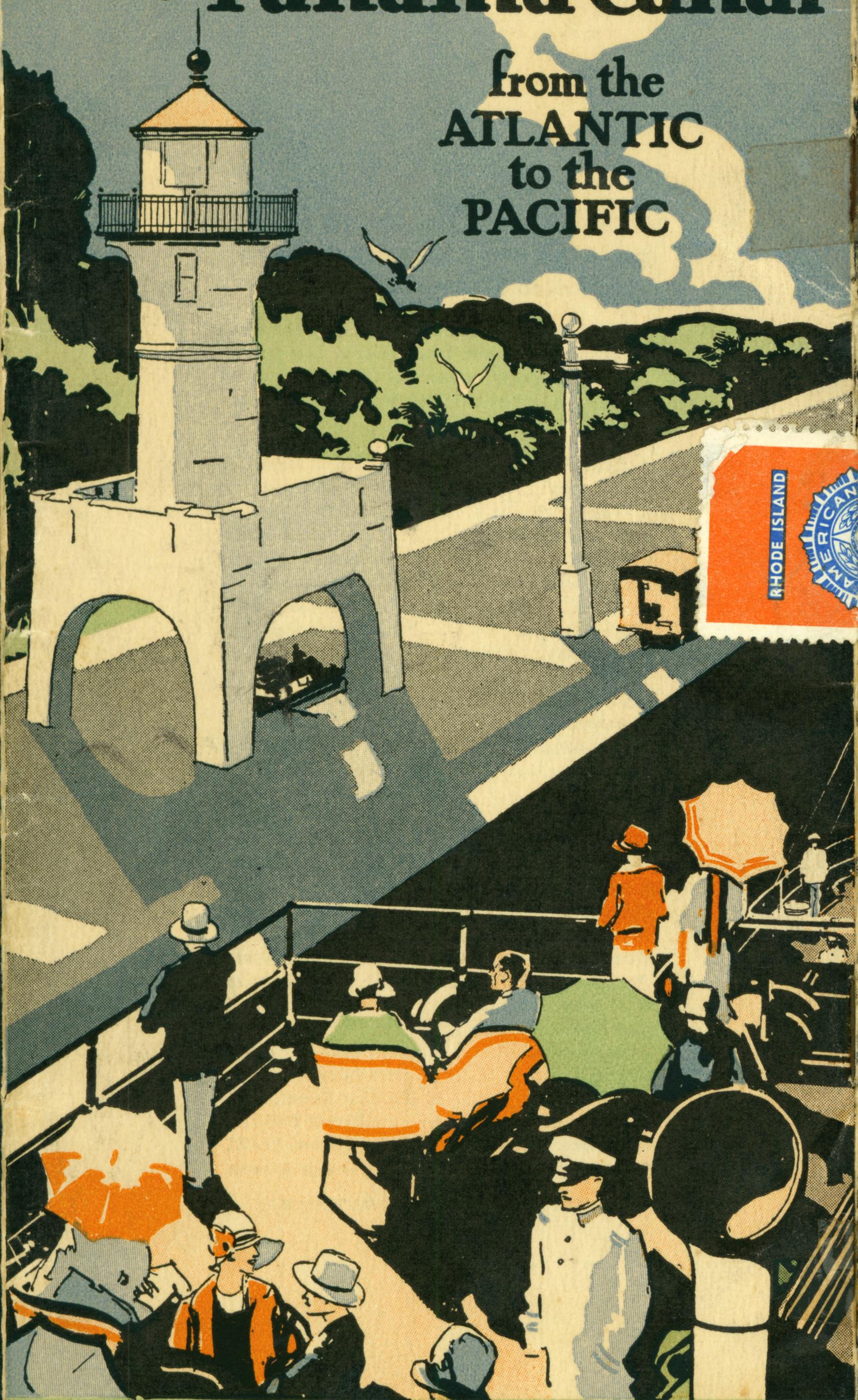
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To mail, place this flap over cover and attach seal. Extra copies of this booklet will be supplied to passengers by the ship's purser, on request, or furnished at any of the company's offices.

My Trip Through The Panama Canal

from the
ATLANTIC
to the
PACIFIC



By **The Panama Pacific Line**
The Coast to Coast Recreation Route
NEW YORK~CALIFORNIA