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APRIL, 1939

Special Map Supplement of the Reaches
of New York City

Spin Your Globe to Long Island

With 25 Illustrations

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Bright Patterns of Long Island Life

18 Natural Color Photographs

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With 21 Illustrations

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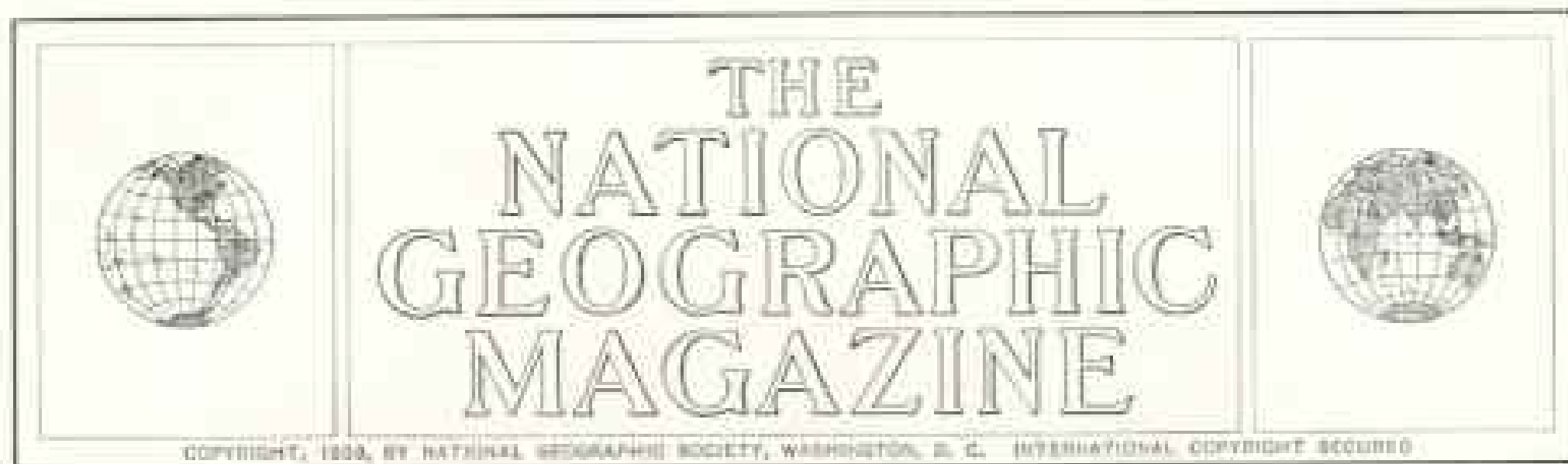
F. BARROWS COLTON

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SPIN YOUR GLOBE TO LONG ISLAND

Only Six States Have More People than the Insular Empire that Ranges from a World's Fair Through Potato Patches, Princely Estates, and Historic Shrines

BY FREDERICK SIMPICH

With Illustrations from Photographs by Willard R. Culver

WHAT if a super-tugboat could cast a line about Long Island and haul it out to sea! Left exposed would be the broken ends of all the bridges and the under-river tunnels that now tie it to Manhattan.

Riding off on the runaway island would go more than $4\frac{1}{2}$ million people—but only if the start were made at night, for in the daytime a large share of these people work in New York.

Off on the floating island would also go about one-fourth of the sea trade of the whole United States, Uncle Sam's Brooklyn Navy Yard, radio towers from which he talks with 34 countries overseas, his busiest coffee and sugar mart, 3,454 trains that run daily between New York and the island, shops that make navigation instruments for the whole world, strategic airports and plane factories, millionaire estates, herds of polo ponies, Forest Hills' famous tennis courts, five million white ducks, to say nothing of Coney Island and other resorts where millions come to play, and a World's Fair!

SHAPED LIKE A MONSTER FISH

Look on the map and you see this island is shaped like a big fish.*

Its blunt, whalelike head, capped by Brooklyn on its west end, pushes into New

York's East River. For 118 miles it stretches east, where two flukelike land points stick out into the Atlantic; they seem on stormy days to be whipping the salt water into foam and spray, just as the split tail of a big mad fish might do.

Like a dorsal fin, its north shore is set off from Connecticut by that blue-water playground, Long Island Sound.

Finally, to clinch this figment of fancy, the island outlines show not only the fish's form, but suggest that this leviathan has just swum in from the Gulf Stream and is nibbling at the hook of lower Manhattan.

Actually, it isn't nibbling, but gobbling. Already Long Island has swallowed about one-third of New York State's whole population.

Gone now is the day when Gotham comedians could get a laugh at Brooklyn's expense, when Brooklyn Bridge was dubbed "the road to yesterday," and Brooklyn itself was merely "New York's bedroom."

Long Island now has more people than most of the States in the Union, being exceeded by only six; more assessed wealth than all Texas; and more sea trade than Manhattan. While Brooklyn, politically,

*See decorated map, $26\frac{1}{2}$ x 29 inches, "The Reaches of New York City," published as a supplement with this issue of the NATIONAL GEOGRAPHIC MAGAZINE.



Photograph by Fairchild Aerial Surveys

ENOUGH RAILWAY PASSENGER COACHES TO MOVE A FAIR-SIZED CITY ARE PARKED
AT SUNNYSIDE YARDS, QUEENS

No more space, either on or below ground, is available at Pennsylvania Station, on Manhattan; so the Pennsylvania and Long Island Railroads shunt their emptied coaches over here for storage and cleaning. Adjacent to the yards the Pullman Company maintains warehouses from which diners are stocked with food, and others from which clean sheets, pillowcases, towels, soap, etc., are supplied to sleepers that leave New York over many lines for various parts of the United States. There is also a "dummy diner" in which "rookie" waiters are taught how to serve.



HAVING EATEN LUNCH, WORKERS SEEK SUNSHINE ABOUT A CLERGYMAN'S STATUE BEFORE BROOKLYN'S CITY HALL

Henry Ward Beecher, brother of Harriet Beecher Stowe, who wrote *Uncle Tom's Cabin*, was long Brooklyn's most famous citizen. During his forty-year pastorate of Plymouth Church he attracted nation-wide attention for his abolitionist sermons and writings on woman suffrage and other timely subjects. One Sunday at auction he sold a slave girl, "Pinky," into freedom (page 428). Plymouth Church, with its pulpit of olive wood brought from the Mount of Olives and its series of memorial windows, symbolic of civic progress, religious freedom, and the spread of education, is one of America's best-known churches.

is a part of New York City, considered separately it is America's second largest city, surpassed only by Chicago.

Quick, cheap, easy travel turned this tide.

As French Strother once wrote: "John A. Roebling, dying of tetanus in the home on Brooklyn Heights that he had built to overlook the construction of his 'crazy' suspension bridge over East River, had sealed the doom of Manhattan as the prime city of the Western World. Not westward, but eastward, the star of New York City's empire made its way" (page 422).

751 COMMUTERS' TRAINS A DAY

Today truck farms turn into parks, golf courses, new homes, and business blocks.

In and about Queens you see literally square miles of new houses, laid out like London's vast new suburbs. Beyond spreading Forest Hills and Kew Gardens sprawls Jamaica, with 751 trains a day to Brooklyn and New York. If it stood somewhere out in a Rocky Mountain State, it would be a nationally known American city; here it is only one more spot in the lengthening shadow of New York, which creeps steadily out Long Island.

Beyond this shadow, farther east, lies yet another island world, whose people still have the "island feeling"; in their 200- and 300-year-old houses and churches, and in their old flintlocks, harpoons, and spinning wheels, there's still a hint of English settlers'



Photograph by Hausior

GETTING READY TO PUT THE SIGHTS AND SOUNDS OF NEW YORK "ON THE AIR"

These trucks are rolling pickup stations of National Broadcasting Company's new television system. Here they are shooting in Rockefeller Plaza, Radio City, New York. Television broadcasts are planned from the New York World's Fair Grounds in April, 1939 (page 437).

life, of Captain Kidd, and the Sag Harbor whalers.

Ride all the way round this island and you see how wild, desolate, and thinly settled its eastern tip is; yet how monuments to man's mechanical genius fairly clutter its west end.

Between these extremes, what profound contrast! Out on storm-pounded Montauk Point, with its ancient lighthouse and lonely beaches, where the ribs of wrecked and forgotten ships stick up like camel bones on an Arab desert, you feel the full imaginative content of that word "island," that "verbal hieroglyph" for romance, piracy, and adventure (Plate XII).

But come back to Brooklyn, on the island's west end, and you see yet another picture. Here is Western civilization, heroically sketched on a gigantic canvas, alive with glimpses of inventions—queer robots from gyroscopes and linotypes to miraculous machines that flash photographs around the world on wireless waves.

How vividly Sir Francis Bacon foresaw these wonders 316 years ago! In his essay on the civilization of the "New Atlantis," writ-

ten in 1623, he says: "We have boates for going under water. . . . Flying in the Ayre. . . . Artificial echoes reflecting the voice many times. . . . Lights of all colors. . . . Lights, which we carry to great distances."

Here are all these things: submarines, airplanes, radio telephones, neon lights, and giant searchlights.

"MOTHER OF NAVY YARDS"

At Brooklyn Navy Yard you may see Bacon's "boates for going under water." With a permit to visit this "mother of all our navy yards," you can see Uncle Sam building his "fancy war canoes," where Indians built theirs long ago (page 425).

Since 1801 this yard has laid keels for wooden "ships of the line," for frigates, sloops of war, paddle-wheel steamers, torpedo boats, destroyers—for many kinds of warcraft from brigs to battleships.

Read the brass name plate on any American war vessel from Miami to Manila and you may see it was launched at the Brooklyn Navy Yard.

From here slid the ill-fated *Maine*, whose destruction in Habana Harbor was followed



THIS REPRODUCTION OF A SHIP'S BRIDGE IN AN OFFICE BUILDING TEACHES THE USE OF NAVIGATION INSTRUMENTS

More than 8,000 ship's officers and sailors, from some 30 nations, have been trained here by the Sperry Gyroscope Company. In another school instructions in blind flying are given, including use of the gyro-horizon and directional gyro, and the gyro-pilot for automatic flying. Besides navigation instruments, this factory also makes searchlights, gunfire-control apparatus, and steering controls.

by our War with Spain. First of first-class battleships launched here was the old *Connecticut*. Years later, off Olongapo, I was aboard her at target practice, and also saw the boxing matches, after mess, when rival gun crews fought out the evening post-mortem. Today some 9,000 men work here. That's about three times as many as the whole enlisted strength of the Navy when this yard opened.

INSTRUMENTS TO STEER PLANES AND SHIPS

Bacon foretold searchlights. Today Long Island makes them, of almost supernatural penetration, in a tightly guarded factory at the foot of Manhattan Bridge.

If you can get in, here you see not only powerful searchlights for spotting enemy airplanes on a dark night, but also other startling Jules Verne wonders of the "Mysterious Isle" kind.

How times have changed since Henry Hudson sent a shore party to explore Coney Island in 1609!*

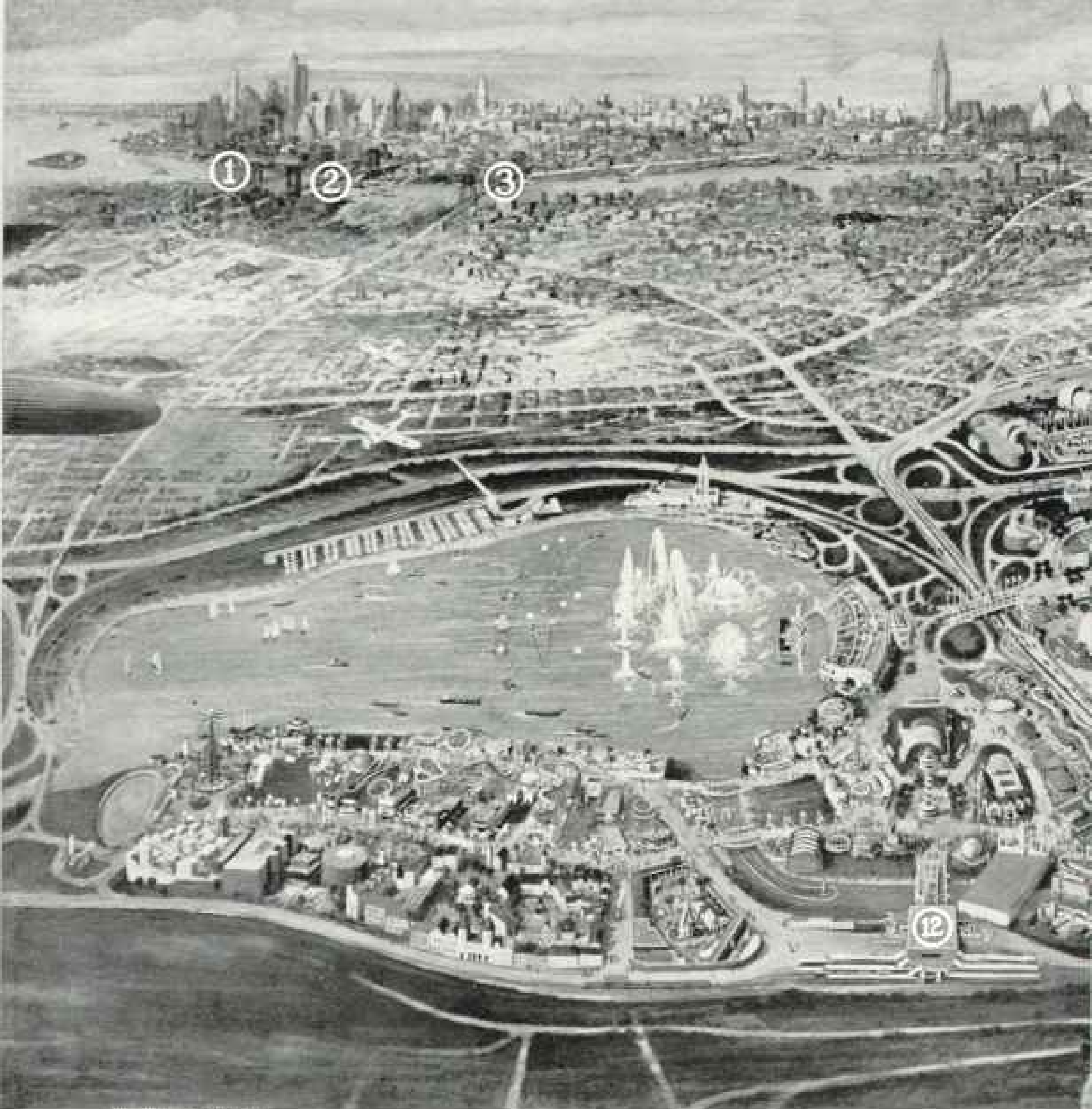
He steered uncertainly, by crude instruments. Today, in Brooklyn, the Sperry Gyroscope Company turns out sensitive gyro-pilots and other magic aids to navigation which are now used by vast fleets of sea and air craft moving over the wide world.

Among all colleges on this island, none has so heterogeneous a student body as the navigation school conducted by the Sperry Company. In one classroom, crowded with sailors from more than thirty different nations, you see a life-size ship's bridge—a dummy, of course—but equipped with all the scientific navigation instruments used now on modern battleships and ocean luxury liners.

From this school more than 8,000 seamen of every nationality from Argentinian to Chinese have been graduated and licensed to handle the gyrocompass, gyro-pilot, and other Sperry marine instruments.

A corresponding aeronautical school gives

*See "Henry Hudson, Magnificent Failure," by Frederick G. Vosburgh, page 493 in this issue, and Color Plate XVI.



Drawn by H. M. Peitit

HOW TO REACH THE WORLD'S FAIR IS SHOWN BY THIS PAINTING

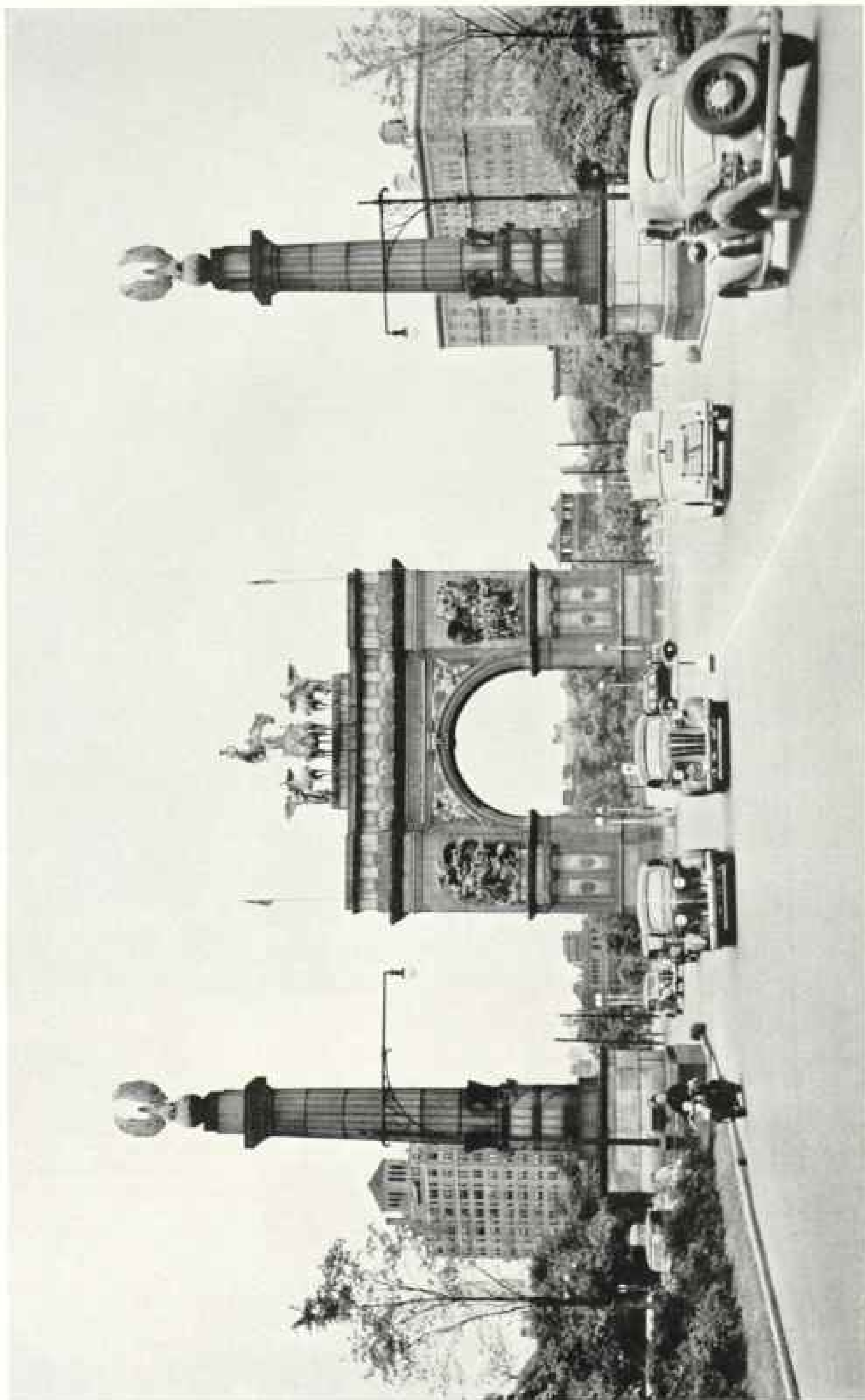
Skyscrapers of Manhattan rise in far background, beyond the East River. Bridges that lead from New York City over to Long Island and connect with roads that run to the fairgrounds, reading left to right, are: (1) Brooklyn Bridge, (2) Manhattan, (3) Williamsburg, (4) Queensborough, (5) Triborough, (6) at extreme right, the new Whitestone Bridge, convenient for motorists from Canada and New England. Visitors coming by air may land at (7) North Beach Airport; it is new, handles both land and sea planes, and as the terminus for coming transatlantic air traffic is destined to become an important news source in the world of tomorrow. No. 8 shows Flushing Bay boat piers. From Triborough Bridge (5), Grand Central Parkway (9) leads east to and past the fairgrounds. At right angles to the Parkway (9) appear the tracks of the Long Island Railroad and the I. R. T.-B. M. T. subways (10 and 11). Fair Station of Independent Subway stands at bottom center (12). Finally, (13) down into its "Immortal Well" was sunk the Westinghouse Company's "Time Capsule." In the year 6939, or 5,000 years from now, it is hoped that future archeologists may find and open this odd capsule to learn much about our civilization. Scientists, engineers, librarians, and others carefully chose the records now buried in this copper capsule, including 40 articles of common use ranging from a watch and an electric lamp to coins, a camera, a razor, a toothbrush, and a pair of eyeglasses. Most important are some 10,000,000 microfilm words on "our times." Greetings from "us" to the "futurians" are here, also the Lord's Prayer in 300 languages, a dictionary, pictures of homes, and accounts of how we are living and working in 1939.



© New York World's Fair, 1939, Inc.

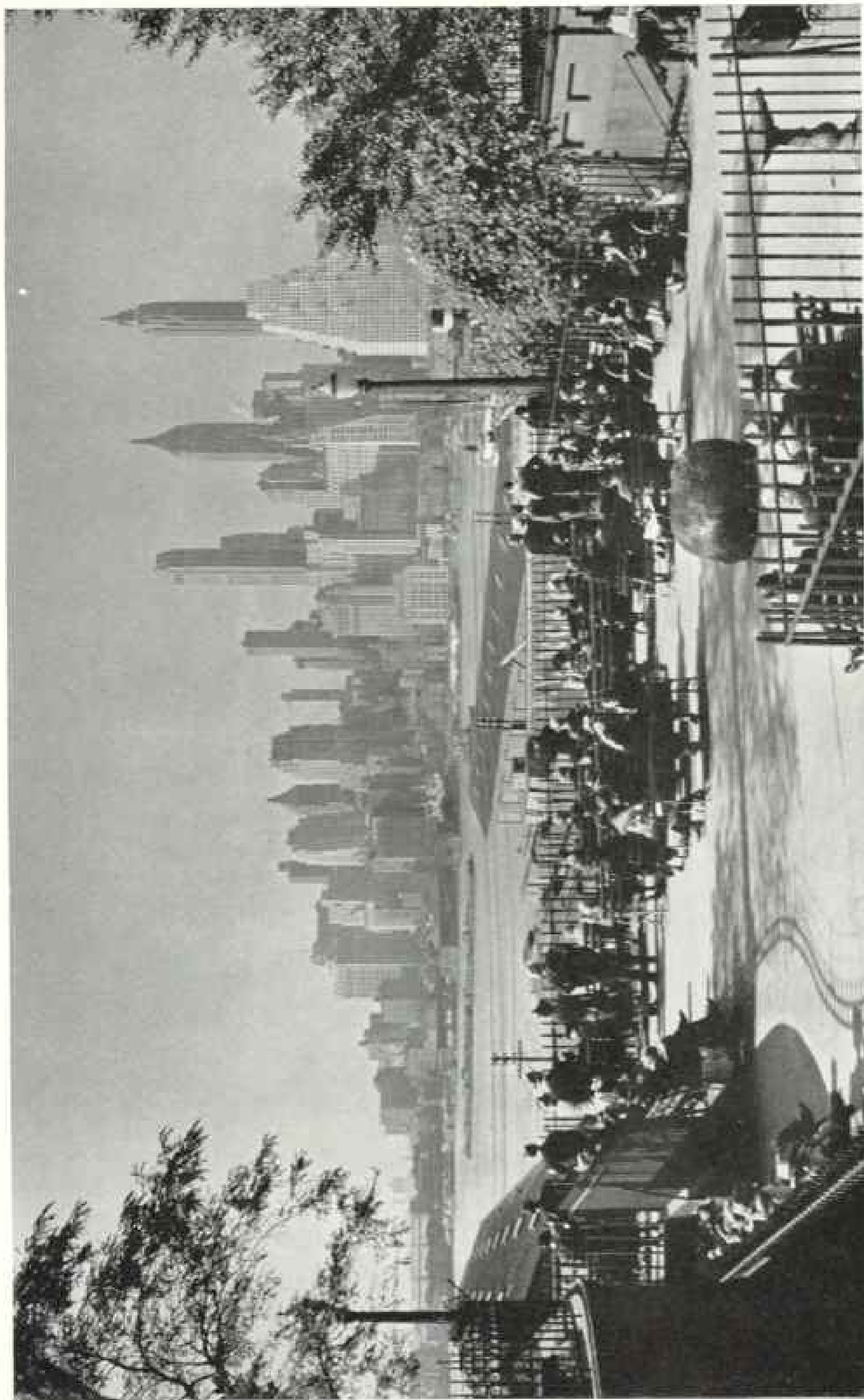
FIGURES IDENTIFY SIGHTS AND EXHIBITS OF THE MAGIC CITY

The Main Exhibit Area radiates from the White Perisphere and Trylon Theme Center. The Amusement Area, identified by roller coasters, lies at lower left, facing Fountain Lake, scene of nightly fire and water spectacles. The whole area covered by the Fair embraces 1,216 acres. There are 17 miles of roads, 45 miles of footpaths, and 300 buildings. About 2,000,000 growing plants are shown; there are 250 acres of lawn and 10,000 trees transplanted and set as in landscape gardens. The Main Exhibit Area, divided into five major units, includes individual theme centers representing Transportation, Communications, Community Interests, Food, and Production and Distribution. In the lower right-hand corner is the large space where our Federal Government, various States, and some 60 foreign nations show their exhibits. Each zone is marked by a distinctive color plan, the colors arranged in prismatic scheme. The total cost of construction was about \$155,000,000. About 60,000,000 people, including repeaters, are expected to pay admission, and visitors may reach the Fair from New York City by train in about 15 minutes. To find their way easily about the vast, glittering "World of Tomorrow," visitors will take their bearings from the great Trylon. Towering high above every other structure, it functions as a direction finder, visible even from miles away. Higher than the Washington Monument, it rises to 700 feet; unlike other high towers of structural steel, in it no framework is visible, its sides being covered with sheathing. Since this adds much to wind resistance, the Trylon has been built with added strength. The unique Perisphere weighs 9,000,000 pounds, stands as high as an 18-story building, and can withstand a wind of 90 miles an hour.



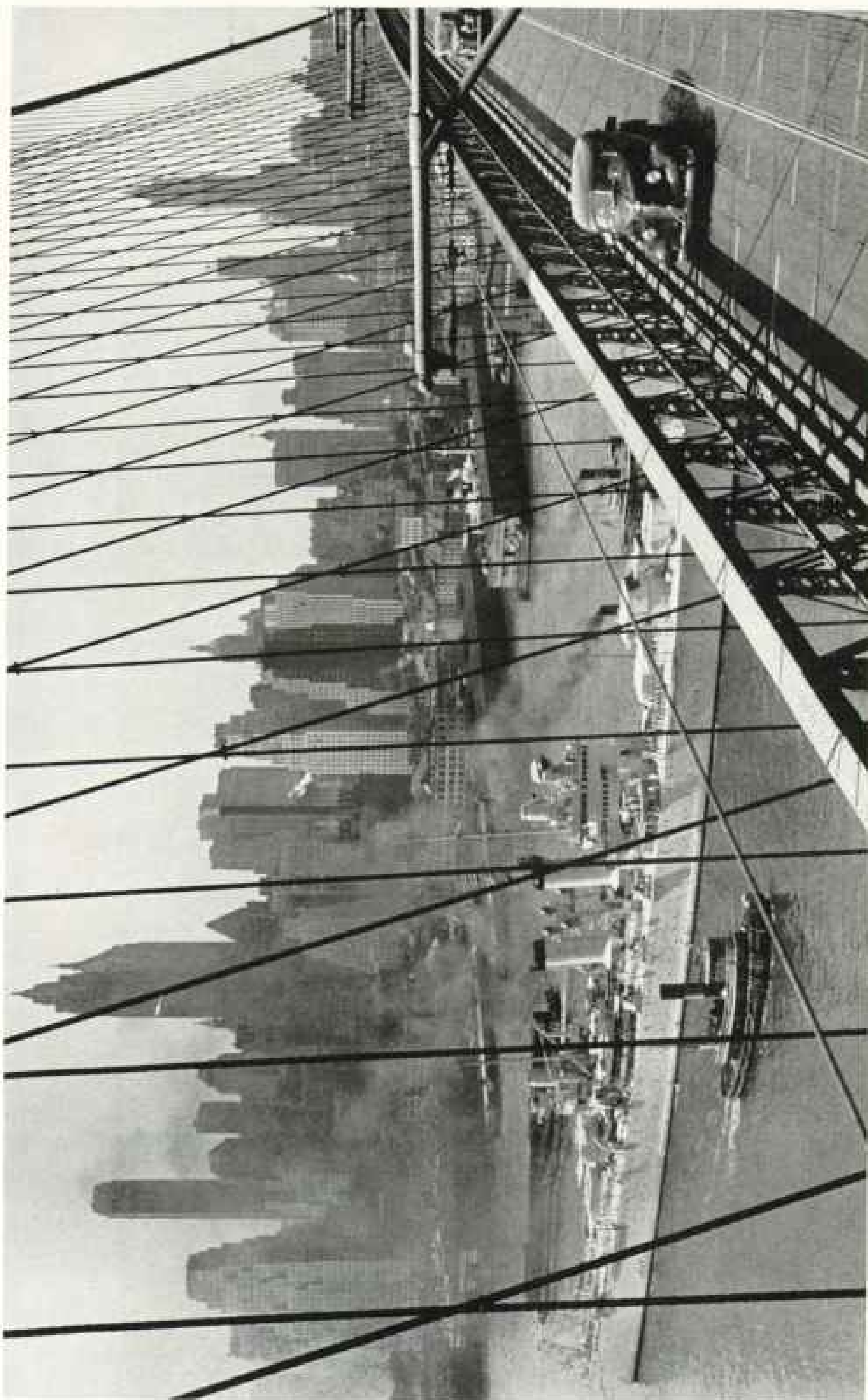
A HEROIC BRONZE QUADRIGA ATOP BROOKLYN'S ARCH MEMORIALIZES SOLDIERS AND SAILORS

The bronze woman, erect in her chariot, holds aloft a banner and an unbeathed sword. To right and left are winged figures symbolic of victory. Set into the piers supporting the arch are two equestrian bronzes, in relief, representing Lincoln and Grant. The cornerstone for this monument was laid by General Sherman in 1869. The figures were designed by Frederick MacMonnies.



IMAGINE WASHINGTON'S FEELINGS, COULD HE SEE NEW YORK'S SKYLINE AS IT APPEARS NOW FROM THE SITE OF HIS BROOKLYN HEADQUARTERS IN 1776!

The stone in the middle foreground marks the location of "Four Chimneys," the house that quartered General Washington during the Battle of Long Island, which was fought near by. Here a war council was held August 29, 1776, when it was decided to withdraw the American Army from Long Island. Today Brooklyn people enjoy sitting at the foot of Montague Street and watching East River boats stream by.



LOWER NEW YORK STABS THE SKY THROUGH THE CABLE PATTERNS OF BROOKLYN BRIDGE

Opened in 1883, this structure was then the greatest of all suspension bridges, and was long a wonder of the modern world. John A. Roebling, its designer, died prematurely, but his son Washington completed the bridge, despite all the critics and doubters of that day, many of whom lived to see this type of bridge being built throughout the world. Below, tugs escort a new cruiser up East River (page 415).



Photograph by Fitchchild Aerial Surveys

BROOKLYN PIERS, REACHING UP THE EAST RIVER, CAN BERTH SEVERAL HUNDRED SHIPS

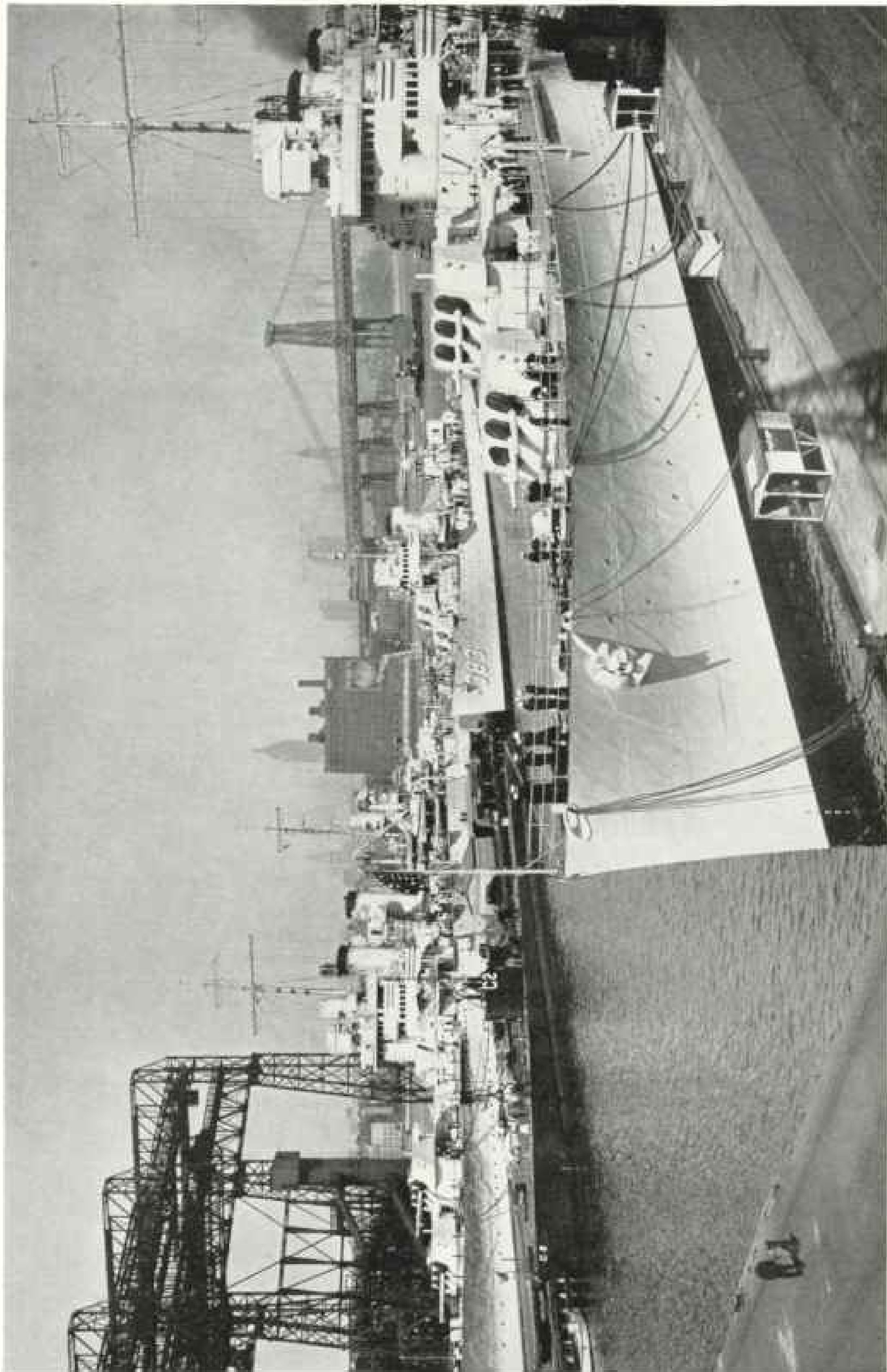
Some 70 steamship lines serve this water front. Considered separately from the rest of Greater New York, Brooklyn is the busiest shipping center in the United States. Accommodating some 700 ships at a time, the Borough's terminals also rent warehouse space to packers of cocoa, paper bags, paint, preserves, varnish, drugs, coffee, chemicals, lamps, wire, molasses, bedsprings, soda-fountain supplies, shoes, nails—in fact, so many things that in a long day's walk you hardly begin to see them. In upper left are the towers of lower Manhattan, with Governors Island just offshore (page 427).



Photograph by McLaughlin Air Service

FLYING IN FROM EUROPE, SKY RIDERS AT NORTH BEACH AIRPORT GET THIS MAGNIFICENT PREVIEW OF MANHATTAN

Planned for both land and sea planes, the new international airport is easily reached from Manhattan by Triborough Bridge, whose towers (upper right) rise just beyond the railway bridge's arch. Pan American Airways, Imperial Airways, Ltd., and German and French lines will use this port. New Federal buildings for passport and customs inspection rise just beyond the white "apron." This field is planned to be ready for use in June, 1939.



BROOKLYN NAVY YARD BUILDS CRUISERS, DESTROYERS, AND BATTLESHIPS, AND REPAIRS OTHER "WAR CARGES" BROUGHT FOR OVERHAUL

This mother of American navy yards was established in 1801. Today it employs some 9,000 people, nearly three times the whole enlisted strength of Uncle Sam's other baby Navy. At left is a giant traveling crane, for lifting turrets, big guns, etc. Upstream, Manhattan Bridge spans East River (page 416).



BILLY WEST, OLD-TIME BLACKFACE MINSTREL, SLEEPS IN BROOKLYN'S GREENWOOD CEMETERY, A LIKENESS OF HIS FAVORITE BANJO BESIDE HIS BUST

On this site an early battle of the Revolution was fought and lost by the Americans in 1776. The impressive cemetery, established in 1838, holds the graves of more than 439,000 people, some of them famous in their day. It comprises 478 acres and has 21 miles of roads.

similar instruction on Sperry aeronautical instruments, the "blind flying" instruments—the gyro-horizon and directional gyro—and the gyro-pilot for automatic flying.

From the Sperry Company's magic shop come also such "gadgets," to use sailor slang, as rudder indicators, gunfire-control apparatus, searchlights (both high-intensity arc and incandescent), steering-control equipment, course recorders, and salinity indicators.

ONETIME TOY NOW SAVES LIVES

Twenty-five years ago the gyroscope merely amused people, as a spinning toy. Today, on land, sea, and in the air, it makes travel safer. Ships of more than 170 of the world's merchant fleets use this gyrocompass for safer and more efficient navigation.

More than 20,000 airplanes maintain flight altitude and course, under blind flying conditions, thanks to the gyro-horizon and directional gyro. By keeping the plane on its course, the gyro or "automatic" pilot relieves the human pilot of the burden of handling his controls and gives him more

time for observation, navigation, radio, and engine work.

With the gyro-pilot, at sea, it is the same: in rough weather as in calm, it saves hard work at the wheel by keeping even the most heavily loaded ship straight on its course.

Out on Ryerson Street, in Brooklyn, Mergenthaler makes a typesetting machine that speeds up the world's newspaper printing and revolutionizes the reading habits of civilization (page 427). This is no phantasy of phrasemaking; look at the facts:

News that the Sioux had killed Custer and all his men, in 1876, was carried in a total newspaper circulation of only about 4,000,000.

By the time Edison had invented his practical type of electric bulb; by the time Garfield had been assassinated and the James boys were raiding across the Middle West, printing was still a slow job because all type had to be set by hand.

Then came the linotype; Whitelaw Reid so named it in 1886, when his *New York Tribune* was first to use the revolutionary machine. Today, American daily papers



THESE HANDS SET TYPE FROM COPY WRITTEN IN THE BENGALI LANGUAGE

Characters on the keyboard look odd to us; but to East Indians they are as simple as ABC to you and me. On the Mergenthaler linotype, built in Brooklyn since 1886, nearly 100 different languages and vernaculars can be set. Its wide use in newspaper print shops has speeded up the reading habits of the world (page 426).

circulate more than 40,000,000, which only mechanical typesetting makes possible.

Mergenthaler's factory exports typesetting machines so widely that it has speeded up the whole world's reading habits. Nearly one hundred different languages and vernaculars are set on this machine, including all those using Arabic script, such as Urdu, Persian, Kurdish, and Malayan, as well as Sanskrit and all East Indian vernaculars written in the Devanagari.

Uncle Sam's printing office in Washington uses 171 linotypes, and 71 foreign governments, from the Vatican City* to the Fijis, set type on this machine in any size from tiny "4-point" to big letters two inches high.

On 25 battleships of our Navy, type is set on these Long Island-built machines, which also set bills of fare and ocean newspapers on many a big liner.

Incredible almost is the feat of a teletype and a linotype working jointly. On this almost human composite of mechanical

* See "The Smallest State in the World," by W. Coleman Nevils, in the NATIONAL GEOGRAPHIC MAGAZINE, March, 1939.

genius, one machine receives and sends the news into the linotype, which sets it up ready for the printer!

BROOKLYN WHARVES, AMERICA'S BIGGEST GROCERY

Home port of the Seven Seas, Brooklyn water front, with pier space for 700 steamers, barbers with 200 foreign ports in 71 different countries (page 423).

Strange names on ship sterns hint at far places. What you don't see you can imagine—the *Zlowtub*, out of North Sea ports, or the *Fling Punk Hi*, from China.

You get hungry on this water front if you only walk along and smell all the exotic fruits, cloves, pepper, sage, sugar, dates, coffee, coconuts, smoked fish, cheese, cocoa, and other good things to eat that unload on this "Isle of Spice."

"America's biggest grocery store" is this water front. More coffee, alone, comes here than to any other spot on earth.

Here is the goal post for the annual date-ship race, which starts from the Persian Gulf. We get most of our dates from about Basra, old haunt of Sindbad the Sailor.

Dates ripen, and rival boats load, all in a brief period; then home they race, across the Indian Ocean, Red Sea, Suez, Mediterranean, Atlantic, and all the way to Long Island, because the first load in sells for the highest price.

One Brooklyn shop takes bales of crude quinine bark from Peru and turns out nice clean pills and powder. Another gets big dirty chunks of beeswax from Africa to make lipstick, shoe polish, and other things.

Since Egyptians varnished their first mummy, the making of lacquer and paint has been a good business. Here, in Queens and Brooklyn, figure fans say enough paint is made every year to cover all buildings now standing in the Thirteen Original States of the Union.

Enough rope to lasso Mars has been made here. Brooklyn had eight ropewalks, but only seven churches and seven saloons in clipper ship days of the 1820's. To fit out a full-rigged ship then took 40,000 pounds of cordage.

Today, ships don't take so much. But hemp, jute, and sisal still pour in from fiber-growing hot lands; and besides all the hawsers, halyards, and braces made for sailors, a world of rope and cordage goes inland for use in derricks, binder twine in wheat fields, even to make rope rugs.

Today Long Island makes better rope than the Romans did, but it's all twisted in the traditional Roman way—strands left, final rope to the right (Plate VIII).

Proximity to New York and its great harbor fostered Brooklyn's industrial growth. Now one city complements the other.

How the Dutch bought Manhattan from the Indians is an old story. From there whites crossed East River to farm, fight the savages, build homes, and barter on Long Island.

That was the day of straw roofs, wooden chimneys, and windmills. Little remains now, except documents yellow with age, to recall that era—little except family and place names.

Brooklyn itself was then *Breukelen*, so changed after the English took New Amsterdam and renamed it New York for their Duke. *Midwout* became Flatbush, and *Rustdorp* changed to Jamaica.

Though the Dutch again took New York in 1672, the English won it back two years later and held it until the Revolution. In Brooklyn the British defeated American troops in that historic battle of

our War for Independence (page 421).

But from that August day in 1776 the history of Long Island began as a part of the United States.

From his pulpit in Brooklyn's famous Plymouth Church, Henry Ward Beecher sold the slave girl "Pinky" into freedom at public auction, when Abolitionists clashed with Southerners (page 415). Roosevelt landed his Rough Riders at Montauk Point after the War with Spain; at Yaphank and Roosevelt Field in World War days Uncle Sam made the greatest mobilization of man power in our history.

Go where you will on this island, past potato patches or princely estates, and you find it thick with scenes of historic events in the making of America. In one place Captain Kidd hid his treasure; in another stands the old house that inspired John Howard Payne to write "Home, Sweet Home" (Plate VIII and page 445).

GARDENS RIVAL THOSE AT VERSAILLES

Take Route 25-A east, along the island's North Shore, turn off now and then, and you enter another world.

Up Glen Cove way lie some of the island's family estates. One we saw, for quiet beauty of landscape and gardens, brought to mind the royal parks at Versailles, or at Sanssouci in Potsdam. Some hatch their own game birds; others have stables and private race tracks and steeplechase courses (Plate XIII).

Turn south along Wheatley Road and the old Post Road and you come to Westbury, world polo center (Plate X).

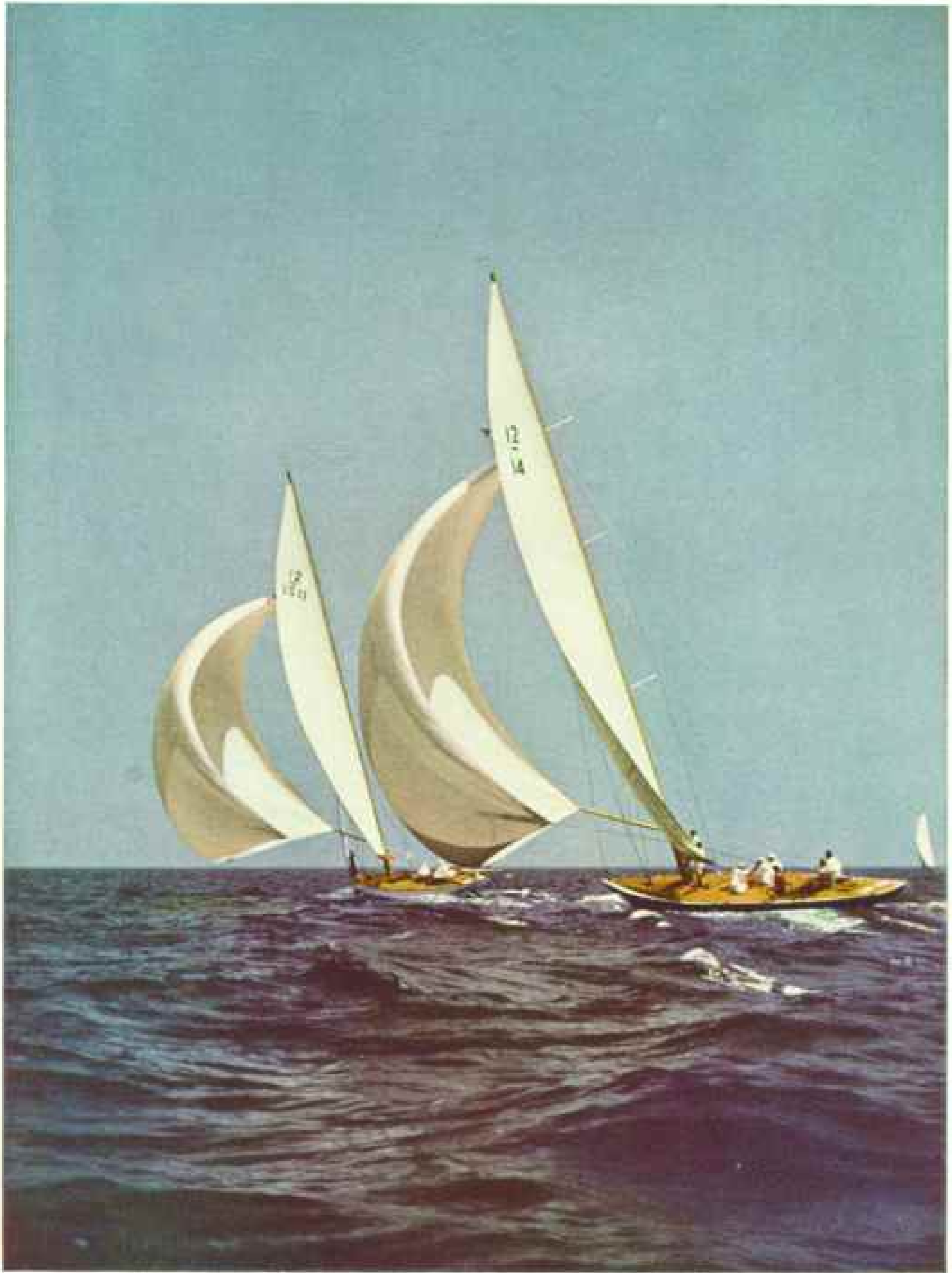
Of all games using a stick and ball, polo is most ancient. Its name comes from the Tibetan word *pulu*, or ball, but Long Island got the game from England, which got it from India.*

Since John Watson first brought an English team to the States in 1886, and since the first American team repaid that visit in 1902, this game has spread to all America's "horsy" spots. Now thousands play it, including schools, universities, and a few women.

Today, without doubt, the Long Island town of Westbury is the world polo center. At famous Meadowbrook Club, locking mallets, you may see Indian rajahs, titled Britons, cattle kings from Australia and Argentina, cavalry officers from many lands.

* See "Geography of Games," NATIONAL GEOGRAPHIC MAGAZINE, August, 1919.

BRIGHT PATTERNS OF LONG ISLAND LIFE

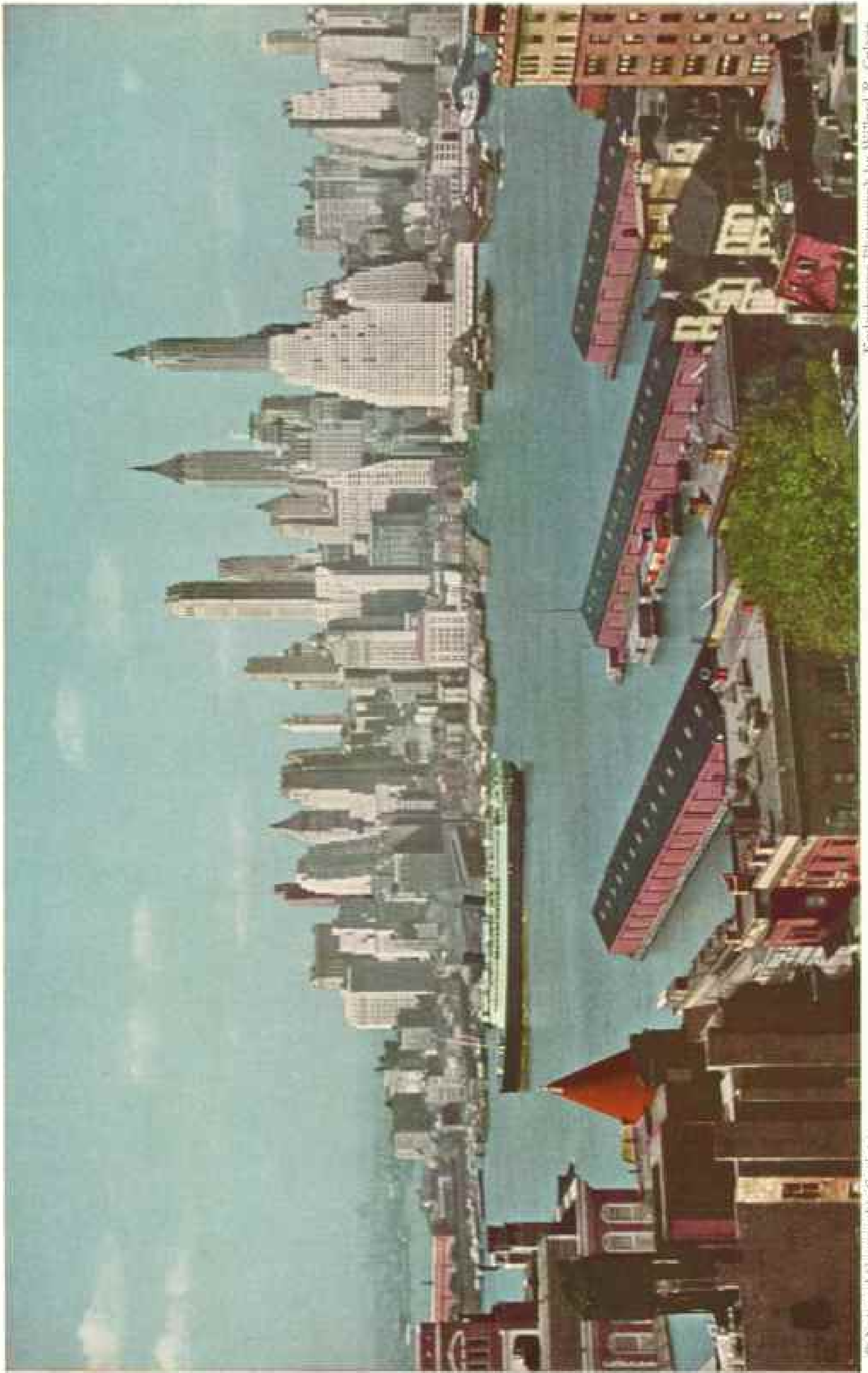


© National Geographic Society

Kodachrome Photograph by Morris Rosenfeld

PARACHUTE SPINNAKERS DRAWING LIKE HORSES, "NYALA" AND "NORTHERN LIGHT" FIGHT IT OUT FOR THE LEAD

A rap-fall of southwest wind snapped masts like matchsticks in this fiftieth annual regatta of the Indian Harbor Yacht Club in July, 1938. Here two 12-meter sloops, the last word in racing design, roar along off Greenwich, Connecticut, with three other contestants far behind. One of these, the *Glean*, was later dismantled.



© National Geographic Society

Kodachrome Photograph by Willard R. Calver

LOWER MANHATTAN'S HUMAN ROOKERIES SCRATCH THE CLOUDS AS THE EAST RIVER ROLLS PAST HOBOKEN'S BUSY WATER FRONT



© National Geographic Society

Kodachrome Photograph by Edwin Levick

"OH, I AM A COOK AND A CAPTAIN BOLD—"

So sings Bob, "utlshipmito" son of Edwin Levick, who made the picture on the *Sagadahoc's* afterdeck. Hauled aboard, roosting place now for boy and dog, is the cruiser's "dink" (dinghy).



Kodachrome Photograph by Willard R. Culver

"OUT TO CONEY" COME NEW YORK'S BOISTEROUS MILLIONS

"They used to talk of Bedlam and they used to talk of flabel, but in all the fact and fable, since the days of Cain and Abel, no metaphor is better for the same than Coney Isle," says an old song.



© National Geographic Society

Kodachrome Photograph by Wilbur R. Culver.

SKIPPER TRIM SAIL WHILE CREWS STAND BY WITH TURNING POLES IN A MINATURE YACHT RACE AT PORT WASHINGTON

Models are so well rigged that often they point into the wind as closely as the finest full-sized racer. Cleverly arranged rubber bands, wire, and string compensate for the absence of a human touch at the tiller. Races are usually run the length of this 1,000-foot tidal basin. The little yachts tack or zigzag against the wind in one direction, round a mark, and then return to the starting point. As a boat approaches the shore, the captain deftly turns it around with his pole and starts it across the pond to the other side, where the "mate" sends it back again.

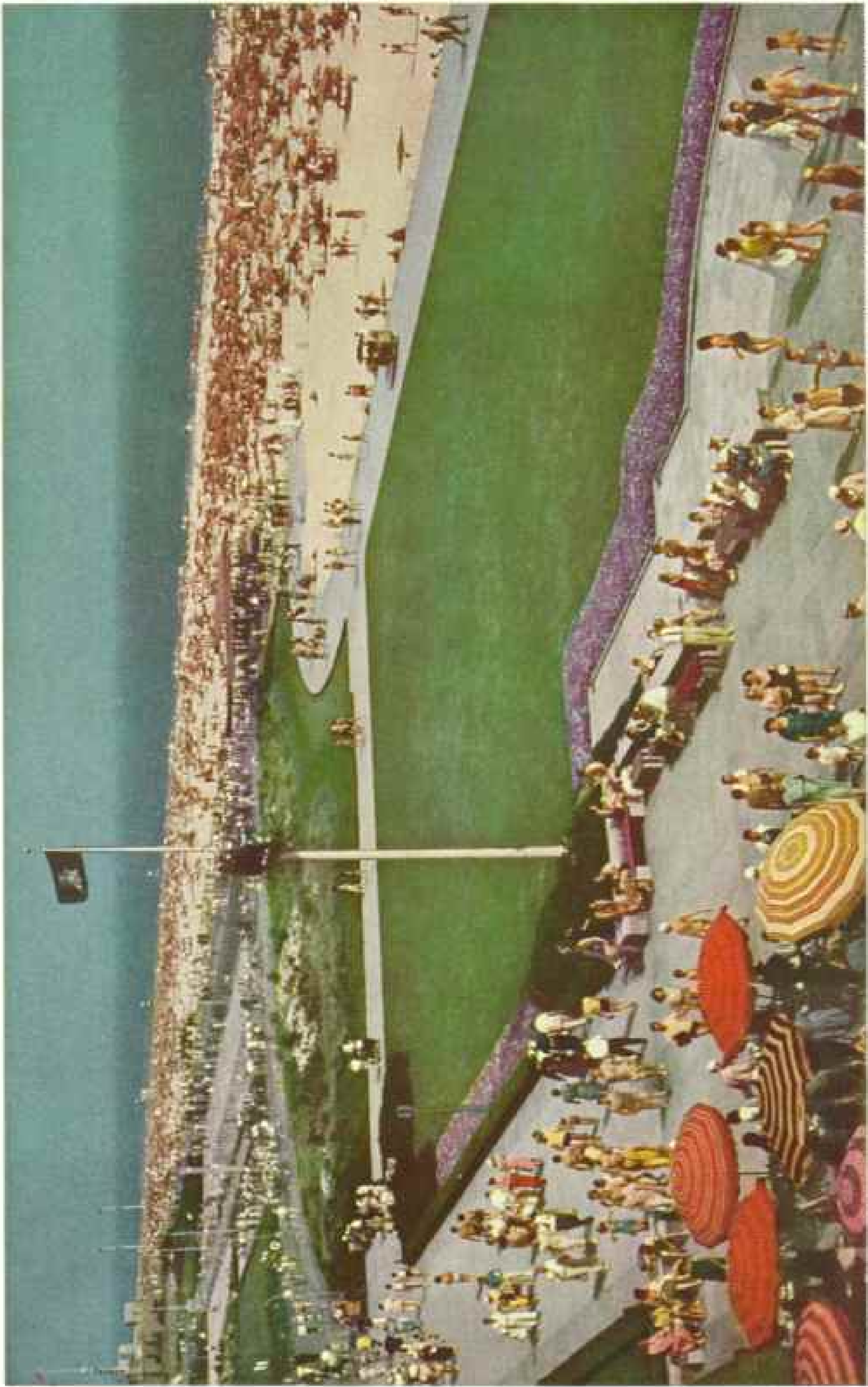


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GUGGLING DAUGHTERS OF SHUPUNE ON A "CLAM TREADING" PARTY IN GREAT SOUTH BAY'S SHALLOW WATERS

Kodachrome Photograph by Willard H. Culver

Waiving waist-deep and feeling for clams with her bare feet, each girl may soon fill the bucket tied to her waist. This primitive method of taking the clam is a trick which Long Island pioneers learned from the Indians.



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KODACHROME PHOTOGRAPH BY WILLARD R. CALVERT
SUNSHINE AND SEA BREEZE CARESS THE CROWDS AT JONES BEACH STATE PARK. MOST LAVISHLY EQUIPPED ISLAND PUBLIC RESORT

Through all park buildings and decorations runs a marine motif. Even trash cans are shaped like ships' ventilators, broom squads dress as sailors, and knobs on drinking fountains are patterned after steering wheels. This vast playground is kept scrupulously clean, tons of trash being daily swept up and carted away. To keep sand from blowing, adjacent open spots have been planted with marsh grass.



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Photocolor Photograph by Willard R. Cabert

FREE LESSONS IN CALISTHENICS ARE GIVEN DAILY TO SUN-LOVING VISITORS BY JONES BEACH ATHLETIC DIRECTORS

Girls in the first two rows belong to the Water Ballet, which dives and swims each night in the park's illuminated pool. Directors, with megaphones, lead the exercises. The graceful campfire conceals a huge reservoir for the park's water system. On summer holidays motorcars by the tens of thousands arrive here over the new parkways from New York and Brooklyn.



Kodachrome Photograph by Willard R. Culver

"HOME, SWEET HOME"—THE BOYHOOD RESIDENCE OF JOHN HOWARD PAYNE

Famous in later years as a playwright and producer, Payne got his inspiration for the words of his immortal song from this humble cottage at East Hampton. Its music he took from an old Italian folk song.



© National Geographic Society

Duress color Photograph by Willard R. Culver

ROPE ENOUGH TO HANG A DINOSAUR

This coil of Manila weighs 6,500 pounds and contains 1,500 feet. Measuring 4 inches in diameter, it is used for towing, wrecking, and similar heavy duty. When new, the hawser will stand a tensile pull of 105,000 pounds. Ropewalks were among Long Island's earliest industries.

Pony buyers swarm here, too, and since 1924 best mounts have sold for as much as \$10,000 each, and more.

Wherever good polo is played, riders know the names of such famed American players as Hitchcock, Milburn, Waterbury, Bostwick, Iglehart, Gerry, Guest, Stoddard, and Stevenson.

"Meadowbrook, Long Island," will be the date line on a great polo news story to be filed there in June, 1939; that is the schedule of the International Polo Challenge Cup Series between England and the United States, which will draw many visitors from the near-by World's Fair Grounds.

Turn north from 25-A at East Norwich and you come to Oyster Bay. Here is an old house on whose windowpanes you can still read names cut in the glass by British officers when they were quartered here during the Revolution. Here also is the family home of Theodore Roosevelt, former President, who led the Rough Riders, gave America the Panama Canal, hunted in Africa,* sought a lost river in Brazil, and spiced up our language with such apt phrases as "the strenuous life," "the big stick," "weasel words," and the "lunatic fringe." To his simple tomb, upon a roadside hill, thousands of Americans have worn a path (pages 442, 444).

Near by is the Roosevelt Bird Sanctuary, apt tribute to that President whose interest in all wild creatures was a predominant passion. Particularly did he love the birds of Long Island.

ISLAND LIKE ONE BIG BIRDHOUSE

So many snipe waded about here when Henry Hudson came in 1609 that this fact was noted in the *Half Moon's* log.

Every sailor knows how islands attract birds. Migrating strangers stop to eat and sleep. Storms blow others ashore. Caribbean hurricanes have brought strange tropic birds to Long Island. Of the 1,420 species and subspecies found in North America north of Mexico, only about 120 nest here, but many others pay calls.

One European widgeon shot here had been banded in Iceland, says one authority; a fish hawk marked at Orient Point was found dead in Brazil; another hawk carried his band for 21 years.

* See "Wild Man and Wild Beast in Africa," by Theodore Roosevelt, NATIONAL GEOGRAPHIC MAGAZINE, January, 1911.

On Shelter Island one September day we saw telephone wires lined with small swallows for more than a mile—tens of thousands of them.

Ospreys built such heavy nests hereabouts on telephone crossarms that they short-circuited the wires. To stop this, and yet to oblige the ospreys, the company set up other poles near by, with convenient platforms on top where these fish hawks in knee pants now build their big nests.

Bird life here changes with increasing population. Heath hens quit the sand barrens a century ago. No more Labrador ducks come to Great South Bay. One story says that in April, 1759, about 75,000 passenger pigeons were sold in New York meat shops, some at 50 for a shilling! They went away with the 19th century.

To preserve many species and perhaps to bring others back, both conservationists and island sportsmen work now to increase and improve bird sanctuaries.

Go east to Huntington and they show you a monument to the patriot, Nathan Hale; also, south of town, the house where Walt Whitman was born.

From Huntington smooth, shady roads wind around the quiet shores of blue-water bays to Northport, on east, past Sunken Meadow State Park, and so to Port Jefferson.

High steel towers of RCA's sending station rise at Rocky Point (page 439). They recall another line from Bacon's Atlantis essay: "We have sound houses . . . and means to convey sounds."

Farther east, at Riverhead, is RCA's receiving station. Taken together, the two plants form the "giant voice" and the "big ear" which converse with countries overseas. Words can be sent at speeds up to 200 a minute; these stations also bounce and catch music and speeches back and forth over the seas for distribution on broadcast programs.

TELEVISION SHOWN AT WORLD'S FAIR

Odd, futuristic-looking sound trucks you may meet, too, with poles sticking up on top like masts. These are the RCA television trucks (page 416). At the World's Fair of 1939, this first baby of radio takes its first step in public. Though on a very small curtain, with reception limited to points within 50 miles of the sending station, RCA will give World's Fair visitors their first taste of television.



TUNING A PIANO BY EAR AT STEINWAY'S FACTORY IN QUEENS

Mahogany from Mexico, rosewood from Brazil, and tusks from Africa to make ivory keys, all go into a piano; so do glass beads, as bearings. To build a complete action of 88 keys from treble to bass means about 5,000 operations. In piano makers' jargon, the artisan who adjusts the sounding boards is known as the "bellyman."

Think of sitting in a small theater at the fair grounds and watching a Forest Hills tennis game—seeing the players hit the ball, hearing the actual smack at the instant of impact, and hearing the crowds cheer (Plate XI); or of seeing the finish of a horse race or a boxing match; or a television broadcast of street scenes at the fair itself, with all their simultaneous sounds, picked up from some distant part of the grounds.

Long Island was the birthplace of American wireless; at Babylon town in 1901 a pioneer station first talked with ships at

sea. Now, by television apparatus come news pictures from abroad for use in our daily papers. Even fingerprints have been sent by "photoradio," to aid in identifying fugitive criminals.

Sailors far out on the ocean can see these high wireless towers. They appreciate their importance. Men digging in the near-by potato fields or cutting cauliflower show no interest in the towers, nor their function. Of one fieldworker I asked, "Do you ever think about the millions of words—all about shipwrecks and dictators and wars—that fly over the oceans to be caught by those big towers, or try to imagine how it all works?"

He said "No," and went on digging potatoes.

Its map spot, climate, and

physiography make this island a good place for food crops. America's biggest food market is near-by New York.

A TRUCK FARM FOR NEW YORK

Likewise, in 1844, the Long Island Railroad, reaching east to Greenport, brought island farmers within hours of New York markets, instead of days. They began turning from hayfields and dairy herds to put their land into intensive gardening crops. New plants were introduced to build up truck farms. Any night in the harvest season you can now see long lines



Photograph by Acme

WORDS BOUND OVERSEAS FROM ISLAND RADIO STATIONS AND MILLIONS BOUNCE IN

This is RCA sending station, at Rocky Point; the receiving station is at Riverhead, a few miles east. Besides words and music, today's radio sends weather maps, fingerprints, and photographs, as well as drawings of machinery, new-style hats, and gowns. Even wills, contracts, and other legal documents are sent by radiophoto (page 437).

of trucks, with potatoes, cauliflower, asparagus, and cucumbers—and ducks—rolling into market.

Route 25 veers northeast from Riverhead, touching Southold, settled in 1640, and runs on through Greenport and out to Orient Point, the tip of Long Island's northern fluke.

Moss-grown tombstones, road markers made of ballast stone from English sailing ships, museums filled with relics of whaling days, old houses and churches, all link Long Island with colonial days. Our country grew so fast in size and man power after 1776 that we are apt now to skip all too hastily over the profoundly significant pioneering of the English and other whites who founded civilization here long before the U. S. A. was ever thought of.

On Long Island these pioneers fought Indians, fished, farmed, built towns, drank, smoked, and gambled, prayed, argued politics, married, begat, and were buried

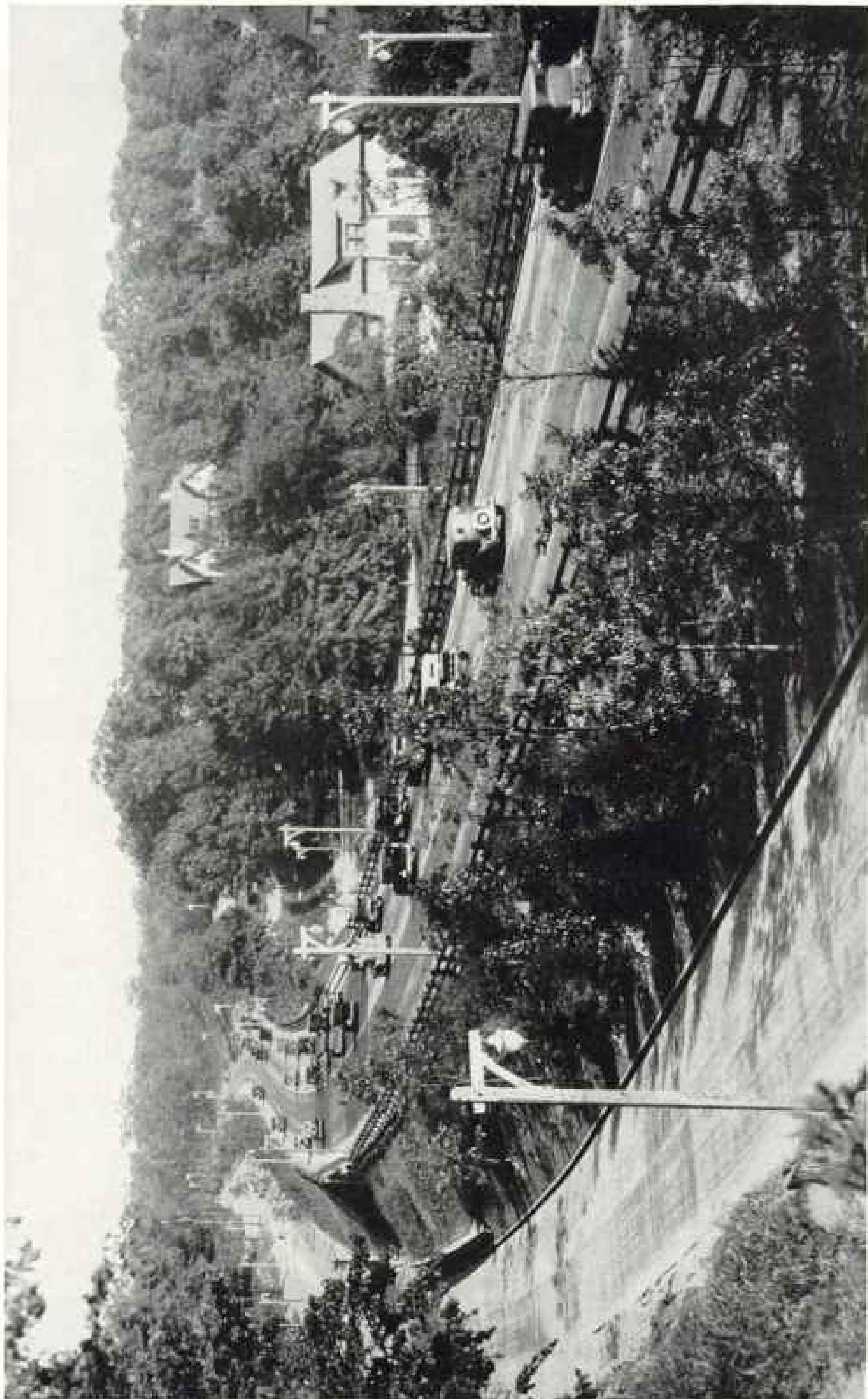
through five or six generations before Washington, D. C., was even surveyed.

BACK TO COLONIAL TIMES

Your mind goes back to colonial times when you see Gardiners Island, which lies between Orient and Montauk Points. It is not only a dramatic survival of colonial days; it shows once more how, from Rabelais' island tales to Hollywood films of Tahiti, mutiny on the *Bounty*, and South Sea hurricanes, this island theme has stirred men's souls.

When Lion Gardiner bought his island in 1639, he must have felt the same romantic nostalgia that moved Blennerhassett to settle on that Ohio River island.

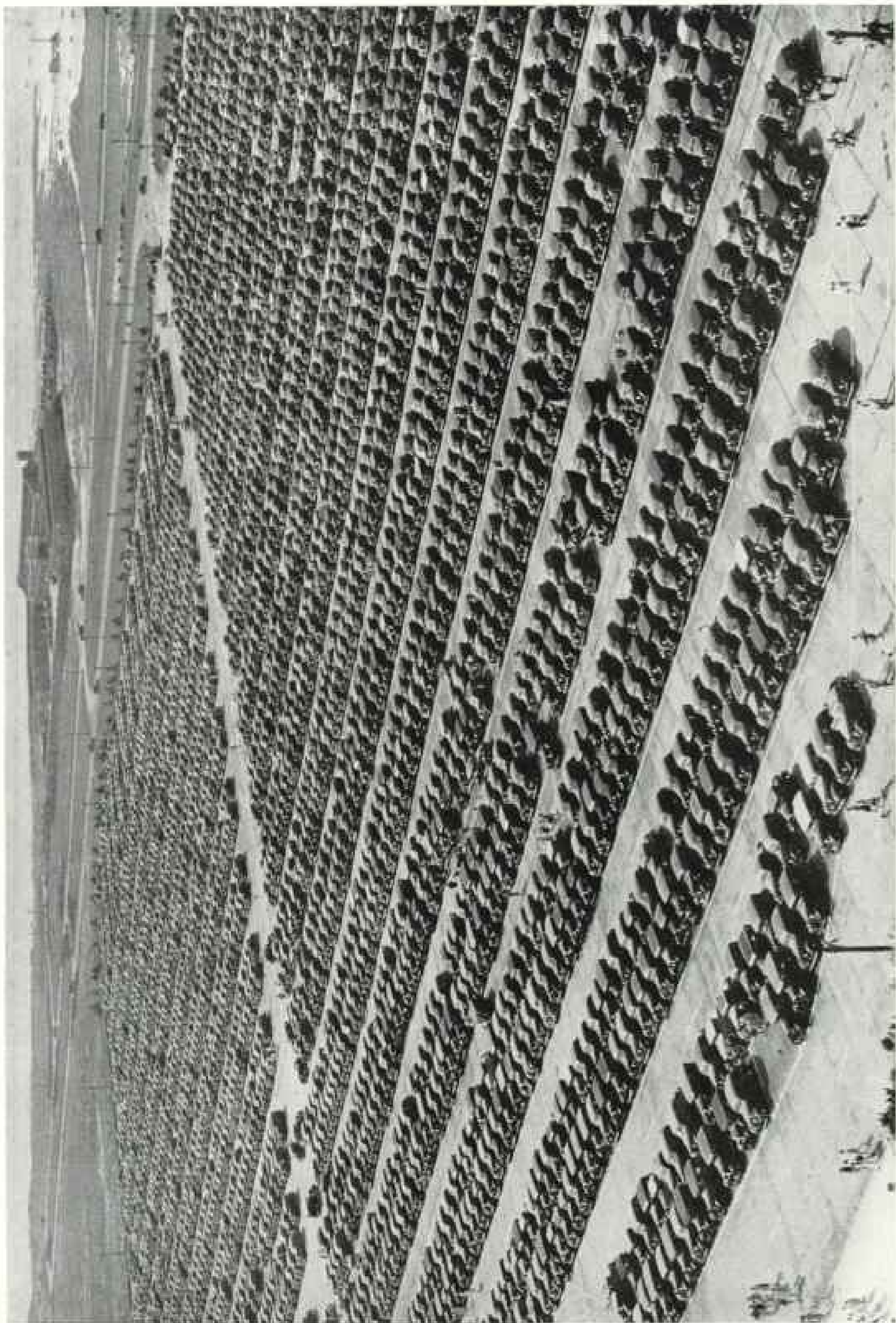
Gardiner, who had built forts for the Lords Say and Brook at New London, paid for his island with a dog, a gun, some rum, and blankets. As a true baronial estate, with manor house and slaves, this domain persisted unspoiled through long



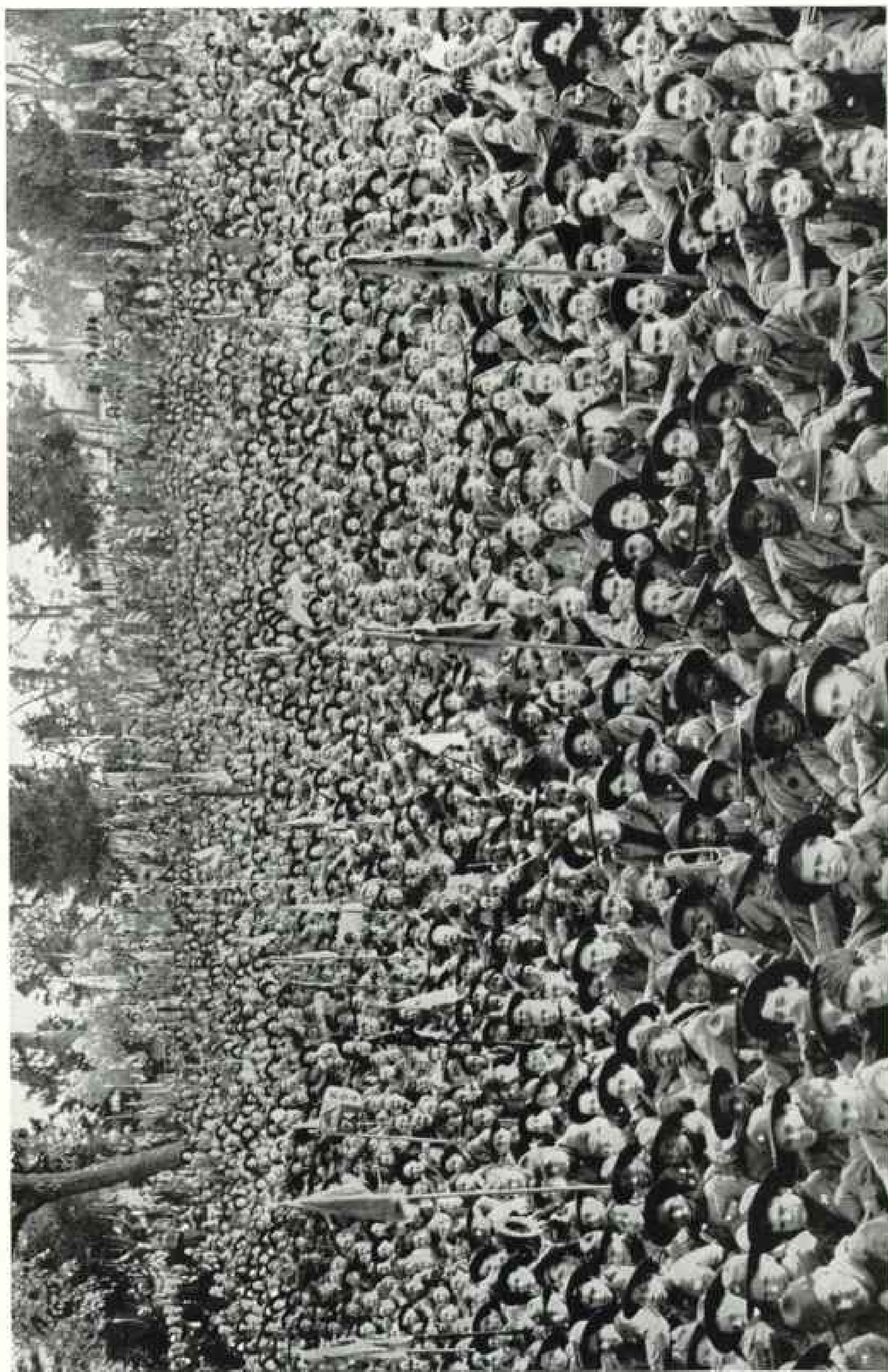
Photograph courtesy Long Island Association.

GRAND CENTRAL PARKWAY SWEEPS EASILY THROUGH JAMAICA HILLSIDE

Unique, as a "city," is Jamaica. Though it has over 175,000 people and would be well known if located somewhere out in the Rockies, here it is only a small part of a borough of the City of Greater New York (page 415). It ranks fourth among American railroad centers in passengers hauled. Besides enormous motor traffic, it is served by 751 daily railroad trains.



AT SPACIOUS JONES BEACH 75,000 CARS HAVE PARKED IN ONE DAY (PLATES VI AND VII). WITHOUT LOOKING AT NAME PLATES, THE AVERAGE AMERICAN BOY COULD CALL EVERY MAKE!



Photograph from World War 4

HONORING THE MEMORY OF THEODORE ROOSEVELT, BOY SCOUTS ANNUALLY HOLD ASSEMBLY AT HIS GRAVE NEAR OYSTER BAY.

Leadership of his Rough Riders in the War with Spain first aroused American boys' admiration for "Teddy" Roosevelt. His "strenuous life," his love of riding, camping, hiking, hunting, exploring, and studying natural history out of doors instead of from books, gained him a warm spot in the hearts of youth.

generations. After 300 years, it still belongs to the Gardiners. At a society wild west show on Montauk Point, I saw a daughter of that family facetiously introduced as "a cow girl from Texas."

This family knew Captain Kidd the pirate. He paid them an unexpected visit one day, demanded certain favors, and hid some of his loot on their island home. Later it was recovered, and Kidd was hanged on London's Execution Dock.

Shelter Island, between the north and south flukes of Long Island, is another example. Its story centers about Nathaniel Sylvester, advocate of religious liberty. He founded its Manor House in 1651. Today's Manor House, dating from 1735, is a fine example of Long Island colonial architecture. On the manor grounds is a wooden windmill 144 years old, still in running order.

Sylvester Manor reminds you that eastern Long Island was largely settled by religious and political zealots, some of whom were exiled from New England as "heretics." For many years some of these early English towns on east Long Island did not acknowledge the royal authority, but ruled themselves entirely through town meetings.

As one writer says: "Of the four New York patriots who risked hanging together (or separately) by signing the Declaration of Independence, two were supplied by Long Island." They were Francis Lewis and William Floyd.

Merely to scan quaint epitaphs on moss-grown stone; to finger rusty old harpoons or cap-and-ball pistols; or to chat with wrinkled veterans of offshore whaling days is to sense the rich color and quality of the life that was.

Today these historic sites, plus fishing, sailing, and other summer sports, form this region's stock in trade. Many visitors hunt up the old inn at Orient Point, where James Fenimore Cooper wrote *Sea Lions*.

A CYCLE PATH TO CONEY ISLAND

Here, now, is a "Pleasure Island" whose social revolution began with the Long Island Railroad. It ended isolation. Later came bicycles. From England, about 1876, we got the high-wheeled pioneer "bone-shaker." On Long Island this new vehicle saw the rise of the L. A. W., or League of American Wheelmen. Then came the safety, with pneumatic tires.

By the 1890's men, women, and children

all over Long Island were riding bicycles. *Munsey's Magazine* for May, 1896, tells how the L. A. W. raised funds to build a cycle path from Brooklyn to Coney Island and issued 5,000 tour books.

When cheap, quick rides brought this half-wild, isolated back country close to crowded New York, it began to turn into what it is now, a colossal playground (Plate IX and page 447).

Fishing, hunting, and horse racing were pioneer American sports. But only after the Civil War, slowly, people from growing cities began to seek the outdoors and learn to play. The thirty years after the seventies saw the rise of baseball, bicycling, boating, tennis, and the beginnings of golf. Long Island was a pioneering spot in America for these games. Shinnecock Golf Club, at Southampton, was one of the first in the United States. By 1900 Long Island had 24 golf courses; and today there are listed close to 120.

Ferry from Shelter Island over to Sag Harbor and drive east to Montauk Point, and you see how man has turned the wilderness into playgrounds (Plate XII and page 448).

Facing the open Atlantic, Montauk's luxurious hotel hints at Long Island's kinship with the sea. In State parks other thousands motor out to camp, cook in the open, or sleep on the warm sands while the children "play Indian."

CARRIER PIGEONS GO TO SEA ON FISHING BOATS

Steam in from Europe any fine summer morning toward Fire Island; see how yachts, sailboats, speedboats, and fishermen scour these waters.

About 25,000 motorboats frequent Long Island waters (Plate I). Off its shores for decades famous races have been run, especially the cup contests between American and British challengers and defenders.

Every Long Island port has some kind of aquatic society. One youthful yachting group at Sayville calls itself "The Wet Pants Club." To join, all you need is a craft resembling a sailboat and \$1 for dues. In the Wet Pants Club one class is called the "Diapers," and the emblem on their sails is a baby's "diddy pin."

Freeport was conceived by sail and born of salt water. As a big-game-fish center, more than 1,000 boats make this their home port. "Party boats" ply for hire. Some



FORMER PRESIDENT THEODORE ROOSEVELT RESTS BENEATH THIS SIMPLE STONE
NEAR OYSTER BAY

Adjoining the cemetery, and overlooking Oyster Bay, is the Roosevelt Bird Sanctuary. Not far away lies Sagamore Hill, the old family home (pages 437 and 442).

have catwalks extending ahead like bowsprits, on which men stand to harpoon sleeping swordfish, turtles, and any other swimming monster they can hit.

Into Freeport, into Great Pond (Lake Montauk), and other bases late any summer afternoon you may see tired, sunburnt fishing parties returning, the lucky grimly exultant over a big marlin, a giant tuna, or maybe even a shark or a sea turtle.

Some shiny cruisers carry two-way radio telephones. A few others take carrier pigeons to sea; if skippers catch a prize fish or get into trouble and need help, they send word ashore by the birds.

"Sunday Morning Fish Specials" whiz out Long Island railway in summer, carrying thousands of eager men and women. Off they pour, at Peconic Bay and at Montauk Point, run for the nearest party boat, scramble in, and make for "where they

are." To keep your string fresh on the ride back at night to New York, the company helps out with a special baggage car wherein you can "check your fish on ice."

No fish anywhere get "worked over" any harder than these around Long Island, and some devotees get only fisherman's luck—wet pants and a hungry tummy. I watched some disgusted school girls fishing near Orient. All they pulled in, time and again, was toadfish.

"Ugly mugs!" complained one girl. "I'm tired wasting good crab-meat bait on you. Let's all quit fishing and eat some canned salmon!"

"Or eat our own bait," said another.

SOWING AND REAPING UNDER THE SEA

Farmers who plant and raise oysters own or lease thousands of submarine acres under Long Island bays. Clams, scallops, and

mussels are also brought in by baymen and tongers; only oyster work is called "farming." One difference between this and dirt farming is that on land you can see corn or potatoes growing, but the oyster crop is out of sight, under water.

Sea-bottom fields also have to be cleared and made ready for planting; while young oysters grow up, the farmer has to thin them, as young corn is thinned, and protect them from sea stars and other enemies, just as land plants are defended against voracious crows and other pests.

Return from Montauk to Brooklyn over Route 27, and you pass through East Hampton. High spots for sight-seers here are the old windmills, topiary hedges, and the "Home, Sweet Home" House. Here in boyhood lived John Howard Payne (Plate VIII). In Paris he wrote the words of "Home, Sweet Home" to the measure of the *Ranz des Vaches* and had it sung in his play, *Clari, or the Maid of Milan*. It opened at a Covent Garden theater in London, and that song swept the world; after a century it is sung wherever English is known, and Easthampton people have made a shrine of Payne's boyhood home.

On this old stagecoach road, now Route 27, lies Southampton. People here say that Job's Lane, now a village street, was opened as a pioneer road in 1636. The town was founded in 1640. Some houses of the colonial period still stand. Venerated, vine-clad Hollyhock House was built about 1650.

Lawns as vast as smaller-city parks surround some Southampton mansions. The Beach Club here is known from Nice to Santa Barbara. Camera addicts invariably halt to photograph the dignified War Memorial at the head of Agawam Lake.

"Worms!"

Startling in its ominous brevity, that signboard flanks the road as you near Shinnecock Canal, heaven to confirmed anglers.

Alfred E. Smith, former Governor of New York and candidate for President, was out wetting a line. "I've been coming here thirty-four years," he said.

Go west, skirt Moriches Bay, and the raucous quack of infinite white ducks shatters the morning calm.

More ducks than people live on Long Island (page 446).

In a peak year 5,000,000, or over one-half as many as all wild ducks and geese shot annually in the United States, are dressed and shipped in iced barrels to a

gluttonous world. On menus from Maine to Manila you find "Long Island Duckling," some of which never saw Long Island.

Ride near a typical duck farm, with its low sheds, feeding pens, and fenced-in swimming pools, toward dusk or about sunup, and your eyes, ears, and nose join in quick recognition of it. Pass at night, and you see that lights are turned on, because young ducks thrive better that way.

People can't throw stones between Sayville and Brookhaven because of the many glass hothouses. This business is enormous—acres and acres of glass roofs. Here they call it "the glass industry."

Quit the cold outer air on a chill winter day and step into one of these warm, steamy, fragrant hothouses, and you feel as if you're down in Rio de Janeiro's botanical garden.

Switch from Route 27 to 109 at Babylon, and you come to Farmingdale. Here is more farming under glass, but of far more importance to all New York is the State Institute of Applied Agriculture. We watched a group of its ambitious young students planting an experimental garden.

"Can you place your graduates in jobs?" I asked a faculty member.

"Usually, yes, on the big estates for garden and landscape work, as well as on farms over the State."

Airplanes have been built about Farmingdale for years. Seversky's proving field is near by.

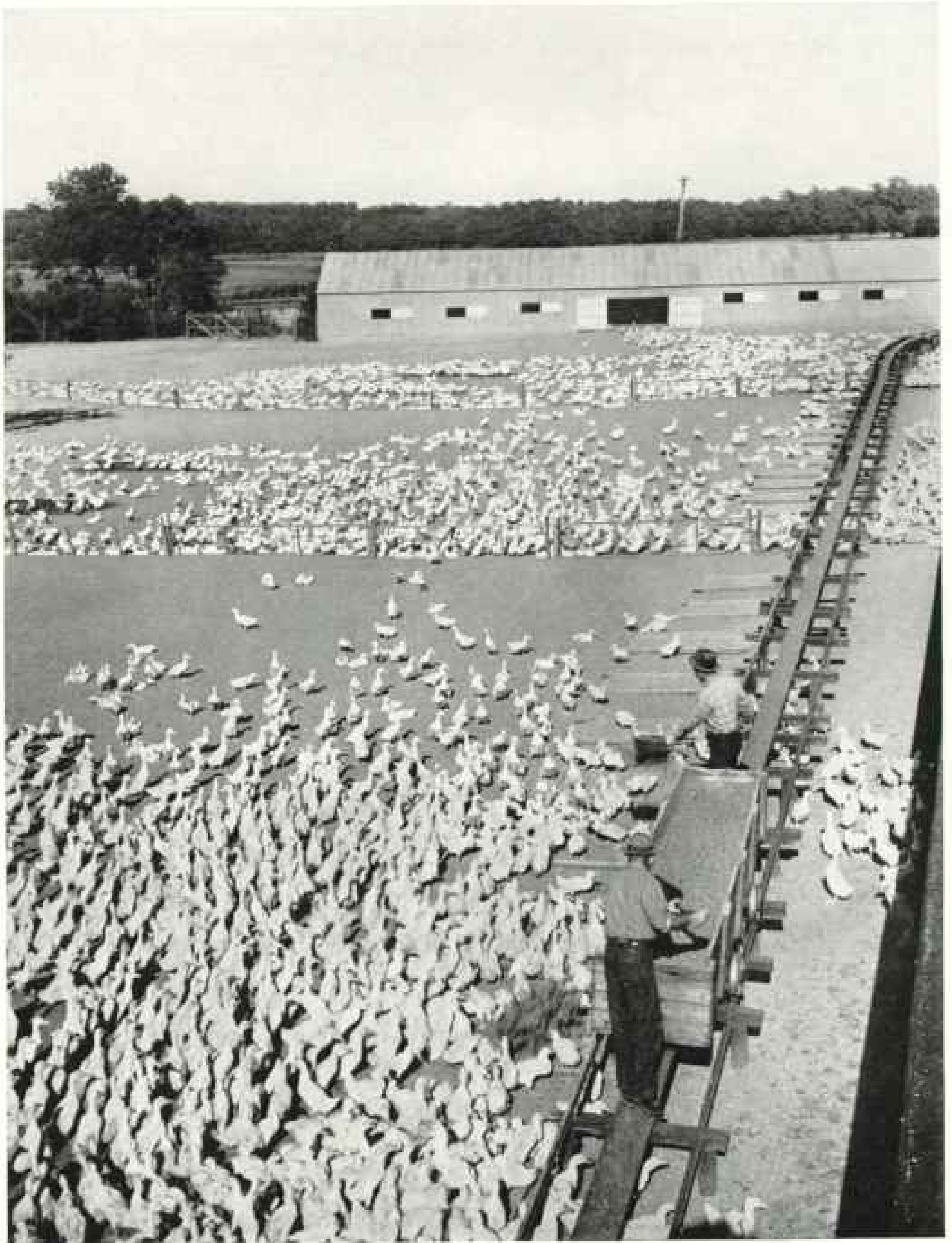
SPRINGBOARD FOR AIRPLANES

Springboard for land and sea planes, Long Island and its waters swarm with aircraft. Spin your library globe and see how not only ship lanes but sky paths converge here.

Mitchell, Roosevelt, and Floyd Bennett Fields, the Aviation Country Club, the new international Air Base at North Beach, and Coast Guard stations and private test fields of Seversky, Grumman, and Fairchild factories are among the island's busy spots.

Look up any flying day and you see planes, big and little, soaring like pelicans and gulls over a fishing fleet.

Lindbergh, Byrd, Chamberlin, Wiley Post, Amelia Earhart, Corrigan, Mollison, and many another transatlantic flyer has used this island base. From here they ventured, conquering time and space, blazing sky paths from pole to Equator, adding to the world's history of adventure and travel, which is the history of civilization.



MYRIAD WHITE DUCKS ADD THEIR QUACKS TO THE ASSORTED SOUNDS THAT ECHO OVER BUSY LONG ISLAND

Here at one Riverhead duck farm men shovel food, principally corn, from loaded trucks that run from pen to pen on overhead tracks. More than 30 such farms, with their quick-freezing industry, supply markets with millions of ducklings each year (page 445). Ancestors of these ducks were brought here from Peking (Peiping), China.



THE "BICYCLE CHASE" LEAPED FROM LONDON TO LONG ISLAND MORE THAN SIXTY YEARS AGO—AND NOW IT'S BACK!

On their old-style high wheelers, the League of American Wheelmen laid out cycle paths in Long Island's horse-and-buggy days. Now, on Fire Island, no other transportation exists. Fire Island Lightship, then its lighthouse, are beacons sighted by incoming European ships. Here Point O'Woods people pedal in to get their mail, brought by boat from Bay Shore.

From here went Howard Hughes around the world in 91 hours, to land again on Long Island. Forgotten are others who flew east into gray Atlantic fog, and oblivion; for them no wreath, no statue, no welcome of the city.

West from Farmingdale, over Route 24, lies Hempstead, with a Presbyterian church organized in 1644. In St. George's Episcopal Church here they still use a communion set given them by Queen Anne; their rector's prayer book was a gift from George III. It holds a handwritten sheet pasted over that part of the prayer which asks God to bless "the King and all others in authority"; after independence, this was changed to read "the President of the United States," etc.

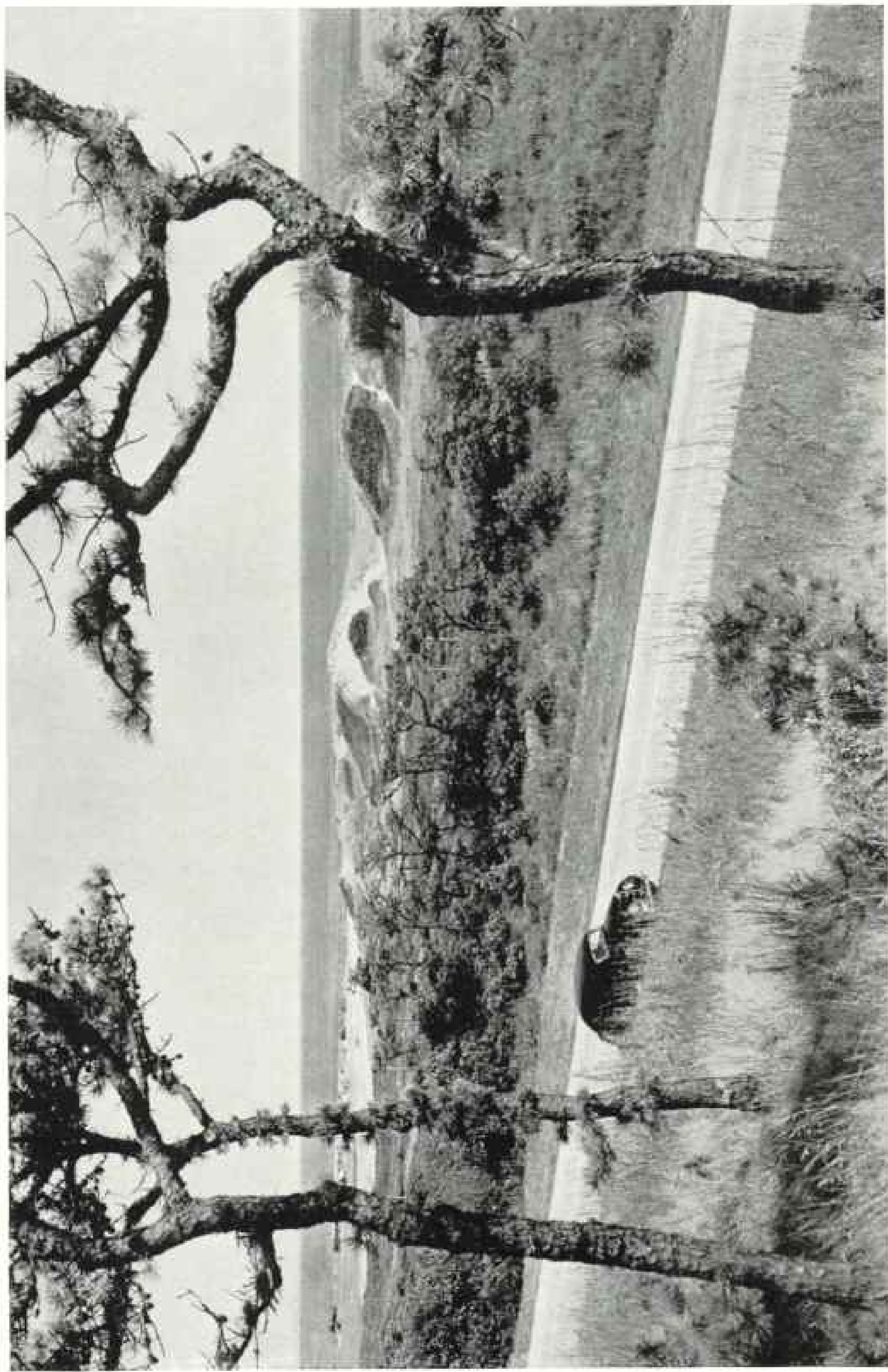
Eat, drink, and be merry; from Brooklyn clear out to Montauk, 118 miles of cafe, casino, dance hall, and nocturnal hot spots flaunt their signs.

One sign reads "Chicken to Take Out." Says another, "Here You Can Eat With Your Fingers." Food costs what you can pay. In a "quick and dirty" a good fish sandwich sells for ten cents; in ultra-swanky casinos, where a doorman in field marshal's uniform bows you in, you get a good cup of coffee for \$1.50.

Ride out any night, and roadhouses echo with swing music and the passionate, paid moans of blond torch singers who enchant the innocent traveler here just as sirens on another isle vamped the sailors of Odysseus coming home from Troy.

TOWERS OF BABEL AT A WORLD'S FAIR

North from Forest Hills rises that glittering, futuristic city, the World's Fair, "The World of Tomorrow" (pages 418-9). When yet a long way off you see its queer, polyhedral piles limned against the horizon—spheres, pylons, obelisks—an architecture



MONTAUK HIGHWAY SWEEPS PAST WIND-WHIPPED PINES WHERE THE ISLAND'S EASTERN TIP FACES THE OPEN ATLANTIC

Though the lonely point is only 130 miles from New York by motor, its misty, storm-pounded hills seem as far from Broadway as the moors of Scotland. Just beyond these Napaugue dunes, where tents appear, lies the Hither Hills State Park.



Photograph by Fairchild Aerial Surveys
GRAND CENTRAL PARKWAY, WITH ITS CROSSOVERS NEAR FOREST HILLS, ILLUSTRATES THE RAPID-TRANSPORT FUNCTION OF THE ARTERIAL HIGHWAY



ROASTING CLAMS WITH A BRUSH FIRE AT SOUTHAMPTON GOLF CLUB

Clams are placed mouth downward in iron grates, which rest on pieces of brick. Then dry oak brush is piled on and fired. After six to ten minutes, the red-hot coals are raked off, and hungry members fall in line! Both hard and soft clams occur here, the former known to the trade as "littlenecks" and also as "cherry stones." However, the local clam trade is small, compared with that in cultivated oysters; farther south, along the Jersey coast, the clam business is much brisker.



TRACTORS PULL MECHANICAL POTATO DIGGERS ON A FARM NEAR RIVERHEAD

Potato harvest marches north with the seasons—from Florida to Maine. Long Island digs before Maine, but later than southern Jersey. Seed potatoes come here in schooners from Maine.

as of another planet. It suggests nothing familiar, unless it be big painted gravestones, grain elevators from our western plains, round, pink gas tanks, or castles in Bryce Canyon.

Rich in fancy as was Bacon's prophetic mind, not even he could have imagined an Atlantis Island of such breath-taking wonders as this World of Tomorrow. Here one miracle follows another so swiftly as to be almost unendurable to any ordinary man who watches too long and thinks too hard.

Supreme sensation of it all is a ride on "magic carpets" through the hollow Perisphere. From inside this globe you look down as if from two miles up in the sky upon an idealized "city of tomorrow." Music fills the vast 200-foot globe. By means of adroit projection, moving pictures show legions of workers walking down out of the clouds, arms upraised, singing the "Song of Tomorrow."

Bits of the "Auld Sod," dug up in Ireland, are laid down on a miniature of that Emerald Isle set in the Irish Free State exhibit. Tiny lakes and rivulets are filled with water actually brought from such beloved sources as the River Shannon and the Lakes of Killarney!

Blooming in all their glory one million brilliant tulips nod to visitors on the Fair's opening day. Planted, also, at just the right time, a field of knee-deep green wheat—the world's most costly field, because of high value of fairground space—is also a part of the food exhibit.

Shot through the whole Fair's brilliant pattern is a spectacular use of glass. Today glass blocks form an increasing part in a gayer, brighter, and more lavish architecture. Some surrealistic structures are almost great goldfish bowls.

Mixing Vesuvius with Niagara—blending fire, water, color, and sound—nightly extravaganzas of furious beauty are formed by leaping fountains and burning gas jets 150 feet high on Meadow Lake and Mall Lagoon.

Fantastic patterns in colored fire and water range from giant peacocks to a golden sheaf of wheat 90 feet tall!

Amplified above the roar of fireworks and fountains, music comes from a pipe organ, from brass fanfares, a carillon, and percussion instruments. Captive balloons, played on by searchlights, form a ceiling over this man-made inferno.

By ingenious valve controls, patterns can

be changed at will, from night to night, or the whole incomparable scene instantly "blacked out" by the operators.

With tremendous effect a giant, integrated color scheme also paints the whole geometric pattern of these two square miles of astonishing architecture.

As if squeezed from myriad rainbows, here float infinite vistas of color, some painted walls blending so gradually into a skylike blue that sometimes it's hard to tell where man's work ends and real sky begins.

Across vast façades march colored murals of majestic proportions, some by American artists, some by famous painters from abroad. Many of them cover from 4,000 to 6,000 square feet; their themes range from man's quest for food to the history of communications.

Set here and there are more than sixty pieces of heroic sculpture, much of it pure white, the work of such artists as Malvina Hoffman, Gertrude Whitney, Mabonri Young, Paulanship, Derujinsky, Savage, Gregory, and others.

Tumbling high in air are 150 tons of water, tossed up and held there by powerful fountains.

Transplanted forests of more than 10,000 growing trees add sylvan charm and afford shady paths for strolling visitors.

Crack railway trains, including streamlined flyers from overseas, take part in the stirring pageant, "Railroads on Parade." This exhibit covers 16 acres and includes a complete operating railway system in miniature.*

From sixty foreign nations come other revealing exhibits which add their conceptions of the "World of Tomorrow."

Designed by Norman Bel Geddes, one vast, living panorama shows what high-speed motor traffic on tomorrow's super-highways may be like. Projected in the General Motors exhibit and known as "Highways and Horizons," this dramatic visual demonstration reveals how progress in transportation is linked to advancing civilization.

By this ideal highway plan, crowds may move with more ease; populations may shift, with farms and cities linked more closely together. To see this road net of tomorrow, visitors sit in chairs on a moving escalator.

Nobody knows, of course, what actual form tomorrow's highway net may assume;

* See "Trains of Today—and Tomorrow," NATIONAL GEOGRAPHIC MAGAZINE, November, 1936.

yet profound change is inevitable. It may come sooner than many people now imagine; certainly, in "Highways and Horizons" there is eye and brain food for plenty of fresh thinking.

Pause at Ford's novel exhibit, and you see cars actually running over a house and around the sides of it!

One odd house in Amusement Area is formed like a giant human eye. Its pupil makes a landscape window; you walk in, look out through this big round pupil, and enjoy a panorama of the fairgrounds.

If you want to see how adventurous men in the World of Tomorrow may attempt being shot up to Mars, here's a working model of a "Rocket Gun," complete with a nice little cabin.

EVOLUTION OF WORLD FAIRS

World's Fair! What words to conjure with! For decades they hinted at the din of many hands all playing different tunes, at races and balloon ascensions, at the sweet whiff of hot grease on frying doughnuts, at side-show barkers with their bored wild men of Borneo, their scaly, tattooed women, whirling dervishes, diving horses, and earth's heaviest hog.

Infinitely more comprehensive, symbolic of man's conquest of Nature, are today's colossal expositions. Now amusement walks hand in hand with instruction. Crowds love play, but also they pack the great halls where magic machines work as deftly, as surely, as if a human brain guided their motions, and even children pause to ponder the miraculous laboratory feats of chemistry.

They expect 60,000,000 paid admissions to the Fair. What a crowd! Think of the lost children, and the aching feet!

What Long Island will be 5,000 years from now nobody can say. At the World's Fair, in an "Immortal Well," they sank a metal "Time Capsule." It holds samples of our civilization and millions of microfilm words, for the benefit of future archeologists—if they can find the capsule!

Meantime, Long Island gears its daily rhythm of breakfast, labor, dinner, and love to the schedule of suburban trains, shoots its mail from Brooklyn to New York in underwater pneumatic tubes, builds its planes, gyroscopes, and typesetting machines, and raises ducks; and, fulfilling the prophecies of Bacon, it sends sounds to far-away lands.

BRIGHT PATTERNS OF LONG ISLAND LIFE

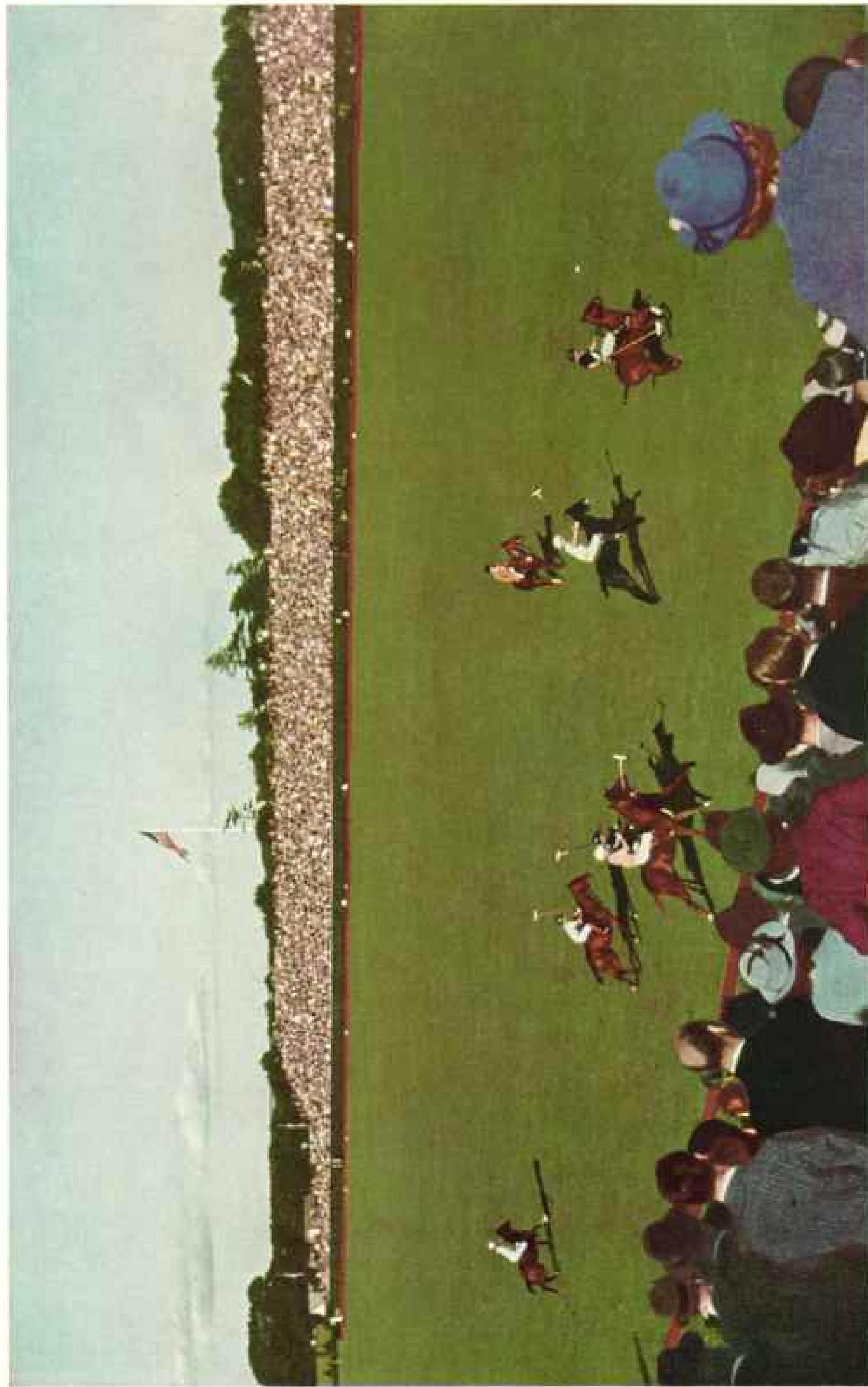


© National Geographic Society

Kodachrome Photograph by Willard R. Colver

GOING OR COMING, WHAT PULCHRITUDE TO WASTE ON LAMP POSTS!

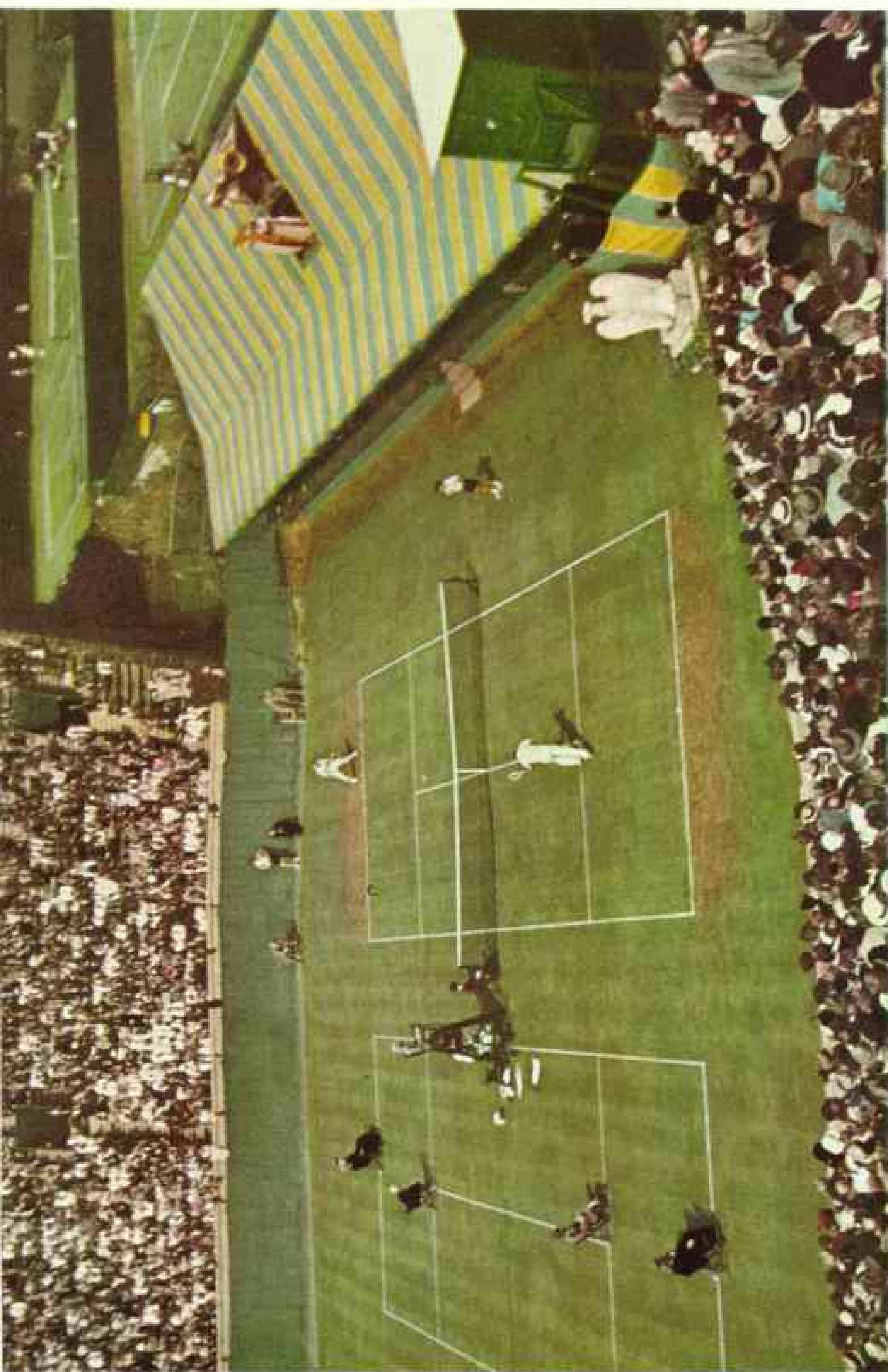
This sandy path leads to Point O'Woods, delightful summer colony on Fire Island, that narrow strip which parallels Long Island's south shore. This resort is reached by ferry across Great South Bay, and bicycles are its only vehicles. It escaped destruction in the 1938 hurricane.



© National Geographic Society

Kochan from Photograph by Willard R. Colver

POUNDS CRACK AS PLAYERS RIDE LIKE CENTAURS IN MEADOWBROOK'S POLO CLASSIC
Thirty thousand fans cheer as Old Westbury (dark shirts) defeats Greentree 16 to 7 in the final match of 1938's National Open Polo Championship. Besides riders well known to American polo fans, this historic field also has seen mallets locked between other players, including Indian rajahs, titled Britons, cattle kings from Australia, and cavalry officers from Chile, Argentina, and elsewhere.

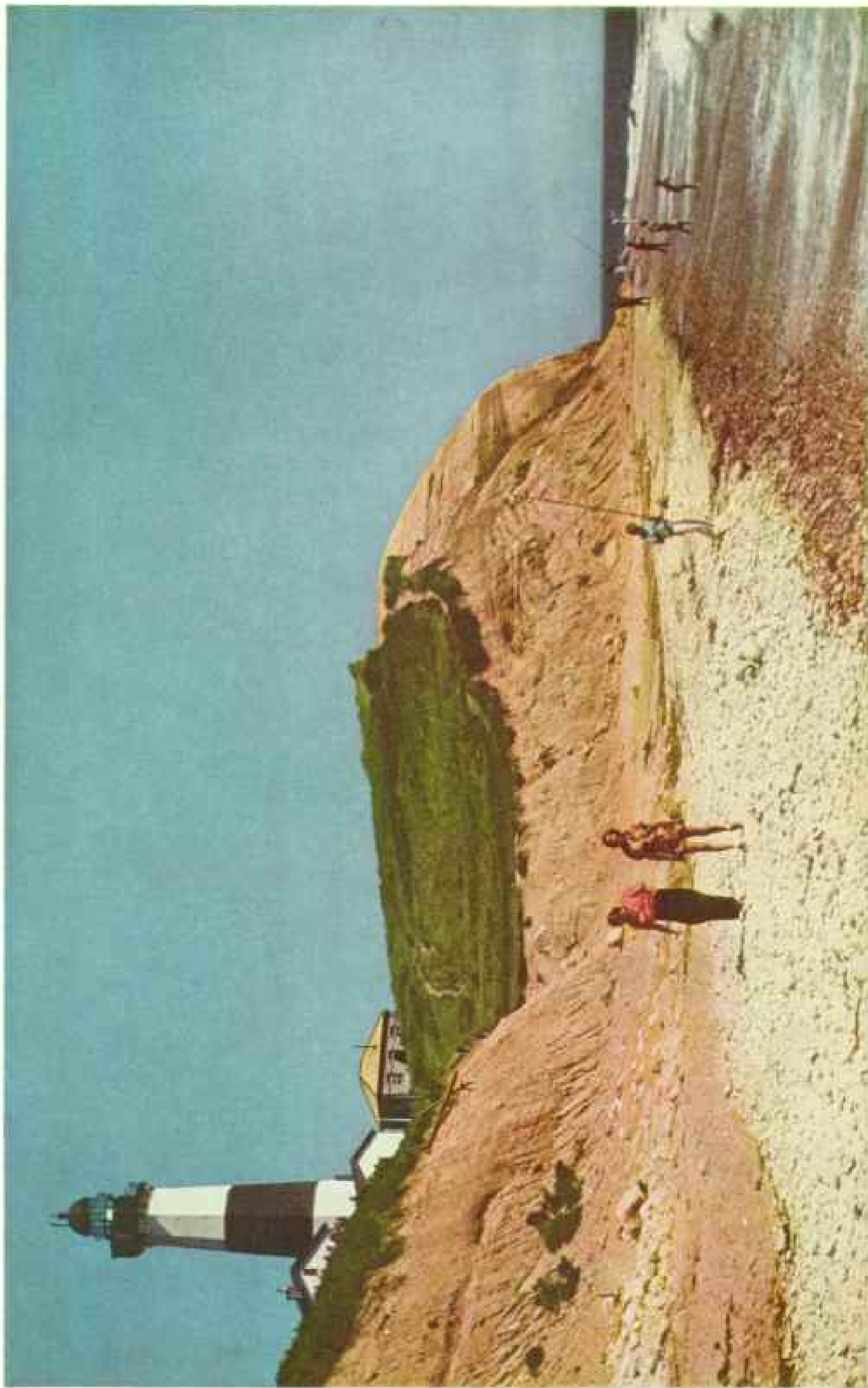


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EVERY SUMMER ESTHUSIASTIC SPECTATORS CROWD THE STANDS TO WATCH CHAMPIONSHIP MATCHES IN FOREST HILLS!

Kodachrome Photograph by Willard B. Culvert

In the background J. Donald Budge, now turned professional, is all set to return the service of Charles E. Hare, of Great Britain. This was the fourth round (September 14, 1938) of the National Singles Championship, won by Budge.

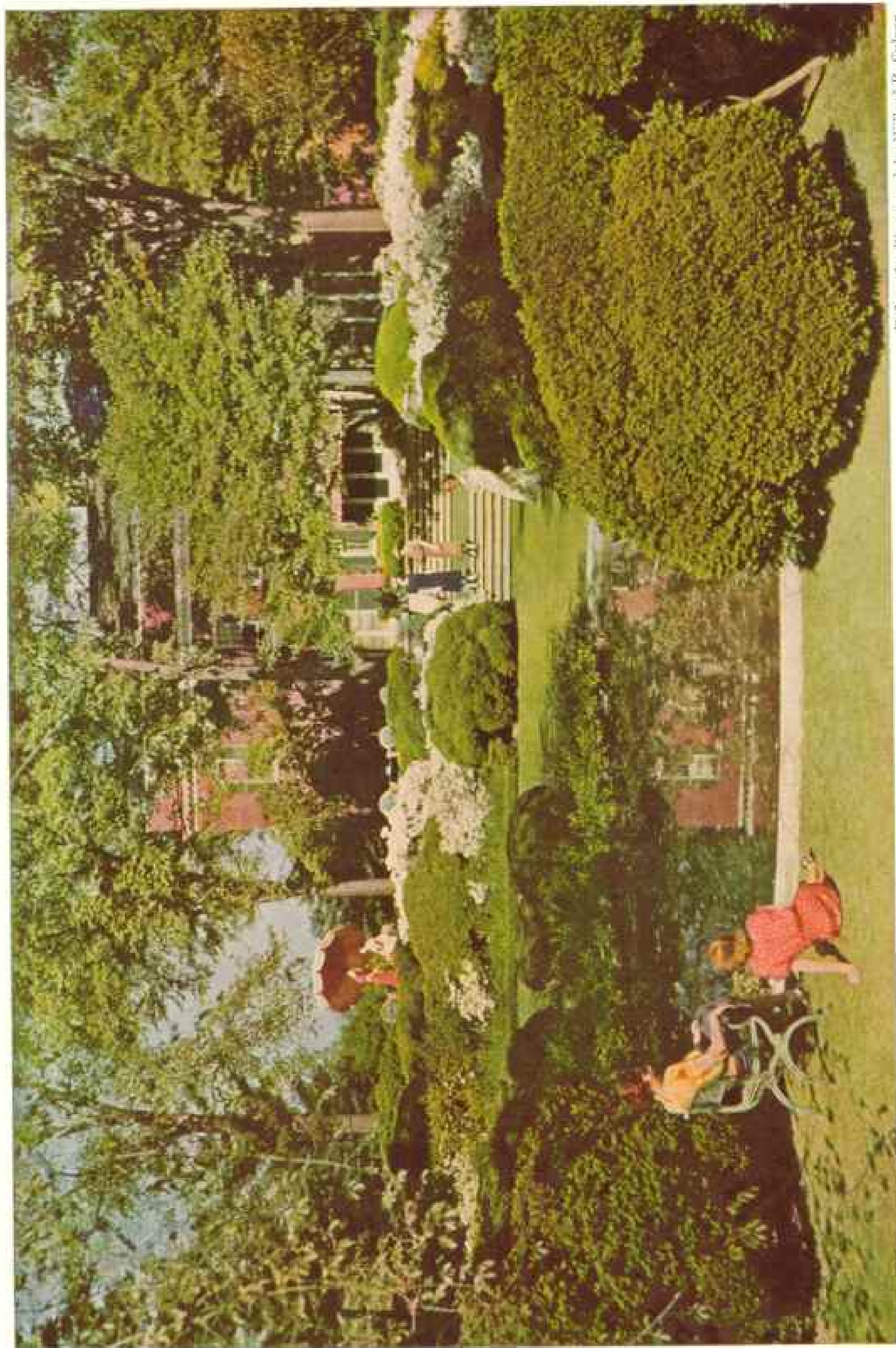


Defayreder Photograph by Willard R. Culver

© National Geographic Society

FOUNDED AND SCOURED BY WINDS AND WAVES, MONTAUK POINT, LONG ISLAND'S EASTERN TIP, FACES THE OPEN ATLANTIC

Since 1795, when it was first lit, how many a storm-tossed mariner has peered through the wet night for a welcome glimpse of the faithful beam from this old lighthouse! Today a high-speed boulevard runs the length of the island, passes just behind the lighthouse, and then curves past the fields where in 1898 the Rough Riders camped on their return from Cuba.

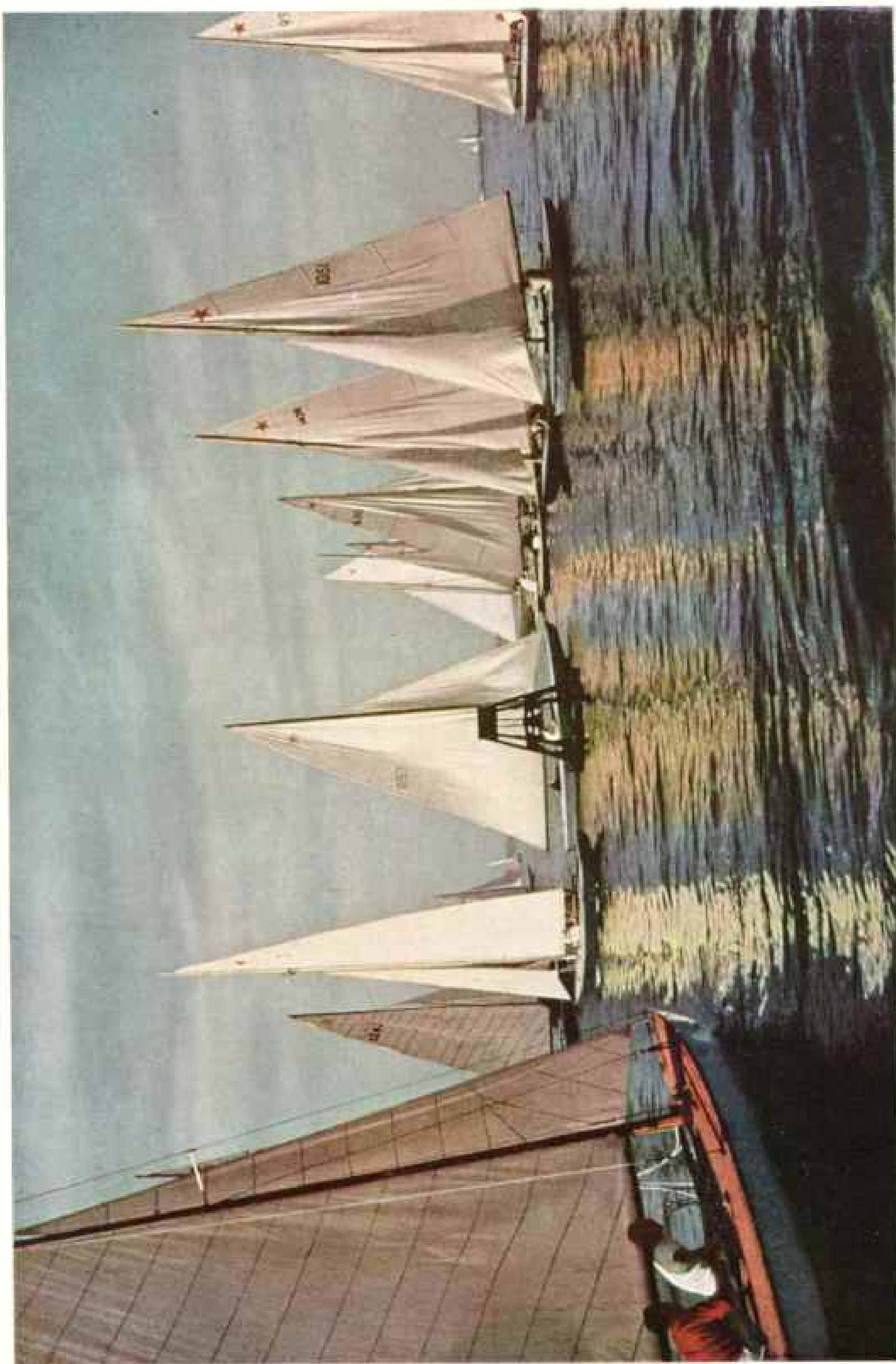


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Dufayardier Photograph by Willard R. Culver

ADAM AND EVE IN EDEN ENJOYED NO MORE QUIET BEAUTY THAN PERVADES THIS FRAGRANT GARDEN AT GLEN COVE

Boxwood and azaleas form the decorative scheme about the pool in this nook of the Harold L. Pratt estate, one of several on western Long Island.

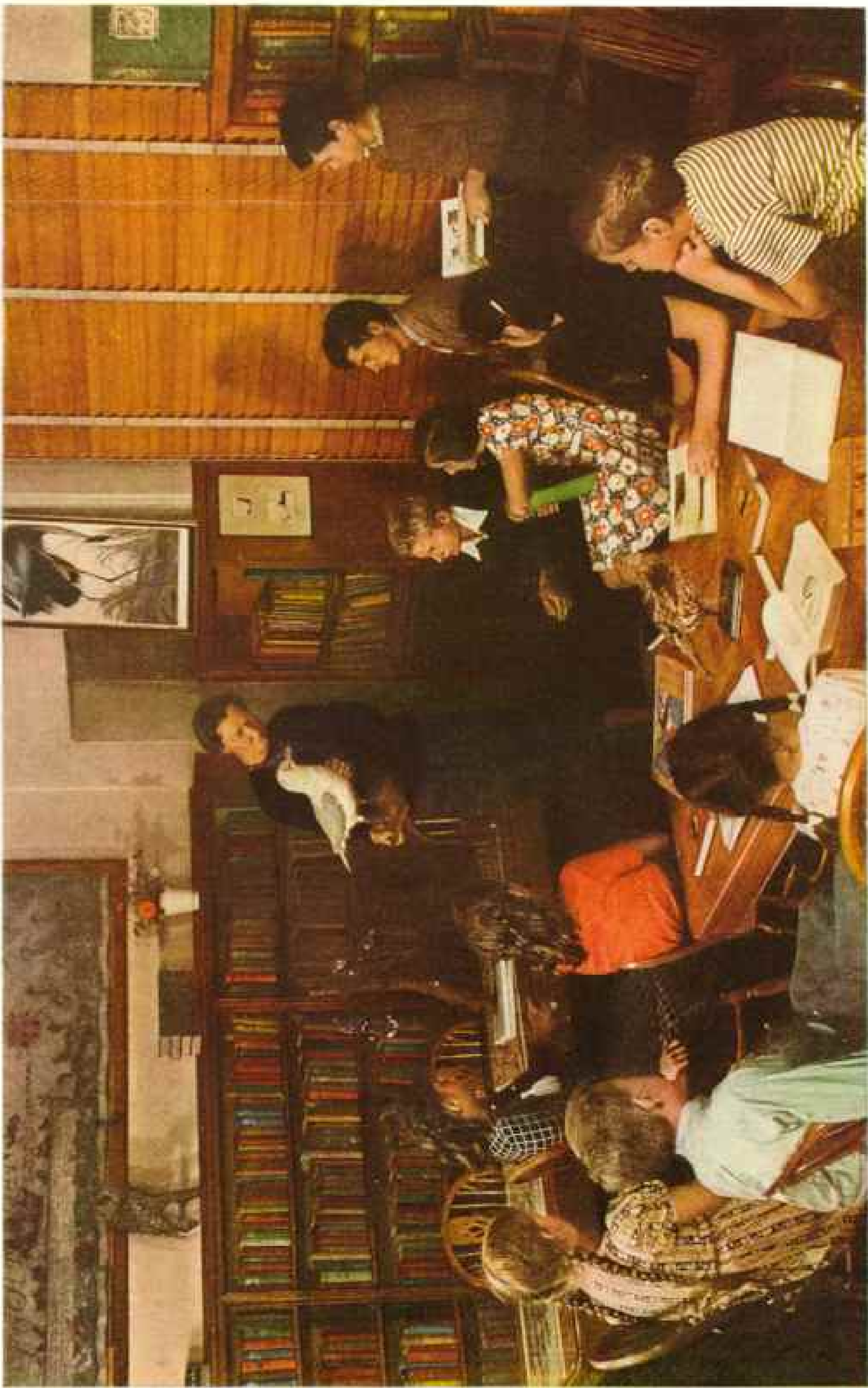


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Kontachrome Photograph by Edwitt Levick

THEIR SKIPPER WHISTLING IN VAIN FOR WIND, STAR BOATS TURN SLUGGISHLY ABOUT THE BELL BUOY OFF GLEN COVE

Racing contestants here approach the windward or turning mark from all directions, with but little headway; at such windless moments many foals occur. These boats, of the Manhasset Bay Yacht Club, are taking part in one of the regular weekly events of the Yacht Racing Association of Long Island.

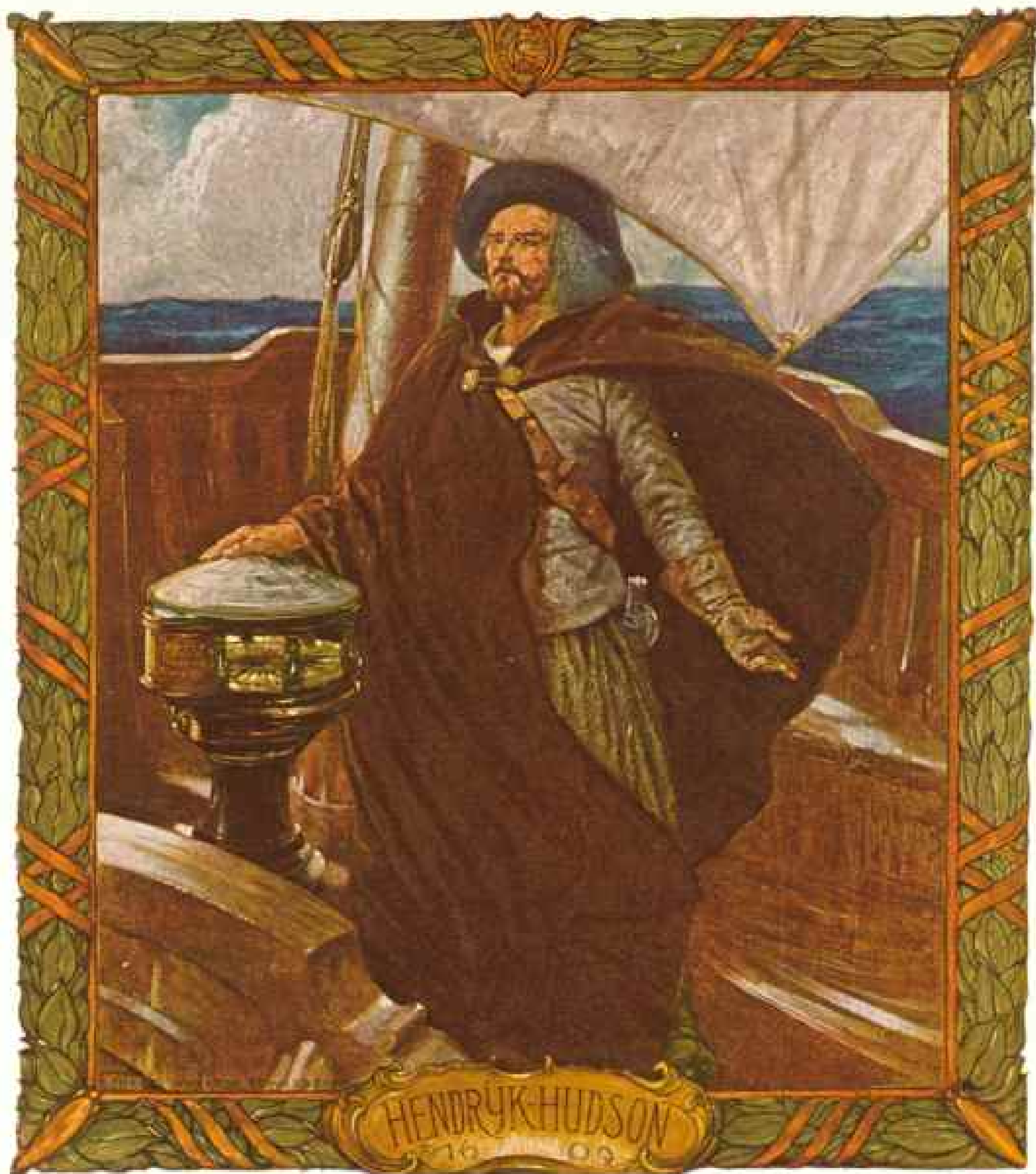


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TO YOUNGSTERS IN THE CHILDREN'S LIBRARY AT WESTBURY, A TEACHER EXPLAINS THE WING STRUCTURE AND FLIGHT POWERS OF A SEA GULL.

Dailycolor Photograph by Willard R. Calver

This library was founded by Mrs. Robert Bacon, in memory of her husband, once a member of President Theodore Roosevelt's cabinet and Ambassador to France. Included on its shelves are many volumes on various branches of natural history. A bird sanctuary, formed from part of the library gardens, affords easy opportunity for bird watching and study.



© George Wharton Edwards, A. N. A.

Direct Color Photograph by Charles Martin

"THEN THE SUNNE AROSE, AND WEE SAW THE LAND"—HUDSON ABOARD THE "HALF MOON," IN THE PAINTING BY GEORGE WHARTON EDWARDS AT WEST POINT

A commanding figure, gauntleted, with sword and bandoleer and wind-blown cape, the navigator in his tossing little ship rests one hand on the binnacle that holds his precious compass and scans the horizon as he nears "a great lake of water," New York Bay. ¶ "This is a very good land to fall with, and a pleasant land to see," scrawled the chronicler of his voyage. Yet not even the wildest imagination could have pictured the city that here would rise to pierce the sky with its towers. ¶ Bound up in the career of Henry Hudson is all the drama of a tragedy by his contemporary, Shakespeare. Less than two years ahead lie mutiny and icy death in Hudson Bay. Now, near the climax of his career, he heads for the mouth of the "great streame," the Hudson River, which he hopes will lead to the Indies. ¶ On this, the third and best-known of his four voyages, Hudson, an Englishman, sailed for the Dutch; hence his first name is often spelled Hendryk. ¶ For more than thirty years this painting has hung in the officers' mess hall of the United States Military Academy at West Point, overlooking Hudson's river and the Catskill Mountains, which he was the first white man to see,

HENRY HUDSON, MAGNIFICENT FAILURE

Just 330 Years Ago He and His Mutinous Crew Found
Manhattan Covered With "Goodly Oakes" and
Fought Indians in New York Harbor

BY FREDERICK G. VOSBURGH

ONE Sunday morning in April, 1607, a man and a boy strode briskly along the London street known as Bishopsgate. Pungent smells of fish and pitch and tar floated up from the Thames whence they had come.

"A sea captain and his son," you might have guessed, but you hardly would have suspected either their destination or their destiny. They were bound for the little Church of St. Ethelburga to receive Holy Communion before beginning a dangerous voyage.

They probably looked very little like figures of tragedy as they walked together with head high, each secretly proud of the other. Yet in little more than four years from this day their dreams and voyages were fated to be cut short in icy North American waters by murderous mutineers.

In that brief time this seafaring man, with his quiet, hero-worshiping son, was to achieve so much that his name would be written many times on the map of the New World.

The captain's name was Henry Hudson.

SAILOR TALK WITH A BIBLICAL RING

Presently you might have seen other seafaring men drifting up from the river. But these were cast in coarser mold—able-bodied seamen mostly, hairy-chested, scarred, some bearing the marks of a Saturday night's carousing. This was the crew of Hudson's ship, and they, too, were bound for church!

To a modern ear their talk would seem strange. They referred to Hudson as "our master." Though sprinkled with lurid water-front phrases and one-syllable Anglo-Saxon words, many expressions had a Biblical ring. But that should not be wholly surprising, because at this very time in history the Bible was being translated into the King James Version, which was to preserve and make familiar for centuries the King's English of the day.

A strange sight it must have been to see these seamen kneeling in church—some

genuinely devout, others, coarse-visaged, wearing what they fondly believed to be a convincing mask of piety. An eloquent candid-camera shot that scene would have made.

CHURCH STILL STANDS, A HUDSON SHRINE

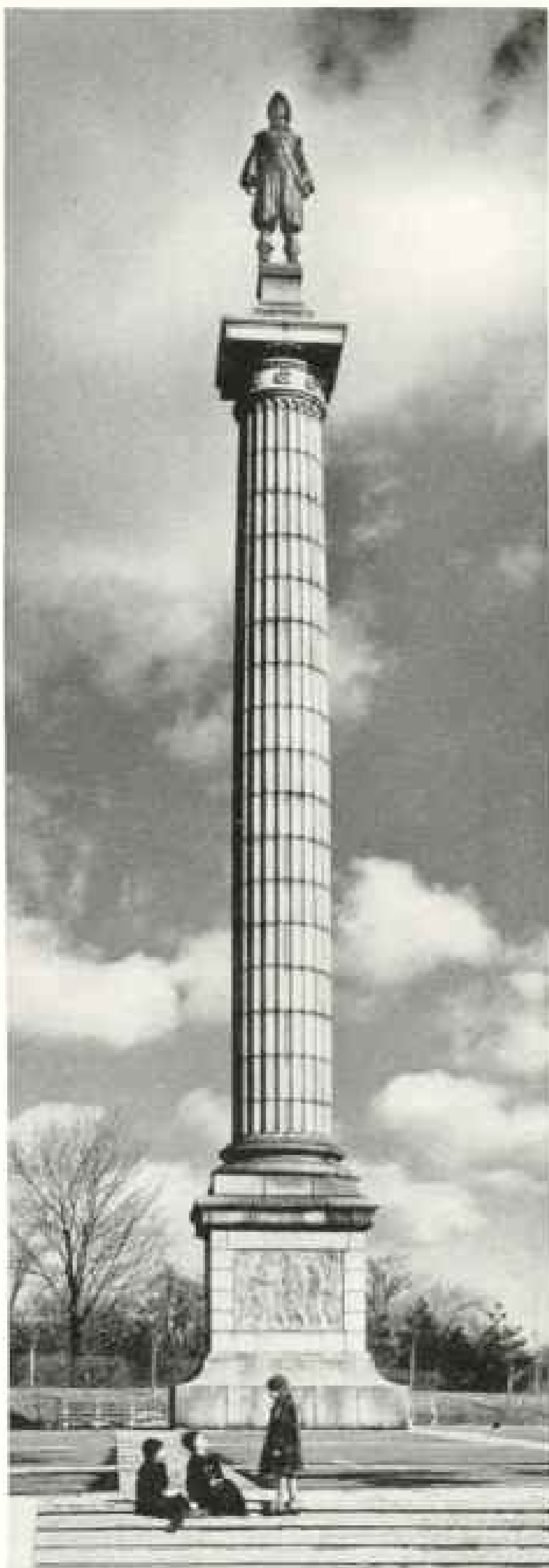
All that the world knows of Henry Hudson begins with this glimpse of the navigator, his son, and ten seamen taking Communion in the little church, named for a Saxon saint, which still stands in Bishopsgate today, 332 years later (page 464).

The incident is recorded in a log of his voyage based on Hudson's journal but written by John Pleyce, one of his crew:

Anno 1607, April the nineteenth, at Saint Ethelburge, in Bishops Gate street, did communicate with the rest of the parishioners these persons, seamen, purposing to goe to sea four dayes after, for to discover a passage by the North Pole to Japan and China. First, Henry Hudson, master. Secondly, William Colines, his mate. Thirdly, James Young. Fourthly, John Colman. Fiftly, John Cooke. Sixtly, James Beubery. Seventhly, James Skrutton. Eightly, John Pleyce. Ninthly, Thomas Baxter. Tenthly, Richard Day. Eleventhly, James Knight. Twelfthly, John Hudson, a boy.

At the time Captain Hudson was probably a man in the prime of middle life. No doubt he had been sailing the seas for many years. He may have been with Davis in the ice-choked waters of Arctic North America some 20 years before. There is reason to believe he had voyaged to the Orient, sailing the long, rough water road around the Cape of Good Hope. Some think he came of a wealthy family, a line of merchant adventurers devoted to foreign trade, and that one of his relatives had been high in the councils of the Muscovy Company, for which he was now to sail.

But all this is shadowy, speculative. We do know that the mariner was an Englishman and not a Netherlander, though his most famous voyage—that in the *Half Moon* to what is now New York—was made under the flag of the Netherlands, and his name to this day is often spelled



Photograph by F. S. Lincoln

A 16-FOOT HUDSON IN BAGGY BREECHES STANDS ATOP A 100-FOOT COLUMN

With legs wide apart, the mariner seems braced to the roll of his ship in this New York memorial overlooking Henry Hudson Parkway and Henry Hudson Bridge over the Harlem Ship Canal. The sculptors, Karl Gruppe and Karl Bitter.

Hendrick or Hendryk as a result. Actually his name was Henry, as English as mutton, and to talk with his Dutch employers he had to have an interpreter.

We know, too, that he had a wife, and other children besides the seagoing John, and that he lived in the St. Katherine's section, hard by the Tower of London and the Thames.

Otherwise, the book of his life is an utter blank up to the time of this April morning in 1607 when he leaps full-grown into history, an experienced mariner at the peak of his powers.

What Henry Hudson looked like no one knows, though the drama of his career has stirred the imagination of many an artist (Plate XVI and pages 467, 475, 490).

"ALWAYS JERKING UP HIS BREECHES"

Priceless and immortal but too good to be true is Washington Irving's description of the navigator in *Knickerbocker's History of New York*:

He was a short, square, brawny old gentleman, with a double chin, a mastiff mouth, and a broad copper nose, which was supposed in those days to have acquired its fiery hue from the constant neighborhood of his tobacco pipe.

He wore a true Andrea Ferrara, tucked in a leathern belt, and a commodore's cocked hat on one side of his head. He was remarkable for always jerking up his breeches when he gave out his orders, and his voice sounded not unlike the prattling of a tin trumpet—owing to the number of hard northwesterly which he had swallowed in the course of his seafaring.

No doubt Hudson knew he would have plenty of hard northwesterly to swallow on this particular trip. He was heading for the North Pole!

Like many in his day, he believed that the ice, instead of growing more abundant and impassable, thinned out as you neared the Pole. They reasoned that in a land of midnight sun, where the sun shines day and night for months, it must generate enough heat to melt the ice. A small fire burning constantly, they argued, would keep a room warm more effectively than would a big fire intermittently quenched.

SPICES PRIZED WHEN SOAP WAS SCARCE

If the theory was correct, Hudson's little ship, the *Hopewell*, of 80 tons, would force its way through a cordon of ice, sail serenely over the top of the world through an open polar sea, then continue down the other side of the globe, past Zipangu (Japan), to the storied coast of Cathay and the warm, pleas-



Photograph by J. A. Glenn

300 YEARS AFTER HUDSON ANOTHER "HALF MOON" SAILS HIS RIVER

This duplicate of the explorer's famous vessel was built in the Netherlands from plans of a sister ship, those of the *Half Moon* having been lost. Elaborate wood carvings, brass fittings, sails and flags, even galley utensils, were shipped as freight to America and refitted in Brooklyn Navy Yard for the 300th anniversary celebration in 1909. Photographed at Cornwall, New York, in that year, she vividly shows what a cockleshell was Hudson's tiny ship—only 80 tons, 63 feet in length, 17 feet 5 inches beam. This copy came to a sad end; on display at Cohoes, supposedly about the high point reached by Hudson's men, she caught fire and was damaged beyond repair.

ant isles of the Indies where fragrant spices flourished in the tropic sun.

The term "spices" included ointments, perfumes, and condiments, in great demand all over Europe.

In those days sanitary facilities were crude. Instead of bathing, fine ladies and high-born gentlemen anointed themselves with sweet-smelling perfumes and ointments.

Refrigerators were as sadly lacking as bathtubs, and spices were used both for preserving food and for disguising the taste of spoiled or poorly cooked meats. Also, many

Europeans, in that pre-gum era, had acquired the habit of chewing cloves. The great need of the day was a short route to the riches of the Orient by Arctic waters of Europe or America.

OFF FOR THE NORTH ON MAY DAY

This was an age when big things were doing. Adventure and enterprise were in the air. Just twelve days after Hudson sailed, his good friend, that stalwart soldier of fortune Captain John Smith, was to land with the Virginia colonists at Jamestown and establish the first permanent English



(© Donald McLeish)

FROM THIS VERY CHURCH IN 1607 HUDSON SET FORTH ON HIS EXPLORATIONS

On a Sunday in April, 332 years ago, the captain, his son, and ten men partook of Communion here before sailing (pages 461 and 467). The tiny Church of St. Ethelburga, in London's Bishopsgate Street, was built about 1400 and from long before Hudson's time until 1934 its front was partly hidden by a porch which was rented to shopkeepers. Since this photograph was taken it has been further restored.

settlement in all the immense New World.

It was May 1, 1607, when Hudson's little ship hoisted anchor at Gravesend in the lower Thames for its voyage to the North Pole and China. Light-hearted children were dancing around Maypoles on the soft green grass of an English spring as the *Hopewell* (optimistic name!) stood out into the North Sea.

Unfortunately there was no Joseph Conrad or Alan Villiers in Hudson's crew. Terse and tantalizing is that ancient log.

"The first of May, 1607," it reads, "we wayed anchor at Gravesend, and on Tuesday, the sixe and twentieth day, in the morning, we made the Iles of Shotland."

Twenty-five days of voyaging in 27 words! But these are known waters. As they venture farther into little-known seas, the details multiply, and out of these simple sentences, like light from a far-off star, comes a glimmer of their hopes and awe-struck fears.

"LAND HO!"

In four days, because of contrary winds, the *Hopewell* covered only a few miles. Soon, however, fresh gales sprang up and the explorers steered away north-northwest with the wild wind screeching in the rigging. Once they saw six or seven whales.

On the thirteenth of June, between one and two in the morning, a sailor's shout rang out. He had sighted land. Though night, it was light in this latitude, and all hands no doubt crowded to the rail. Before them rose "a very high land, most part covered with snow." Hudson had reached the coast of Greenland.

Inhospitable these waters proved. "Our sayle and shroudes did freeze. . . . With much wind wee were hardly able to maintayne a sayle."

Yet this northern land was not wholly without life. "Wee saw much fowle. Also wee saw a whale close by the shoare."

THE LAND OF HOLD-WITH-HOPE

Hudson rightly guessed that this coast was a part of Greenland, but a part "to any Christian unknowne." Seemingly endless, it blocked his route toward the Pole and the spicy isles of the East, but in compensation he felt the discoverer's thrill. He took a proprietary pride in the land, which he described as "very temperate to our feeling."

"And considering wee knew no name given to this land, wee thought good to

name it Hold-with-Hope, lying in 73 degrees of latitude."

The quaint name stuck. Cape Hold with Hope and Hudson Land are shown on maps to this day.*

At last Hudson tore himself away from this fascinating but forbidding coast and vainly tried to penetrate the barrier of ice which bars the way north between Greenland and Spitsbergen at this time of year.

For days the *Hopewell* played tag with the ice along the coast of Spitsbergen, and time after time she barely escaped. The log is full of pious expressions of thanks for the help of a higher Commander:

"It pleased God that about twelve of the clocke this night it cleered up."

"Wee gave thankes to God who marvelously preserved us from so many dangers amongst so huge a quantitie of ice and fogge."

Twice when they were caught in a calm and the sea was carrying them toward the grinding, thundering ice, they were saved by an apparent miracle:

"It pleased God at the very instant to give us a small gale, which was the meanes of our deliverance; to Him be praise therefore."

FROM HUDSON TO BYRD

Of course he was attempting an impossibility. Three hundred and nineteen years were to elapse before a ship would sail from Spitsbergen to the North Pole, and then it would be a ship of the sky, not the sea—the *Josephine Ford* flown by Lieutenant Commander (now Rear Admiral) Richard E. Byrd and the late Floyd Bennett.†

One thing of major importance Hudson noted: these northern waters seemed alive with whales, one bay in particular. One day, while a seaman was fishing over the side, a whale swam under the keel and the ship was held fast as if on a reef. There was imminent danger of capsizing, "yet by Gods mercie we had no harme but the losse of the hooke and three parts of the line."

The *Hopewell* was not equipped for hunting such game, though in her wake would come fleets of whalers to turn the giants into oil for lamps and bone for corset stays.

* See the National Geographic Society's Map of the Arctic Regions, NATIONAL GEOGRAPHIC MAGAZINE, November, 1925.

† See "The First Flight to the North Pole," by Lieutenant Commander Richard Evelyn Byrd, NATIONAL GEOGRAPHIC MAGAZINE, September, 1926.

As the little vessel was nearing Greenland again, Hudson, noting "the icy skie" which marks the presence of wide expanses of ice, saw that no open passage existed around the north of that huge island. Otherwise, he tells us, he would have made his return "by the north of Groneland to Davis his Streights, and so for England." He had no idea that Greenland was as large as it is or extended so far north. But he guessed it was an island—something Peary was to prove 293 years later.

With this course out of the question, Hudson swung about in the general direction of home. On the way he discovered "Hudson's Tutches," now called Jan Mayen Island. September 15 the weary *Hopewell* cast anchor at Tilbury in the Thames.

Four and a half months of terrific hardship and almost daily risk were over, and what had Hudson to show for it? Little but negative results. There was no passage to the north of Spitsbergen. There was none to the north of Greenland. For the first time Hudson had proved these facts.

No doubt the hard-headed merchant adventurers listened to the skipper with due respect. "Important, doubtless," they probably said, "but purely in the realm of science. The geographers will be glad to know this—but there is no money in it!"

Yet there were some among the canny London merchants whose thoughts went back to one part of Hudson's story in particular—those whales. And many a British fortune was founded, in the years to come, upon the bodies of the sea creatures Hudson had seen unsuspectingly cavorting in the waters to the north.

Hudson's thoughts, however, had already moved onward. In him there burned, far hotter than even the passion for profits, the discoverer's unrelenting urge. Throughout the winter he planned another voyage, one that would try still another door to the icebound citadel of the Arctic.

JOHN HUDSON GETS HIS SEA LEGS

And what of young "John Hudson, a boy"? Throughout that entire eventful voyage we hear of him not once. That is hardly surprising. A youngster getting his sea legs ranks little higher than the barnacles under the keel, even if he is the captain's son.

The lad must have done his work well, for when his father persuaded the Muscovy Company to dispatch another expedition the following spring, John's name was listed

as one of the crew—minus the probably hated label "boy."

FUTURE PLOTTERS APPEAR

Several members of this second crew were destined to be involved in the mutiny that cost Captain Hudson his life three years and two voyages later. Particularly is this true of Robert Juet, of Limehouse, the mate, who became a ringleader in the plot. In the meantime he was to play the part of his master's right-hand man.

This time, having found the ice impenetrable between Greenland and Spitsbergen, Hudson was to try a more eastern door, between Spitsbergen and Novaya Zemlya.

By the first of June the little ship—again the *Hopewell*—had reached the North Cape of Norway. "It was cleere weather, and we saw Norway fishermen at sea."

Eight days later the *Hopewell* entered the ice. "Our hope was to go through it." For four hours she twisted and dodged, penetrating 12 or 15 miles, but then Hudson decided he had better turn back. "Wee had endangered us somewhat too farre."

A MERMAID IS SIGHTED

On a sunshiny morning, June 15, a fair apparition saluted the *Hopewell*:

"This morning," says Hudson's log, "one of our companie looking over boord saw a mermaid, and calling up some of the companie to see her, one more came up, and by that time shee was come close to the ship's side, looking earnestly on the men: a little after, a sea came and overturned her: from the navill upward, her backe and breasts were like a woman's, as they say that saw her: her body as big as one of us; her skin very white: and long haire hanging downe behinde, of colour blacke; in her going downe they saw her tayle, which was like the tayle of a porposse, and speckled like a macrell. Their names that saw her, were Thomas Hilles and Robert Rayner."

Hudson, living in an age when far stranger things than mermaids were being discovered, was willing to give her the benefit of the doubt!

As the ice continued on and on, once again the navigator knew disappointment. "Our hope of passage was gone this way, by meanes of our nearnesse to Nova Zembla and the abundance of ice."

Foiled to the north, Hudson now proposed to try for a northeast passage to the north of Russia, or, if it proved impossible,

"to give reason wherefore it will not be." He groped in vain. Not until 1878-1879 was this north-east passage accomplished by Nordenskjöld in the sturdy *Vega*.

Hudson next proposed to cross the entire Atlantic to try for a northwest passage instead. But this bold project he was compelled to abandon because of his crew's fears and contrary winds, and on August 26 the *Hopewell* again anchored in the Thames.

Once more Hudson had to confess himself defeated. Doubtless the lords of the Muscovy Company told the downhearted mariner that they had no more good money to throw after bad.

It looked very much as if Captain Hudson would have to stay home for a change.

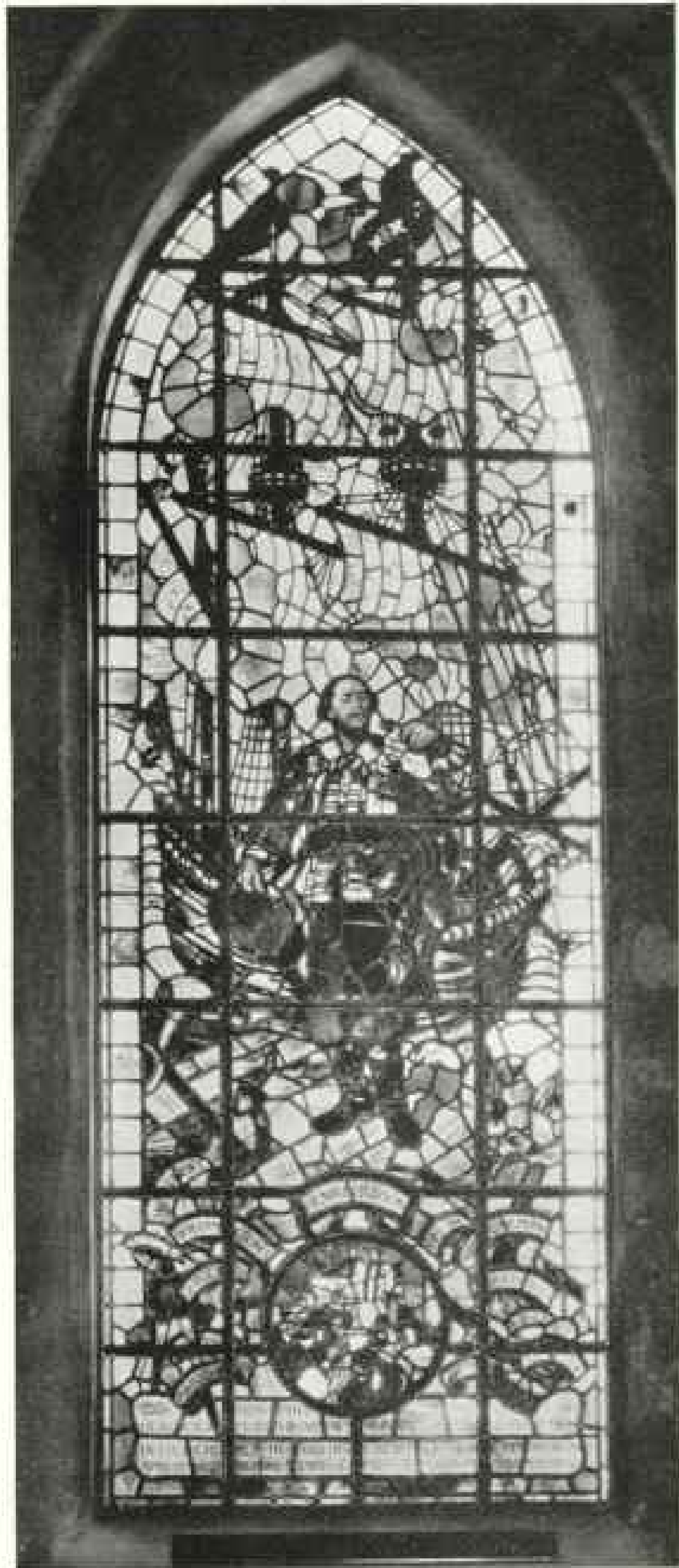
EYES ACROSS THE NORTH SEA

But across the North Sea eager, calculating eyes were trained on the doings of the Muscovy Company. The enterprising merchants of Amsterdam had been watching the work of Henry Hudson. "There," they thought, "is a real explorer, hard-working, fearless, ambitious, thorough, a man well worth engaging."

Amsterdam at this time was a rich and thriving center of world trade. In science, too, the city stood in the forefront of the world when Henry Hudson strolled its streets in 1609. Geography, then as now, was the indispensable handmaiden of trade. And even the hard-headed traders of the Dutch East India Company listened with deference to the makers of maps.

HUDSON'S LIFE VALUED AT \$80

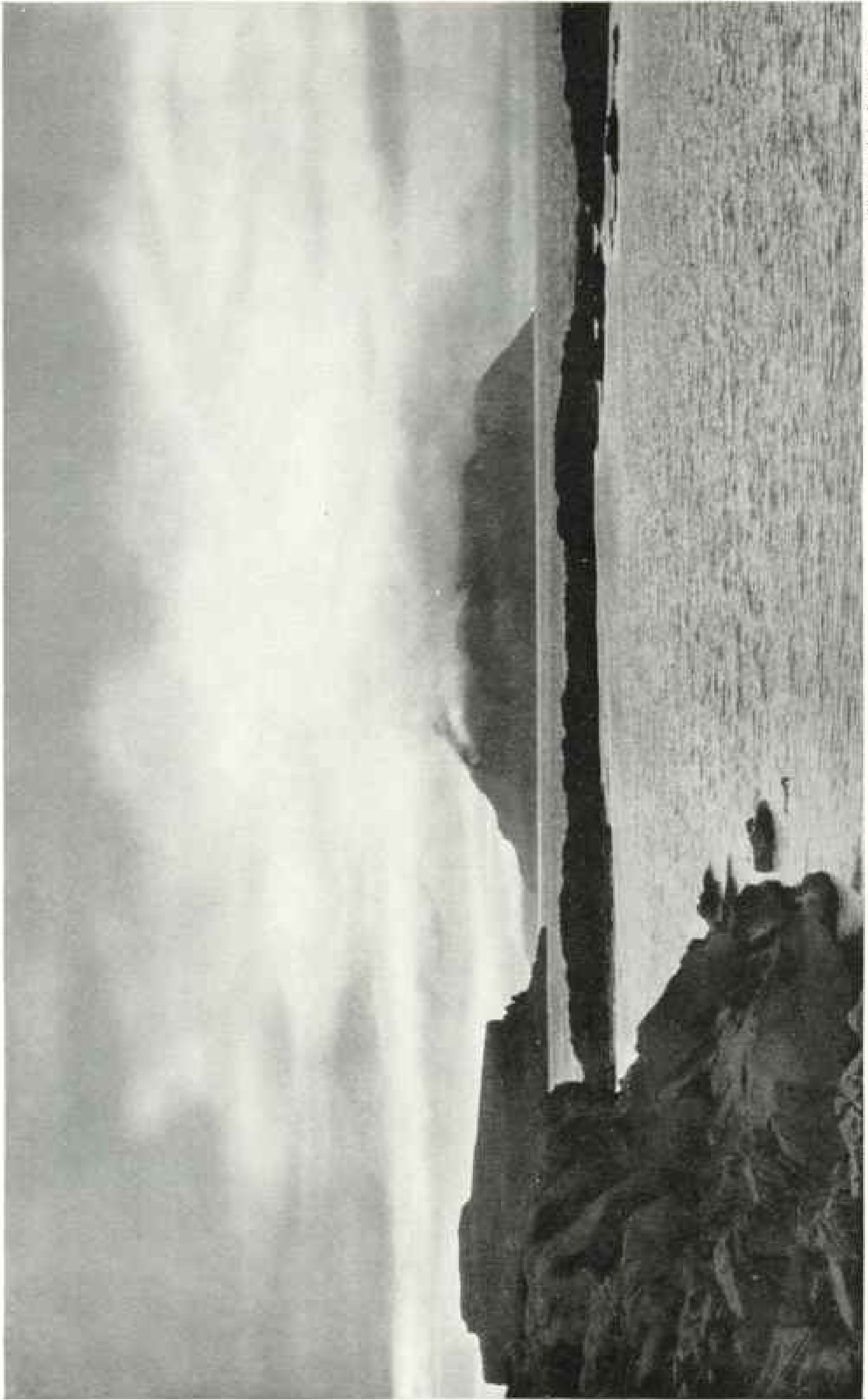
By the terms of his contract the Englishman was hardly overpaid. The sum to be given him for the support of his wife and children and the purchase of his own personal equipment has been computed as the equivalent of \$320. And if he should not return alive, \$80 more was to be paid his widow—not exactly an exorbitant price to place upon such a life!



Photograph by Clifton Adams

HUDSON OFF FOR UNKNOWN SEAS

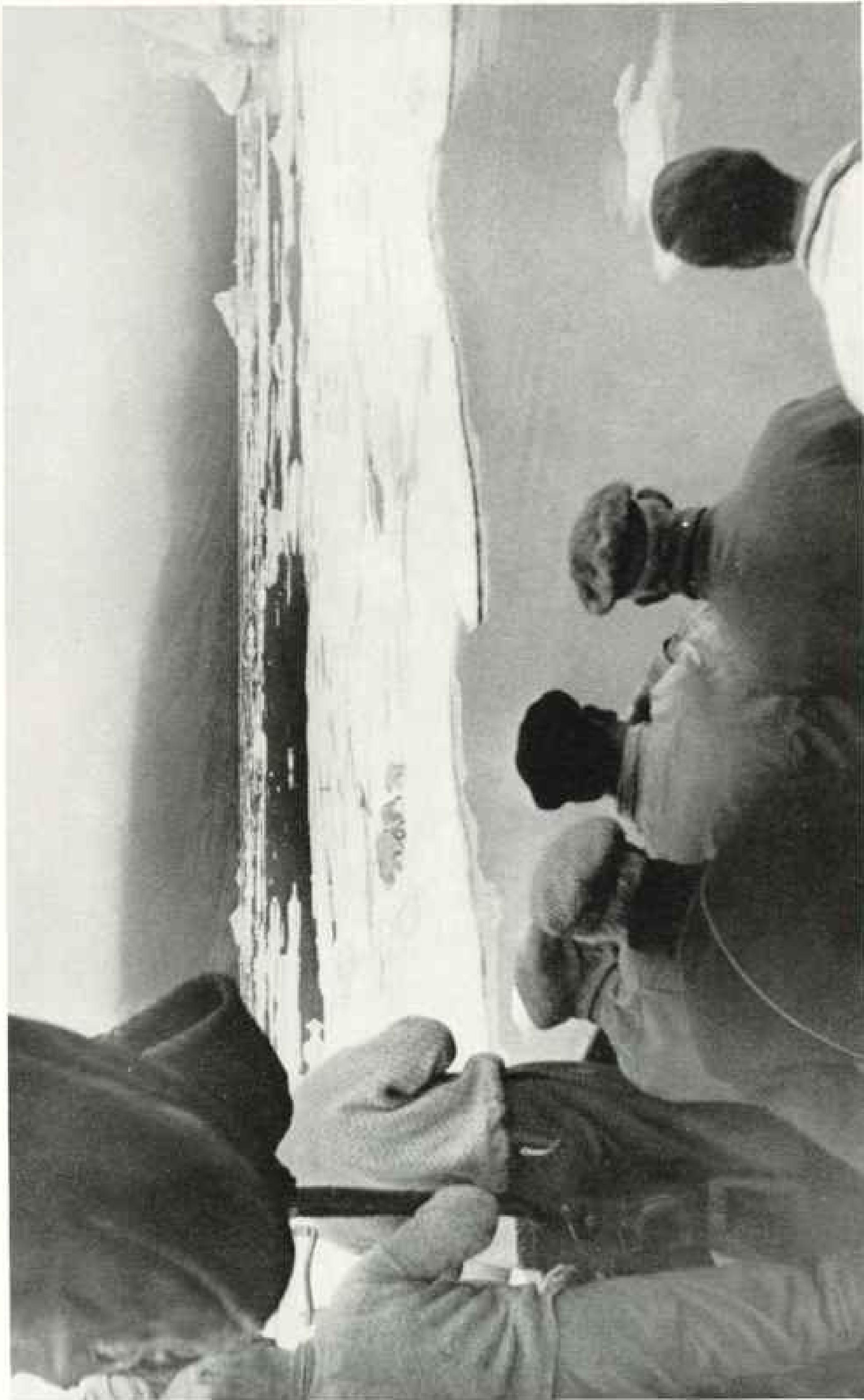
Some of the glamour and excitement of sailing time are caught in a 15-foot stained-glass memorial window by Leonard Walker, R. I., in the old Church of St. Ethelburga where the heroic explorer first appears in history (pages 461 and 464). Behind him is the *Half Moon* and below is a glimpse of Hudson and his crew receiving Communion here "before starting on their great adventures."



Photograph by Leif Hamren

AT THE LONELY, RUGGED FAROE ISLANDS THE "HALF MOON" STOPPED TO "REDMAGE" (HUNT FOR FOOD)

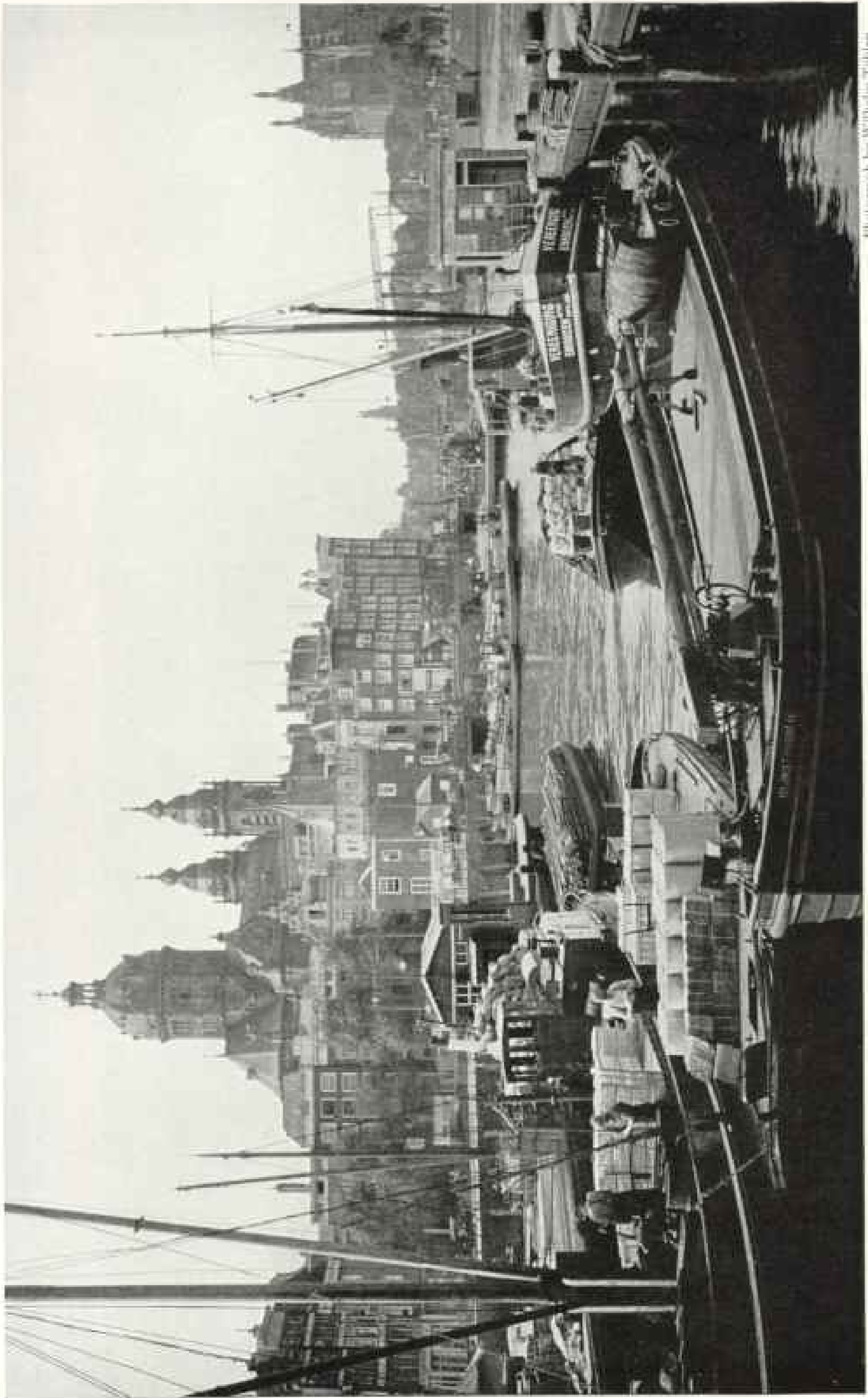
Hudson's ship put in near Myggenäs in 1609 on the way to America and the exploration of the Hudson River. "In the morning," says Robert Juet's journal, "we turned into a road in Strömo, one of the Hands of Farre, between Strömo and Mougnes . . . As soon as we came in we went to forrage, and sent our boat for water."



Photographed by Vitalls Pantenburg from Three Lions

"BEARS, BEARS!" SHOUTS THE LOOKOUT MAN

These northern hunters leave them alone, for the polar bears ambling over the ice are a mother with her little ones (page 488). In similar fashion the crew of Hudson's ship must have crowded to the rail at the cry of "beary"—or more exciting things. On one occasion two of his men even saw a "mermaid" (page 466).



Photograph by Wilhelm Tolben

AMSTERDAM HARBOR: FROM ITS OLD "WEEPERS' TOWER" ANXIOUS EYES WATCHED THE DEPARTURE OF THE "HALF MOON" IN 1609

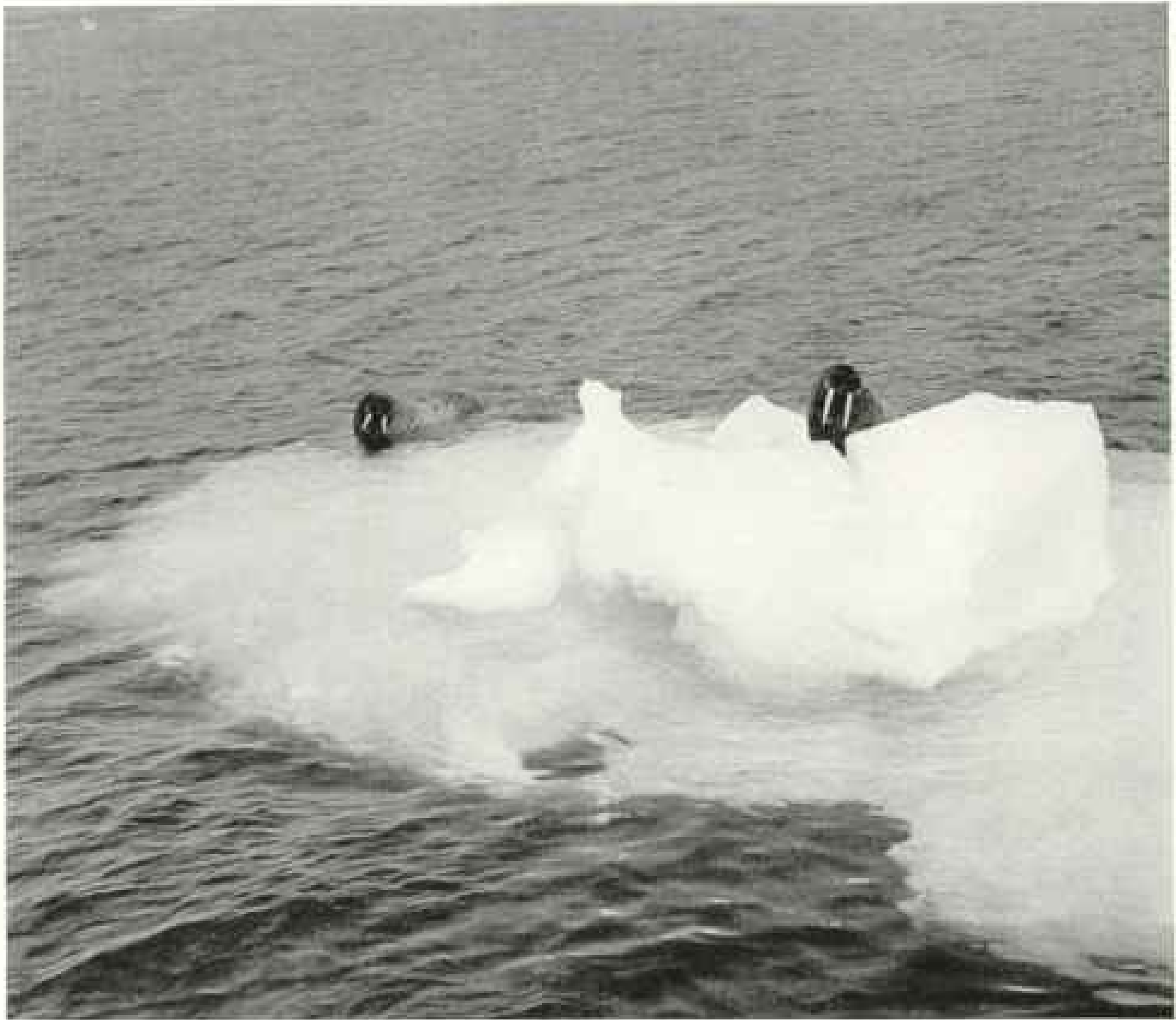
Erected long before Hudson's day, the squat Schreyerstoren (Criers' or Weepers' Tower) takes its mournful name from the tears that were shed when the time for parting came and little ships sailed away for dangerous seas. With conical roof, it stands at the water's edge near the center. Beyond rise the dome and twin towers of the Church of St. Nicholas. At the far right is the Central Station, so heavy that when under construction it partly subsided on its pile foundation.



Photograph by Fairchild Aerial Surveys

CONEY ISLAND, TRADITION SAYS, WAS HUDSON'S FIRST LANDING PLACE AT NEW YORK

"Then our boats went on land with our net to fish, and caught ten great mullets, of a foote and a halfe long a peece, and a ray as great as four men could hale into the ship," says Juet, the chronicler of his voyage (page 478). He adds that the natives who came aboard "got in deere skins boose, well dressed . . . They desire cloathes, and are very civil." What would he say if he could see this vast crowd of bathers on Coney's beach, most of them wearing far less than the Indians wore!



Photograph by Captain Robert A. Bartlett

WALRUSES PEER AT THE "MORRISSEY," AS THEIR FOREFATHERS PEERED AT HUDSON

Since the explorer's time they have been ruthlessly hunted for their blubber, skins, and ivory tusks. Their roaring can be heard long distances over the water and floating pack ice. The journals of Hudson's Arctic voyages are full of references to these creatures, which he called "sea horses or morses." In 1933 this particular pair was sighted by Captain Bartlett from his famous schooner off Four Peaks, Labrador (page 486).

The ship assigned for the expedition was a high-prowed, high-pooped, rather broad-bottomed yacht named *Halve Maen*, or *Half Moon* (page 463). The crew was part English, part Dutch. Whether John Hudson was among them nobody knows. The names are not given, but one, of a certainty, was our old friend Robert Juet.

In fact, it is almost wholly from this elderly seaman's journal that details of that extraordinary voyage have been obtained; Hudson's own log has never been found.

His orders were plain—to try to find a passage to India north of Novaya Zemlya.

It was April 4, 1609, when the little vessel with her polyglot crew cast off at Amsterdam on one of the strangest and most important voyages in the entire story of exploration (page 470). A month later

they had passed the North Cape of Norway, well above the Arctic Circle.

MUTINY AND RIGHT-ABOUT-FACE

Then, as fog and ice compassed them about, there arose a muttering among the crew, especially those members who had been sailors in the warm East India service and had never before felt an Arctic blast. Juet, however, makes no mention of mutiny, perhaps because he had a guilty hand in it.

Hudson, probably glad of the chance, proposed two plans. Either they might sail to the northwest to explore "Davis his Streights" or they might strike for the coast of North America to seek a passage to the Orient reported to exist about latitude 40. Of this mysterious passage Hudson had heard from his friend Captain John Smith.

To Hudson's shivering sailors the choice was easy. They wanted no part of Davis Strait. They craved the warmth of the Temperate Zone.

Thus, in spite of his ironclad sailing orders, Hudson set off in a direction almost diametrically opposite to that in which he had been hired to go.

When nearly across the Atlantic, Hudson's lookout sighted an unknown vessel hurrying past in the opposite direction. Immediately the *Half Moon* turned around and for six hours gave futile chase—Juet does not say why.

Perhaps some of the seamen would not have been averse to a little profitable piracy. Hudson had probably lost control of his crew, and during the voyage he was often savagely threatened.

On the Grand Banks of Newfoundland, even at that early date, Hudson sighted "a great fleet" of French fishermen.

Cautiously he approached the North American coast, taking frequent soundings, and on July 17 six Indians paddled out to the ship, "seeming glad of our coming." One spoke a few words of French. In response to eager questions of gold-greedy sailors, they averred that not only gold but silver and copper were found near by.

A SHORE DINNER IN MAINE

Next day the *Half Moon* sailed on "into a very good harbour"—probably about at Penobscot Bay, in Maine—and there some of the men cut a tall tree to replace a mast lost in Atlantic storms. All hands ate lobsters till they could eat no more.

Distrust of the natives breathes in Juet's account, perhaps because his own motives were not of the best. "They offered us no wrong, seeing that we stood upon our guard. They brought many beaver skinned and other fine fures, which they would have changed for redde gownes."

These peaceful people the crew of the *Half Moon* soon rewarded in dastardly fashion. First at musket point they stole one of the Indians' boats. "Then we manned our boat and scute with twelve men and muskets, and two stone pieces or murderers [small cannon], and drave the savages from their houses, and tooke the spoyle of them, as they would have done of us." Juet added the last phrase, apparently, by way of flimsy justification.

After this piece of gratuitous savagery

they wisely if not very courageously sailed away. Whether Hudson approved the attack is not known, but his own comments on the Indians are far from hostile.

On the Massachusetts coast there were friendly Indians, one of whom Hudson entertained at dinner. Later the captain gave him three or four glass buttons and so pleased was the savage that he "leaped and danced" when the ship's boat set him ashore. These Massachusetts Indians were to be of great help to the Pilgrims when they landed at Plymouth eleven years later.

Soon Hudson left the coast, continuing his course southward. By about the middle of August the *Half Moon* had reached the mouth of Chesapeake Bay. "This is the entrance into the King's River in Virginia, where our English-men are," wrote Juet, referring to Jamestown.

About the latitude of Nags Head, North Carolina, Hudson turned and started north again, inspecting the coast more closely. The long finger of Cape May he at first thought to be an island.

Continuing up the coast of what is now New Jersey, Hudson noted the low sandy shore punctuated with many small islands. On one of them Atlantic City was to rise, some 250 years later, a metropolis conjured out of a sand bar seven miles at sea.

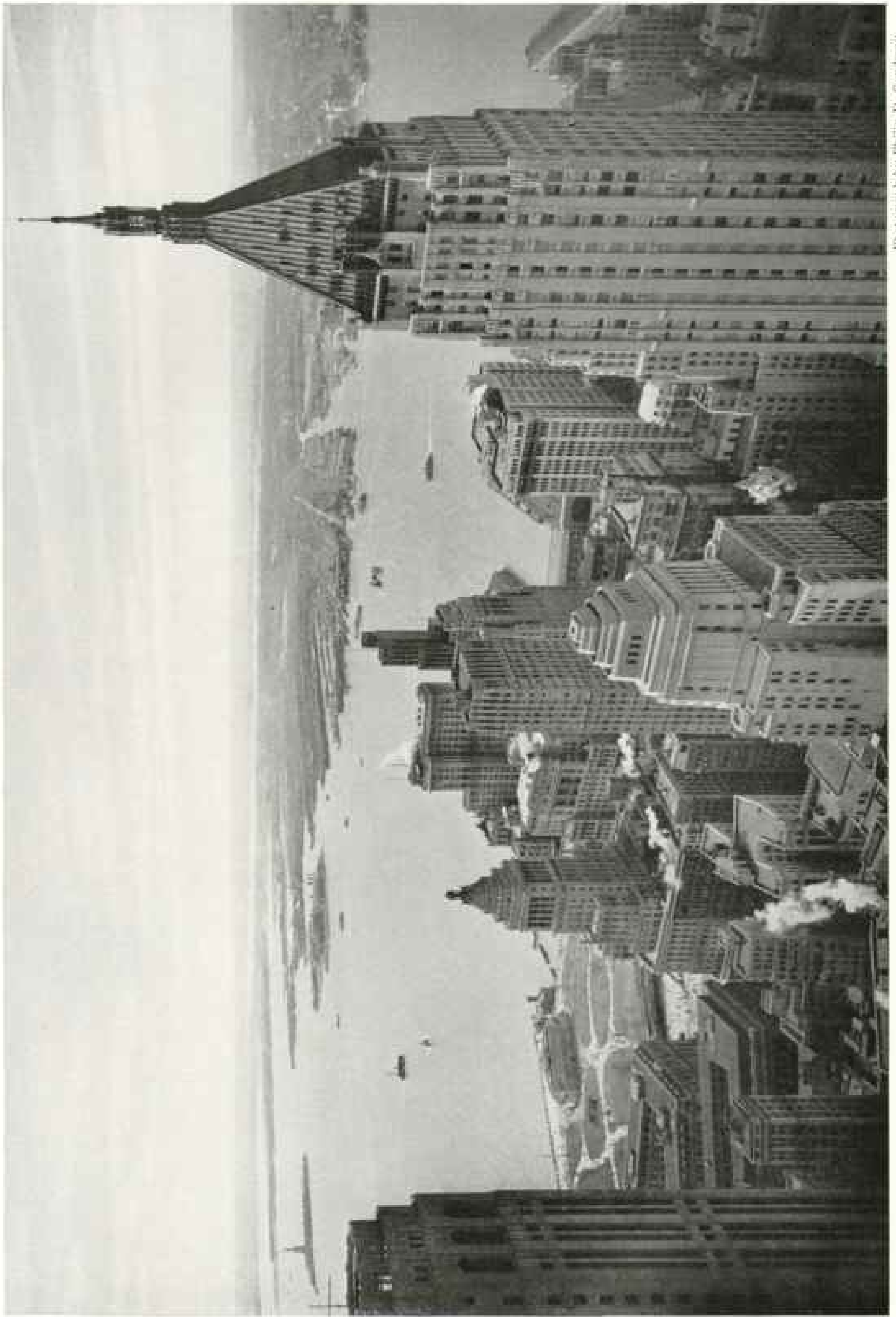
But no beach umbrellas or bathing beauties beckoned the *Half Moon* on that August day in 1609. The only sign of life was smoke from a big fire built by Indians.

HUDSON ENTERS NEW YORK HARBOR

Early in the morning of September 2 the *Half Moon's* lookout sighted Sandy Hook. Before him Hudson found "a great lake of water"—the Lower Bay of New York Harbor—and out of this lake or bay flowed "a great streame," the river that was to bear his name.

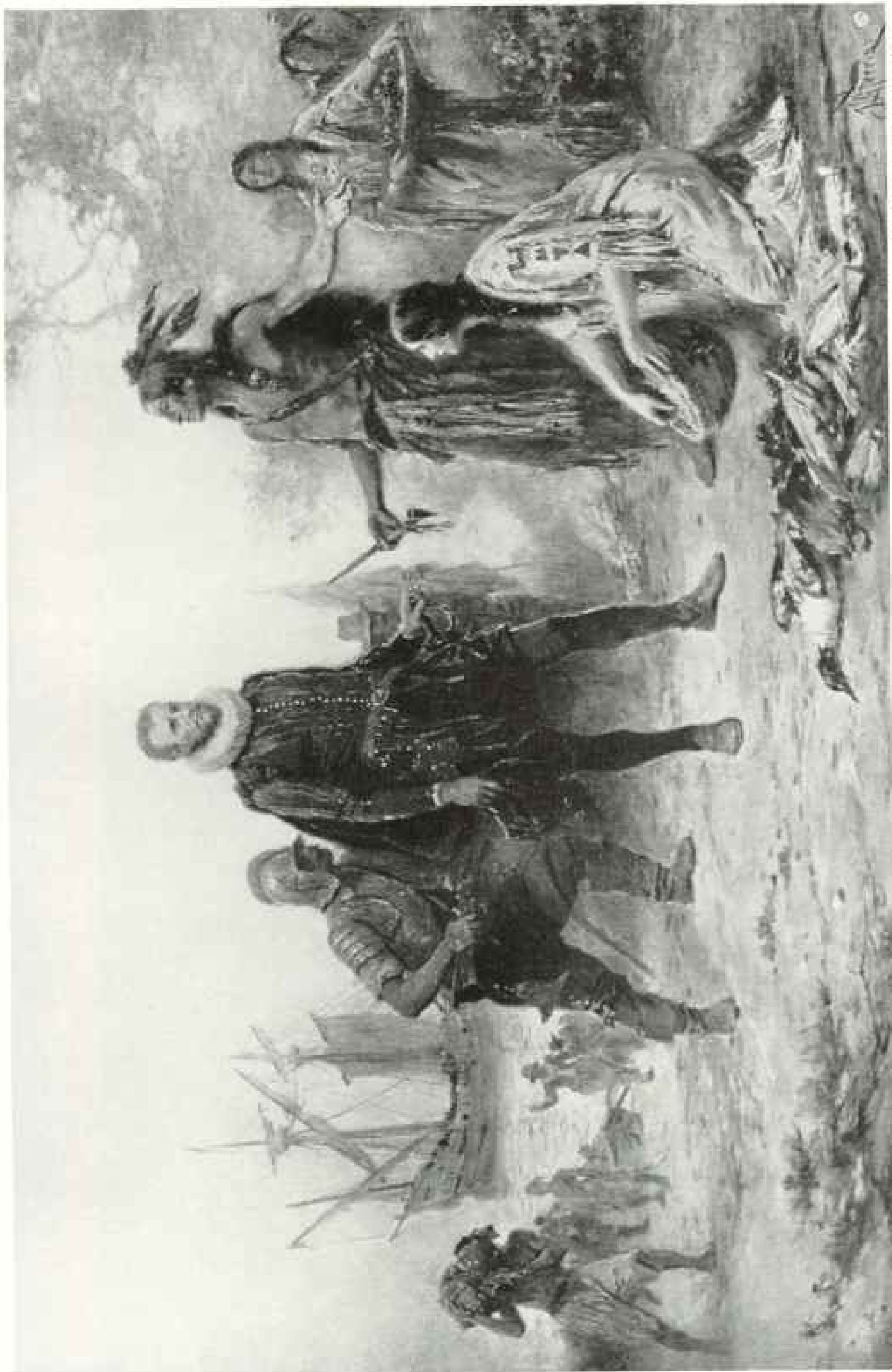
Hudson, however, was not the first to see it. If the Hudson bore the name of its discoverer it would probably be the Verrazano River or the Gomez River today, for the Italian captain, Giovanni da Verrazano, who sailed this coast 85 years before in the service of France, had beheld its mouth, and so had Estevan Gomez, a Portuguese mariner in the Spanish service, who once had voyaged with Magellan.

But Hudson was to make it his river, not theirs, by right of systematic exploration. Undoubtedly he was the first white man to pass the Palisades and the Hudson



Photograph by Philip D. Gundrum

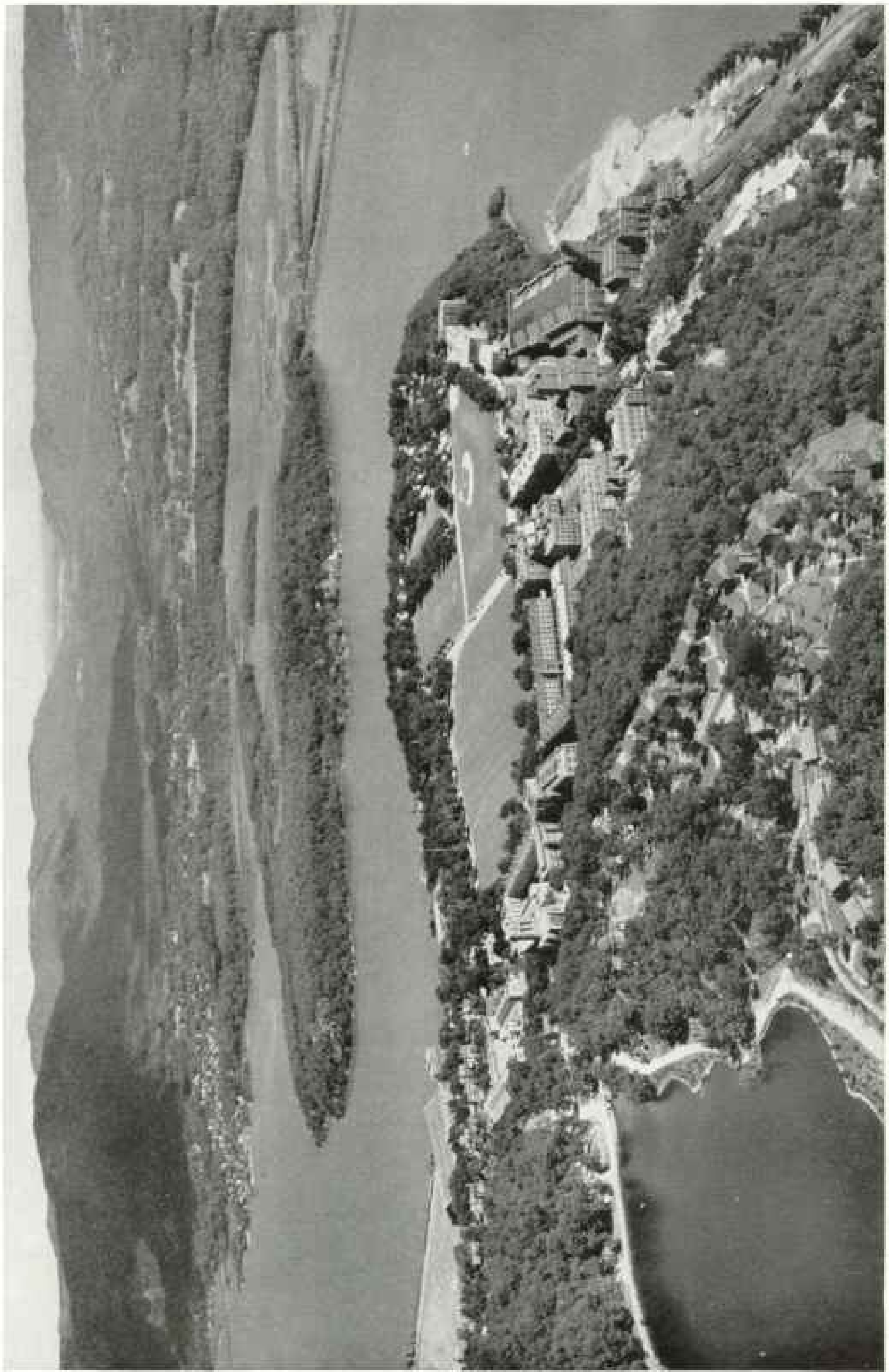
IN PLACE OF HUDSON'S "GREAT AND TALL OAKS," TOWERS OF LOWER MANHATTAN FORM A FOREST OF STEEL AND CONCRETE.



10 Courtesy Mrs. J. L. G. Ferris

HENRY HUDSON EXCHANGES GIFTS WITH THE INDIANS IN 1609

"When I came on shore," Hudson reported of one such visit, "the swarthy natives all stood around and sung in their fashion." The painting, "Hudson the Dreamer," by the American artist, J. L. G. Ferris, is on exhibition at Washington in the National Museum's Division of History.



Official Photograph U. S. Army Art Corps

WEST POINT: "THE LAND GREW VERY HIGH AND MOUNTAINOUS—THE RIVER IS FULL OF FISH"

First white man ever to see the Highlands was Hudson, whose picture hangs here at the United States Military Academy on the western shore of his river (Color Plate XVI). Washington called this post "the key of America." During the Revolution a huge iron chain was stretched across the channel to stop British ships.



Photograph by Fairchild/Aerial Surveys

NEAR THE SITE OF ALBANY, HUDSON TRADED BEADS, KNIVES, AND HATCHETS FOR "BEVERS SKINNES AND OTTERS SKINNES."

Here the river dwindled at last and the explorer soon had to turn back (page 475). But five years later, in 1614—six years before the Pilgrims landed at Plymouth—the Dutch had followed up his discovery and planted the seed of the modern capital (on the west bank, upper left) by building a trading post, Fort Nassau.

Highlands. Quite possibly he was the first to sail well into the mouth, past the island of Manhattan, towerless then, with virgin forest oaks for skyscrapers (page 474).

"This is a very good land to fall with, and a pleasant land to see," wrote Juet, little thinking that a world metropolis would arise at the mouth of this river.

On September 4, four men were sent ashore, tradition says on Coney Island. If so, the first white excursion to Coney Island was a fishing trip, for the landing party caught mullets for the *Half Moon's* larder (page 471).

The copper-skinned New Yorkers proved hospitable, though their committee for the reception of distinguished guests was dressed a bit informally in deerskins and beads, not cutaway coats and gardenias. And they greeted their guests with something more substantial than torn-up ticker tape and telephone books. Good tobacco they brought, and Indian corn. Even Juet had to admit they were "very civill," but darkly he added, "Wee durst not trust them."

FIRST BLOOD IS SHED

The very next day his suspicions were borne out when two canoe-loads of Indians attacked the ship's boat, though perhaps the assault was not unprovoked. Rain put out the match with which the muskets were fired, and John Colman, a veteran of Hudson's first voyage, was killed. An arrow pierced his throat.

Next day, when some Indians came out to the ship to trade, the seamen placed their bloodstained boat in plain sight, to see whether the visitors would show any guilt. Stoical, they gave no sign, and so were allowed to return in peace.

But next morning when two large canoes arrived, one full of braves armed with bows and arrows and the other ostensibly to trade, the *Half Moon's* men feared treachery. Panicky, they took two Indians as hostages, but a third escaped by leaping overboard. Either to mock or to mollify their prisoners, the seamen decked them out in bright-red coats.

ANCHORED NEAR 42D STREET

For several days now the *Half Moon* had been slowly riding the wind and the tide deeper and deeper into the bay. On September 12 she sailed up into the river and anchored, perhaps near the western end of present-day 42d Street.

No Indians were allowed on board, but next day, near the site of Grant's Tomb, the crew bought "great store of very good oysters" for a few cheap trinkets. That night they anchored near Spuyten Duyvil.

On the fourteenth, with a favoring wind, the *Half Moon* sailed up the river some 36 miles, past the lofty and inspiring Palisades, to about the level of Peekskill.

Later the same day she seems to have reached the neighborhood of West Point. The mountains passed were the Hudson Highlands, now looked upon for the first time by the eyes of any white man (p. 476).

Early the next morning the two captive savages squeezed out of a porthole and swam away, whooping scorn and defiance when safe from pursuit.

But still as the whites moved up the river they found the Indians uniformly friendly. "Wee found very loving people, and very old men: where we were well used."

Hudson himself has left a description of a visit he paid to the home of an old chief.

"The natives are a very good people," he reported, "for when they saw that I would not remain, they supposed that I was afraid of their bows, and taking the arrows, they broke them into pieces, and threw them into the fire."

At last, on September 19, the *Half Moon* reached approximately the point where Albany, capital of the Empire State, now stands (page 477). Hudson suspected he had reached the head of navigation, and this view was confirmed next day when he sent the mate and four other men farther up the river to sound the channel.

Two days later, with typical thoroughness, Hudson sent out the boat again. When the men returned they announced they had ascended several more miles—traditionally to about the site of Cohoes and Waterford—and had found the river only seven feet deep.

FAILURE AGAIN

Long since, Hudson had probably realized that this steadily diminishing fresh-water stream could hardly be the channel to the western ocean. But now this disappointing fact had been proved beyond a doubt.

While Hudson's reconnoitering party was away in the ship's boat, he and his mate invited "some of the chiefe men of the countrey" aboard the *Half Moon* and got them drunk, "to see whether they had any treacherie in them."

One native drank himself unconscious and had to stay on the boat all night. But the one woman in the party, wife of a chief, proved herself such a lady that Juet marveled. She "sate so modestly," he wrote, "as any of our countrey women would doe in a strange place."

Dropping down the river from Albany, the explorers "gathered good store of chestnuts," perhaps at or near the location of the city of Hudson.

Next day, about the site of Catskill Landing on the west side of the river, they noted the fertility of the ground, the size of the oak and other trees, and the abundance of stone for building houses.

In the vicinity of Red Hook they caught "four or five and twentie mullets, breames, bases, and barbils" in an hour.

Often they encountered friendly natives. Once the visitors included two Indian maidens of 16 or 17, who, even Juet is forced to admit, "behaved themselves very modestly." Probably the sight of the bushy-bearded seamen scared the young girls half to death.

One spot which caught Juet's eye as "a very pleasant place to build a towne on" was evidently in the neighborhood of Newburgh and Beacon, a few miles below Poughkeepsie and the Franklin D. Roosevelt estate at Hyde Park (page 480).

TRAGEDY OUT OF A PILLOW

On the first of October, as the *Half Moon* slowly approached Manhattan, swift tragedy broke—brought on by a light-fingered native's theft of a pillow, two shirts, and two leather belts!

Let Juet tell the rest of the brutal story:

"Our masters mate shot at him, and strooke him on the brest, and killed him. Whereupon all the rest fled away, some in their canoes, and some leapt out of them into the water.

"We manned our boat, and got our things again. Then one of them that swamme got hold of our boat, thinking to overthrow it. But our cooke tooke a sword, and cut off one of his hands, and he was drowned."

The very next day one of the red-coated Indians who had escaped from the *Half Moon* on the way up the river appeared with a strong band of companions, as Juet says, "thinking to betray us." In the ensuing fight seven or eight Indians were killed and the rest fled, whereupon Hudson went six or seven miles downstream and rode in safety through the night "on that

side of the river that is called Manna-hata."

At last, when October was four days old and frosts were reddening the hardwood trees of Manhattan, the little *Half Moon* emerged from the river of its many adventures and sailed out into the open sea. Hudson was eager to hurry home, for he feared his unruly crew might take the ship and turn pirate. On November 7 he anchored safely at Dartmouth in Devon.

LAST ACT OF HUDSON DRAMA

When reports of his discoveries spread to London, the authorities flatly forbade him and the other English members of the crew to go on to report to his Dutch employers. "Where," they probably asked, "is your patriotism?" And Hudson, remembering how flagrantly he had disobeyed his orders, perhaps was not sorry to avoid being called on the carpet by a bunch of angry Dutch uncles.

But the news of his discoveries reached Amsterdam, and the shrewd Dutch traders soon followed up Hudson's efforts by building a fort on Manhattan and sending out colonists. New Amsterdam, later New York, was born.

Meanwhile the mariner was off on another adventure, destined to be his last. Like a well-planned drama his eventful life was marching toward a tragic climax.

This time Hudson was to explore a region that long had whetted his curiosity and appealed to him as offering perhaps the best chance of a short route to the Orient, the icy region west of Davis Strait.

Several of London's merchant adventurers backed him, gambling a ship, a few pounds, and a few sailors' lives on the chance of fabulous fortune. The chief backers were Sir Dudley Digges, Sir Thomas Smith, and Master John Wolstenholme.

LOGBOOK PRUNED BY MUTINEERS

Direct knowledge of this voyage comes chiefly from, first, a small part of Hudson's log, cut short and sharply pruned by the mutineers to eliminate incriminating passages; second, the sanctimonious but detailed effusions of a pious landlubber, Abacuk Prickett, a haberdasher and a servant of Sir Dudley Digges, who returned from the tragic voyage in safety and has often been suspected of a prejudiced account intended to ease the punishment of the mutineers; and, third, a scribbled note found in the desk of Thomas Wydhouse, a



Photograph by Fairchild Aerial Surveys

CRUM ELBOW, THE ROOSEVELT ESTATE AT HYDE PARK, STANDS AT THE HEAD OF THE "LONG REACH" NAMED IN THE HALF MOON'S LOG.

President Franklin D. Roosevelt was born here, within sight of the Hudson where it sweeps southward straight and true. Over part of that stretch today the Nation's crack eight-oared crews match strokes in the Poughkeepsie Intercollegiate Rowing Regatta. If Hudson, an Englishman, had not sailed for the Dutch on his third and most important voyage, America probably would never have had either Theodore or Franklin D. Roosevelt. Among the Netherlanders to come in his wake was their ancestor Claes Martenszan van Rosenvelt, or Roosevelt, who emigrated to New Amsterdam about 1649.

"student of the mathematickes" on Hudson's ship and one of those set adrift by the mutinous crew. Like a finger out of the grave it points at the guilt of Juett and others and counteracts Prickett's attempt to present Hudson in an unfavorable light.*

On April 17, 1610, Hudson presumably kissed his much-neglected wife goodbye.

* In the preparation of this article such materials have been consulted in the notable collection of Hudson documents published by the Hakluyt Society, of London, under the title, *Henry Hudson, the Navigator*, and edited by G. M. Asher. In addition, *Henry Hudson*, by Llewelyn Powys, and *Henry Hudson*, by Thomas A. Janvier, contain valuable documents, lost for three centuries, relating to the trial of the mutineers.

boarded his new vessel, the *Discovery*, and dropped down the Thames with the tide. With him once more went his son John.

As if in omen of disaster, trouble arose even before the ship left the Thames. Hudson put one of his men, "Master Coleburne," off the ship and sent him home on a boat bound for London. With him went a letter from Hudson telling his employers the reason for this strange act, but probably the disgruntled Coleburne tore it up, for his offense has never become known. Coleburne seems to have been sent along as a sort of adviser to Hudson.

Sailing north by way of the Orkneys and Faeroes, Hudson, ever the alert geogra-

pher, found that the tip of Scotland, the Orkneys, and the Shetland Islands all were too far north on existing charts.

Breidi Fiord, a gulf on the west coast of Iceland, Hudson's men inelegantly dubbed "Lousie Bay" because there, finding springs of hot water, they gratefully bathed and deloused themselves. "They had found there a bath hot enough to scald a fowle."

MUTTERINGS OF MUTINY

The *Discovery* passed Greenland, and as it entered what would later be known as Hudson Strait, fearsome icebergs, strong currents, and "over-falls" or rippings of the water were observed. "Some of our men this day fell sicke," says Prickett. "I will not say it was for feare, although I saw small signe of other grieffe."

At last the little ship was so beset with ice that the men began to mutter of returning home; whereupon Hudson called the crew together, brought out his chart to show how far they had come, and agreed to be governed by their decision as to whether he should advance or retreat.

Such a democratic suggestion by a sea captain may easily be taken for irresolution. The malcontents were emboldened and sharp words passed, for already tempers were beginning to fray.

"If I had an hundred pounds," quoth one, "I would gladly give fourscore and ten to be at home."

But the stout-hearted carpenter, Philip Staffe, laughed at such fears.

"If I had an hundred," he told the company, "I would not give ten upon such condition, but would think it to be as good money as ever I had."

The upshot was that the ship continued. Near Akpatok Island, which Hudson named Desire Provoketh, the men worked off some of their ill spirits by chasing polar bears.

To several of the bays, islands, and capes in Hudson Strait the navigator gave names, including "Salisburies Foreland" (Salisbury Island), "Cape Worsenholme" (Cape Wolstenholme), and "Cape Digs" (Digges Islands).*

On one island an exploring party headed by Prickett discovered "some round hills of stone, like to grasse cockes, which at the first I tooke to be the work of some Christian." Opening one, Prickett found it

"full of fowles hanged by their neckes." They had stumbled on an Eskimo cache.

The men urged Hudson to stay and let them gorge themselves on these fat and apparently ownerless birds, waiting ready for the pot. But Hudson would have none of it. These twin "capes" (Digges and Wolstenholme) seemed to guard the entrance to something. Could it be the long-sought northwest passage that would lead to the Orient and everlasting fame?

They sailed on, the land fell away, and before Hudson stretched an immense open sea. How he must have thrilled with hope, little knowing that this was but a huge bay, the cul-de-sac in which he would meet his death.

"Confidently proud that he had won the passage," Hudson sailed southward. But his jubilation was short-lived. He soon found himself lost in the maze of islands that clutter the eastern side of Hudson and James Bays. Day by day it became clearer that they were making about as much progress as if sailing in a trouser pocket.

THE SHOWDOWN

Nerves and tempers grew frazzled and criticism arose. Juet went about jeering at the master's hope of reaching the Indies by Candlemas. Grave charges about Juet reached the master's ears.

"Slander!" cried the mate, and demanded a showdown.

On September 10, after dinner, the captain called the entire company together to hear the case for and against the mate.

Vainly Juet tried to bluster it out, but the accusations against him were overwhelming.

Philip Staffe, the carpenter, and Ladlie Arnold looked him straight in the face and with hand on Bible swore the mate had urged them to keep swords and loaded muskets ready in their cabins.

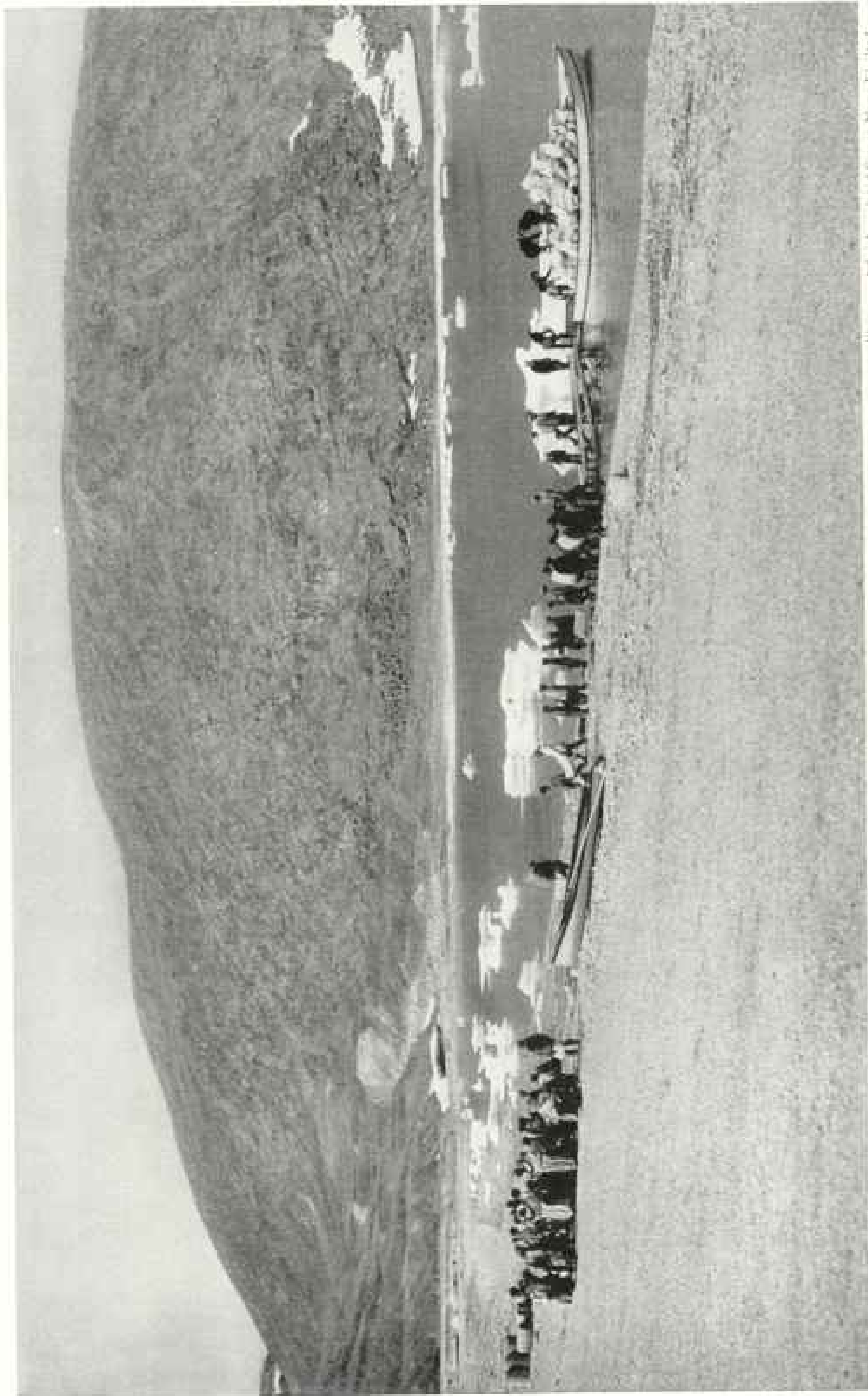
Other seamen took oath that Juet had talked of a bloody mutiny and murder and had threatened to take the ship into his own hands and head for home.

Hudson's action under the circumstances was surprisingly lenient. He displaced Juet as mate and demoted the bosun.

FROZEN IN FOR THE WINTER

But now the dissension grew even worse, though the grumbling was driven underground. The hot hate of Juet fermented in secret, infecting others with discontent.

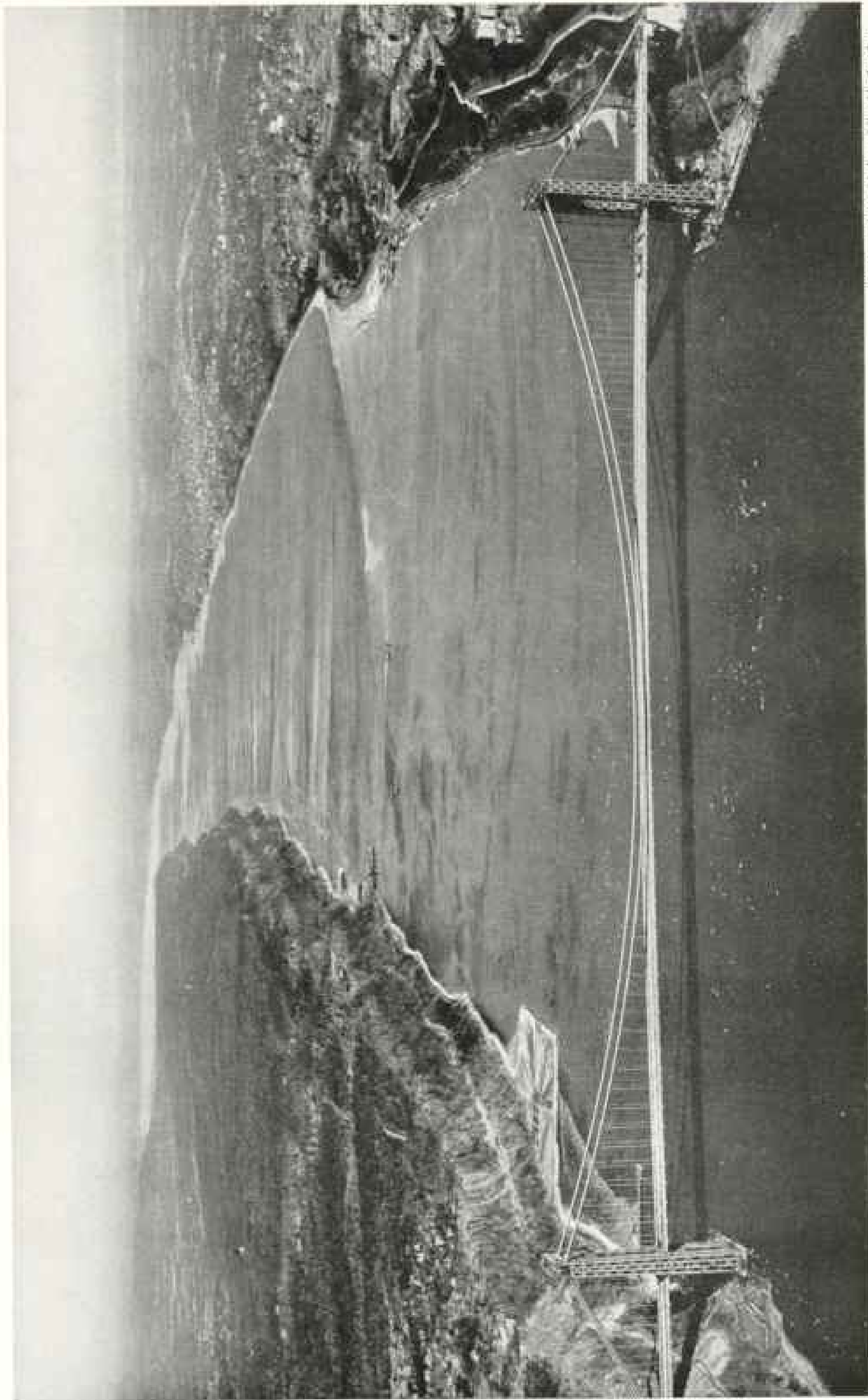
* See the National Geographic Society's Map of Canada in the NATIONAL GEOGRAPHIC MAGAZINE, June, 1936.



Photograph by Associated Simon News Limited

NOT FAR FROM HERE, ON THE WAY BACK TO ENGLAND, RETRIBUTION CAUGHT UP WITH HUDSON'S MURDERERS

Several of the leading mutineers were killed in a fight with Eskimos near the mouth of Hudson Bay (page 489). Perhaps descendants of some of these natives are among these Eskimos landing cargo from the Hudson's Bay Company supply ship *Mascopé* at Wolstenholme Post in Hudson Strait. Cape Wolstenholme was named by Hudson for one of the backers of his ill-fated last voyage in 1611 (page 479).



Photograph by McLaughlin Alf Suvvick

GEORGE WASHINGTON BRIDGE SPANS HUDSON'S RIVER WITH ONE MAJESTIC STIRDE

Mysterious and mighty seemed the "great stream" as the *Half Moon* sailed up it, 350 years ago. But modern engineering has worked its will on the river. Today its bed is pierced with traffic tunnels and this graceful suspension bridge with a 3,500-foot span forms an eight-lane highway, 253 feet above the water, from busy Manhattan at 178th Street to the New Jersey Palisades at Fort Lee. In this aerial picture the view is northward, up the river.

By now they had been wandering about in the labyrinthine bay three months and the long, cold winter was at hand, for the end of October had arrived. In all that time they had seen but one sign of human life, an Indian's footprint in the snow.

At last, near the southern shore of James Bay, they were frozen in. Already supplies were running low, and Hudson offered a small reward for each animal, fish, or fowl brought in by the crew.

In the ides of November the ship's gunner, John Williams, died, and the malcontents were quick to say that the master's slave-driving ways were responsible. But their regard for the gunner did not prevent them from coveting his belongings, particularly a "gray cloth gowne." And out of a quarrel over a mere garment Hudson made himself an unrelenting enemy compared to whom Juet, with all his hatred, seems pale—a ne'er-do-well named Henrie Greene.

This burly black sheep of a good Kent family had been brought on the voyage by Hudson "because he could write well." A scamp and a waster, he was trusted by no one, but Hudson apparently had taken pity on him, giving him food, drink, and lodging in his own home.

At Iceland Greene had gotten into a row with the ship's surgeon and beaten him severely. Many of the crew were enraged, but Hudson, according to Prickett, defended Greene, blaming the surgeon's sharp tongue for the trouble. Juet began saying the master had brought Greene along as a stool pigeon to discredit anybody who happened to displease him. This talk of Juet's had come to Hudson's ears early in the voyage and made him so angry that he seriously considered going back to Iceland and sending the mate home in a fishing boat.

But now Greene had incurred the captain's displeasure by siding with the carpenter in an argument with Hudson over building a house on shore. The captain's anger, says Prickett, took the petty form of denying Greene the "gowne" which he had previously promised him.

When Greene protested, according to this prejudiced witness, Hudson railed at the man, telling him he couldn't be trusted with twenty shillings and that he should have no wages if he didn't mend his ways. This affront brought out all the devil in Greene, and he plotted, biding his time.

Meanwhile, ptarmigan and other fowl augmented the failing larder, and a decooc-

tion brewed from tree buds staved off the scurvy. But spring found the crew in pitiable shape, many of them with badly frozen feet, including Prickett himself.

A LONE INDIAN COMES—AND GOES

With the break-up of the ice a lone Indian appeared and Hudson was overjoyed. He asked the crew to turn in all their knives and hatchets to be used for trading purposes but—sinister note—only the carpenter and Prickett would part with theirs.

Once the Indian returned with deer and beaver skins, but he was badly treated and after that he never came back.

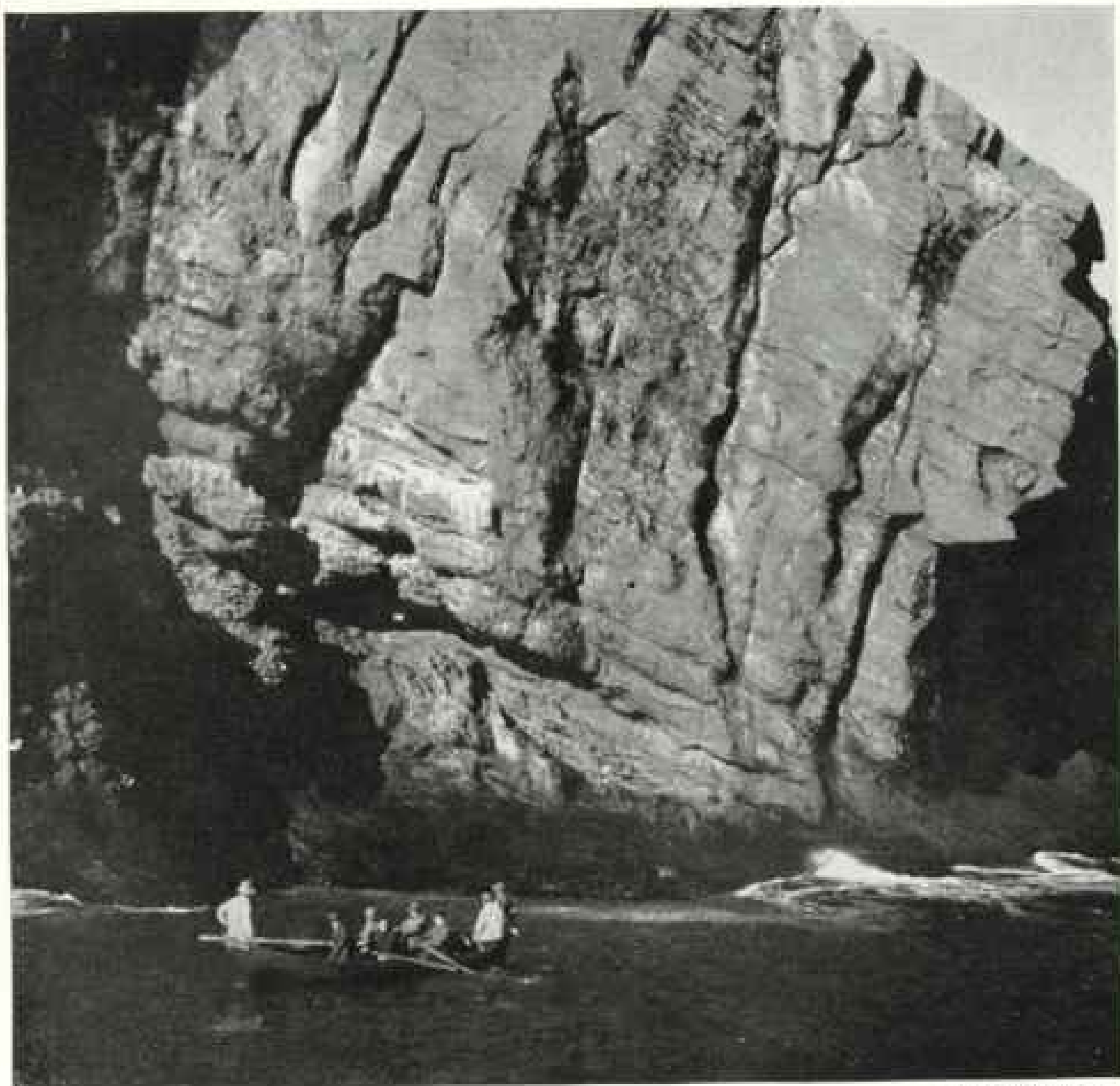
Hudson was in despair, and finally he himself set out in the ship's boat in the hope of locating the natives. But they eluded him and even set forest fires to keep the whites away.

Returning, Hudson divided equally the dwindling supply of bread and the *Discovery* sailed out of her wintering place. Wilson, the new bosun, gobbled two weeks' supply of bread in a day, getting a stomach-ache for his pains. Greene, with only slightly more will power, gave half of his share to a friend to keep lest he eat it all at once, but within two or three days he had wheedled it away and bolted it all anyhow.

THE PLOT IS REVEALED

Finally, on the night of June 21, 1611, these two precious scamps came to Prickett's cabin, where he lay with badly frozen feet, and told him they had decided to put the captain and all the sick men except Prickett himself into the open boat and let them shift for themselves. A strong suspicion exists that Prickett's own life was spared so that he might intercede with his master, Sir Dudley Digges, in behalf of the mutineers.

In the flickering shadows of that smelly little room Williams and Greene declared their unshakable determination to go through with the deed or die. They had not eaten for three days, they said, and they would just as soon hang as starve. They declared that the captain was concealing food and playing favorites in its distribution. Hudson, they said, was dallying unnecessarily—they probably feared he was still hunting for his passage to China—and the food supply would last but two more weeks. With the captain and the sick men cast adrift, there might be enough food to sustain the rest. Thus they talked, in the



Photograph by Pix

SEA-BIRD COLONIES ON ICELAND'S ROCKS HAVE LONG PROVIDED SAILORS WITH FOOD. Hudson and his crew were no exception: "Wee killed good store of fowle." Here a surlboat approaches the cliff so men may leap ashore, climb the sheer rock, and raid its ledges for eggs.

eerie lamplight, while Hudson, unsuspecting, slept.

In vain Prickett tried to dissuade them, he says. He charged Greene flatly with seeking "blood and revenge." But in the end the best he could do was to get them to swear to a sanctimonious and hypocritical oath of his own devising, thus:

"You shall sweare truth to God, your prince and countrie; you shall doe nothing, but to the glory of God and the good of the action in hand, and harm to no man."

To this the plotters readily agreed, no doubt with their fingers crossed. By ones and twos the others crept to his cabin. "It was darke, and they in a readiness to put this deed of darkness in execution." All night the villain Greene stood watch

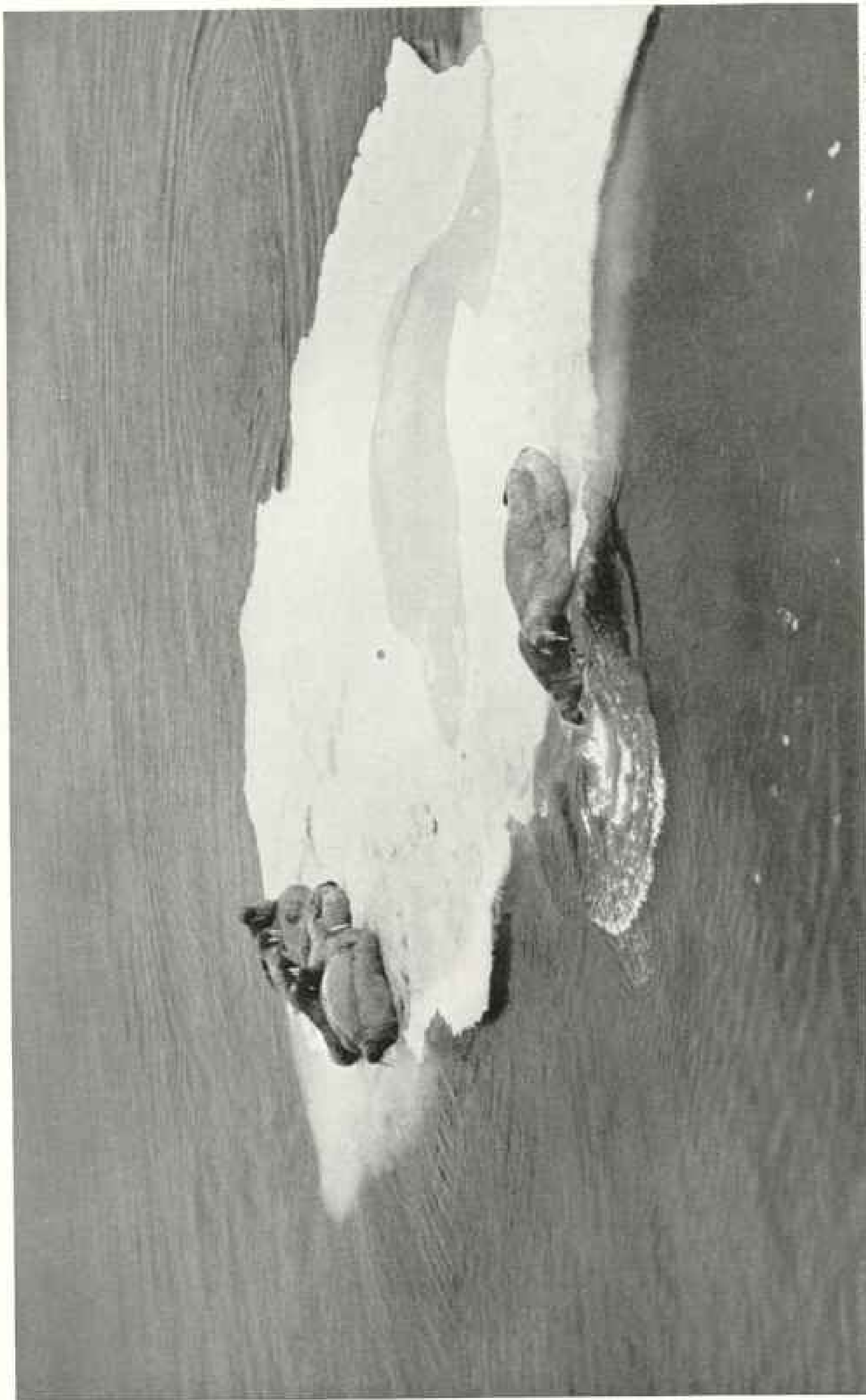
outside the captain's door. Then, as the sky began to lighten toward the east, he found an excuse to go elsewhere and left the actual taking of his captain and benefactor to others.

MUTINY ON THE "DISCOVERY"

As Hudson stepped out of his cabin he was quickly confronted by John Thomas and Bennett Mathues, their faces grim, while William Wilson, the man he had promoted to bosun, darted behind him and pinioned his arms.

Hudson, who apparently had no inkling of this, must have thought himself still asleep and dreaming. "What do you mean to do?" he demanded of his captors.

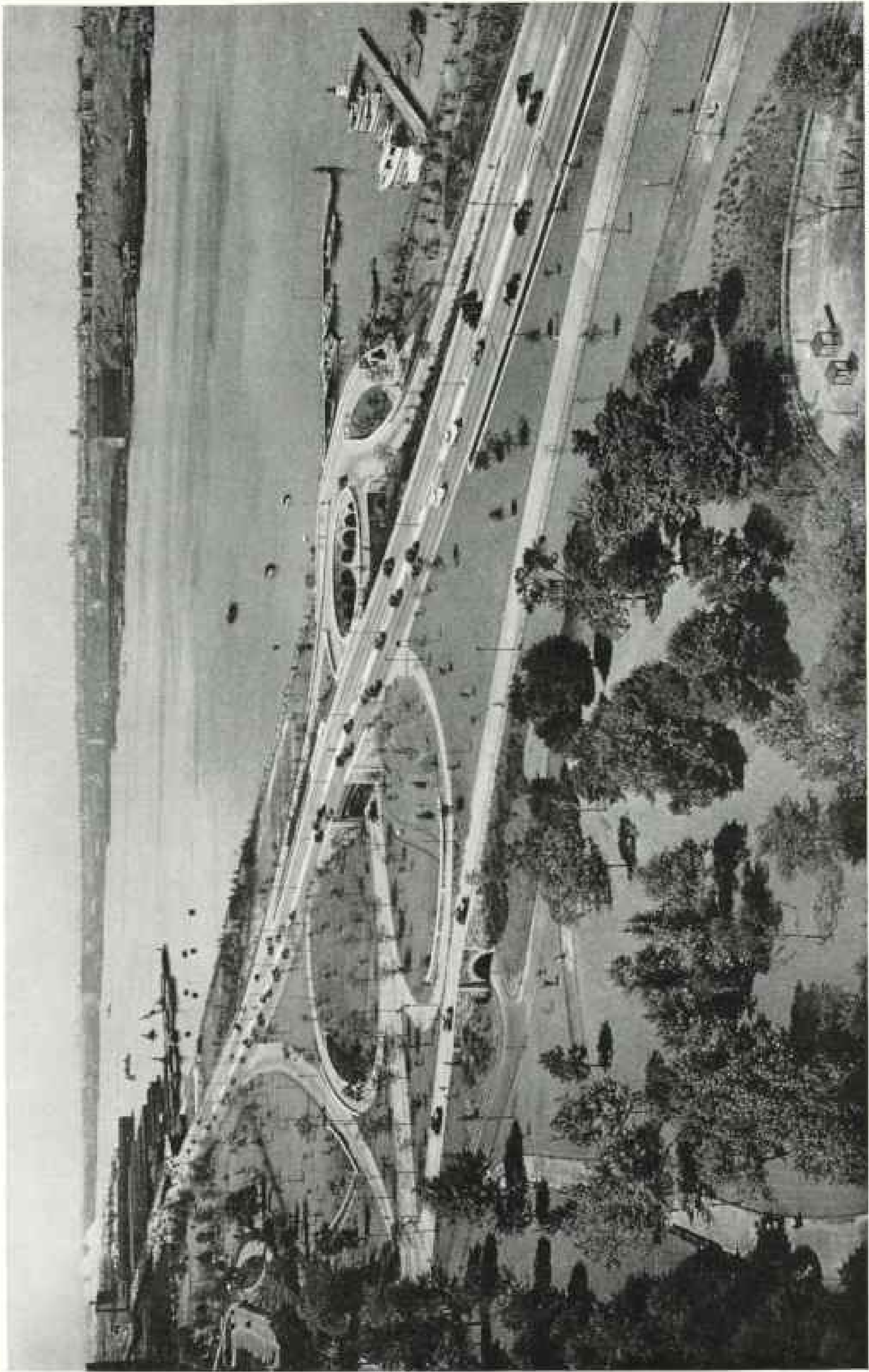
"You will find out soon enough when



Photograph by Captain Robert A. Barlett.

"... AND THERE WERE MANY MORSES SLEEPING ON THE ICE"

So wrote Hudson on his second voyage, referring to the walrus abounding in Arctic waters. Strange and grotesque are these huge mammals, the "morses" or "sea horses" of early navigators. Though stupid, walrus may be dangerous foes and will charge furiously in defense of their young. Old males weigh 2,000 or 3,000 pounds and females about a third less (page 472).



Photograph by E. Leach, Railway

A MODERN MOTOR PARKWAY BEARS THE NAME OF A NAVIGATOR WHO NEVER HEARD OF MOTORS:

Where dense forests stretched in 1609 and Indians came out to trade, the explorer would find today the pulsing traffic of New York City's Henry Hudson Parkway with its scientifically designed "cloverleaf" approach at 79th Street. In the distance, at 72d Street, it connects with the West Side Elevated Highway for downtown, while to the north it leads to the Saw Mill River Parkway. On the far side of the river, rise the New Jersey Palisades.



Photograph from *Three Lions*

POLAR BEARS WERE HUNTED AND EATEN BY HUDSON'S HUNGRY MEN

"This day," says the journal of his first voyage, "many of my companie were sicke with eating of bears flesh the day before unsalted." All of Hudson's four recorded voyages carried him into northern waters and he often sighted the big white bears, swimming tirelessly in the icy sea. But it is doubtful that he ever saw such a sight as this, photographed from a Norwegian ship—a mother bear with three cubs. Triplets among polar bears are most unusual (page 469).

you are in the shallop," they sneered.

John King, the quartermaster, who was attacked by Juet in the hold, snatched up a sword and wielded it so well that the old seaman had to call for help.

Meanwhile Greene had gone to the place where the loyal carpenter slept and held him in conversation until the other two had been taken.

Young John Hudson lay sick in his bunk and the others who were to be set adrift were likewise so weak that they could do no more than rail feebly at the villains who were taking their lives. Painfully, at Greene's harsh orders, they dragged them-

selves to the side and found places in the shallop which had quickly been lowered.

Then the captain called upon Prickett to aid him, and the old landsman limped to the door of his cabin where he made a final plea to the mutineers, he says, beseeching them, "for the love of God, to remember themselves, and to doe as they would be done unto."

But Greene and the rest ordered him back to his cabin, not allowing the master to speak with him.

Later, when the shallop with the Hudsons and the sick men in it drifted near the window of Prickett's cabin, the doomed

captain called out, "It is that villain Juet that hath undone us."

"Nay," answered Prickett, "it is Greene that hath done all this villainy."

"FOR THE LOVE HE BORE THE MASTER"

Now Staffe, the ship's carpenter, was freed, Greene having spared him probably in the belief that such a stout seaman would be useful on the long voyage home. But the sturdy Staffe would have none of this.

"Do you want to be hanged when you come home?" he demanded, confronting the ringleaders. "As for me, I will not stay in the ship unless you force me."

"Go then," they said, "for we will not stay you."

"I will," answered he, "so I may have my chest with all that is in it."

Accordingly, they allowed him to get his clothes and tools, and the carpenter took his place in the shallop "for the love he bore the master."

This unsung hero, Hudson's carpenter, had sailed with him before.

To Prickett he confided that he planned to hoist the little sail and follow the vessel in the hope that the mutineers would relent. Meanwhile those worthies were sacking the ship like a crew of pirates, breaking open the chests and rifling everything in sight. But finally they hoisted sail and slowly stood out of the ice, the shallop towing behind. Then one of their number cut the rope and the little boat with its tragic cargo quickly fell away astern.

Before long the mutineers took in their topsails and lay to, while they further ransacked the ship. But soon someone yelled that the shallop had come within sight, whereupon "they let fall the mainsayle and out with their top-sayles, and fly as from an enemy."

The little open boat faded into the distance and nothing was ever seen again of Henry Hudson, John Hudson, or any of the seven men with them (page 490). Whether they died in the icy waters or reached shore to live for a little time will never be known.

RESCUE SHIPS SAILED IN VAIN

Three ships sent out the following year, by order of the King, partly to search for Hudson and partly to confirm his discoveries, never succeeded in reaching the place.

Henry Hudson probably was ready for death. In his own eyes he had proved the rankest of failures. Four times he had tried,

and four times he had failed. The last hope of his life was gone.

But history's verdict on Hudson is very different from his own. In the sheer extent of his voyages he far surpassed any other Arctic explorer of his time. Resourceful, he tried not one but four of the possible routes to his goal.

His great virtue was his thoroughness. Where before him the map bristled with vaguely outlined shores, will-o'-the-wisp capes, and phantom islands, behind him he left it plainly marked.

If he was a failure, he was a magnificent one. His bold explorations cleared away immense blind spots, opened the way for the founding of New Amsterdam, and made known to the world, though he did not discover, the great river, strait, and bay which carry his name.

The Hudson River, as stated, was really discovered by Verrazano (page 473), Hudson Strait probably by Sebastian Cabot, and Hudson Bay by the Portuguese. But it took Hudson's hard work and dramatic career to etch them on the maps and minds of the world. In his wake came commerce—whales in the north, fortunes in furs in New York and the Hudson Bay country.

And what a figure of devotion is young John Hudson! In all of history he speaks not a word; yet when the name of Hudson is seen on the map he, too, should be remembered.

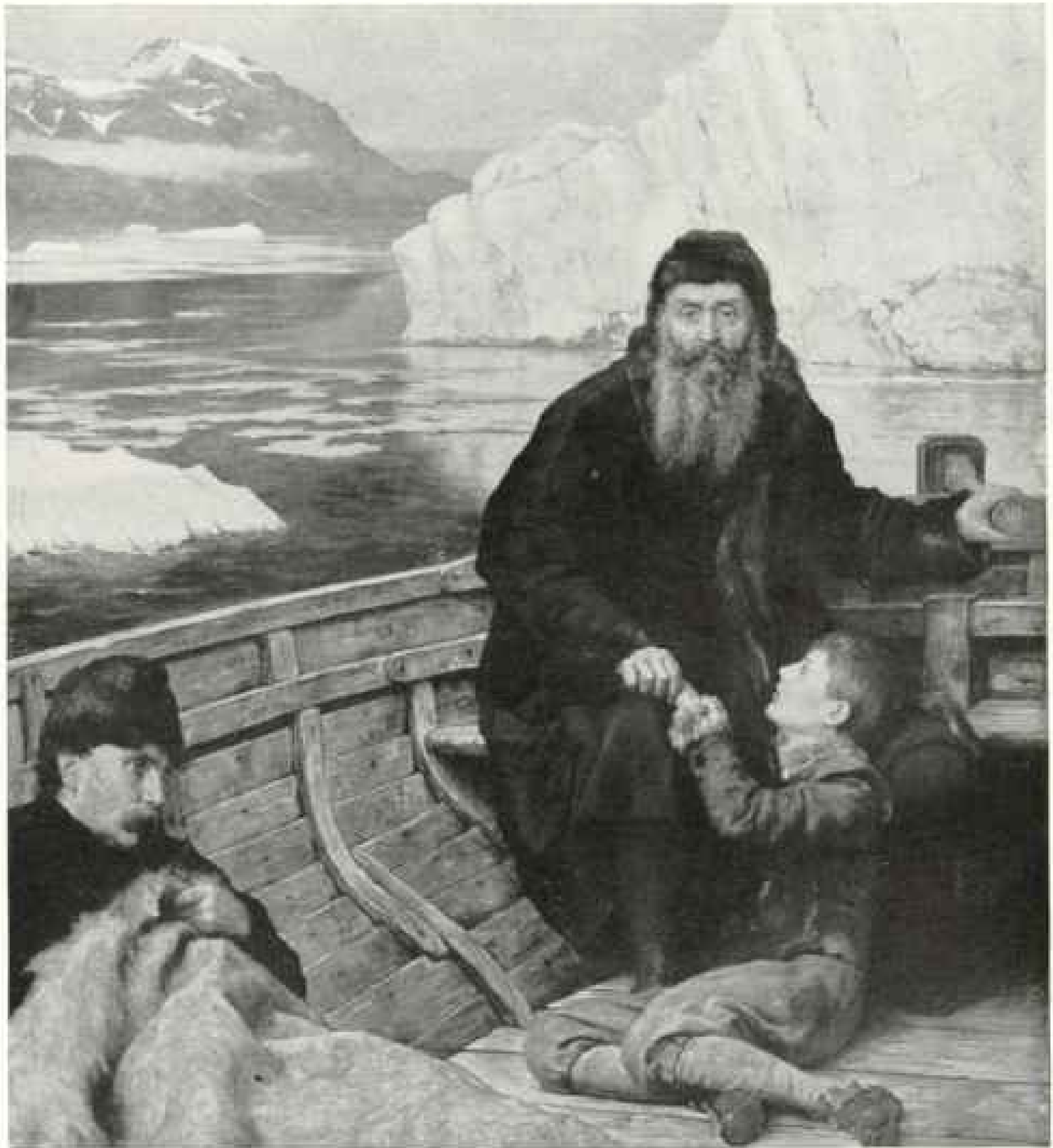
RETRIBUTION STRIKES

And what of the *Discovery*? Did she ever reach home? She did, by dint of a nightmare voyage in which her sailors were reduced to eating seaweed fried with candle ends, and landed, more dead than alive, only to be put in prison.

Old Juet died on the way, of slow starvation. But the other leading plotters met a swifter end. Encountering Eskimos near the mouth of Hudson Bay, the *Discovery's* men, perhaps up to the *Half Moon's* old tricks, aroused the ire of the natives (page 482). They were set upon and Greene, who had talked of turning pirate, went down crying "Coragio" and laying about him with a club. William Wilson died cursing. Michael Perce and Thomas, too, were killed.

There apparently was no hanging as a sequel to the crime against Hudson.

Yellowed papers unearthed in London a few years ago, after having been lost for



Photograph from W. E. Meyers

"THE LAST VOYAGE OF HENRY HUDSON"

This dramatic painting by the English artist, John Collier, in the Tate Gallery at London, represents Hudson abandoned in a small boat by his mutinous crew in Hudson Bay, June 22, 1611, with his gallant son John, and one of the sick men put into the shallop with them (page 485).

three centuries, disclosed that Prickett, Edward Wilson, barber-surgeon, and some of the others were tried and acquitted of the mutiny. The court seems to have felt the guilty were already dead.

And what of the captain's widow, Mrs. Katharine Hudson? A strong-minded woman evidently was she. Left almost penniless by her husband's murder, she sought compensation from the backers of the voyage. Not only did she win for her son Richard a lucrative position in the serv-

ice of the British East India Company, but she proceeded to India, too, and actually engaged in the company's trade herself—a business woman far ahead of her time.

When she thought the company had gotten the better of her in a matter of freight charges, she promptly sued. One of the company's old books contains the entry, "end of Mrs. Hudson's tiresome suit."

A strong-minded woman indeed! Perhaps we can understand better now why Henry Hudson liked those long, long trips at sea.

THE SOCIETY'S MAP OF THE REACHES OF NEW YORK CITY

MORE people will cluster upon one small patch of the earth's surface this spring and summer than ever before assembled in any one place in all the world's history.

Joining the 7½ million people who already live in New York City, some 15 million more are expected to visit the skyscraper city's startling World's Fair.

Along what routes will they pour in for this pilgrimage? What scenic places and historic shrines can they drive out from New York to visit?

To answer such questions, the National Geographic Society presents as a supplement to the April issue of the NATIONAL GEOGRAPHIC MAGAZINE a ten-color, decorated map, 26½ by 29 inches, of "The Reaches of New York City."*

Here, on the framework of Nature's time-old ridges and rivers, men have wrought one of the mightiest and speediest works of all time. Consider three headlines of only 330 years—only a few seconds on the clock of the recorded annals of mankind:

HENRY HUDSON SAILS UP HIS NAMESAKE RIVER, 1609

PETER MINUIT BUYS MANHATTAN ISLAND FOR \$24, IN 1626

GEORGE WASHINGTON INAUGURATED AT THE FIRST U. S. CAPITOL UNDER THE CONSTITUTION, APRIL 30, JUST 130 YEARS AGO

From such modest events there arises in 1939 the exposition to symbolize the world's biggest and richest city—a city dispatching more ships and trains, more planes and words, buying more food and selling more goods, than any other place on earth (pages 418-419).

The cartographer's chart reveals the geographic setting of this magic drama—tracing the harbors and waterways, the mountains and human settlements, and the many other factors that combine with man's resourcefulness to build a unique area of traffic and trade.

The map encompasses the rich region radiating from the metropolitan area into several States where one feels the pulse of the city a hundred miles or more away as

* Members wishing additional copies of the map, "The Reaches of New York City," may obtain them by writing the National Geographic Society, Washington, D. C. Prices, in United States and Possessions, 50¢ on paper (unfolded); 75¢ mounted on linen. Outside of U. S. and Possessions, 75¢ on paper; \$1 on linen. Postage prepaid.

trainloads and truckloads of food, goods, and fuel pound past. It includes places as far as 140 miles from Broadway and 42d Street. It shows New York City in its relation to Philadelphia and to points as far north as Albany, south to Cape May, and east to New London, Connecticut.

Besides mapping New York State up to Albany, the chart comprises in detail all of New Jersey, most of Connecticut, part of Massachusetts, a fringe of Pennsylvania, and a strip of Delaware. Thus it dovetails with the National Geographic Society's map of "Historic and Scenic Reaches of the Nation's Capital" (July, 1938). The two maps vividly portray a highly important section of the United States along a 400-mile stretch of the Atlantic coast from Virginia to Connecticut.

FROM SWAMP SITE TO WORLD'S FAIR

In Queens, on Long Island, is the World's Fair site, more than 1,200 acres of parkland where formerly stretched a tidal swamp. All the main approaches are shown, including the newest of all, the Bronx-Whitestone Bridge across the East River, scheduled to be opened early this summer.

Symbols help in quick location of monuments, shrines, ruins, noteworthy architecture, old churches, battlefields, and other treasures of a region exceptionally rich in scenic beauty and historic interest. Main roads are indicated in brick-red, with highway numbers; railroads in black, canals in blue. Sprinkled over the map in blue are numerous notes identifying birthplaces of famed Americans, or highlights of such diverse places as Blue Point, Long Island, famed for oysters, and Gardiners Island, where Captain Kidd hid treasure.

Around the borders are notable scenes and faces, done in old woodcut style. There are Grover Cleveland, Henry Hudson, Thomas Edison, Robert Fulton, Alexander Hamilton, Eli Whitney, Nathan Hale, Theodore Roosevelt, and J. A. Roebling, the designer of the Brooklyn Bridge.

A diversified company, they typify the vigor and versatility of the area within the compass of this map. Typical, too, are the scenes selected: Columbia University, Atlantic City, the Palisades of the Hudson, Rockefeller Center, West Point, Montauk Light, Brooklyn Bridge, the World's Fair. Another decorative note is added by the arms of New York City.

Reading the map with imagination helps explain New York's supremacy. To the northward the lordly Hudson makes a broad water highway upstate. With its connecting waterways, and the roads and rails through its valley, it leads from New York to the Middle West, the Far West, and Canada. Sandy Hook, like a lifted finger, seems to point the way.

New York with its excellent harbor forms a natural entry to much of industrial New England, Pennsylvania, and New York State, and it lies between busy New England and the rich, productive South.

Because it is a major gateway to Europe, airways, railroads, and highways, and far-away connections lead to New York. From Florida, from the west coast, from big inland cities, from Boston and Canada, trains, planes, and buses pour in, unload, reload, and move out again. So many trainloads of food arrive that a year's supply would mean a line of boxcars stretching from New York out to Denver!

The bulk of all our mail and passenger traffic over the Atlantic is handled out of New York, and fully 50 per cent of all our sea-borne freight enters and clears through this great harbor. Its place at the end of tropic ocean lanes makes it the world's chief coffee market, and North America's principal place for refining raw sugar.

In the territory covered by this map exist more miles of highway, more massive bridges and tunnels, and more great airports than in any other equal American area. Planes crisscrossing here in one day represent more horsepower than all the horses and oxen that plodded the Plains in the busiest year of the California gold rush.

In New York and its metropolitan district, the commuter zone stretching over into New Jersey and up into Westchester and Connecticut, live more people than inhabit all our Pacific Coast States. Bank deposits in the area exceed all the money in circulation in the whole United States. To pay cash for New York City property alone, at its assessed value, would exhaust the whole stock of money in the United States, including gold and silver coin and bullion held by the U. S. Treasury, a total of more than 17 billions.

In news dispatches, commercial, government, and other messages, more words are fired into this area, by telephone, cable, and radio, than into any other map spot.

Soon a new kind of news is due; it will deal with transatlantic airplane travel, be-

cause on Long Island a major international airport is about to open, for use of Pan American, Imperial Airways, the German, French, and other airlines which will base here in this new fast link between the New and Old Worlds. On the map appears the site of this international depot of the air, known as the North Beach Airport (p. 424).

Among historic routes are the old Albany Post Road, part of the Boston Post Road, and the old stage road between New York and Philadelphia, now U. S. No. 1. For its length, traffic is heavier on this last-named road than on any other in America.

MAPPING "YANKEE DOODLE"

Our *Yankee Doodle* story stretches clear across this map. In the French and Indian War, the shabby dress of Colonel Thomas Fitch's "cavalry," leaving Norwalk, Connecticut, for the front, led his sister Elizabeth to raid her chicken yard for feathers and stick one in each man's cap. Later at Fort Crailo, Rensselaer, New York, where the men joined with General Abercrombie for the Ticonderoga campaign, a British surgeon was so amused by the chicken-feather plumes that he wrote the lines, "stuck a feather in his cap," and so on.

South Coventry, Connecticut, was the home of Nathan Hale, whom the British hanged near what is now 45th Street and First Avenue, New York City. It was he who said, "I only regret that I have but one life to lose for my country."

Take U. S. Highway No. 1 north from Philadelphia, and at Trenton you come to the old barracks where the British had quartered their Hessians that Christmas night when Washington crossed the Delaware from the west, amid floating ice, and struck a historic blow for freedom.

Near Wethersfield, Connecticut, is the Webb House where Washington and Rochambeau planned that joint campaign which finally brought about the capture of Cornwallis and the end of the Revolution.

But the map tells its own story. Just off Long Island, the artist has shown us Hudson's *Half Moon*, first of all boats to land a visiting party on Coney Island (page 471). Around the map he runs a border of structural steel, symbolic of New York's amazing engineering achievements.

Designed by C. E. Riddiford, the map was produced in The Society's studios under the direction of Chief Cartographer A. H. Bumstead. Research is by James M. Darley and Wellman Chamberlin, culture by A. E. Holdstock, and relief by J. J. Brehm.

COUNTRY LIFE IN NORWAY

The Beneficent Gulf Stream Enables One-third of the People in a Far-north, Mountainous Land to Prosper on Farms

BY AXEL H. OXHOLM

AFTER 20 years of absence, I went back to visit a valley in Norway where my father had practiced medicine when I was a boy. Nobody would know me, I thought. To my surprise the bus driver refused my fare, the innkeeper politely returned my money, and for a week I had to accept free board, room, and fishing privilege.

"Your father treated the poor people here for nothing," explained the local councilman, "and no man in this valley will accept your money."

That is the spirit of rural Norway. Hordes of visitors swarm each year to see the fjords and glaciers, and the cities in which life differs little from that in other cities of northern Europe; but it is the back country, with its farm, forest, and village life, that reveals the real Norway.

NORTHERNMOST CIVILIZED COUNTRY

Mountainous Norway, stretching for 1,100 miles between 58 and 71 degrees of north latitude, is the northernmost civilized country. But for the Gulf Stream, a branch of which washes its west coast, it would be an arctic waste (map, page 496).

In such a mountainous land it is hard to see how agriculture can be the main occupation, and yet about one-third of the population of 2,907,000 people live on farms. The farmers have toiled for generations, clearing the forests, pulling stumps, removing millions of tons of stone, draining swamps, and utilizing every square inch of ground suitable for pasture or cultivation. Today, despite the natural handicaps under which they labor, about 94 per cent of them own their land.*

The thrifty, stubborn character of the country people has been formed by this means. Through centuries Norwegians have worked to create stable living conditions and gain economic security, a fair distribution of wealth, and respect for law

* See "Norway, a Land of Stern Reality," by Alfred Pearce Dennis, NATIONAL GEOGRAPHIC MAGAZINE, July, 1930.

and order. They cling to their soil with a tenacity at times almost fanatical, many a farm having remained in the same family for several hundred years.

An old friend of mine, born 75 years ago not far from the Swedish border, is a good example of the Norway farmer. At an early age he had to shift for himself. He married a capable girl from another valley, and the two broke new land far up on the mountainside where few could have made farming pay.

After 50 years of toil he is the richest man in his neighborhood. He has brought up a family of eight children, sent them to school, and given every one a technical education. The old farmstead is still his home, but for each son and daughter he has purchased a farm in the valley.

His success lies in his thrift and the strong family tie which made every member of the household co-operate, as in the *Swiss Family Robinson*. Most self-sufficient group I have ever met, they produce on the farm all their food, with the exception of coffee, sugar, and salt.

The fishing rights they own in a lake bring in annually a thousand dollars or more, and a few head of cattle provide butter, milk, and cheese. In winter, boats, fishing tackle, nets, etc., are made at home, as are clothing, shoes, and farm implements.

One son is an expert carpenter, one an electrician, and another a blacksmith. Together these boys installed a complete hydroelectric power plant for the community. The mother and daughters weave in their spare moments; the boys add to their income by hunting and trapping.

A POOR MAN'S KINGDOM

In the statement, "Norway has houses and cottages, but no castles," lies the key to the social and economic structure of the country. The average size of the farms is only nine and a half acres, and all Norway has barely a score that exceed 250 acres. There are few rich people and everybody shares the tax burden.



© A. B. Wilse

COAST GUARD VESSELS RACE TO THE AID OF A DISABLED SHIP

During stormy winter months, 15 motor vessels and 10 sailing ships of the Norwegian Life-saving Society patrol treacherous coastal waters. Supported by voluntary contributions, the society also maintains land stations with lifesaving equipment. In its 40 years of service the *Sealværet* has rescued 70 men from 19 foundering vessels and towed into port 1,000 disabled boats.

I observed that inheritance laws have a direct bearing on the division of farms, according the same treatment to men and women. Usually the eldest son inherits the farm, though he must "pay off" his brothers and sisters. A farmer and his wife who feel that they have worked enough may cede the farm to their eldest son, and in doing so be assured of being taken care of as long as they live.

MANY DOORS ARE NEVER LOCKED

Honesty is a characteristic of the people everywhere. Though the country has its quota of thieves and crooks, "their names," as the police records say, "are known." The traveler in Norway finds hundreds of farmers who never lock their doors at night.

Willingness to accept a stranger's word is a common trait. In one valley, I, a total stranger, was given the key to an old church. A beautiful 14th-century church door key was hanging on a nail inside.

"But it might be stolen," I said to the warden's daughter.

"People in this valley never steal," was the reply.

In several out-of-the-way places when I asked the gasoline attendant to fill up my tank, I received the surprising advice, "No, don't do that. We charge you 33 cents a gallon because of transportation costs. Down in the valley gas costs only 28 cents."

"A stranger must not be exploited" seems a slogan in most Norwegian communities. In a small country district I had to leave the inn at 7 a. m. The proprietor, who was in bed, asked me, through the maid, to make out my own bill. It was returned to me with a deduction of 50 cents because the breakfast at that early hour did not include the customary fish course!

LAWSUITS A FAVORITE SPORT

Notwithstanding general honesty and fairness, stubbornness and a quarrelsome attitude are common traits among the farm-



© A. B. Wiise

IN UP-AND-DOWN COUNTRY, MILK THAT'S UP COMES DOWN BY CABLE

On a rude but sturdy platform, girls unload cans of milk just arrived by cable trolley from high up the mountain across the stream. Three cans may be sent down each trip. Such cable slides are also used for lowering hay and wood to valley floors. Norway has almost half as many cattle, mostly of native breeds, as people (page 536).

ers, and a man's reputation grows with the number of lawsuits he is able to support. They litigate about anything, from boundary lines to hunting grounds.

Many disputes are referred to a municipal board made up of well-known men or women of common sense whose duty is to call both parties before them and to hear their stories.

A JUDGMENT WORTHY OF SOLOMON

I know a case where one farmer's dog had torn a hole in another farmer's trousers. The judgment, worthy of King Solomon, was: Farmer A must pay five dollars to farmer B for hole in trousers; farmer B must pay five dollars to farmer A for trespassing. The litigants swapped bills, shook hands, and left contented.

If to the casual observer Norwegians seem melancholy and pessimistic, their environment should be considered. Months with only a few hours of daily sunshine or no sun at all naturally have their influ-

ence on human moods. Here men lack the carefree outlook on life enjoyed by people of sunny southern climes; they take life seriously.

A Dane once told me how a Norwegian farmer visiting Denmark was inclined to boast. Shown the fertile plains of the country and its prosperous cities, he always belittled what he saw in comparison with things in Norway. Finally the Dane in exasperation showed his guest the Round Tower in Copenhagen, the pride of Denmark.

"You certainly do not have that in Norway," he said.

"That may be," was the answer, "but if we did have it, it would be much higher and much rounder."

Since most farmhouses in Norway are made of wood, men here know the art of girdling the trees in a way to cause heavy bleeding of resin. They make wood tar from fat stumps and paint their houses with this preservative. Adorning doors



and eaves of some of the century-old houses are elaborate wood carvings.

Shingles are made by means of a horse-drawn wooden frame in which a big knife is set like the blade in a hand plane. With the driver perched atop it, the contraption is pulled over a row of logs placed end to end on the ground, and shingles are "plowed" off by the knife.

An old superstition has it that gnomes make their homes under the roots of farm-yard trees. To quench the thirst of these gnomes, farmers pour beer about the trees at Christmas time.

A plant called "the family peace," grown in some houses, is carefully nursed because of a belief that if it dies the peace of the home will come to an end.

Much furniture is homemade, especially "log chairs" cut from logs of suitable length and two or three feet in diameter. The upper half is hollowed out to form seat and back, and the chair is then painted and decorated. Wooden beds, tables, and cupboards are elaborately carved and painted.

Unfortunately, many farm homes have been modernized in recent years, and old interiors have been spoiled. Colored glass and verandas copied from central Europe have been added, so that many fine old farm buildings have lost their character.

In this northern clime farming can be carried on only from April to the end of October. Summers are warm, and the many hours of sunlight accelerate the growth of vegetation.

In spite of hilly land, Norway uses much farm machinery, a large percentage of which comes from America. Silos, I noticed, are being introduced by returning Norwegian-Americans.

Visitors are astonished to find how many



THE "SPARKSTØTTING" LOOKS LIKE A KITCHEN CHAIR ON SKIS

School girls show the proper form of operation—hands gripping the chair-back handle bars, one foot on a steel runner, and the other free to push. Much used in country districts, the sled is surprisingly fast (page 511). Bright, hand-knitted caps and sweaters are farm products.



Photographs by A. B. Wilce

CALL OF HORN AND ROAR OF WATERFALL MINGLE IN DUET

Made of birchbark wound around a hollow wooden stick, the long *lar* was once generally used to signal from one mountain pasture to another, or to call in the cattle. The blonde *lar* blower, clad in white blouse and red skirt, plays simple tunes on the instrument.



© Carl Normann

FROM A LEDGE HIGH ABOVE GEIRANGERFJORD, THE CRUISE SHIP SEEMS A TOY

Perched dizzily on the overhanging "pulpit," the man looks down into the deep Flydal Gorge. Geiranger is one of the fjords most visited by travelers who come by ship or automobile. Down its cliffs leap scores of waterfalls, among them the well-known Seven Sisters. Small hamlets and farms occupy less precipitous lower slopes. In the spring, when rocks and snow avalanches thunder down into the water, huge waves are set in motion, often endangering the lives of villagers and cattle.



© A. B. Wilse

THRIFTY FARMERS CLING TO "THREE-DIMENSIONAL" FIELDS

On such 35-degree slopes in the Gudbrandsdal, children are sometimes tethered so they won't fall out of their front yards! Norway is so mountainous and heavily forested that only one twenty-fifth of its area is cultivated; yet agriculture is the country's leading occupation.

different crops grow here, so far north. Wheat, barley, rye, and oats are all produced in considerable quantities, though Norway must also import these grains.

To support the cattle and dairy industry, hay is most important. Potatoes and turnips grow widely, but early frosts often damage the crops. During the last 25 years the growing of fruits and vegetables has much increased.

Citrus fruits are imported; so are vegetables in the off season. On the southern shores, peaches and apricots will ripen in some sheltered places, and in the central fjord districts of western Norway some tobacco is grown.

Wild blueberries, strawberries, lingonberries, and raspberries, gathered in the summer and fall, give some farmers a good income. Yet, because the potential farm

land of Norway is limited, the country will probably always import much of its food.

SUMMER FARMS IN THE MOUNTAINS

Virtually all Norwegian farms of any size have *seters*, or "summer farms" up in the mountains, where cows are taken in June and kept till fall (page 511).

These farms are operated by women skilled in the making of butter and cheese. To most mountain farms belong certain hunting and fishing rights, which the owners lease to sportsmen. Ptarmigan, capercaillie, woodcock, and willow grouse are among the birds to be found.

Nowadays few bears are left, though in the past they often endangered the lives of both cattle and people. I saw the doors of some old mountain farmhouses still studded with sharp-pointed nails put there

to ward off bears. Hunters may still find the elk, hare, fox, marten, otter, and other animals; and lakes, of course, abound in fish such as salmon, trout, and pike.

No other animal of the country interests Norwegians so much as does the little fjord horse, or Norwegian dun (Plate VIII and page 528). Nobody knows from whence it came. Whether it was brought in on early Viking ships or came overland from the east is still a matter of guesswork.

Small in height and usually beige-colored, it has a black stripe through the mane and down the back. Its front legs are also striped like those of the primitive horse of Asia, and it has a small head and slightly curved nose not unlike the Arab horse, which it somewhat resembles.

Some years ago a farmer in the western part of the United States imported some of these animals, but he came to grief—not because the horses became homesick or would not work, but because every one of them was promptly stolen by Indians who took a fancy to the stripes.

Raising silver foxes, on special fur farms, is a brisk business here; and goats and sheep are scattered all over the kingdom. Sheep are largely of imported stock, while goats are of native breed. Most wool is spun and woven on farms.

"HOT GOATS" INSTEAD OF "HOT DOGS"

From goat's milk the famous Norwegian brown goat cheese is made. Only a hardy Viking can digest pure goat cheese; therefore much of the cheese exported is mixed with cream, which has a tendency to modify the strong taste of goat.

One village in western Norway I heard called "Goat Hell," because there whole flocks are taken and converted into "hot goats," or sausages.

Mixed with wool, goats' hair is used as material for heavy socks because it makes them almost impervious to water and very warm.

As a boy I much admired the Norwegian elkhound, which is as old as the Norwegian race itself. This dog has a powerful body and thick, dark-gray fur. It carries its bush tail coiled. An intelligent, hardy animal, it is a fighter that I have often seen chase every other dog off the farm. It is fearless and a keen hunter, at its best in chasing bear and elk, the latter the "moose" of northern Europe.

Norwegian farmers are more prosperous

than the size of their farms would indicate. Since many do not have enough land to support their families by farm operations alone, they have other occupations. Thousands along the coast are fishermen, and those near timber districts are also woodsmen, having log cabins in the forests. Many farmers also own their own wood lots of saw timber, pulpwood, and firewood. In case of crop failure, the wood lot will usually see the farmer through till next harvest.

It is astonishing how many farm tools, implements, harnesses, and shoes are home-made. The farmers build their own houses and boats. Jacks-of-all-trades they must be, to make ends meet.

In some valleys the silversmith's art has been handed down for centuries from father to son, and the designs and patterns have their origin back in the dim ages. I saw in the valley of Telemark exquisite filigree work which, to my mind, has no equal among farm-home crafts elsewhere in Europe. In other valleys farmers are skilled coppersmiths and work during winter months making excellent copper kettles, coffee-pots, flower stands, etc. These products are sold all over the country.

Wood carving is likewise a highly developed art based on centuries of tradition. One need only consider the artistically carved dragons and other ornaments of old Viking ships, the elaborate decorations of the thousand-year-old "stave" churches still in existence (page 527), to realize that wood carving is an ancient art in Norway. During the winter evenings farmers make a variety of such carvings, often based on their own ideas of design.

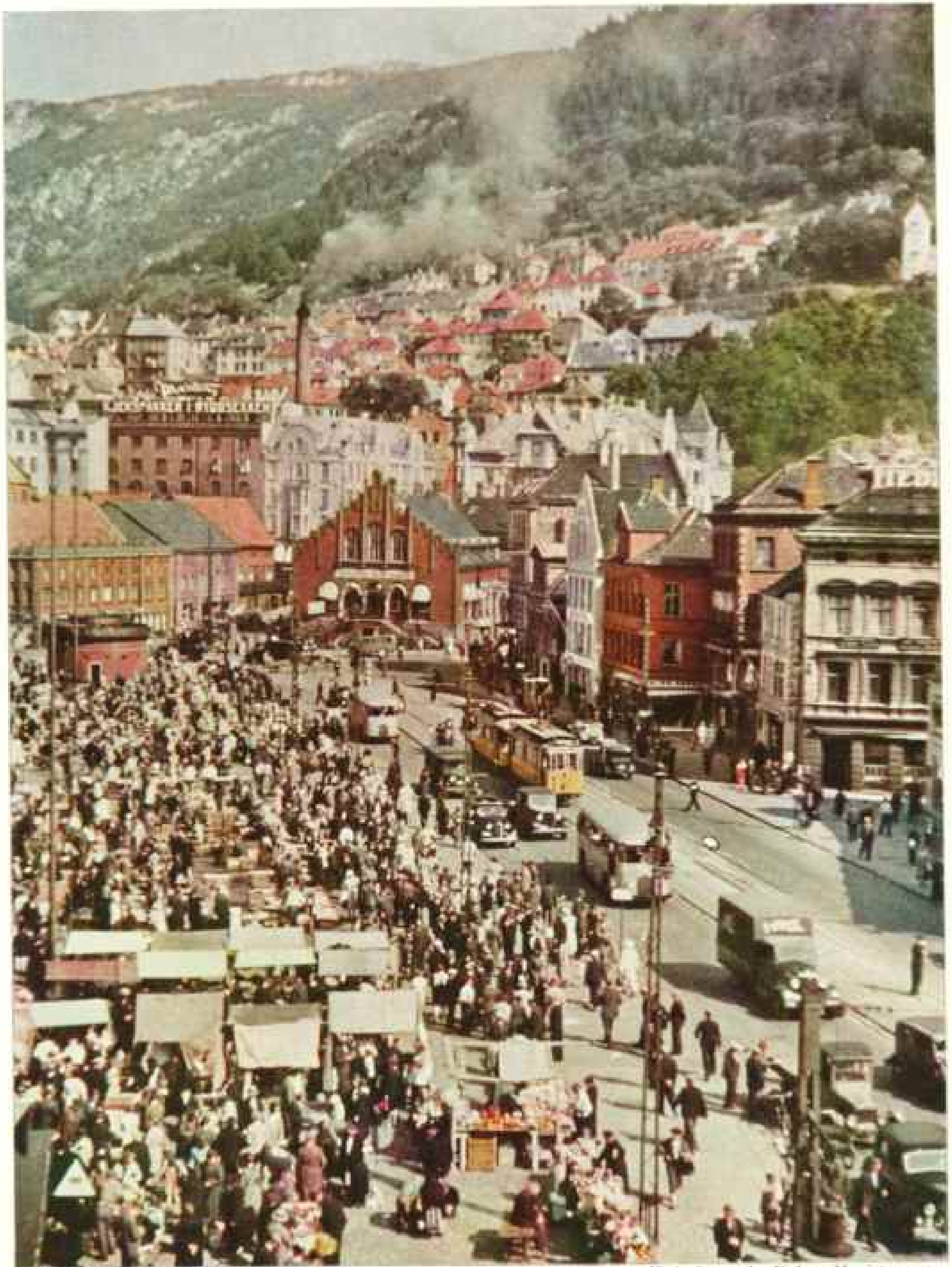
Then there is wrought-iron work. Beautifully designed and executed chandeliers, hinges, and fireside implements are made by country blacksmiths. They find an excellent market throughout Norway.

NEEDLECRAFT A FINE ART

Women and girls gather moss, bark, nuts, and plants, and extract from them dyes of rare beauty. That these vegetable dyes are sunfast is proved by the century-old vegetable-dyed tapestries seen in Norway.

In embroidery the Hardanger pattern is particularly well known. There is always a good market in Norway for hand-knitted sweaters, caps, scarfs, socks, and similar sport togs, all produced in characteristic patterns of the region where they are made. One small farm community makes only

NORWEGIAN FJORDS AND FOLKWAYS



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Kodachrome by Kahne, Movietone news

IN BERGEN'S BUSY MARKET FISH ARE SOLD ALIVE IN SEAWATER TANKS

Founded nearly 900 years ago, the city has experienced many destructive fires. Streets are wide, and open spaces are numerous; to cut down the hazard. Although Bergen lies in the same latitude as northernmost Labrador, the climate is much milder because of the warm Gulf Stream, which bathes Norway's shores. To see the midnight sun at the North Cape, travelers merely buy cruise tickets. If they were to go to the same latitude in North America, they would be arctic explorers traversing the Greenland Ice Cap or northernmost Alaska.



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Kodachrome by Kahne, Movietone

ETERNAL SNOWS CROWN THESE MAJESTIC GIANTS, THEIR PEAKS HALF HIDDEN IN THE CLOUDS

Slowly steaming up the wide expanse of Romsdalsfjord, a cruise ship approaches the tiny town of Åndalsnes, 35 miles inland from the sea.



© National Geographic Society

Kodachrome by Kühn, Movétolewa

COSTUMED YOUNG FOLK DANCE IN THE MEASURED TREAD OF AN EARLIER DAY AT A NORHEMSUND WEDDING

In this and other villages along the Hardangerfjord, life of the countryfolk changes little from generation to generation. A fiddler always is on hand for the wedding ceremony (Plate VI). His peculiar violin has extra strings, some of steel and others of gut, to increase resonance.



© National Geographic Society

ROMANCE AMONG THE RØDDEENTRON

Soon the village fiddler (Plate III) will be playing for their wedding; for these young Norheimund folks are engaged. They have donned old national costumes, but the girl's hair has been set with a modern touch.



Kodachroms by Kubin, Movietone

THIS BRIDE'S "SOMETHING BORROWED" IS HER CROWN

Heirloom of a Hardanger family, the delicately wrought coronet also supplies the proverbial "something old." It is willingly lent to any girl of the community for her wedding. A napkin covers the hands of the bride.

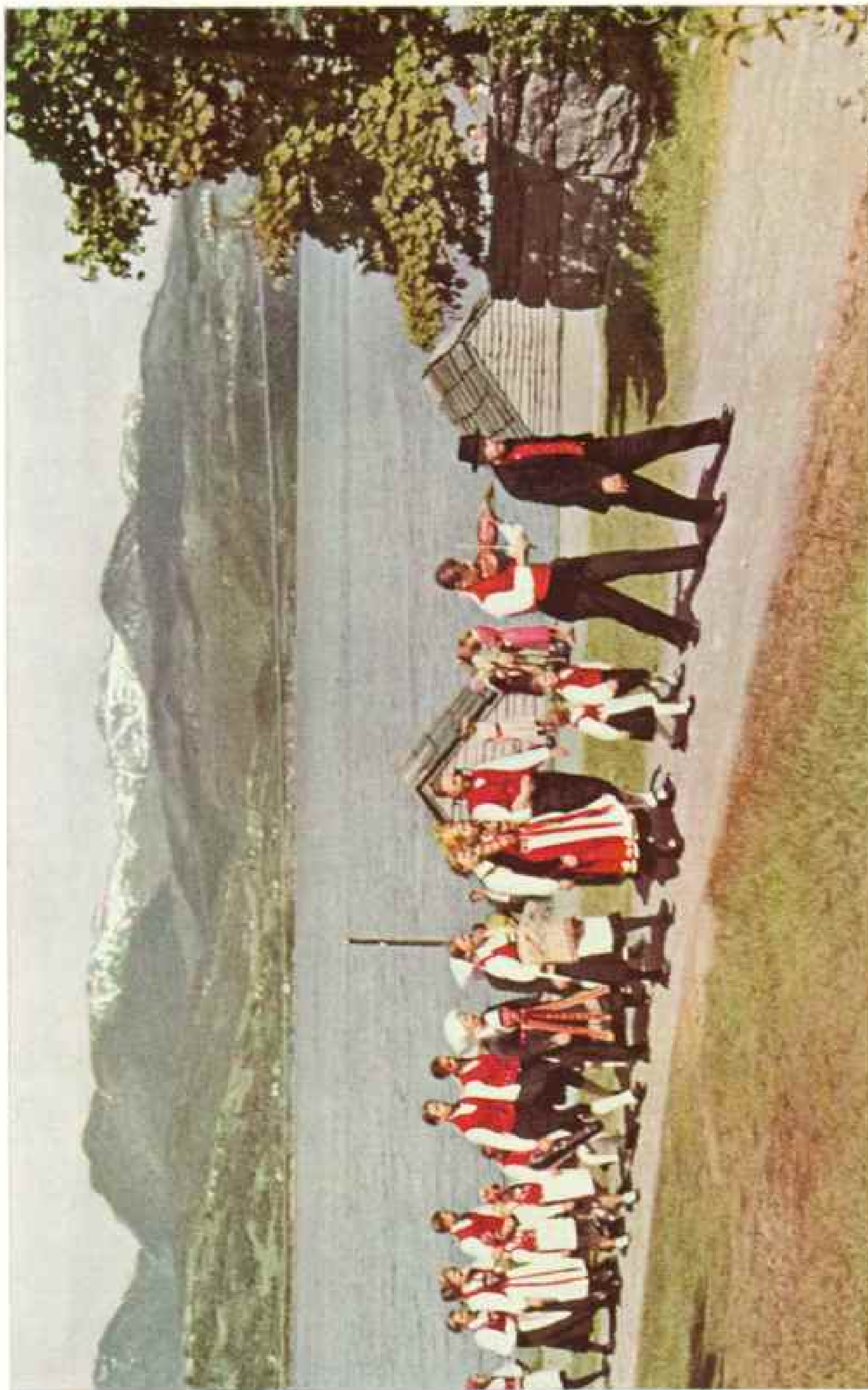


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Kodachrome by Kubner, Mozlittanews

ONLY A WEDDING CAN BRING OUT SUCH AN ARRAY, EVEN IN THE OLD-FASHIONED JARDANGER REGION

Huge white linen caps, called *shawls*, folded and starched, are prized by the women. Boys and men rely on buttons to ornament their jerkins, but feminine *tybet* also include a bodice trimmed with embroidery. Large handmade silver pins, pendants, and brooches, delicately shaped, are heirlooms.



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Kochetrom by Kuhn, Movintrom

HERE COMES THE BRIDE—TO THE FIDDLER'S MERRY TUNE—A BRIDAL PROCESSION NEARS THE CHURCH

Accompanied by relatives and friends, the young couple passes through the village of Norheimund. One of the marchers carries the case for the ever-present violin. Such scenes have served for centuries as motifs for designs in tapestries, hand-woven in the Håranger.



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Kofa by Kalm, Moynonews

BOUGHS BEDECK THE BOAT, TELLING ALL THAT A WEDDING PARTY IS ABOARD.

The bride and groom (Plates IV and VI) live across the fjord from Norheimund, and must cross the waters to reach the church.



WITH CHASSIS OVERHANGING, A BUS FERRIES THE SWIFT BARDU RIVER. Irregularly melting ice from glaciers, not tides, causes the swift stream to rise and fall, thus making the floating dock necessary. The passengers are landing at Bardu, above the Arctic Circle.



© National Geographic Society

Kodachromes by Kahne, Movietone

A NORWEGIAN DUN IS NOT MUCH BIGGER THAN A PONY

The stocky horse, well adapted for service in fjord country, has maintained its color since earliest history. These fast trotters once were exported to England to improve racing strains.

mittens, and some of them are exported to America. In olden days a bride had to prove her skill by making and embroidering her future husband's wedding shirt. Nearly every region has its peculiar and picturesque costume, still in use, but now seldom worn excepting on holidays and festive occasions.

In a lonely mountain valley I saw a door-mat made from old rubber tires, cut into strips and held together with iron rods! Clever toys, fishing tackle, and novel household appliances all find a market. The extensive electrification of the country has played an important part in the development of these small industries.

Such industries help keep people off the charity rolls; that is why the State takes such keen interest in their development.

WOMEN ACTIVE IN PUBLIC AFFAIRS

Though the man still "wears the trousers" or, as the Norwegians say, "decides where the cupboard is to be placed," women have gained a strong voice in public affairs.

Norway, in fact, was among the first countries in Europe to enfranchise women, and the political position of Norwegian women and men today is equal. Women are found in all positions except in the Army and Navy. There are women in the Parliament and in executive government positions, women owning and operating large farm properties, and women leaders in the business world.

Sunday is peaceful on a Norwegian farm.

On Saturday afternoon the whole family is drafted for kitchen police. All floors are scrubbed with sand and soap, and freshly cut juniper twigs are spread over the floor.

In the fireplace birch branches are placed. This imparts an agreeable odor—one can "smell Sunday coming." On Saturday night young folk attend dances or meetings of their own societies. They may also go to the nearest community to see a picture show.

Each valley has its peculiar dances and its own music. It seemed to me that on the plains the music is more cheerful and the dances are more sedate than in the mountain valleys (Color Plate III).

Old dances that I saw as a boy have given way in some places to more modern ones, but up in the mountains people cling to their own music.

There is no doubt about the originality of these compositions; they are as typical

of Norway as are the mountains and fjords. When Norwegian farmers dance, they dance! They lift their girls high from the floor, kicking almost to the rafters.*

From long ago is handed down a story of a mountain dance at which a new tune was played, so wild and weird that it created bad blood among the men and ended in a fight. After several of the dancers had been killed, survivors saw that the devil himself was the fiddler. This tune, called the "Devil's Dance," is still played.

The folk at Røldal claim descent from French fugitives who, tradition says, discovered the valley. They have a legend that the crucifix of their old "stave" church was caught in a net by a fisherman, who, unable to lift it from the water, began calling out the names of all the churches in Norway. When he named Røldal's church, the crucifix became so light that he lifted it into his boat.

Soon it was reported that the sweat on the face of the Christ had healing power, and for centuries people came to this church from all over the country to pray for good health. Thousands of Gothic inscriptions on the woodwork of the walls bear witness to the many pilgrims.

Often visitors are puzzled to note that the altar shows only eleven Apostles. The omission of one is explained as due to the action of the forefathers who built the church; they did not want anything to do with Judas!

In front of these old churches one often finds an "armory," a place where the farmers in early days were required to leave their axes and other weapons before entering the house of worship. Tricksters tried to evade this rule by making walking sticks with ax heads as handles. On some old farms such canes may still be seen.

CHRISTMAS IN THE COUNTRYSIDE

Of the few holidays observed in Norway, the principal one is Christmas. Preparations for the celebration begin weeks in advance with baking of cakes and cookies and brewing of Christmas beer. Farmers, however, are moderate in their use of alcohol; they do their drinking on special occasions, such as Christmas, weddings, and funerals, but are not in the habit of mixing drinks with their work.

* See "Life in a Norway Valley," by Abbie L. Bosworth, NATIONAL GEOGRAPHIC MAGAZINE, May, 1935.



© A. B. Wise

IN RAINY VALLEYS, HAY MUST BE DRIED ON RACKS OF POLES AND WIRE

Many farmers, not owning enough land to support their families by agriculture, become fishermen or lumbermen in winter. Others make tools, harness, shoes, furniture, and objects carved from wood or fashioned from wrought iron (page 500). Women spin, weave, dye tapestries, and excel in embroidery and knitting.

Akhevit, a special kind of schnapps made from potatoes, is used. Formerly this was made on the farm, but now it is a factory product.

Most countryfolk bake their own bread, usually of rye. Throughout Norway the so-called "flatbread"—rye dough rolled into almost paper-thin sheets about two feet in diameter and baked to appetizing crispness—is the favorite. It is delicious and will keep for months.

During heathen times the horse was a sacred animal and horseflesh was eaten at religious festivals. Since Christianity was introduced 900 years ago, however, the country people have had an aversion to eating horseflesh.

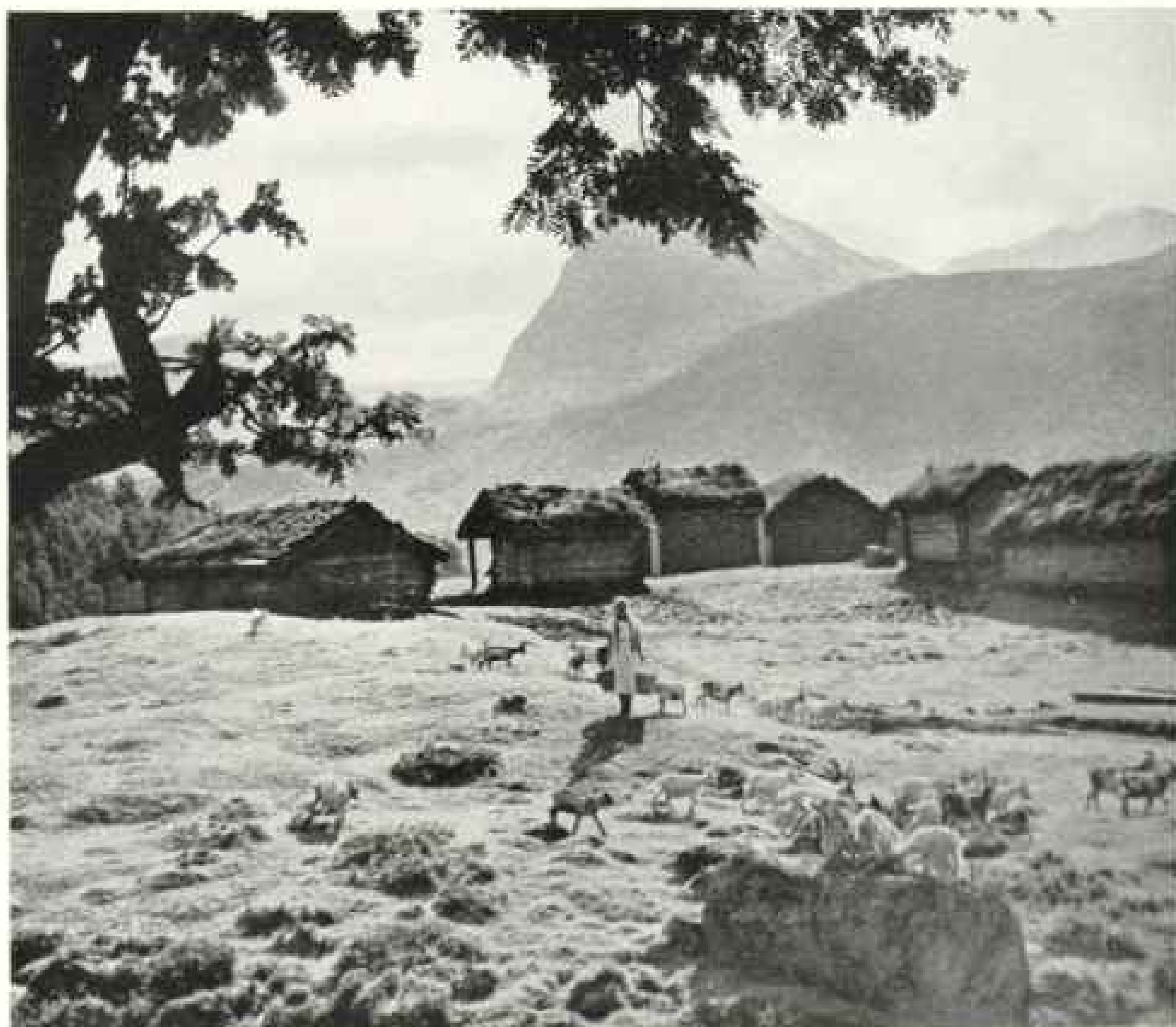
There are numerous kinds of cheese, ranging from a skimmed-milk product fla-

vored with caraway seeds and cloves to rich cream cheese. Fish of all kinds are also in use. The famous *lutefisk* is cod treated for three weeks with lye and water. Smoked, dried, and spiced fish delicacies complete the menu.

Outdoor sports are popular on farms. Norway is a real ski country, and in every valley skis are used both for recreation and as the chief means of transportation. Some of the best runners can cover 30 miles in hilly country in three and a half hours.

Every year ski sportsmen gather at the national ski-jumping and ski-running contests at Oslo. The toboggan has never been popular in Norway; in its place is a sleigh steered by a 15-foot pole which trails behind.

Soccer, an importation from England, is



Photograph by Alf Adriansen

CLUSTERS OF HUTS ARE HEADQUARTERS FOR UPLAND DAIRYING

With her hair in braids and a pail in each hand, a Hornindal milkmaid rounds up her goats. Girls usually tend the flocks. They may stay in the high camps all summer without visiting the home farms in the valley. A heavy layer of sod protects the roofs from winds (p. 499).

played all over Norway. There is also a game called "long ball" which reminds one somewhat of baseball. For pleasure trips the bicycle and the motorcycle take the place of automobiles, the motorcycle being frequently fitted with ski runners which permit its use in winter.

Automobiles, trucks, and buses are nearly all of American make, and there are about 79,800 cars in the country, or one for each 36 persons. The larger farms usually have cars, but for the small farmers a car is a luxury. On many Norway farms old auto engines are used to supply power.

A HIPPIITY-HOP CONVEYANCE

Did you ever ride in a "sparkstøtting"? This odd conveyance is like a kitchen chair mounted on two long steel runners, curved in front. The operator stands behind the

chair, one foot on the runner, and holds on to the handle bars. With his free foot he propels it at unexpected speed. This rig, which may carry one passenger and light freight, is much in use in the country districts. I have seen something like it in North China—from whence the idea may have come (page 497).

Probably nowhere else in the world do people hike more than they do here. On all highways and mountain paths one sees boys and girls, old and young, walking for days and even weeks, loaded down with their rucksacks.

Wild mountain scenery, glaciers, roaring waterfalls, fjords, and lakes have all exercised a strong influence on the Norwegian farmer. Even today there is much superstition among the farming population.

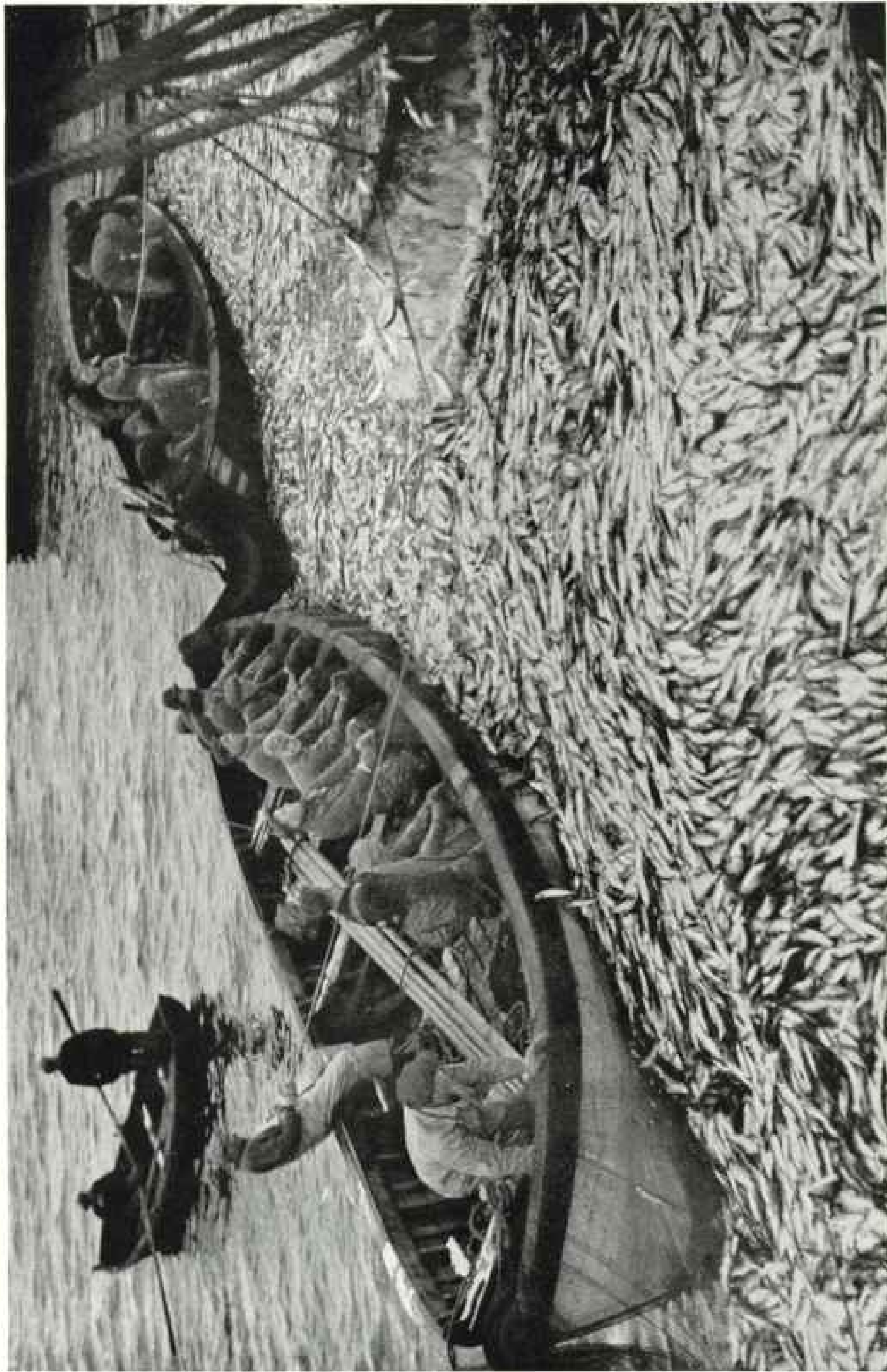
I have a vivid memory of weird tales



Photograph by Herman Neupart.

IN A CARRIAGE OF STATE, KING HÅKON VII AND CROWN PRINCE OLAV RIDE TO THE CLOSE OF PARLIAMENT

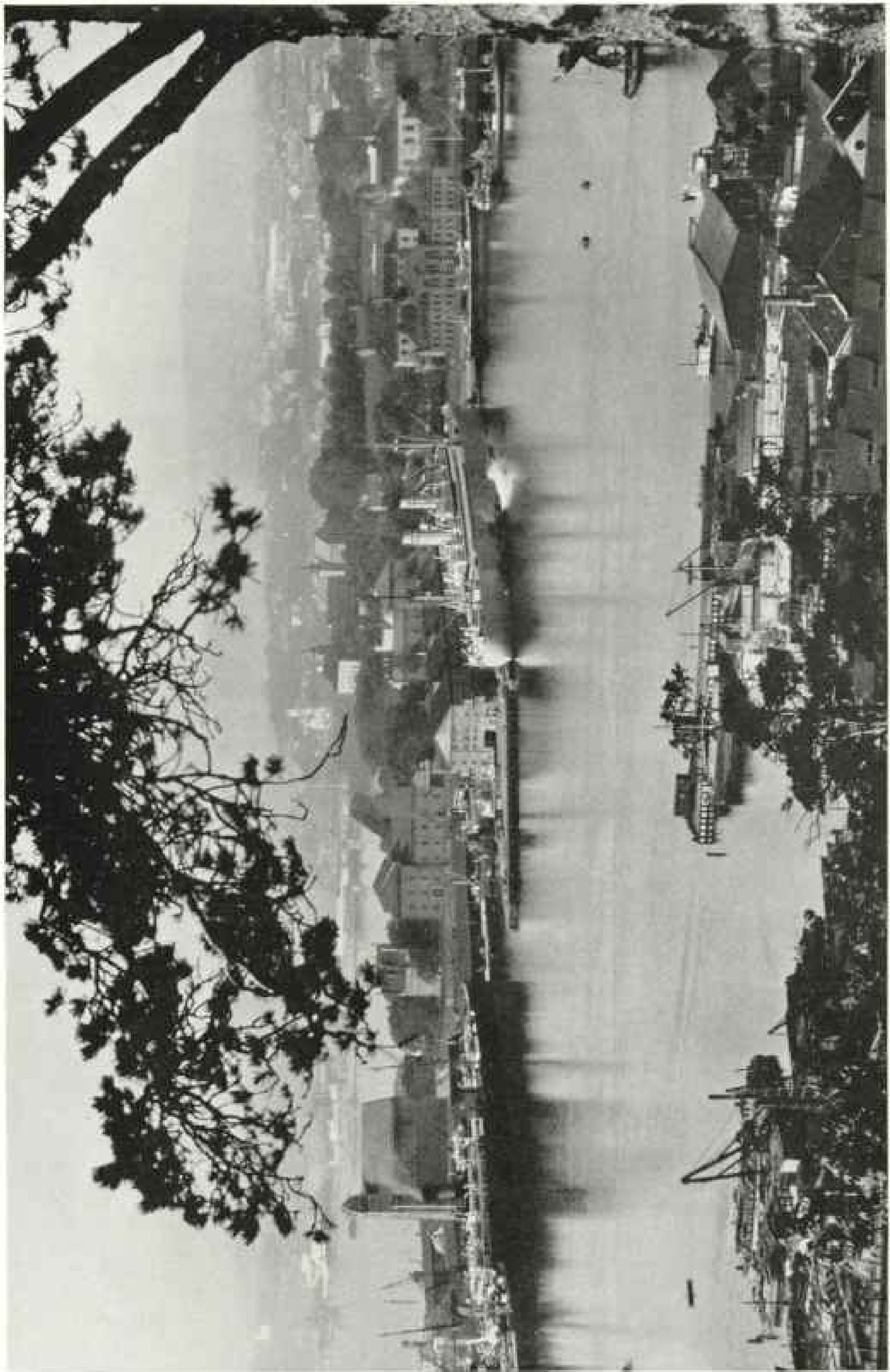
In the procession through the center of Oslo, Norway's capital, the King, who is commander-in-chief of both army and navy, wears the uniform and cocked hat of an admiral. The Prince (saluting) and his wife, the Crown Princess Märtha, will visit the United States this April, May, and June (Plate XII).



Photograph by Henriksen and Stoom

HEAVING ON THE BULGING PURSE SLING, FISHERMEN CROWD TONS OF HERRING AGAINST THE MOTHER SHIP'S SIDE

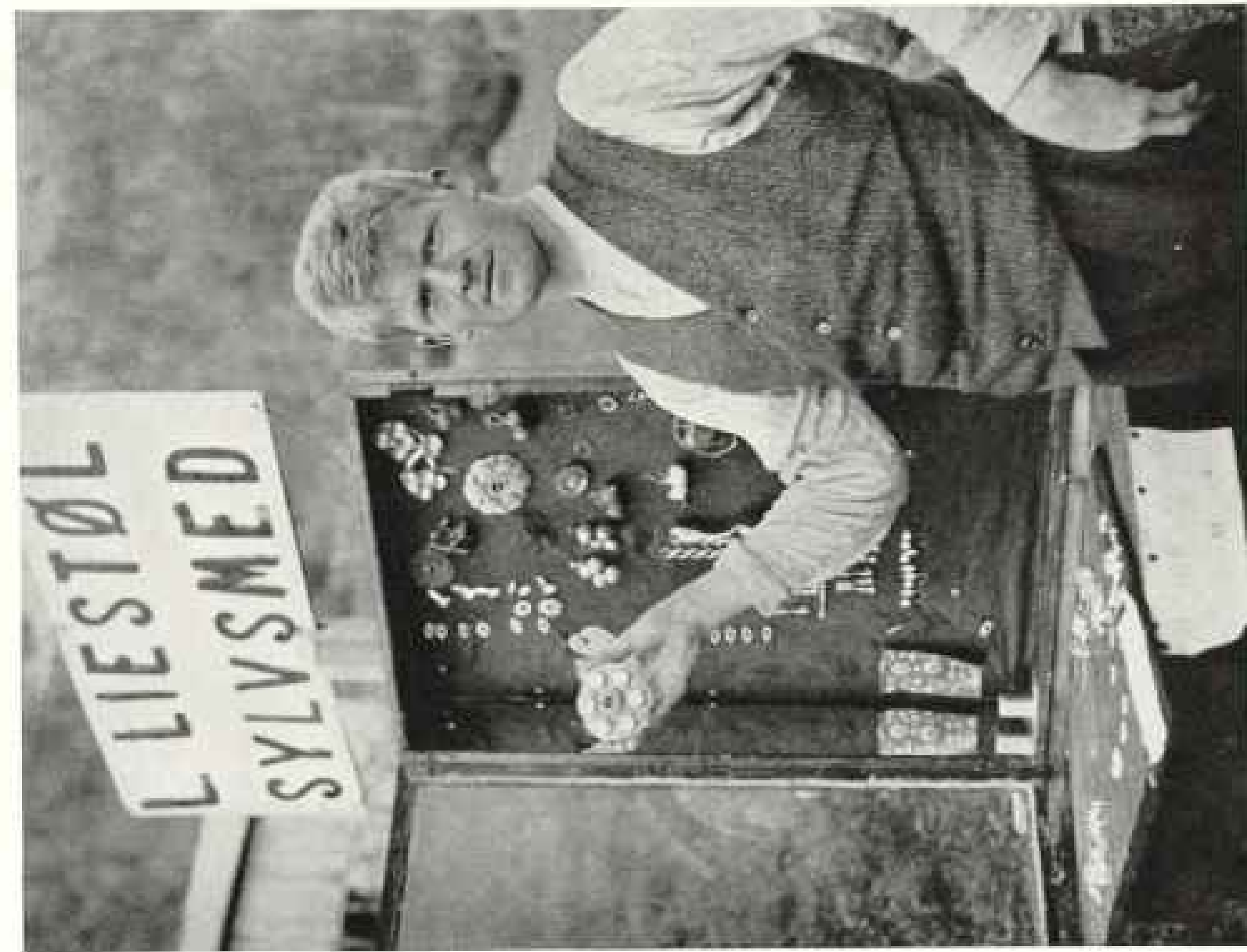
A kettle-shaped brailing net, lowered from a boom, "excavates" masses of the flipping fish (right).



© A. H. Wilke

STEAMERS FROM THE WORLD'S FOUR CORNERS CLEAVE OSLO HARBOR, CHURNED LONG AGO BY OARS OF VIKING SHIPS

In 1300 King Håkon V built tower-topped Akershus Castle (center background). Capital and largest city, Oslo is also Norway's chief seaport. In gross tonnage Norway's merchant fleet is surpassed only by those of Great Britain, the United States, and Japan.



Photograph by Axel H. Osbolden

SILVERSMITH LIESTØL NEED NOT LOCK HIS SHOWCASE

"People in the country districts of Norway do not steal," is the author's simple statement. This Setesdal craftsman, like many other farmers, devotes spare time to fashioning brooches, pins, rings, and bracelets of silver and gold to tempt souvenir-hunting travelers.



© A. B. Wilson

LEATHER-SEATED BRIGCHES LAST LONG

In past centuries Norwegian men enlisted in various European armies and brought back fashion notes from the Continent. This thrifty Setesdal farmer told the photographer that his reinforced overalls were patterned after old Spanish cavalry uniforms. Here he stacks barley on a drying pole.

told in my childhood, particularly the legend of the *draug*, the Satan of the Sea, who could be seen rowing in half a boat during a storm on the ocean. He had no face; in its place was a bunch of seaweed. Seeing him and hearing his shriek warned people of death by drowning. If he got into a fisherman's boat, only a dash of cemetery soil would drive him away, for he was the spirit of dead seafarers looking for a Christian resting place.

These bits of folklore are still alive; I heard them again on my recent visit.

MODERN NOISES BANISH SPRITES

In southern Norway there still exists a century-old embroidered tablecloth supposed to have been left on Christmas Eve in a barn when the sirens had their feast. Whistles of trains and honking of automobile horns, however, have driven them and the draug away. Only the tiny manikin called *nisse* still makes his home in the barns throughout Norway.

He is a harmless creature, dressed in red blouse and pantaloons and wearing a red cap. A mischievous fellow loving horseplay, he upsets the milk pails in the cow barn and causes other troubles on the farm unless he is well fed.

Consequently, the farmer must share his Christmas Eve dinner with this manikin, placing cream porridge out in the barn. The next morning the bowl is empty—proof of the presence of these manikins—unless one should happen to quiz the cat or dog!

I shall never forget my fright as a small boy when the fishermen in the Arctic told me that it was very dangerous to wave a white cloth when the northern lights were in the sky during the dark winter months. Persons disregarding this warning would one day disappear without leaving any trace. Were there not thousands of people, young and old, who had disappeared in those regions during the winter storms?

The present Norwegian public school system was founded when book learning in most European countries was reserved for the wealthy or privileged classes. At that time the State first aided young people to prepare for the church "confirmation test."

All schools now are under State control, and there is not a family in all Norway that is deprived of school facilities. The percentage of illiterates is almost zero. The

State and municipalities spend twice as much on education as is spent for national defense. In secondary schools tuition is paid only by those able to do so.

SCHOOLS PROVIDE POVERTY INSURANCE

The University at Oslo, the technical college at Trondheim, and the agricultural college at Ås are State institutions where tuition is free.

Many school children in Norway learn a trade, so that no matter what happens to them later in life they will always have something to fall back upon. This is indeed a "poverty insurance" of the most practical kind.

Getting about in winter is often difficult, and at times boys and girls must ski many miles to school. I remember many a dark winter morning in my early youth when the "chain gang" picked me up in the snow-drift at the gate. Two big boys, one ahead and one in the rear, held the ends of a rope, and we smaller children were placed between them. So we set off to school on skis.

Bigger boys watched out for their smaller wards, keeping them from dropping out to sit down for a moment on a snow pile to sleep a little when the intense cold made them drowsy. There were frozen ears, noses, and cheeks to watch, and it was often necessary to rub the white skin with snow until the blood circulated again.

Lunches are free in many schools, and in some districts children receive free dental service. For these reasons taxes are high.

In some ways education has raised new problems. Thousands of young men and women who have received a superior education are now unable to find the work they have been trained to do. Lately there has been a strong movement back to the farm by youngsters of this class, a movement that has played a large part in the growing rural interest in magazines and newspapers.

A NATION OF READERS

Every farmhouse, no matter how small, has a bookshelf, and the farmers are inveterate readers. In all communities of any size there can be found one or more bookshops and libraries.

Radio has done much to educate the people of Norway. Broadcasting is controlled by the State, and the educational features of radio programs are stressed.

Last summer I visited a small farm in the

NORWEGIAN FJORDS AND FOLKWAYS



ROALD AMUNDSEN SET OUT FROM HERE ON THE RELIEF EXPEDITION THAT COST HIS LIFE

The monument to the intrepid Norwegian polar explorer in far-north Tromsø recalls his fatal flight, in 1928, in an attempt to rescue General Nobile. The Italian polar flyer and his companions had been forced down on the ice in the airship *Ritta*, northeast of Spitsbergen. Amundsen's plane disappeared, but Nobile and part of his crew later were saved by others.



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Kodachromes by Kahne, Mircionew's

"HERE WE GO ROUND THE MULBERRY BUSH!"

Children amuse themselves in a Norheimsund field while their elders attend wedding festivities. Drying hay, strewn on wire supported by poles, hangs in the background.



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IN TRADITIONAL FINERY, DAUGHTER AND MOTHER STROLL
TO THE VILLAGE CHURCH



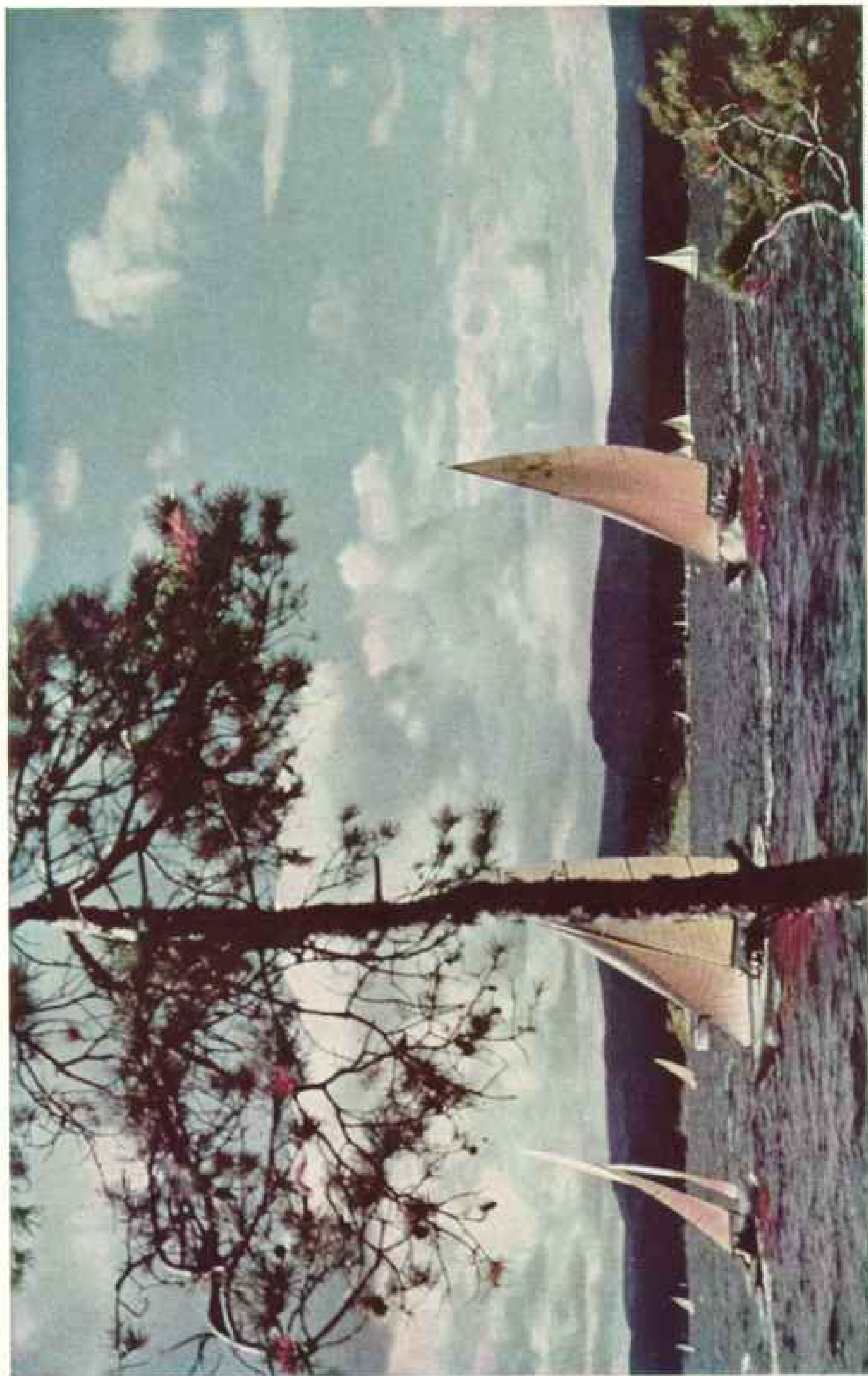
Kodachromes by Kühne, Movietnews
SLIGHTLY BORED YOUNG WEDDING GUESTS PICK FLOWERS
DURING THE CEREMONY (PLATE V)



Kodachrome by Kuhn, Movietone

© National Geographic Society
FORMALITIES OVER, NEWLYWEDS NO LONGER MARCH APOFT; THEY RIDE IN STATE IN A TWO-WHEELED CART

Admiring relatives and friends follow as they drive back to the boat (Plate VII). The waterfall is one of scores for which the Hardangerfjord is famous.

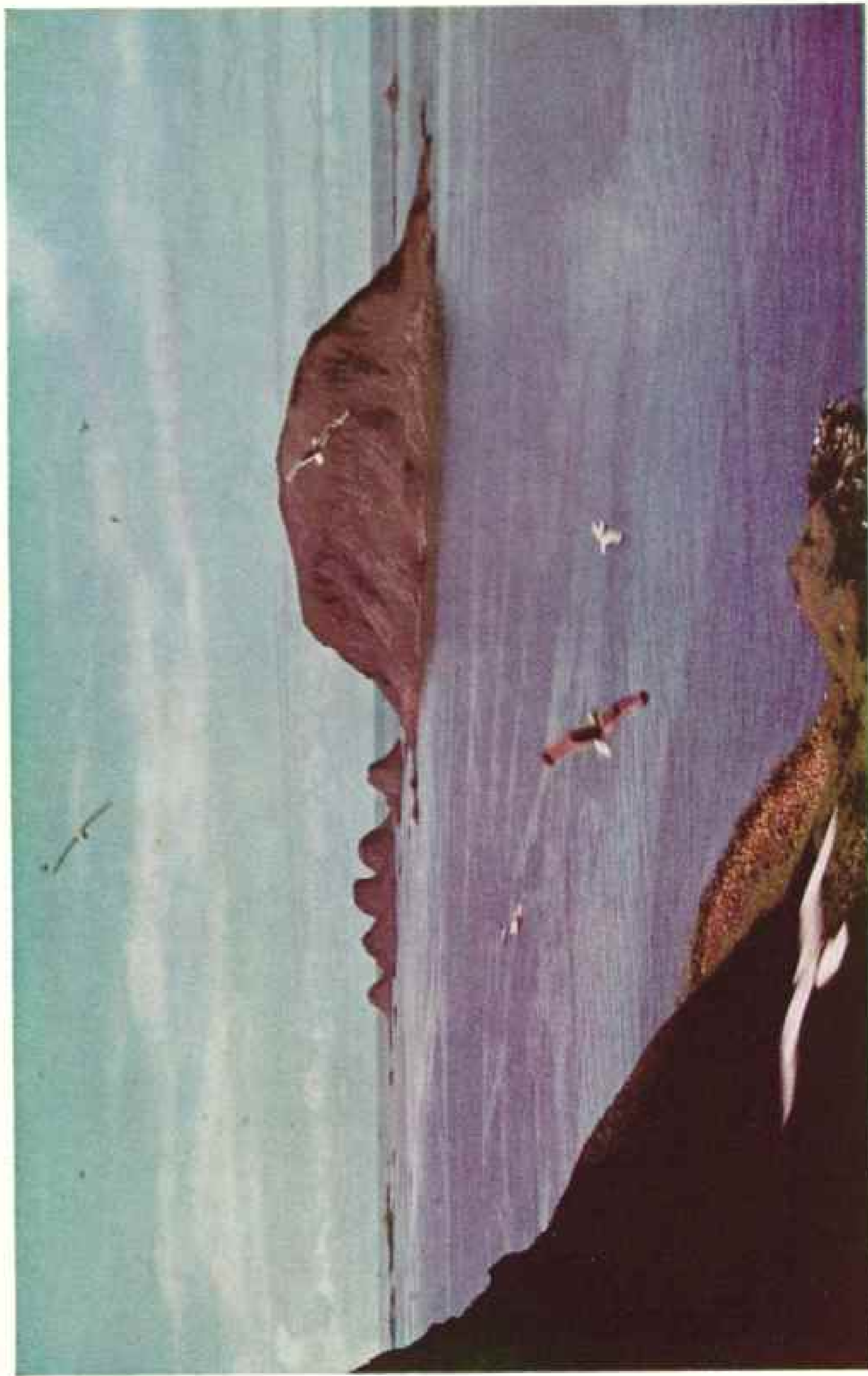


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CROWN PRINCE OLAV COMES FROM BEHIND TO WIN A ROYAL NORWEGIAN YACHT CLUB RACE IN OSTFJORD

Kodachrome by Kahne, Moringen

The belt to the Norwegian throne skippers the eight-meter sloop, No. 33. The far-stretching coast is protected by islands and skerries; deep channels within are usually free from tides and currents. Most of the towns are near the sea; shipping and fisheries provide a livelihood. In summer months light junks nearly all day long. These factors make Norwegians enthusiastic yachtsmen and attract hundreds of foreign yachts throughout the season.



© National Geographic Society

LOVELY, GULL-HAUNTED LOFOTEN ISLANDS LEAD TO THE SUBJECTS OF FISHERMEN ONLY WHEN THE COO RUN

Kollström by Kullne, Movinmets

Largest group of islands off the Norwegian coast, the rocky chain, southwest of Tromsø, stretches for 115 miles. Cod in great shoals come here to spawn in February and March. So dense is the mass of fish sometimes that a sounding lead, dropped from a boat, cannot reach the bottom and it is difficult to lower nets. The men live in rude bunkhouses on shore or aboard the boats. Their enormous catch is exported to many parts of the world.

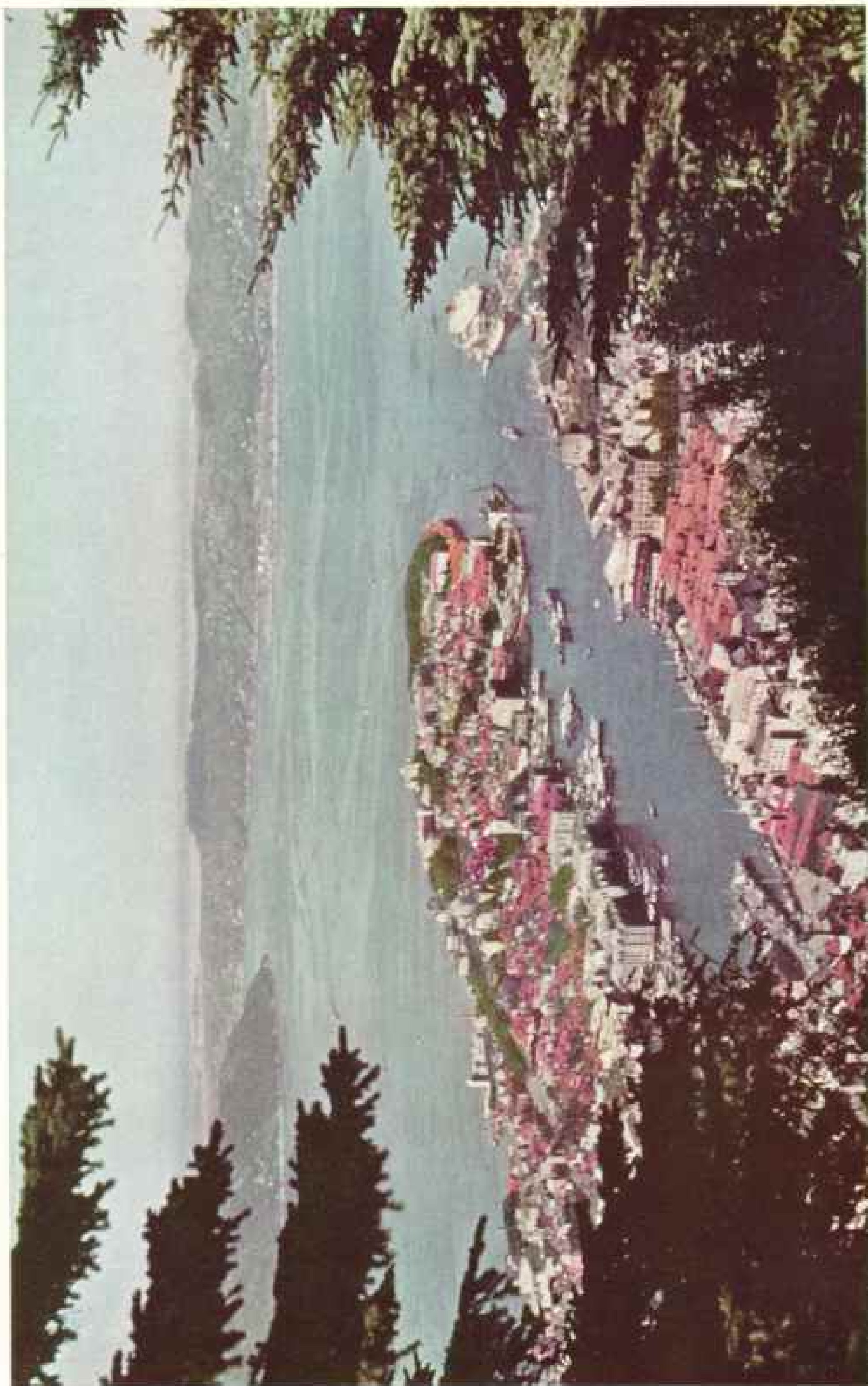


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FOR TEN WEEKS EACH WINTER FLÅM KNOWS NOT THE SUN, BUT THIS RED HOUSE, A MILE AWAY, BASKS IN ITS LIGHT.

Photograph by Thomas W. McKnew.

High peaks blot out all solar rays from the near-by Norwegian village for some weeks before and after Christmas. During this time the sun is not seen from the village, but by a strange prank of Nature its bright beams peep through a break in the mountains to bathe the dwelling and the slope beyond. Flåm villagers make daily pilgrimages to this home to sit in the cheery sunlight and enjoy its warmth.

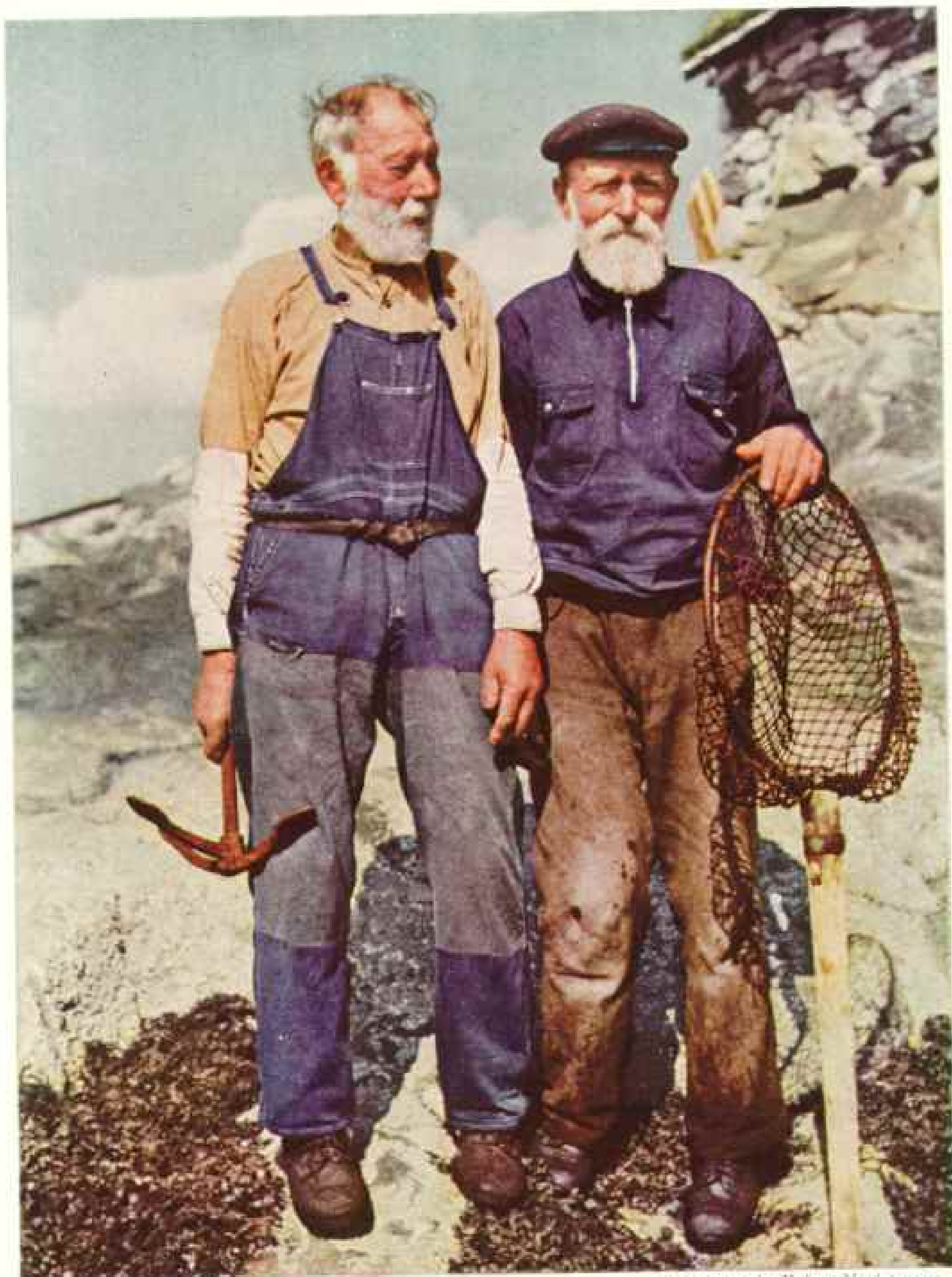


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Kodachrome by Kubine, Moticontours

THROUGH DEEP FJORDS, SHIPS WIND THEIR WAY TO BERGEN, SECOND SEAPORT OF NORWAY

A little more than 20 years ago, the only commercial access to the city was from Oslo, now a railway terminus here. Flanked by seven mountains, communication with the interior was slight and many a resident found it simpler to visit Britain, Germany, or the Netherlands than his own land. On the promontory, between harbor (foreground) and fjord, sea trade has flourished since the city was a member of the Hanseatic League (Plate I).



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Kodachrome by Kahne, Moviatonews

TREACHEROUS CURRENTS OF THE SALTSTROM FAIL TO DAUNT THESE SALTY VETERANS

Profitable catches sometimes lure them into the whirlpool near the Saltfjord, above the Arctic Circle. Here the fjord is connected with its bay by three narrow straits, through which tidal waters rush, causing the eddies. Navigation is feasible only for an hour at half-tide. Similar arms of the sea cut into the shore from one end of Norway to the other. If a superhuman Marathon runner speeded around the coastline, with all its indentations and larger islands, he would cover about 12,000 miles. If he did the same thing in Africa, he would travel only 4,000 miles farther; yet Africa is ninety times larger.

interior, 50 miles from the main highway and 75 miles from the nearest railway. I was struck by the ability of the farmer and his wife to discuss the leading questions of the day. They had formed their own opinion in regard to world affairs; they knew from day to day the price of butter in the English market—all as a result of reading the newspapers and magazines and receiving daily radio reports.

I found an ingenious system of "learn while you eat" on one farm in an interior valley. The farmer had carved the letters of the alphabet on a piece of wood which was applied to the piece of butter placed before the children at the table!

Norway, like some other countries, controls its doctors, apothecaries, dentists, and midwives. The country is divided into medical districts, each headed by a government doctor.

Besides supervising all questions of public health in their districts and acting as chairmen of the local boards of health, these doctors care for the poor without charge. The system works because they also have their private practice.

HOSPITAL CARE AVAILABLE TO ALL

Both State and local governments maintain hospitals and nursery homes. About 90 per cent of all tubercular patients, for instance, are treated in public hospitals. For those who could afford to pay, the charges in Norwegian hospitals, other than private institutions, at the time of my visit, ranged from 50 cents to \$1.25 per day.

Thirty years ago state health insurance was established. This covers workers in certain wage classes, about one-third of the population. The insured pays six tenths, the employer one tenth, the State two tenths, and the municipality one tenth of the premium.

As a result of these activities, the average length of life in Norway is high, and this in spite of climatic conditions which induce pulmonary diseases that annually take a toll of thousands of lives. Norway has one of the finest records in the world for low infant mortality and it surpasses all other countries in the lowness of its maternal mortality rate.

Closely allied with questions of public health is public welfare. A system of old-age pensions has been inaugurated. All civil-service employees and other public servants receive a pension, and this system

is also followed by many private enterprises.

Naturally, all these public expenditures mean heavy taxes, but the taxpayers receive much for their money. The Government has given its citizens economic security perhaps unparalleled elsewhere. Under certain circumstances, as much as 60 per cent inheritance tax is levied on fortunes in excess of \$75,000. There are, therefore, very few large fortunes in Norway, and there are only about 600 persons who have annual incomes in excess of \$12,500.

A MONARCHY BY POPULAR VOTE

One may think it odd that such a democratic country should be a monarchy. In 1905, when the union with Sweden was peaceably dissolved, the people voted for this form of government.

King Håkon VII, through his intelligent understanding of the country and the people, has reigned in peace during the 34 years he has lived in Norway. He takes keen interest in the agricultural problems of the country. In summer he lives on a farm outside of Oslo. The Crown Prince has another farm in the vicinity, considered a model establishment.

The Norwegian language has undergone many changes. In reality, the country has two official languages—the *riksmål*, which is a further development of Dano-Norwegian, and the *landsmål*, which may be considered as a common denominator of all Norwegian dialects, and is largely based on old Norse. Both are recognized as official and are taught in the schools.

An educated Norwegian understands both Swedish and Danish, but some of the Norwegian dialects are so different from the *riksmål* that a city dweller may have difficulty making himself understood by a farmer from certain parts of the country.

It is difficult for most Norwegians to understand the dialect in Setesdal, in southern Norway, for this interesting and picturesque valley has been out of touch with other communities. In centuries past, young men from Setesdal often joined the mercenary armies on the Continent.

SOLDIERS INTRODUCED ENGLISH WORDS

A number of English words in the present dialect, such as "rod," "knife," etc., probably came into use through these returning soldiers of fortune.

Virtually always there are persons in



YOUTHFUL STUBBLE-SCUFFERS MARCH BEHIND THE CLATTERING BINDER.

Such broad acres as this wheat field are found in level southeastern Norway. The average farm is only nine and a half acres. Agricultural machinery, much of it from the United States, is widely used.



Photographs © A. B. Wiley

NO BIGGER THAN SHETLAND PONIES, TELEMARCK CATTLE ARE SURE-FOOTED AND EXCELLENT MILKERS.

Hair hanging in braids, this Setesdal milkmaid wears heavy homespuns and big boots. Brass knobs on the cow's horns protect the girl from injury.



Photograph by A. B. Wilce

SHIPBUILDING NORSE CARPENTERS PUT FIGUREHEADS ON BORGUND'S STAVE CHURCH

Hundreds of these curious Christian houses of worship, suggesting Chinese pagodas, were erected in Norway in the eleventh and twelfth centuries. Pagan symbols were used, like the dragon-headed peaks and the dragon-scale shingling. Such churches were built entirely of wood. Well preserved, although black with age, the old church of Borgund is protected as a monument.

each community able to speak English. Most of these have lived in the United States or have sailed on American or English ships.

AMERICA HAS ALMOST AS MANY
NORWEGIANS AS NORWAY

Leif Ericson, son of the Norwegian, Eric the Red, came to North America in about the year 1000. A Norwegian expedition visited Hudson Bay in 1619, and during the 1630's Norwegians began to trickle into New York State. But 800 years elapsed since this first visit by the Norsemen until emigration started on a large scale.

Because of close contact with foreign countries, through commerce and shipping, Norwegians are found in all four corners of the earth, but the great bulk of those who have emigrated have gone to the United States.

During late decades many thousands have gone to Canada, and fairly large Norwegian communities are found in South America, South Africa, Australia, and the Far East.

In 1825 a small sailing vessel landed at New York with the first group of fifty-odd Norwegian Quaker emigrants, and, curiously enough, a small cargo of iron. During the last hundred years about three-



© Carl Normann

OF GENTLE NATURE, THE LITTLE FJORD HORSE IS A NATIONAL PET

Differing from other horses in temperament and habits, the dun is typically Norwegian—as if made to order for the country (Color Plate VIII and page 300). Able to live on hay alone, it is well built and a willing worker.

quarters of a million Norwegians have emigrated to America, and the population of Norwegians of the first and second generations in America is almost as large as that of the mother country. With the exception of Ireland, no other country in Europe has contributed a larger percentage of its population to America.

Most Norwegians in America at present live in Minnesota, the Dakotas, Illinois, Iowa, Wisconsin, and Pacific Coast States. Although large numbers live in such metropolitan centers as Minneapolis and New York City, the great majority are essentially agriculturists.

Up until the time of the depression the Norwegians in America figured among the larger percentages of landowners of all nationalities of foreign birth. Land hunger is characteristic of Norwegians, both in Norway and abroad.

Norwegian emigrants have contributed much to the development of America. They have always preferred the rough pioneering

work, breaking new land and clearing the forests because they are accustomed to hard work and privation.

They have taken a leading part in developing the excellent school systems characteristic of practically every Norwegian community in America. They have also established a number of Norwegian colleges in this country, and have always looked after the sick, aged, and poor in their communities. They have made good citizens because they are law-abiding, industrious, and thrifty.

During late years the emigration from Norway has dwindled, and in some years more Norwegians have left America than have entered this country.

All over Norway I found farmers who have lived in America. Naturally, these returning Norwegian-Americans have brought with them much knowledge of American farming methods. There is hardly a community in Norway where someone does not have near relatives in America.

THE GEOGRAPHY OF A HURRICANE

A Doughnut-shaped Storm Turned Back Time in New England to Candlelight Days, but Revealed Anew Yankee Courage and Ingenuity

BY F. BARROWS COLTON

HORDES of salps, strange soft-bodied creatures from far out to sea, swarmed into the harbor of Halifax, Nova Scotia, one September day, and brought an early "forecast" of New England's hurricane of September 21, 1938.

When the brewing storm was still down near the Equator, some force associated with it already was pushing surface waters of the open ocean quietly in toward the North Atlantic coast, 3,000 miles away. Vast numbers of the salps, carried shoreward by the influx of the waters, thus gave scientists in Canada an advance hint of what was going on.

No one suspected then that this hurricane, forming so far away, would strike northward at New England, turn time backward a generation or more for seven million people overnight, and bring changes ranging from recasting shore lines to altering the courses of men's lives.

Harmless, balmy tropic breezes were being transformed into a roaring, whirling juggernaut of wind and wave.

The hurricane was to demonstrate how a great, close-packed, highly industrialized modern civilization can be crippled almost in an hour when struck on its "Achilles heel" of electric light and power—and how human energy, Yankee ingenuity, and the New England conscience can rise to defeat disaster. It was to destroy valued relics of New England's proud history, but it made that same history live with new vividness as people actually went back to candles for light, fireplaces for cooking, and even community barn-raising to replace storm-flattened structures.

A MYSTERY OF THE WATERS

The far-flung displacement of ocean surface water, apparently connected with the hurricane and bringing the salps to Halifax, may have been the result of wind action, changes in atmospheric pressure, or an "internal wave" in the sea, though no one knows for sure. The same phenomenon has been associated with other hurricanes.

But that was only one bit of this hurricane's geography. Things began to happen on an amazingly wide front when the great doughnut-shaped storm roared in on the forests, farms, and factories of teeming Yankeeland. Only Maine and Cape Cod escaped its full fury.

STORM SHOOK THE EARTH

It deposited ocean salt on the windows of houses in Montpelier, Vermont, 120 miles from the sea. The pounding of its waves and the changes it produced in atmospheric pressure caused a large part of North America to vibrate, recording shocks like miniature earthquakes known as "microseisms" on seismographs as far away as Sitka, Alaska (page 533).

It blew down and damaged some 250 million trees, a bigger logging job than even Paul Bunyan, legend's mightiest lumberjack, ever tackled. It stirred up the bottom of the ocean in some places, maliciously moving oysters from one man's beds to another's.

It refilled, with the aid of rains, an empty gravel pit for the New Hampshire Highway Department, scared chickens so they laid fewer eggs, blew tropical birds and seafoam far inland, where they rarely or never had been seen before (page 545).

The story of the hurricane's horrors already has been told. Suffice it to say that the loss of life is placed by the Red Cross at 488, while some authorities estimate that the damage to property was the greatest ever caused by such a storm.

But there's another hurricane story—the story of how a roaring demon of destruction as big as Ohio can literally be formed out of thin air, how it can travel a mile a minute through the turning earth's blanket of atmosphere, and how it can affect almost every phase of the lives of millions, not only for a few days, but in some ways for years to come.

From all this, however, New England had plenty of comeback spirit. Nowhere in America, said veteran Red Cross disaster



© Albert N. Thomson

THE SEA CLAWS IN ANGER AT BUILDINGS SET DEFIANTLY NEAR ITS DOMAIN

Because people have a passion for building cottages and homes as close as possible to the ocean's edge, the storm wave accompanying a hurricane causes much death and destruction. This big comber, breaking over the water-front drive at Falmouth, Massachusetts, is mild compared with the onslaught of water that struck nearer the center of the storm.

workers, have they seen more self-reliance, more reluctance to ask for outside aid, more speed in cleaning up and getting back to work.

The first morning after the hurricane, housewives were out scrubbing leaf juice off white paint. A lady of more than 80 years said all she needed was a few shingles; the neighbors would help her nail them on.

Fishermen of the Connecticut coast, perhaps harder hit than any other single group, gave \$2,500 from their association's treasury to the Red Cross. And, characteristic of Yankee thrift, Boston banks sent out letters advising their customers how to deduct hurricane losses from their income taxes!

SUN AND MOON ALLIES OF BIG BLOW

Nature, it seemed, decided that since the Yankees hadn't had a first-class hurricane since 1815, she would give them a good one. Before launching her main attack, she laid down a four-day barrage of rain that flooded New England streams, softened the earth around the roots of 150-

year-old trees, and washed out railroad tracks, highways, and bridges (page 539).

She even called in the sun and moon as allies. The hurricane was turned loose at a time when the moon was almost at its closest to the earth, and near the time of new moon, when the sun and moon are pulling on the earth together in phase, both factors causing higher tides than normal.

So the great storm wave brought in by the hurricane was piled at some places on top of a tide already about a foot or so higher than usual.

New Englanders have had their share of blizzards and floods, sleet storms, and screaming nor'easters—but hurricanes? "They can't happen here."

True, William Bradford, governor of Plymouth Colony, wrote that in August, 1635, the settlement experienced "such a mighty storme of wind and raine, as none living in these parts, either English or Indeans, ever saw. . . . It blew downe sundry houses, and uncovered others; diverce vessells were lost at sea, and many more in extreme danger. It caused the sea



Photograph from The New London Day

YANKEE INGENUITY SAVES THE DAY WHEN POWER FAILS

With "juice" cut off, making gasoline pumps useless, hundreds of automobiles were stalled for lack of fuel on New England roads until somebody thought of this solution. The tire was removed from the rear bicycle wheel, and a belt run over a pulley on the pump. When gas or electric stoves were cut off, some housewives cooked on chafing dishes or at outdoor fireplaces in picnic grounds.

to swell above 20 foote, right up and downe, and made many of the Indians to clime into trees for their saftie."

And on September 23, 1815, came a storm described in the New Bedford Mercury: "On Saturday morning last, this town, in common with the other towns in this and adjacent States, was visited by the most tremendous gale ever remembered in this vicinity. The scene presented during its continuance was awful beyond description. The destruction of property which was occasioned by the wind and tide is extensive and distressing, and several lives were lost in this and the adjacent towns."

RELIEF RUSHED IN WRONG DIRECTION

But all that was forgotten. If New Englanders noticed the obscure news stories in their newspapers of September 18 and 19, telling of a tropical hurricane crossing the South Atlantic, they probably thought, "Too bad for Florida."

Others also saw those stories. The Red Cross sped disaster relief workers south.

The American Telephone and Telegraph

Company had men with short-wave radio sets ready for bridging possible gaps in Florida telephone lines. Transient electrical workers hurried south, too, anticipating plenty of jobs in repairing power transmission lines and electric lights.

NATURE PLAYS A PRANK

But Nature was playing a gigantic joke. A few days later they all were hurrying frantically back to New England.

Out near the Cape Verde Islands, in the eastern Atlantic Ocean, is the "hurricane factory," in the doldrums, a calm region between the trade winds that blow from the northeast and southeast.

A column of moist air, heated by the hot sun near the Equator, starts to rise. Cooler air moves in below to replace it, and the rising motion continues, much as in a chimney.

Air flows in from all sides, but, because the earth is rotating eastward, all the inflowing winds are deflected to one side. North of the Equator, this starts the inflowing air circling spirally, opposite to



Photograph by Willard R. Culver

THE HURRICANE SCOOPED THE BOTTOM RIGHT OUT OF A POND

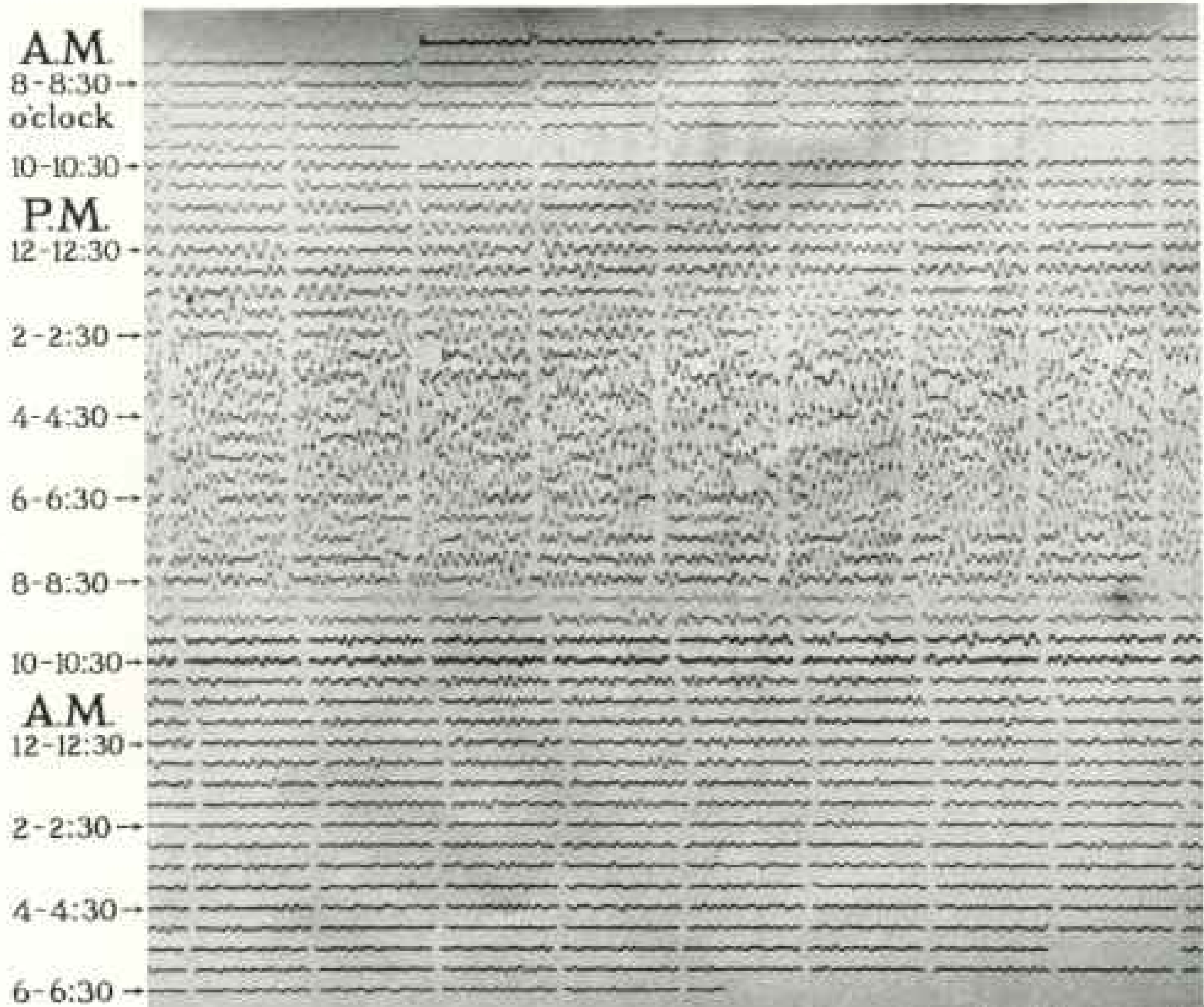
These chunks of silt and humus, four or five feet thick, formed the floor of Halsey Pond, behind the sand dunes near Southampton, Long Island. Giant waves broke through the dunes and dug out about three acres of spongy muck, depositing it upon the lawn on the pond's shore.



Photograph from International News

SCHOOL'S OUT—IN THE OPEN!

The walls and roof of this school building in Milford, Connecticut, were blown away by the hurricane. Only the desks and chairs, securely fastened to the floor, remained in place. Classes were over for the day when the storm struck, so no children were injured.



Photograph from Prof. William A. Lynch

NORTH AMERICA SHOOK FROM OCEAN TO OCEAN AS THE HURRICANE PASSED

On this seismograph record at Fordham University, New York City, are registered the vibrations of the "storm-quake." Each horizontal line from top down represents a successive half hour. From 7 a. m. September 21, 1958, (top line) to noon, the lines are only slightly wavy, recording normal earth movements. But from 1 to 8 p. m. the jogs are far more irregular, showing that as the storm passed over the New York region it made the ground shake much more than it normally does. Such vibrations, like miniature earthquakes, and called "microseismic," result from pounding of waves and rapid atmospheric pressure changes. Seismographs as far away as Sitka, Alaska, recorded these shakes, reports the Reverend J. E. Ramirez, S.J., of St. Louis University (page 529).

the direction in which a clock's hands move.

So the rising column of warm air, and the winds flowing toward it, start whirling counterclockwise, faster and faster. In this way hurricanes are born. South of the Equator, of course, a hurricane's winds would move clockwise.

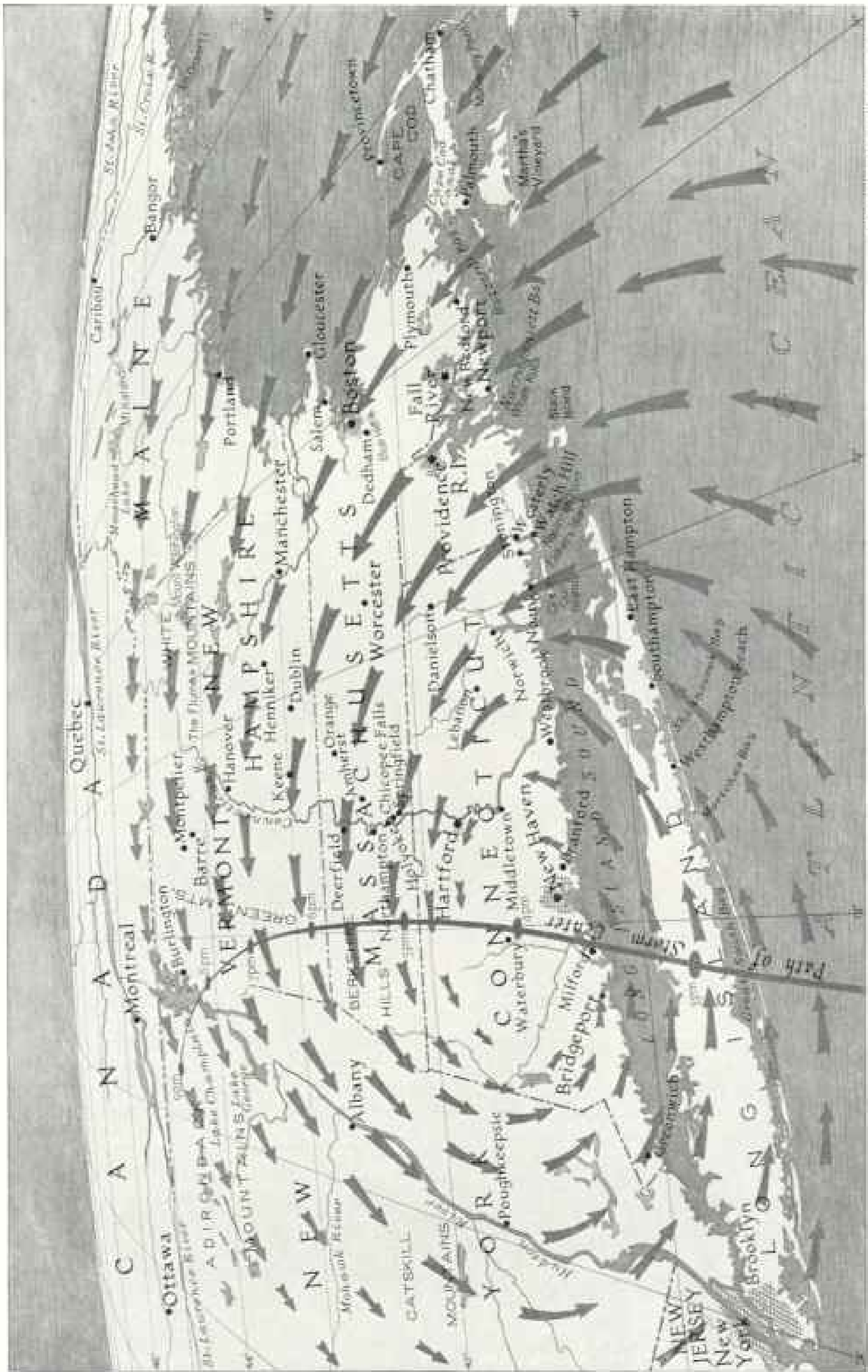
In the center of the whirlpool of water running out of a wash basin there is often a little hollow space. In the center of a growing hurricane there is somewhat the same thing—a calm center, 15 to 30 miles across, where the atmospheric pressure is very low. Into this center the ocean water is believed to be actually pulled up several feet above its normal level, forming a

mound of water traveling with the storm.

Once started, the whirling hurricane winds increase in speed, like a huge spinning doughnut, with the "hole," or calm region, in the center. The entire "doughnut" may be up to 500 miles across.

LIKE A TOP SPINNING SWIFTLY, BUT MOVING ALONG SLOWLY

As hurricane winds gain speed, they eventually may be blowing 100 miles an hour or more around this circular path. But the storm as a whole usually moves rather slowly, only 15 or 20 miles per hour, like a top, which, though spinning at high speed, travels very slowly across the floor.



Drawn by Albert H. Barnwell

WHIRLING COUNTERCLOCKWISE, THE HURRICANE CUT A WIDE SWATH ACROSS CROWDED NEW ENGLAND

Arrows indicate how the air currents in the doughnut-shaped storm blew spirally around and toward a calm center, here near Waterbury, Connecticut, at 4 p. m. The largest arrows represent the heaviest winds. They show that the storm blasts were stronger, and therefore destruction greater, on the right of the hurricane's line of march. On that side the speed of the storm's forward movement was added to the velocity of the winds blowing around the circle (page 531).



Photograph from The New London Day

FALLING SHADE TREES STRIPPED CENTURY-OLD BEAUTY FROM MANY NEW ENGLAND STREETS

Privacy of leaf-screened porches, too, was lost. The elm, typical of New England, may be replaced by other types of trees in some regions as an indirect result of the storm, for diseases more easily attack weakened survivors. These prostrate giants are on Huntington Street, New Haven, Connecticut (page 347).

Because a hurricane is so large, its winds seem to be blowing in a straight line, instead of in a circle, at any one place over which the entire storm passes. As it progresses over any given spot, the wind first is felt blowing in one direction; then there is a period with no wind at all, as the calm center passes over; finally comes the wind on the opposite side of the circle, blowing hard again in the opposite direction.

Over the center of the North Atlantic Ocean in September there usually hangs a great mass of heavy air, what weather men call a high-pressure area, or "high." Hurricanes ordinarily are first carried westward by the trade winds, toward the West Indies and Florida. Then, as they work north, the prevailing westerly winds catch them, and blow them back northeastward along the edge of the North Atlantic high, back out to sea where they expand and lose their force.

But Nature, seemingly intent that this particular hurricane should hit New England, built a special "track" through the earth's atmosphere. She placed the North Atlantic high so close to shore that the hurricane could not veer off to the northeast. Then she moved in another high from the west, leaving a narrow lane of warm, low-pressure, moist air between them, leading straight up through New England.

The hurricane headed first toward Florida, then veered out to sea again.

Until then the Weather Bureau's scouts had kept close track of the enemy's movements, but they worked almost too well. So thorough were the Bureau's warnings that nearly all ships at sea had steamed out of the hurricane's path. When it turned north toward New England, there were few ships to note its movements and radio them to shore.

Roaring north between the two high-pressure air masses, the hurricane had no chance to expand, no chance to dissipate its force. Instead, the whirling power of its winds was fully maintained, and it gathered speed on its forward march until it was swooping toward New England at nearly 60 miles an hour, a speed almost unheard of for a hurricane.

SOME RIVERS CHANGED COURSES

Meanwhile, four days and nights of rain had set the stage for disaster. Peaceful brooks in the White Mountains, the Green

Mountains, and the Berkshire Hills had turned to savage torrents. Small dams were breaking; bridges, roads, and even parts of villages were being washed away. Some rivers were actually changing their courses.

There were ominous signs. People noticed that the air was unseasonably hot and muggy. Their ears felt queer, because the atmospheric pressure was decreasing.

Near the coast, cirrus clouds scudded fast and high across the sky.* The wind was from the southeast. A man who had seen hurricanes before warned his neighbors, but they only laughed at him. Far up in Vermont people noticed a smell of the seashore in the air.

The Weather Bureau issued warnings of a whole gale, which means winds of hurricane force, but people still stayed in their cottages along the beaches. No one realized until the last minute that the full force of the hurricane was sweeping in.

THE LEGEND OF "OCEAN-BORN MARY"

But up in New Hampshire they will tell you that at least the spirit world had a warning, for the ghost of "Ocean-born Mary" came back to look after her own.

On a hilltop a few miles from Concord stands the quaint old colonial house which was her home more than a century ago. Each October, so the story goes, Ocean-born Mary revisits the vicinity in a ghostly stagecoach.

This year she came earlier—the night of the hurricane.

The people who now live in her house told me that one of them saw her, with ghostly skirts whipped by the wind. She seemed to be watching over a member of the family who had gone out to brace his garage against the storm (page 538).

Down on the shore, in the afternoon, a man out in his boat saw what he thought was a thick gray fog bank sweeping in from the sea. Then, to his sudden consternation, he realized that it wasn't fog, but a solid mass of racing, wind-lashed water, the great "storm wave" of the hurricane. The attack was on—New England's biggest surprise since the French and Indians swooped down on old Deerfield for the massacre of 1704.

Most of the death and damage in all

* See "Tollers of the Sky (Clouds)," by McFall Kerby, in the NATIONAL GEOGRAPHIC MAGAZINE, August, 1925.



Photograph by Fairchild Aerial Surveys

EVEN THE COASTLINE WAS CHANGED BY THE HURRICANE'S ASSAULT

Where summer cottages once lined the beach, storm waves have cut two new inlets (nearest the camera) into Moriches Bay (left), on Long Island. The third inlet (background) existed previously but was considerably deepened. Just beyond the horizon is Westhampton Beach, where severe damage occurred.

hurricanes is caused by the sudden rise of water along the coast. The mound of sea water, pulled up into the storm's center of low atmospheric pressure, is built up higher still by the wind's force, perhaps five feet or so. But when it comes in to the coast, where the sea is shallow, it rises to far greater heights (page 530).

"STORM WAVE" NOT A TIDAL WAVE

This is not a tidal wave, for, strictly speaking, a tidal wave is caused by a submarine earthquake. The "storm wave" that accompanies a hurricane is really a sudden, terrific rising of the level of the sea.

The water rose so fast at a town on Buzzards Bay, Massachusetts, that a man who crossed a street in ankle-deep water to rescue a child from an automobile struggled back to safety with her through water up to his chest.

If you look at the diagram of the hurricane, you can see that the winds blew hardest on the right hand, or eastern side (map, page 534). The wind is blowing around the circle at, say, 60 miles an hour.

The storm itself, when it struck New England, was traveling at least 50. So the winds on the eastern side of the storm, blowing in the same direction that the storm itself was traveling, had a total velocity



Photograph by L. M. A. Roy

DID OCEAN-BORN MARY'S GHOST GUARD THIS HOUSE DURING THE STORM?

The lady who lives here says she saw a tall woman, with skirts whipping wildly, watching her son while he tried to prop his garage during the hurricane. Later the large elm tree at the right fell without touching the house. They believe the mysterious visitor was the ghost of "Ocean-born Mary," who lived here long ago, and that she protected the home and its inhabitants from harm. The house, near Henniker, New Hampshire, was built in 1750 or earlier (page 536).

of something like 110 miles an hour at some places. That was one reason why the storm was at its worst on the eastern side of its center, and why the rise of the sea was especially great in Narragansett Bay.

Look at the map and you'll see that that bay is V-shaped. As the storm wave swept up the bay, it was squeezed between narrower and narrower shores. So it had to rise higher and higher. The business section of Providence, at the head of the bay, was flooded nearly two feet higher than the old high-water mark of 1815 (pages 543 and 546).

LAUNDERING BONDS AND SECURITIES

Men swam for their lives in the heart of the business district. Great coal barges were lifted up and deposited in the streets. A man knee-deep in water calmly tried on hat after hat floating out of a flooded haberdashery, until he found a fit!

Horns of submerged autos, and burglar and sprinkler alarms, short-circuited by the salt water, added their din to the shrieking of the hurricane. The normal life of New

England's second city was brought to a standstill.

Not even safety deposit boxes were proof against the flood. Millions of dollars worth of bonds and securities in flooded boxes had to be washed and ironed on regular laundry ironers under watchful eyes of guards. Signatures and seals were washed from some of them, raising delicate legal questions.

From northern New Jersey to the Cape Cod Canal the storm wave devastated the coast, and few of the works of man prevailed against it. Much of the damage and loss of life was directly due to the fact, as one scientist said, "that people seem to have a passion to build dwellings, and live, as close to the water's edge as they possibly can."

Thousands of summer cottages and other dwellings were destroyed, badly wrecked, floated away, flooded, or undermined by the hurricane wave (page 548).

A parade of cottages sailed up Narragansett Bay. The sea swept a man's wooden legs out of a window.



Photograph from Wide World

HE'LL NEED A LITTLE HELP IN PUTTING IT BACK!

Smooth ribbons of concrete were broken up into jumbled ruins by the gouging waters of overflowing streams, which had brought a major flood disaster to New England before the hurricane arrived. Swollen waters of Bible Rock Brook, near Middletown, Connecticut, did this damage the day before the "big wind" came.

A week later someone found them together on shore 20 miles away. Another man, washed into the sea, climbed on a board and found it covered with red ants. They swarmed into his ears and nostrils until he had to dive off his refuge to be rid of them!

A large yacht headed for sea when the storm began. Though she had all anchors out and her engines at full power against the wind, she was blown back to her starting point.

"How did you feel?" I asked the skipper.

"Well, you get tough, or else you lose your courage altogether. I guess we just got tough."

NEW BEACHES FOR OLD

The hurricane bit and tore at New England's south shore until even the coastline was altered. Some wide, smooth bathing beaches disappeared. But there will still be plenty of beaches for bathing in New England this summer. New beaches were built, here and on Long Island, where there had been none before (page 537).

Sand dunes 20 feet high were cut to

water level. Whole beach communities were wiped out. For years boat owners had wished for an inlet through Long Island's barrier beach at Shinnecock Bay. The hurricane obligingly dug them one, plus several others that weren't wanted.

It swept every one of 34 fine houses off Napatree Point, a sandy spit near Westerly, Rhode Island, and cut it up into a series of islands. But old Fort Mansfield at the point's tip, long since abandoned, withstood the enemy's assault. Waist-deep in water in its stout gun pits, several people came safely through the storm.

The waves greedily chewed away a large piece of the original Watch Hill, for which the town in Rhode Island is named, where Indians once watched for enemies. They carried a cottage a mile and a half inland without displacing the dishes on the china closet shelves. They destroyed the sturdy lighthouse at Whale Rock, Rhode Island, carrying the assistant keeper to his doom.

The storm wave rose from 12 to 25 feet above mean low water at various points along the southern New England coast.

The U. S. Army Engineers estimate that



Photograph from Boston Edison Co.

BRINGING NEW ENGLAND BACK TO THE 20TH CENTURY

The hurricane showed how modern conveniences are quickly put out of commission when electricity is cut off. Repairmen were rushed by airplane from Georgia, Michigan, Ohio, and other States to help restore storm-crippled light and power lines. Many a western lineman saw New York's skyscrapers for the first time, from the air.

75 per cent of the small pleasure craft in the region between Chatham, Massachusetts, on the elbow of Cape Cod, and Greenwich, Connecticut, were sunk, damaged, or beached. Many also were damaged and wrecked along the shore north of Cape Cod. Exclusive Baileys Beach, society haunt near Newport, lost all its buildings.

BUILDING LOTS WASHED INTO SEA

A man who had paid \$1,000 for an ocean-front lot a few days before found his land had been washed out to sea. Three

sisters in Connecticut owned a 50-acre sea-front tract—all they had in the world. They had planned, in a few days, to auction off the lots on it. After the storm, only two acres of their property remained.

Fresh-water ponds back of the sand dunes were made salt, and in some cases filled with sand, destroying resting places of wild ducks which used to alight there. Great Gull Island, site of a coast defense fort near Fishers Island, was reduced in size from 18 acres to 12. A house floated part way through the Cape Cod Canal.

With inlets cut through outer barrier beaches, and sand dunes flattened, many stretches of shore once protected are now exposed to erosion, though the sea itself is filling

up some of the new inlets again.

A rain of salt spray fell over the entire State of Rhode Island. It turned needles brown on conifer trees as much as 40 miles inland in Connecticut.

The pilot-house windows of the U. S. Coast and Geodetic Survey ship *Lydonia* were so badly pitted by wind-blown sand and gravel that it was impossible to see through them after the storm. Débris blocked anti-mosquito drainage ditches.

In Branford, Connecticut, a woman parked her car under a big tree to wait until the storm was over. The tree was

blown down on the car. When the police removed her, they found that she had been reading *Gone with the Wind*.

In a few short hours one of the Nation's greatest centers of population, of industry, of education, of culture, was set back from the age of electric lights, oil furnaces, streamlined trains, and telephones to the days of kerosene lamps, pot-bellied stoves, and "shanks' mare."

Wind, more than wave, did this—and what a wind! As far west of the storm's center as New York it blew 120 miles an hour on top of the Empire State Building. On Mount Washington, highest point in New England, it blew 163. At Blue Hill Observatory, near Boston, it hit at least 186.

These were gusts, but even the steady-blowing winds shot up to 121 miles an hour.

At Blue Hill, the director, Dr. C. F. Brooks, said: "The wind came in great puffs, as much as five minutes apart, and we could hear the puffs coming with a deep, heavy, roaring sound." The force of this blew down brick walls. Even at the far northern end of Lake Champlain it kicked up waves big enough to drive boats ashore.

It not only stripped leaves from trees, but blew the leaves apart, leaving the mid-



Photograph courtesy New England Telephone and Telegraph Company

MEN WERE RUSHED 1,500 MILES TO REPAIR NEW ENGLAND'S PHONES

When hurricane-felled trees put half a million telephones out of order, the Bell System speedily mobilized expert repair crews from as far away as Nebraska, Arkansas, and Virginia to help restore service. Equipped with their own trucks and tools, and using standardized methods, the men tackled the job beside their Yankee co-workers without loss of time. Grateful New Englanders banqueted crews returning home, and paraded them to depots with brass bands.

ribs still attached to the twigs. In parts of southern New England, foliage conditions changed from early fall to full winter in two hours.

STRANGE VISITORS—COME WITH THE WIND

The wind brought strange visitors. A young gannet, whose normal habitat is the North Atlantic Ocean,* was blown as far

* See "Birds of the High Seas," by Robert Cushman Murphy, NATIONAL GEOGRAPHIC MAGAZINE, August, 1958.

inland as East Corinth, near Barre, Vermont (page 545).

A Leach's petrel, rarely seen as far inland as Vermont, also was found near Barre after the storm, in an exhausted condition, and died the next night. Other sea birds were found in other parts of Vermont, in New Hampshire, and Massachusetts, all apparently blown inland.

Three yellow-billed tropic birds, natives of the West Indies, were found in Vermont. Three black skimmers, whose range is tropical and temperate America, turned up at Monomoy Point, Cape Cod. Several common terns, usually seen along the coast, were blown inland near Holyoke and Northampton.

The beautiful elms and other shade trees that were New England's pride became suddenly its nemesis. Planted along the sides of streets, they were blown down by hundreds of thousands (p. 535). With them went telephone and telegraph wires, electric light and power lines. Torn-up roots broke buried gas and water pipes. Highways and railroad tracks were blocked. Autos, street-cars, trains were suddenly useless.

Electric power had to be cut off because of the danger from live wires. Iron fences in Salem, Massachusetts, and Burlington, Vermont, were charged by live wires. A "blackout" almost as complete as for war-time air raid defense settled over the countryside.

A fourth of all telephones in the storm area ceased to function. Millions of electric light bulbs suddenly failed to glow when switches were flipped (page 547).

Elms planted along the main street of East Hampton, Long Island, to replace elms destroyed in the hurricane of 1815, fell in their turn before the hurricane of 1938. In Stonington, Connecticut, the tree warden had marked one old dying tree to be cut down soon. After the storm, that tree alone, of all in the entire block, still stood!

Many cities require that warning lanterns be placed on fallen trees. Before the night of September 21 was over there wasn't a lantern of any kind to be bought in many a New England locality. And then the lanterns began disappearing from the fallen trees. The temptation was too great for people left suddenly helpless by failure of their electric lights.

When September 22 dawned, New Englanders found themselves almost cut off from the world, and from each other. Over

vast areas there was no way to travel or send a message unless you walked—or flew. The air lines between New York and Boston set new records for passengers.

RADIO "HAMS" HELP MEET EMERGENCY

Factories were shut down for lack of power; elevators and drawbridges weren't operating; you couldn't use an electric flatiron, or vacuum cleaner, or curling iron, or heating pad, or stove, or ice box, or radio, or washing machine, or gasoline pump. You couldn't even turn in a fire alarm or phone for a doctor.

Electric locks of bank vaults wouldn't work. Yeggs were foiled in a safe-blowing attempt when failing power made useless their electric detonator, attached to a light socket. For a time telegrams were sent from Boston to New York by way of London. Amateur radio operators, already organized in a nation-wide network, did yeoman service. Commercial radio stations carried on under difficulties. Much of their traffic consisted of messages seeking news of friends and relatives. One man received a dispatch saying, "Please let us know if you are dead or alive!"

Nearly half a million telephones were out of service in New England, Long Island, and parts of New Jersey and New York. Vermont, New Hampshire, and parts of Massachusetts were virtually cut off from telephone communication with the outside world. Long-distance calls were swamping switchboards.

TELEPHONE COMPANIES MOBILIZE

Facing the worst interruption of service in its history, the Bell System mobilized as for war. Extra operators were sent in by airplane from other cities. As far south as Virginia, as far west as Nebraska, repair crews got hurry-up orders to load trucks on trains, pack bags, bid farewell to families. By rail as far as possible, then in truck convoys speeding over the roads, the telephone army moved in.

Strange faces and accents suddenly appeared in remote New England villages.

"What're you boys from Arkansas doing way up here?" asked someone.

"All we know is," drawled a lineman, "the boss said pack up in a hurry and go up and help the Yankees."

Help came, too, for the light and power companies. And they needed it! Mile after mile of electric lines was either broken

Photograph from *The Providence Journal*

HIGH-WATER MARKS IN PROVIDENCE—1815 AND 1938

On the walls of the historic old Market House in Market Square, Providence, which survived two hurricane inundations, 123 years apart, are these self-explanatory signs. The 1815 storm followed almost exactly the same path as that of 1938, and occurred on September 23, two days after the date of the 1938 blow. An old newspaper, describing the earlier hurricane, said: "Consternation and dismay were depicted on every countenance; all were eager to fly, but knew not where to find an ark of safety. Vessels were forced into the streets, and threatened destruction to the surrounding buildings. Women and children were rescued from chamber windows, and men were seen buffeting the torrent to save a friend or secure an asylum" (pages 538 and 546).

or thrown to the ground. Eighty-eight per cent of the New England Power Association's customers had no electric service. The closely knit network of electric power lines that crisscrosses New England had largely ceased to function (page 540).

One woman demanded her lights be restored at once, because otherwise her 12 servants wouldn't stay. Another impatient lady, whose "juice" was still functioning, wanted the bulb in her electric ice box fixed right away! But other people came in and paid their bills ahead of time, because they thought the company needed the money.

In their repair work, the telephone com-

panies used 720 miles of cable, 10,000 miles of wire, 3,211,000 cable rings, 535,000 drop wire clamps, 132,000 pounds of solder, 21,800 poles.

A total of 2,300 repairmen and 615 motor vehicles were sent to the hurricane area from other Bell System companies (page 541).

Where regular electric power had failed, welding machines and gasoline engines helped generate electric current to carry voices over telephone wires.

Two weeks after the hurricane every telephone in New England's storm area was back in service, except in certain regions where restoration and rebuilding were



Photograph by Rothberg

LIKE A GIANT SPEAR THRUST FROM THE HEAVENS

The sharp point of the steeple, blown off and upended by a freakish twist of the hurricane, smashed through the roof of the Community Church at Dublin, New Hampshire. It struck the pew usually occupied by the minister's wife. Another steeple, scheduled to be removed from a church at Springfield, Massachusetts, was obligingly broken off at almost the exact place planned,

particularly difficult. And all this despite the exasperating fact that 79,000 telephones not cut off by the storm were put out of service afterward when householders and clean-up crews accidentally cut or injured wires and cables while clearing away fallen trees and debris.

Visiting telephone men told tall stories of the Wild West to credulous Yankees. But the local fellows had their revenge when some of the westerners wanted to go deep-sea fishing. Two-thirds of them had to be brought back to shore—too seasick to cast a line!

Travel through New England today, and in most places you'll hardly notice that there's been a hurricane, unless you go along the seashore or on the back roads.

Few communities lost more than 25 per cent of their shade trees. But on the morning after, New England was a sorry sight indeed.

Tall, straight old pines, of the original "forest primeval," the kind that used to be marked and reserved for masts in the British Navy, were broken down or uprooted. Three-fourths of the merchantable timber in Harvard's 2,200-acre experimental forest lay flat. Fifteen hundred fine specimen trees on the grounds of the world-famous Arnold Arboretum near Boston were down, a few not duplicated in the collection.

In 1925 a landscape architect had reported to Amherst College that a reshaping of the college campus was desirable, but that since "immensely strong sentiment and tradition are attached" to its groves of large old trees no changes should be considered "unless some calamity should destroy all the trees at one fell swoop." Now the calamity had happened.

It has been estimated that a million shade trees were blown down by the storm.

Trees with thick, heavy tops, like pines and oaks, fell easy victims to the wind. Old pines are brittle, too, and many were

broken off instead of being uprooted. Shallow roots made uprooting of pines easier. Beeches, with spreading roots and short trunks, were somewhat more resistant.

"REBUILDING" THE FOREST

But New England's greatest tree loss, greatest problem for the future, is in her forests. The New England farmer's wood lot always has been his bank account. The hurricane blew down trees that he was saving to educate his children, pay his taxes, secure his old age.

One of the greatest lumbering jobs of its kind in history is going on now in New England. A board foot of lumber is 12 by 12 by 1 inches. It is estimated that 2½ billion board feet of timber were blown down or broken by the hurricane, in addition to much cordwood and small material—about eight years of normal production. If the salvageable part of this were cut into one-inch boards, it would make a 10-foot fence extending around the earth.

To encourage salvage of this timber, and prevent the price from dropping to ruinous levels, the Federal Government has become one of the world's largest lumber dealers. It is buying logs of various grades and species at approximately normal prices,



Photograph by Elaine M. Drew

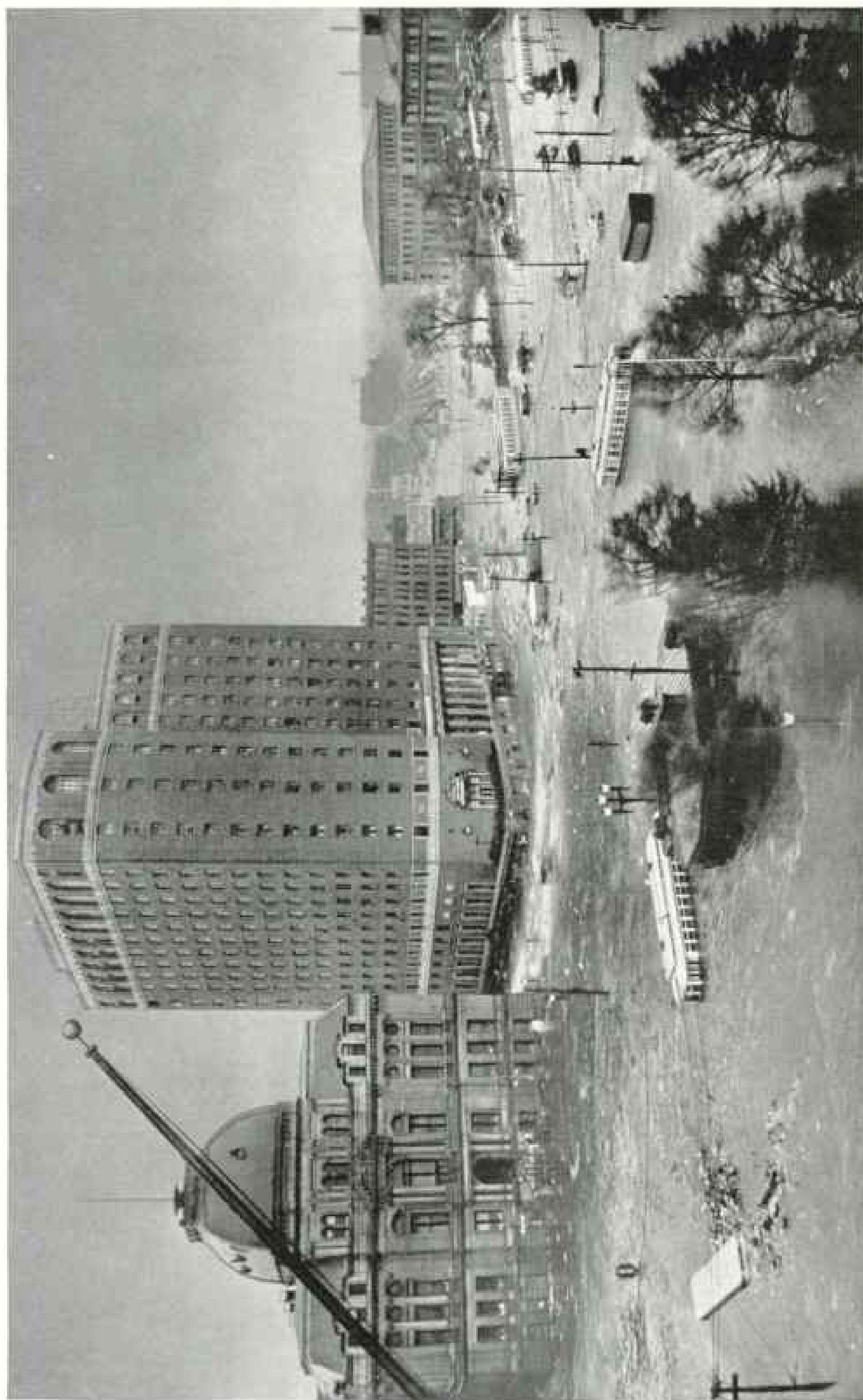
A PUZZLED DEEP-SEA FISHERMAN FINDS HIMSELF IN VERMONT

"What became of that ocean?" seems to be the thought of this young gannet, blown inland to East Corinth, near Barre. Its normal habitat is the North Atlantic Ocean, and this was the first gannet ever reported in Vermont. When captured, the bird ate "hot dogs" with relish, but later was fed on its accustomed diet of fish. It was tagged with U. S. Biological Survey band No. 39-802838, sent to Boston, and released 50 miles off-shore by the fishing schooner *Alpur*. Two weeks later the captain of the *Alpur* said he saw the gannet again, south-east of Cape Cod (page 541).

storing them, and then will feed them gradually onto the market for the next four or five years. Cutting undamaged live trees will be discouraged.

SALVAGING TIMBER

Pine logs for lumber are being stored in lakes and ponds, where they will keep for years. You can store 1,000,000 board feet in a four-acre pond. Pulpwood and hardwood logs can be piled on land.



© Miller Art Associates

A MAN DROWNED HERE AS THE HURRICANE PUSHED SEA WATER SIX FEET DEEP INTO THE HEART OF PROVIDENCE

People watch incredulously from the City Hall steps at the left as the wind-lashed water pours into the Mall, center of New England's second largest city. Automobiles are submerged to their tops in front of the Biltmore Hotel, in the center of the picture. Horns of flooded cars started blowing as the salty water short-circuited their wiring systems. Thousands were marooned in office buildings. Ropes were thrown from second-story windows to people caught in the sudden inundation. The water rose eight to ten feet above gutter levels at some points (pages 539 and 543).



Photograph from Granite State Studio

EACH WHITE DOT ON THE SWITCHBOARD MEANS "DON'T PLUG IN—STATION SILENCED"

Most of the telephones in Keene, New Hampshire, were out of order. Only 50 of 1,553 lines were clear after the storm. For a time a short-wave radio telephone was Keene's connection with the outside world. Messages were sent over it via Boston to places as far distant as San Bernardino, California (page 542).



Photograph from *The Providence Journal*.

ONCE THAT PILE OF KINDLING WOOD WAS COTTAGES AND YACHTS

Scenes like this near Providence, Rhode Island, were repeated all along New England's south shore, and to some extent farther north. One yacht, hastily abandoned, was found aground on an island next day with electric lights burning and engine still hot. Two boats owned by one man were crushed when a storage shed on shore collapsed, while his two others, in the water, were uninjured. Boat yards now are busy building new craft.

Business is booming for portable saw-mills and logging equipment. Thousands of jobs in cutting and processing timber have been created.

The hurricane winds scattered tree seeds unusually well and the activity in the woods has helped work them into the forest floor, aiding future growth. Woodpeckers will reap a generous harvest of bugs in fallen logs and stumps.

Most dangerous heritage of the hurricane is the menace of forest fire. The branches of blown-down trees remain on the ground, a gigantic brush pile scattered all over New England, ready to blaze when the woods dry out this spring. In regions of danger, much brush was burned last winter while snow lay on the ground.

Many a New England "sugar bush" felt the fury of the storm. In Vermont alone, which leads all States in maple sugar production, 20 per cent of the 3,624,000 sugar

maples normally tapped were blown down. Some were 100 years old or more. They can be cut up now, however, into wooden heels, bowling pins, meat blocks, and hardwood floors.

It takes nearly 50 years to grow a producing sugar maple, yielding about two pounds of sugar a year.

In one day the hurricane "picked" four million bushels of apples and damaged vast numbers of New England's apple trees. Then began an orgy of apple-using. Housewives dug out grandmother's old recipes and started making their own apple sauce and apple butter.

The Federal Government bought 555,000 bushels of apples and shipped them to other parts of the country, chiefly the South, for distribution to persons on relief. About three-fourths of the apples were salvaged. New England's ancient prejudice against waste "bore fruit"!



Photograph from Rice and Watkins, Inc.

A CANNON SHOT BRINGS VERMONT BACK TO THE WORLD

A bridge, washed out by floods at Chicopee Falls, Massachusetts, carried away a key telephone cable connecting Vermont with the rest of the United States. This Lyle gun, used by the U. S. Coast Guard to shoot life lines to ships wrecked offshore, was flown from Long Island. Here it is being loaded to fire a light rope over the river for hauling a new cable across.

In some orchards partly uprooted trees were replaced in the ground. Some of these may bear apples next year only on the side where the roots weren't injured.

CHICKENS, HONEYBEES, AND TOBACCO

Thousands of prospective chicken dinners for New York City were almost literally blown away. Chicken farms are an important industry along the Connecticut and Rhode Island shores. Chickens were dashed against obstructions and killed, or died of exposure when their houses were blown down or unroofed. Many unborn chicks died when electric power was cut off from incubators.

Barns were unroofed and hay soaked by the rain. Milk couldn't be pasteurized when electric power was cut off. Some bee swarms were weakened and threatened with starvation after salt spray and wind killed fall flowers near the coast.

Connecticut River Valley soil, once an

ancient lake bottom, is well adapted to growing cigar wrapper and binder tobacco. In the fall it is dried in long barns with slits in the sides to let air circulate. The hurricane romped through the open slits, and down crashed hundreds of barns. Many caught fire from charcoal braziers used to assist the drying. Tobacco representing growth on 3,000 acres was destroyed.

"Hell and High Water" was the headline used by a New Hampshire paper over its story of hurricane and flood. The floods, which came with the wind, though not caused by it, wreaked their own havoc.

Carloads of onions went sailing down the Connecticut River. Potatoes and other crops rotted in flooded fields. Three small Connecticut lakes, fringed with summer cottages, were emptied of water when the small dams that created them were washed away.

But beaver dams in New York State, on the flood area's western fringe, are cred-



Photograph from Hartford Courant

TO BLOCK A ROAD EFFECTIVELY, MOVE A VILLAGE ASTRIDE IT

That is just what the hurricane wave did near Westbrook, Connecticut. Note the long line of automobiles on the road beyond. Though some houses along the coast were literally torn to pieces by the waves, others were floated from their foundations more or less intact. Some people were carried miles by the storm, inside or on the roofs of their houses.

ited by authorities with preventing serious flood damage in several places.

THE DUCKS GET A BREAK!

So much water poured into Lake Champlain that at Burlington, Vermont, the lake level rose two feet. Coming on the eve of the duck-hunting season, this gave the ducks a break. Hunters' blinds were flooded or washed away, and the lake waters, rising far back inshore, afforded the ducks much better protection.

Some of the famous 190,000,000-year-old dinosaur tracks near Holyoke, Massachusetts, were lost when flood waters carried away slabs of stone containing them, which had been cut out of a ledge.

Factories located along the sides of streams were especially vulnerable to floods. Connecticut, Rhode Island, Massachusetts, and New Hampshire are among the most highly industrialized States in the Union. Of the some 350 leading kinds of goods

manufactured in the United States, two-thirds come at least in part from New England factories.

Suddenly the wheels in this vast workshop largely ceased to turn. Enough tapioca for thousands of puddings floated down the river from a plant at Orange, Massachusetts. A toy factory and all its contents sailed away. Steam boilers and electric generators were flooded. Glass from wind-broken windows got into machines. Thousands of yards of unfinished cloth had to be washed.

When one factory was unroofed by the wind its automatic sprinkling system was set off, and meanwhile the rain also poured in. The company was insured against sprinkler damage but not against rain. What a headache for the adjuster!

Some rivers carved new channels, emptying millponds and leaving factory dams high and dry with no water power available. Other industrial dams were carried



Photograph from Pictures, Inc.

FROM THIS "LOST" TRAIN 275 PEOPLE WERE RESCUED JUST IN TIME

With communication wires down, the New York, New Haven and Hartford Railroad was unable to stop this crack flyer before it reached the exposed causeway at Stonington, Connecticut. The storm wave, already flooding in, began washing out the tracks, and wreckage broke the air lines, locking the brakes. Passengers were hurriedly moved into the forward coach and engine cab, while a trainman, standing in shoulder-deep water, uncoupled the other cars. Then the big locomotive, become a tugboat, towed its "lifeboat" car to safety. It pushed a house and other debris off the track and tore down a line of telegraph poles when it struck fallen wires.

away. More factories were shut down for lack of power. Thousands of workers were suddenly out of jobs.

But not for long! There was another flood—of orders. An asphalt shingle plant went on 24-hour shifts. A glove factory got huge orders for electric linemen's rubber gloves. As soon as power and transport were restored, New England industry was humming again.

Floods isolated small communities. Planes dropped typhoid serum.

A man shot an arrow with a string attached across a raging torrent to help get food to stranded refugees near Norwich, Connecticut. Another did the same thing with a baseball at Danielson so that an isolated town could be given electric power.

All three of the main railroads in the hurricane path were facing a major flood disaster even before the wind struck.

With communication wires blown down, trains were "lost" for hours. Houses and boats were blown onto tracks. Sand and rock were washed 200 feet into the Hoosac Tunnel in western Massachusetts. Twelve hundred trees and 700 poles fell on the tracks of the New York, New Haven and Hartford Railroad.

VERMONT MILK, SHIPPED VIA MONTREAL TO BOSTON

The only railroad track still open into Boston, or practically all of New England, was by way of Portland, Maine. Half of Boston's milk comes from Vermont cows. So Vermont shipped milk to Montreal, over into Maine, and so down to Boston. Food and freight came in the same way.

The task of reconstruction was enormous. Track-laying crews were brought in from everywhere, even Mexicans, in

gay-colored shirts, from the Southwest. They rebuilt 26 miles of track in 293 bouts at one place on the New Haven line along the Connecticut shore.

The New Haven had to reclaim part of its right of way from the sea, where the storm had changed the coast line. The Boston and Maine used 4,500 carloads of fill in one washout alone. Hundreds of miles of its tracks were seriously damaged.

Mountains of freight were piling up for shipment into New England, which overnight had become the Nation's best market for everything from roofing nails to cross-cut saws. So great was the need for moving trains that, to save time, one end of a wrecked bridge was held up for several days by a powerful crane until a new foundation could be placed under it. Another steel bridge, washed away and buried in sand, was found with the aid of a magnetic "divining rod," and salvaged.

From the ocean off Connecticut and Rhode Island, and along the Long Island coast, come many of the fish and shellfish that supply New York's Fulton Market.

But fishing came to a standstill the day after the storm, not for lack of fish, but of things to fish with. Fishing boats were sunk, stove in, or thrown high and dry upon the shore, even far back in the woods. Fish traps, nets, and oyster tongs were washed away or smashed. Whole blocks of fishermen's cottages were destroyed or floated away.

EVEN THE OYSTERS SUFFERED

Fish and lobsters off these shores were not injured so far as anybody knows. But the hurricane had malicious fun with oysters. Some were washed from the private beds leased by one concern to those of a competitor, or out onto the public grounds where they are anybody's property. In Buzzards Bay some beds were buried by silt or sand, or carried away.

Layers of shells on the bottom, to which the spat, or young oysters, cling while growing, in some cases were buried, depriving oyster youngsters of a resting place.

But the great depth of the inflowing water actually protected fish in the shallow salt ponds along the Rhode Island shore. So thick was the blanket of water that the surge of the incoming wave was restricted to the upper layer of the water, leaving the bottom undisturbed.

Safe are most of New England's historic

landmarks, though some well-known ones were damaged or destroyed.

The famous Sentinel Pine, estimated to be nearly 300 years old, at the Flume Reservation, New Hampshire, relic of the forest primeval, fell before the gale. The Avery Oak, at Dedham, Massachusetts, dating to colonial times and incorporated in the town seal, was destroyed. Many of Boston Common's ancient trees, each marked with its scientific name on a little metal sign, were blown down.

The Congregational Church at Lebanon, Connecticut, 131 years old, was partly destroyed. At Noank, mecca of artists, the Old North Dock, perhaps most painted of all the scenes in town, is gone forever. Venerable Russell House, on the campus of Wesleyan, at Middletown, Connecticut, looks as bare as it did 100 years ago before trees were planted around it.

Mount Hermon School, in Massachusetts, plans to preserve the huge stump of one of its lost trees as a memorial.

Dartmouth's "Bema," at Hanover, New Hampshire, a grove that was the scene of scores of commencements, is no more. Trees planted by Daniel Webster are now neatly stacked cordwood.

Hikers, hunters, and campers will be reminded of New England's hurricane for years to come as they clamber over fallen trees and push through tangles of brush and fallen branches. However, the U. S. Forest Service, Appalachian Mountain Club, Green Mountain Club, and other outdoor groups are rapidly clearing and repairing their trails.

The list of hurricane effects is endless. Some 30,000 plate-glass windows were broken by wind and flood, an insurance man calculates. This is enough glass to cover 17 football fields. At least 26,000 automobiles were smashed by falling trees, soaked with water, or otherwise damaged. Nearly \$1,500,000 in insurance was paid on them.

In Westerly, Rhode Island, after the hurricane, a body was identified as that of a local character whom we'll call John Smith. Next day, however, John showed up again in town, unharmed. Seeing his name on the list of dead, he asked to see the body. He took one look, shook his head, and tersely stated, "Nope, 'tain't me!"

New England, after the hurricane, can say the same. Despite her ordeal of wind and water, she's very much alive today.

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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.

The Society cooperated with Dr. William Beebe in a deep-sea exploration of undersea life off Bermuda, during which a world record depth of 3,028 feet was attained August 15, 1934, enabling observations of hitherto unknown submarine creatures.

The Society also had the honor of subscribing a substantial sum to the expedition of Admiral Peary, who discovered the North Pole, and contributed \$100,000 to Admiral Byrd's Antarctic Expeditions.

The Society granted \$25,000, and in addition \$75,000 was given by individual members, to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees in the Giant Forest of Sequoia National Park of California were thereby saved for the American people.

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 continental 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.

On November 11, 1935, in a flight sponsored jointly by the National Geographic Society and the U. S. Army Air Corps, the world's largest balloon, *Explorer II*, ascended to an officially recognized altitude record of 72,395 feet. Capt. Albert W. Stevens and Capt. Orvil A. Anderson took aloft in the gondola nearly a ton of scientific instruments, and obtained results of extraordinary value.

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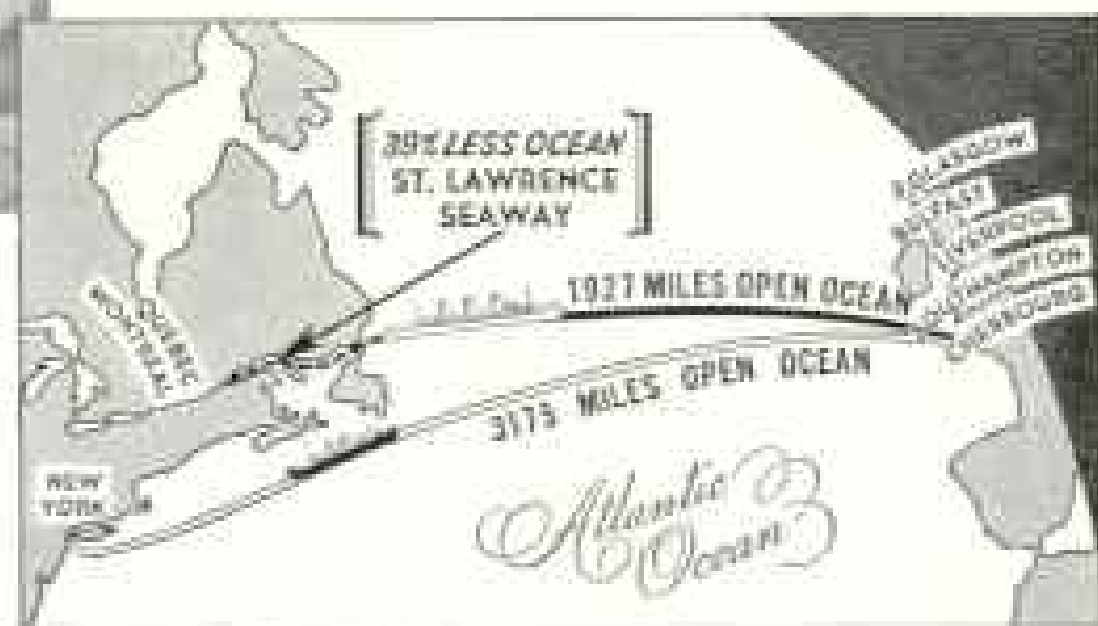
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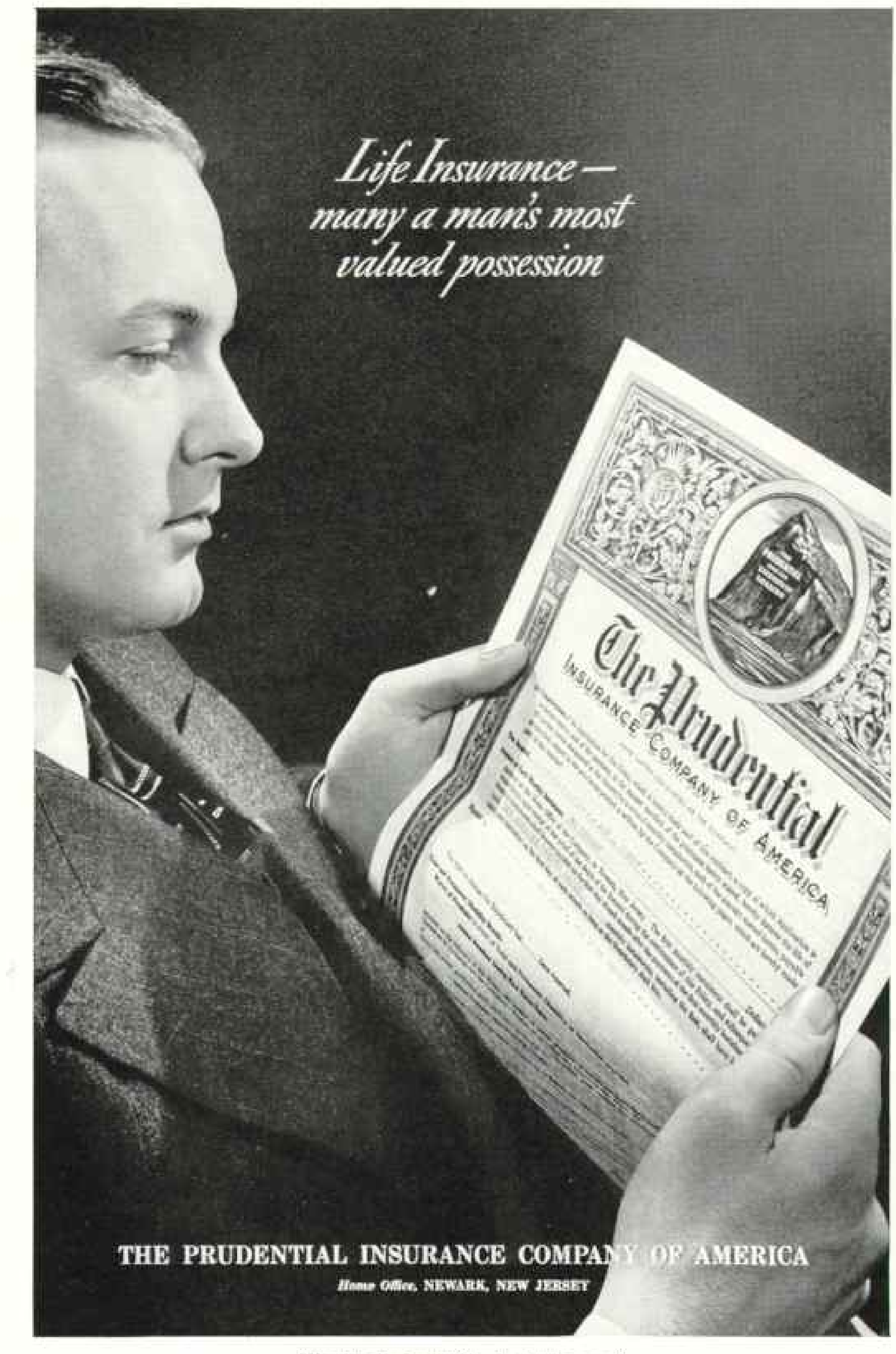
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A voyage as colorful as Hawaii's flowered isles!



Matson Line
 TO *Hawaii* • NEW ZEALAND • AUSTRALIA
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Details of *Matson Cruises to Hawaii and the South Seas*, also *hotel accommodations at the Royal Hawaiian or the Moana in Honolulu*, from Travel Agents or MATSON LINE offices at New York, Chicago, San Francisco, Los Angeles, San Diego, Seattle and Portland.

This year SAN FRANCISCO'S WORLD'S FAIR visit HAWAII



Go bright the sun

It gleams from bronzed shoulders, shimmers on the open-air pools and decks. Even in early Spring... even before you reach the blue, luminous Mediterranean... every day is "beach" day on a Lido liner!

Pleasant shipmates share the sunny outdoor play, the worldly entertainment. Throughout your voyage you live splendidly, dine sumptuously... enjoy Lido's incomparable stewardship... when you cross to Europe on the mild Southern Route.



Italian Line

Choose the BEX or extra-stabilized CONTE DI SAVOIA for speed... or, for a more leisurely crossing, select the ROMA, SATURNIA or VULCANIA. Consult your TRAVEL AGENT or Italian Line, 624 Fifth Avenue, New York. Offices in other cities.



Style note for Spring



"BUICK'S THE BEAUTY" quite obviously in more ways than one. And you get more than a hint of that from its new Body by Fisher—a beauty on all counts—in style, safety, luxury and comfort.

IT'S the style this year to have a car you can see out of • And in the Buick pictured here, the total glass area has been increased 412 square inches—all safety plate glass—with 30 per cent more area in the windshield alone } That increased visibility gives you a view of the traffic—and the world around you—that's a new note in safety too in General Motors cars this year } Add to this the honest

craftsmanship, the solid comfort and silent security you get in Body by Fisher—add the convenience and protection of Fisher No Draft Ventilation and you'll know why smart motorists say . . . "For '39, better pick the car with Body by Fisher,"

which means a General Motors car of course.



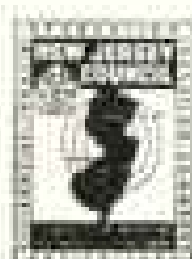
BODY BY FISHER

5 REASONS FOR A JERSEY VACATION*



- * 1. Nation's Playground. 2. World's Fair.
3. All land and water sports. 4. No advance
in hotel rates. 5. Reduced travel fares.

Honestly, now, what do you want on your vacation? Dancing? Swimming? Fishing? Riding? Golf? How about visiting historic sites? You can enjoy any or all of these in New Jersey this year, and still get to the World's Fair and back in one day. Marvelous beaches invite you. Surf and ocean abound with game fish; streams and lakes are plentifully stocked. There is every reason to enjoy Jersey's hospitality this year.



THE PERFECT STATE
TO PLAY, LIVE AND
WORK!



NEW JERSEY COUNCIL

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free

New Jersey Council, Dept. N49, State House,
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Kindly send me three booklets giving authentic information
for a New Jersey vacation:

- (1) New Jersey: "The Playground of the Nation"
(2) Hotel Guide (3) Road Map

Name _____

Address _____

City _____ State _____

Sail the Lakes to the New York World's Fair



If you're traveling to the World's Fair, you'll want to make your trip to New York just as interesting as possible. And here's the way to do it. Take the Great Lakes way! Sail between Detroit and Buffalo on big, luxurious D & C liners. You'll enjoy this refreshing interlude on the water.

D & C liners—larger than many ocean-going vessels—are completely equipped for your comfort and entertainment. Your round-trip railroad ticket will be honored by the D & C Lines. And if you're motor-ing, remember that you can take your car on the ship for a modest charge. Save yourself 278 miles of cross-country driving! Fares on the D & C Lines are low and every type of accommodation is avail-able. See your local travel agent.

★ ★ ★

D & C liners sail daily between Detroit and Cleveland and Detroit and Buffalo. Season opens April 15 (approximately) for Cleveland Division and May 15 (approximately) for Buffalo Division.

Passenger Department G2
D & C NAVIGATION COMPANY, Detroit, Mich.

Please send me illustrated folder, containing fares and schedules.

Name _____

Address _____

D & C
LAKE LINES

The Great Lakes Route
to the World's Fair

DETROIT AND CLEVELAND NAVIGATION COMPANY

DETROIT, MICHIGAN

T*raveler's Aide*

Some people travel to see the sights, some for the fun to be found in the going. But the thing you sense about a Buick the first time you take the wheel of this gallant car is that it makes both the going and the seeing more enjoyable. This, even more than the satin-smooth power of its almighty Dynaflex straight-eight engine or the level-flying comfort of its BuiCoil Springing, is what makes this fine car so great a value. Prices now range as much as \$102 below those of a year ago.



"Better buy Buick!"
EXEMPLAR OF GENERAL MOTORS VALUE

"Mention the Geographic—It identifies you."

CHESSIE

— Invites You —



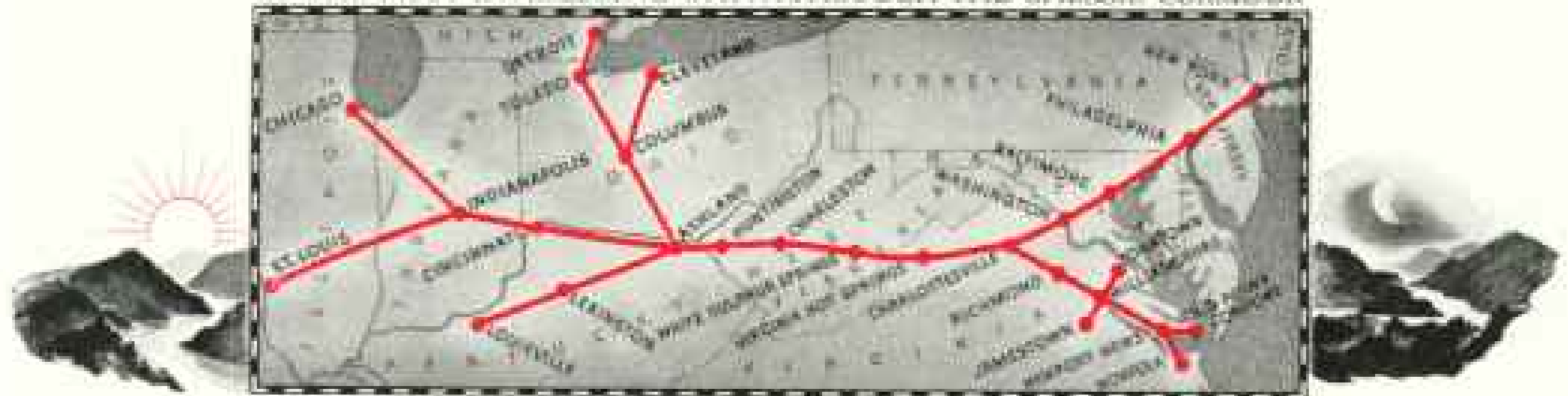
WHENEVER business or pleasure takes you into her territory, Chessie invites you to travel the most interesting and enjoyable way—through *The Chessie Corridor*.

Relaxed in the comfort of air-conditioned, fast trains—THE GEORGE WASHINGTON—THE SPORTSMAN—THE F.F.V.—you'll be

enthralled by a grand scenic panorama—no two miles alike...or refreshed at night in a clean and quiet sleeping car that lulls you to *Sleep Like a Kitten*.

Chessie especially invites World's Fair visitors to make the trip on her railroad. It will greatly add to their journey's pleasures.

GO THE MOST INTERESTING WAY... THROUGH THE CHESSIE CORRIDOR



CHESAPEAKE AND OHIO LINES

Ticket agents of any railroad can route you via Chesapeake and Ohio. For information, ask your local agent or write this company at 1111 Terminal Tower, Cleveland, O.

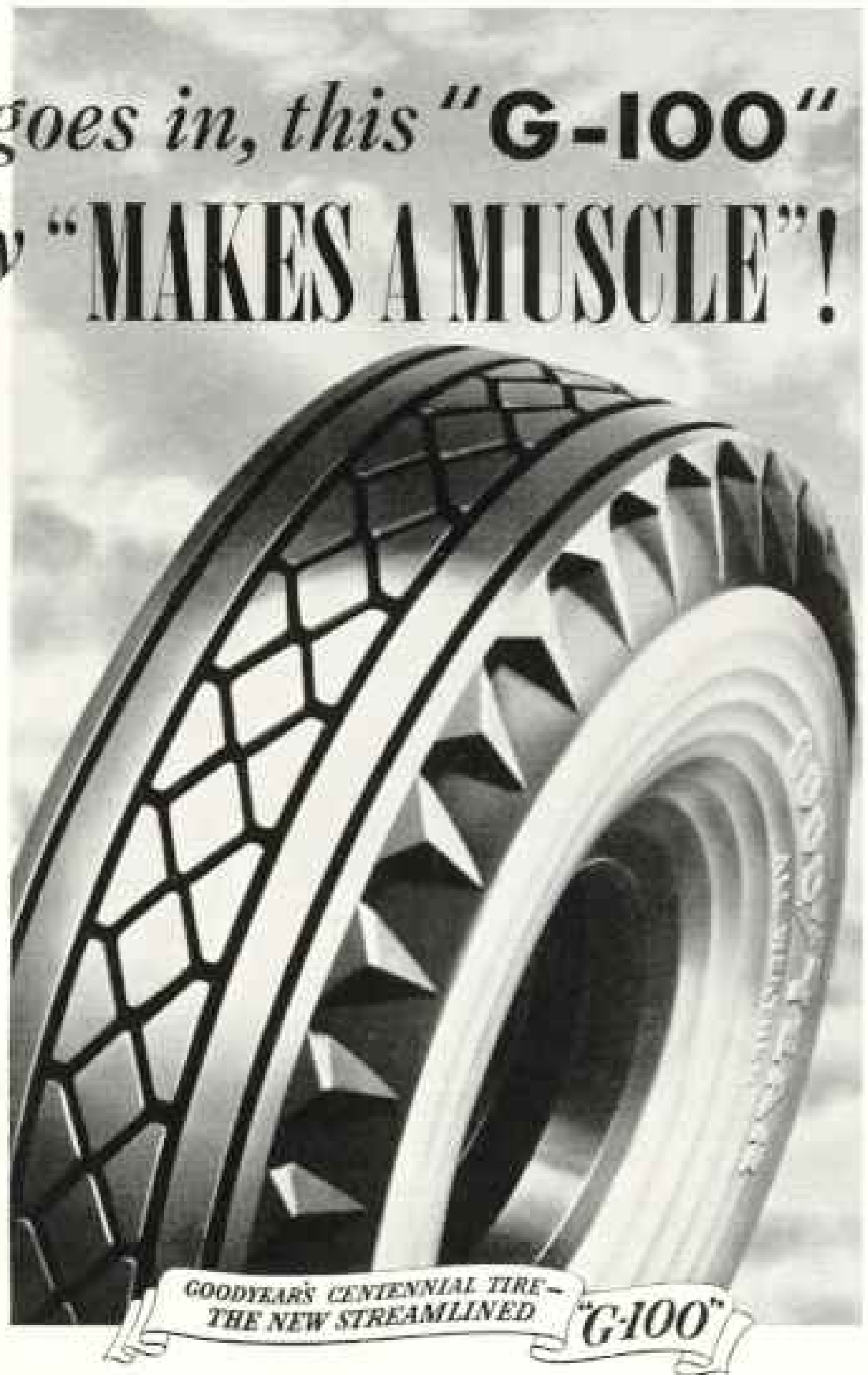
As the air goes in, this "G-100" tire literally "MAKES A MUSCLE"!

THIS year being the Hundredth Anniversary of Rubber, we naturally wanted to make it memorable to every tire user. And after turning everything upside-down we contrived new stuff in tire engineering that makes our Centennial tire—the new "G-100" All-Weather—an all-round standout.

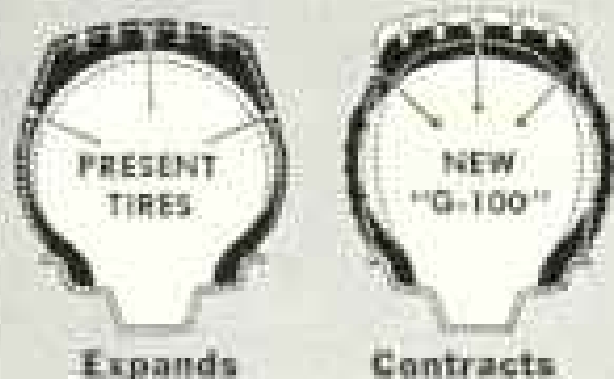
Now you know that in cross section an ordinary tire is *round*. When inflated it *e-x-p-a-n-d-s* equally, stretching the tread. And when stretched, rubber cuts and scuffs more easily.

But you'll note that our new "G-100" is *elliptical*—oval in cross section, higher than wide. As air goes in it actually *contracts* vertically—*firm-s down* instead of "growing."

This action *compresses* the tread—literally "makes a muscle"—making it tougher to cut, harder to scuff, *making it wear 33% longer!*



LOOK AT THE DIFFERENCE



Dotted outline shows shape of tires before inflation; solid section after. Note how the new "G-100" actually contracts in overall diameter—firm-s down—compressing the tread to make it more resistant to cuts and wear.

And beyond this, "G-100" All-Weather gives you 11% more rubber on the road for greater grip, surer traction. It has more durable cords in the sidewalls—a sturdier low-stretch cord that marks a new high in resistance to bruising and blowouts.

A handsome performer, it is equally handsome in its sleek sculptured lines that match the

streamlining of modern cars. You want the best for your money, so go see this great Centennial "G-100" tire at your Goodyear dealer's—he has it in stock now.

One Hundred Years ago Charles Goodyear discovered vulcanization and made the modern rubber industry possible.



THE GREATEST NAME IN RUBBER
GOODYEAR

MORE PEOPLE RIDE ON GOODYEAR TIRES THAN ON ANY OTHER KIND

"Mention the Geographic—It identifies you."



SUN. Down the coast, along the wide, white, uncrowded beaches. There's a charm to the rolling waters of the Maine sea.

MON. Eastward along the more rugged coast where giant rocks jut into a frothy surf, and fragrant pines fringe the shore.

TUE. A graceful sweep away from the coast takes you into wild forests, with a background of massive mountains.

WED. Up the soaring mountainsides to lofty lookouts. Good roads take you up above quiet lakes and green valleys.

THU. Then into the lake region where rippling water laps the wild shores of countless lakes. Canoes and boats dot the scene.

FRI. Through quaint Maine towns where friendly folk live unhurried lives. As the days fly by you feel more and more welcome.

SAT. No matter how long you stay, you hate to leave. You have unforgettable memories of hospitality, beauty and incomparable food.

• Sail, fish, swim in salt or fresh water of Maine. Ride, hike, camp, play golf and tennis surrounded by the beauty of Maine. A week is not enough — nor a month — but 1300 miles of easy driving over fine Maine roads will not soon be forgotten. Send the coupon, today.



• See the Maine Exhibit at the New York World's Fair
THEN SEE MAINE!

GET MORE FOR YOUR MONEY—IN MAINE

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MADE EASY**



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Note the sharpness of detail and realistic force of this telephoto shot taken by the Contax. This same camera will record the ethereal patterns of a dragon fly's wing in a 7" close-up . . . will snap vivid pictures indoors in ordinary artificial light . . . will take informal, expressive portraits. Contax offers new, fascinating possibilities—in full color as well as black and white.

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At leading dealers.

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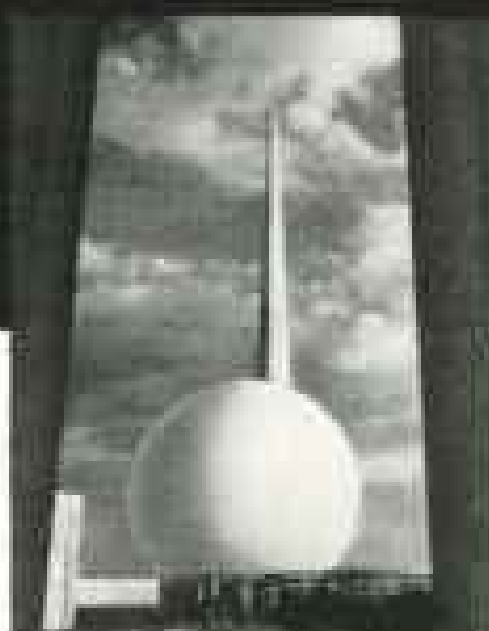
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PICTURES

**...take a
WESTON along!**



Don't return from the fair and find that many of the pictures you took are worthless or disappointing . . . *incorrectly exposed.* Before you start your trip, get a WESTON Exposure Meter. Then you can be sure that every still or movie you take, even your color pictures, will be brilliant and life-like . . . pictures you'll treasure and be proud to show. This tiny and inexpensive meter tells exactly what camera settings to use for any picture, in or out-of-doors. Used by amateurs everywhere. See the WESTON at your dealer's today, or write immediately for complete details. Weston Electrical Instrument Corporation, 584 Frelinghuysen Avenue, Newark, New Jersey.



**WESTON
EXPOSURE METER**

THE *Hounds of Spring* ARE AT YOUR HEELS



HERE ARE THE BUMPS! New Nash rear rock absorbers (40% longer...mounted liberally) iron out winter-rattled roads—glass-like smoothness.



FISHING FIRST! Nash is a fun-on-wheels—with a five-minute convertible double seat for out-of-door life.

SOME DAY THIS WEEK, give the best girl a ring, and come down and borrow a new Nash.

Here's a car that knows what it's all about... why colts kick their heels in the spring... why little boys run away from home... why trout rods are being revarnished.

Just look at it—begging to be let loose! But be careful... for there's a new kind of power packed beneath that bonnet... and it's terrific!

There's a gear-shift on the wheel* that's fast as light... and a Fourth Speed Forward* that's fleet and soft as the wind you're racing.

With all this wide vision, you might be in the cockpit of a glider. And there's the same feeling... of being divorced from the rush and rumble of the road. No whining of the wind or booming from beneath breaks

the spell of this glorious hour. And as you ripple across space, don't regret the coming end of the day. Spring can last forever!

From this day on there will be no more cold, chilly drafts, dust, and dirt—thanks to the automatic Nash "Weather Eye".

It's *always* spring in a Nash!



Yes, a Nash is as catching as measles, and twice as hard to quarantine. Get into the driver's seat *once*, and you can never get yourself out of it.

But, that's all right, because— Ten models are priced near the lowest... and Nash economy is just as surprising! For facts about value—see the X-Ray System at your Nash dealer's.

Four Series of Great Cars,
22 Models... 10 Priced Next
to the Lowest... Delivered at
Factory, as Low as \$770.
Standard Equipment and Federal Taxes Incl.
(*Optional Equipment—Slight Extra Cost)

\$770



The L-Dash Sedan, 112" wheelbase, is \$820 delivered at factory, with standard equipment and federal taxes included. (White sidewall tires and rear wheel shields optional at extra cost.) 1800 dealers from Maine to California to serve you. NASH MOTOR DIVISION, Nash-Kelvinator Corporation, Detroit, Michigan.

LEAVE THE OTHERS behind. New pick-up... from 15 to 50 MPH. in 13 seconds, high gear.



It's that New **NASH**

THE CAR EVERYBODY LIKES

Delightful Days IN HISTORIC MASSACHUSETTS



Plymouth Rock



The entire gamut of summer recreations. A panorama of scenic splendor. An alluring historic background. Include Massachusetts in your World's Fair itinerary. *Plan now!*



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Send me free illustrated booklet, "Massachusetts - Ideal Vacationland".

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See WASHINGTON

when you go to
New York



WORLD'S FAIR

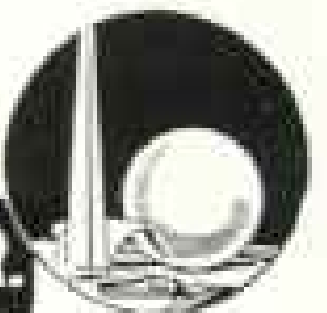
Make your Trip
Doubly Thrilling!

Take advantage of the inviting opportunity B&O offers you to visit Washington—America's great "Shrine of Patriotism"—now, the world's "Wonder Capital". You'll be thrilled at its new magnificence. See Philadelphia, too—the "Cradle of American Liberty". Liberal stop-overs at no additional cost—going to the World's Fair or returning.

B & O is the *direct* route thru Washington. From Chicago, Diesel-Powered Streamlined CAPITOL Limited; from St. Louis, Diesel-Powered NATIONAL Limited. All thru trains completely air-conditioned. No extra fare.

Ask any Ticket Agent about Low Fares or write W. B. Calloway, Gen. Pass. Traffic Mgr., Baltimore & Ohio R. R., Baltimore, Md.

BALTIMORE & OHIO R.R.



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In the Green Mountains your days of play and relaxation are accented with the exhilaration of exploring an unspoiled countryside where hospitality is a community art. Famous hotels, quaint New England inns and tourist homes, all state-inspected, combine with unusual sports facilities to create vacation memories that will survive the years. Write for illustrated book, "Unspoiled Vermont." A copy reserved for you.

Vermont Publicity Service
15 State House, Montpelier, Vt.



VERMONT



NEW DRIVING CONFIDENCE!

"Even on our brand-new car, it really is amazing what a difference Squeegee-Generals make. I'll admit I don't like wet, slippery streets—what woman does? But now I have a wonderful new feeling of confidence. And how easy they make steering and parking!"



MILEAGE, COMFORT, ECONOMY!

"I practically live in my car—average 100 miles a day—over all kinds of roads. Believe me, I know tires. I changed over to Squeegee-Generals for mileage, but what makes the big bit with me is their comfort, quiet running, easy handling and positive traction *always*."

COMPLETE THE NEW CAR THRILL! CHANGE-OVER TO **SQUEEGEE** GENERALS

Motorodom has outdone itself this year with notable improvements in safety, ease of handling, comfort and style. Why, then, are more people than ever before changing over their new cars to Squeegee-Generals? Simply because they are as far ahead of ordinary tires as today's cars are ahead of yesterday's. The way they stop, quick and straight, *every time*—the new traction on curves—your complete unconcern about blow-outs—the low pressure comfort—their utter quietness—their "new car" style—the economy of General's long mileage—these are worth many times the change-over cost.

See the General Tire dealer or your car dealer. Have Squeegee-Generals from the start. The General Tire & Rubber Co., Akron, O.



THE ONE AND ONLY
SQUEEGEE
TIRE

WITH THE *wrinkle* THAT
REVOLUTIONIZED NON-SKID DESIGN

No wrinkle when running (left). Silent riding; slow, even wear. When brakes are applied (right), the flexible ribs wrinkle into squeegee-action, grip in every direction for a quick, straight stop.

You're miles ahead
with **GENERAL**

It's Spring 1739
again

in Old Virginia

Enjoy this romantic land
in 1939 luxury!

Gain new life in inspiring Old Virginia, where Colonial America has come to life! Golf 'mid scenic and historic surroundings, bask on broad white beaches . . . fish . . . or ramble along pine-scented trails, and through quaint river-clinging towns with famous old homes and gardens. Come once . . . and evermore you'll say, "Carry me back to Old Virginia!"

Write for free 30-page
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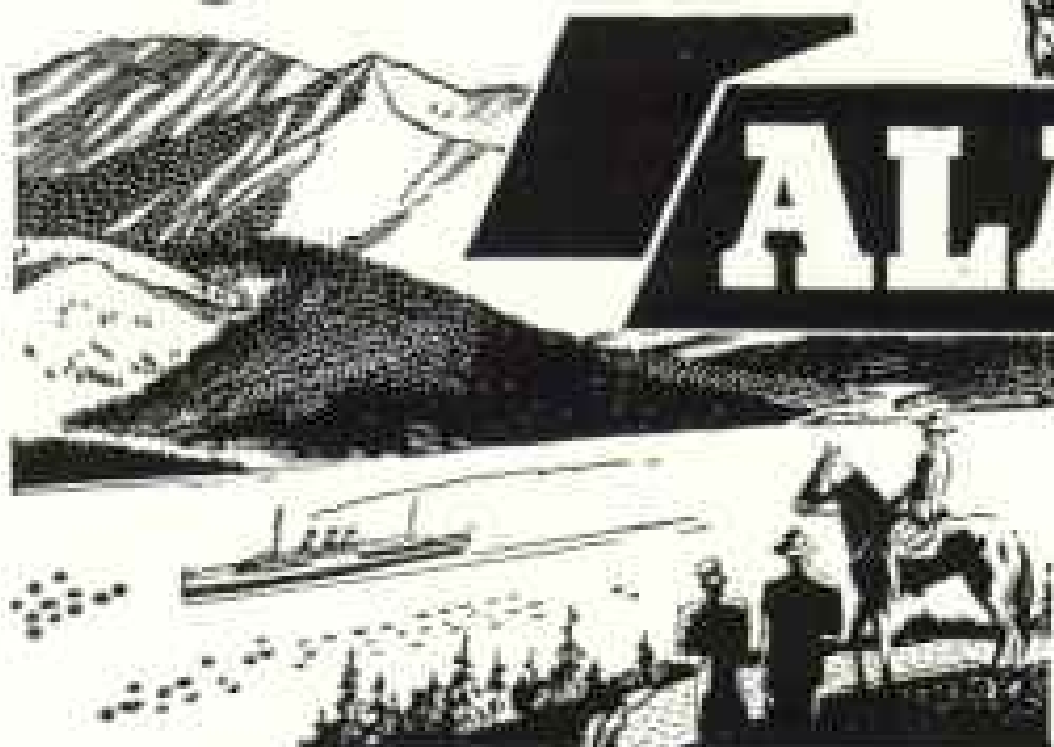
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"Princess
Cruises"



ALASKA

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★ Have you ever visited a totem pole village—seen high fjords and glistening glaciers rising sheer from deep blue waters? Then come to Alaska and the Yukon, lands of the Midnight Sun, lands of spectacular beauty, fabled Gold Rush towns. Play deck games and dance on luxurious *Princess* liners, cruising 2000 scenic miles on the sheltered Inside Passage.

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To Skagway . . . Sailings from Vancouver each week.

SPECIAL 11-DAY CRUISES . from \$115

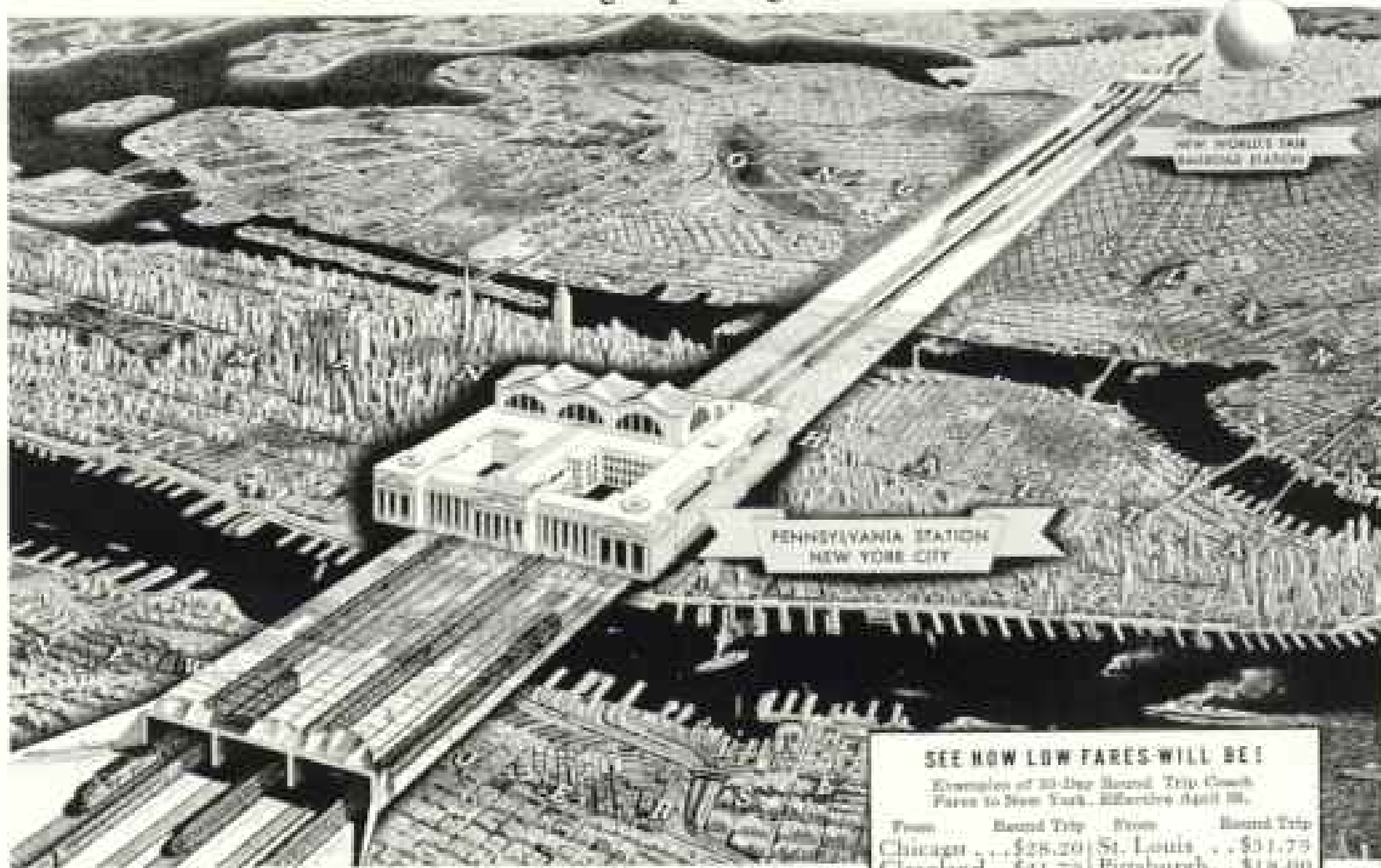
via Sitka and Skagway . . . from Vancouver June 21 and July 3.

Fares from Vancouver, Victoria and Seattle include meals and berth except at Skagway.

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THIS WAY TO THE NEW YORK WORLD'S FAIR

... without driving or parking worries!



Pennsylvania Railroad is the Direct Route

... STATION ON FAIR GROUNDS!

All the way by rail! Not merely to New York City—right to the Fair Grounds!

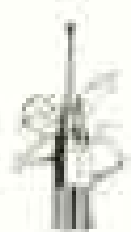
Glide in from the west or south... into Pennsylvania Station, New York... there step into a waiting electric train which whisks you to the very heart of the "World of Tomorrow" ... 10 minutes, 10 cents. How simple!

So forget the family car—and its care. New York's dense traffic, subways, bridges, confusion. Go direct—by Pennsylvania Railroad.

Enjoy the comfort of the largest fleet

of air-conditioned trains in the world. Start in the very style of tomorrow, if you wish—take one of the *Fleet of Modernism*... *Broadway Limited* (all-room train) or *The General* between Chicago, Philadelphia and New York; *Spirit of St. Louis* between St. Louis, Philadelphia and New York; *Liberty Limited* from Chicago, via Washington.

So consult your local Railroad Ticket Office or Travel Agent now (he can arrange hotel accommodations, too)—or mail the handy coupon here.



EXTRA! "TWO FAIRS FOR ONE FARE!" Sensational grand-circle trips. For \$90 fare in Coaches and \$135 fare in Pullmans you can go from any station in the United States to both the Golden Gate International Exposition and the New York World's Fair—thousands of miles, with liberal stop-over privileges, for little money! Effective April 23.

SEE HOW LOW FARES WILL BE!

Examples of 20-Day Round Trip Coach Fares to New York. Effective April 26.

From	Round Trip	From	Round Trip
Chicago	...\$28.20	St. Louis	...\$31.75
Cleveland	...\$21.75	Pittsburgh	...\$18.00

1-Day and 2-Day Excursions from Philadelphia, Washington, Pittsburgh, other points; 2-Day Exc. from Detroit, Cincinnati, other points at even lower fares. Practically all trains carry coaches.

THERE'LL BE SPECIAL PULLMAN FARES, TOO!



TAKE IN WASHINGTON and historic Philadelphia en route. No extra cost for passengers from west of Pittsburgh. And here's an idea! Include that gay meadow resort, Atlantic City—only \$2.00 more in coaches; \$3.00 in Pullmans.

C. H. Wathens, Jr., Passenger Traffic Manager, Pennsylvania Railroad, Philadelphia, Pa.

Please send literature covering the following:

- New York World's Fair
- Golden Gate International Exposition, San Francisco

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Address _____

City _____ State _____

Pennsylvania Railroad

SHORTEST EAST-WEST ROUTE... DIRECT ROUTE TO NEW YORK WORLD'S FAIR

*History
REPEATS
Itself!*



Twenty-five years of scientific research made it possible for Quaker State, in 1914, to produce the only motor oil which successfully lubricated the hottest running motor of its time...the Franklin Air-cooled engine. Twenty-five more years of research and improvement of refining technique enables Acid-Free Quaker State Motor Oil to meet the most difficult problems of lubricating the 1939 automobiles. Insure the performance of your new car! Use Acid-Free Quaker State regularly. Quaker State Oil Refining Corp., Oil City, Penna.



Do as World Famous Explorers do!

Rely on
*Horlick's Malted
Milk Tablets*



For quick food-energy, for pick-up between meals, for safe, wholesome relief of hunger pains, use these delicious handy candy tablets of Horlick's Malted Milk—convenient to carry in pocket or handbag. They helped explorers who reached the North and South Poles, are used by aviators, hunters, sportsmen. Many coaches give them to athletes before and during grueling contests.

In every Horlick's Tablet are concentrated the full-cream milk, the extracted nutriment from wheat and malted barley, the malt sugars, the minerals, proteins and natural vitamins that have made Horlick's Malted Milk a famous, trusted food for over fifty years. Write to "Horlick's, Dept. N-4, Racine, Wis., enclosing 3-cent stamp for sample tin of Horlick's Tablets."

HORLICK'S
the Original Malted Milk

Visit a Foreign land en route to the FAIR NEW YORK

Old Mexico

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EL PASO COUNTY
El Paso, TEXAS

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SEND ILLUSTRATED "SUNSHINE PLAYGROUND BOOKLET" TO

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SUNSHINE PLAYGROUND OF THE BORDER

AMERICA RIDES AND DECIDES—
**"THIS YEAR, IT'S
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OLDS 60 2-DOOR SEDAN '35 *

THE verdict's in! New thousands of low-priced car buyers are swinging over to Olds. Owners of previous model Oldsmobiles are placing repeat orders by the tens of thousands. Everywhere, the vote's the same—this great American court of public opinion ranks Olds as the stand-out, low-priced "buy" of the year. Drive a big, brilliant Olds Sixty and your conclusion is sure to agree. You'll find in Olds' 90 H. P. Econo-Master Engine power for top-flight pep and pace with worth-while savings in gas and oil. You'll find in Olds' big, roomy Bodies by Fisher extra vision for extra safety. And you'll find in Olds' exclusive Rhythmic Ride smoothness and steadiness on the road that no other car can match. All backed by a reputation for quality and dependability earned by a million Oldsmobiles in regular use today! So, take a ride and you'll decide:

**"YOU OUGHT TO
 OWN AN OLDS!"**

* A GENERAL MOTORS VALUE *

\$ 777 ★

★ Delivered price at Lansing, Mich., subject to change without notice. Price includes safety glass, bumpers, bumper guards, spare tire and tube. Transportation, state and local taxes, if any, optional equipment and accessories—extra. General Motors Instalment Plan.

**THE LOW-PRICED CAR
 THAT HAS EVERYTHING**

Rhythmic Ride based on Quadri-Coil Springing, 4-Way Stabilization and Knee-Action Wheels • Dual Center-Control Steering • Handi-Shift Gear Control • Self-Energizing Hydraulic Brakes • 90 H. P. Econo-Master Engine with Rife-Drilled Connecting Rods • Wide-Vision Body by Fisher • Die-Cast Radiator Grille • Big Streamlined Trunks on All Sedan Models

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Spend your vacation in the West . . . and at San Francisco's Golden Gate Exposition! Arrange everything in advance . . . at a cost that need be no more than you would spend on your own! How? Through American Express Travel Service!

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Comfort and Friendly Service in the Observation Car

A finely equipped all-Pullman train in daily service between Chicago and Southern California. Excellent facilities and thoughtful service. Barber and valet; also Registered Nurse-Stewardess. Tempting dining car meals prepared from foods of highest quality.

For safe, enjoyable and carefree travel . . . ride the Los Angeles Limited.



DOUBLE FEATURE



1. *Southern California*
2. *San Francisco World's Fair*

See both on one "air cooled" vacation

1 **FIRST FEATURE:** Fade in summer beach scene in Southern California. (That's you with the mahogany tan in foreground). Then quick cut to series of short shots: you fish a bubbly mountain stream, drive palm-lined boulevards, eat at open-air restaurants, visit Old Missions, foreign settlements, orange groves... Dissolve to...



2 **Night scene.** It's you again. From a mountain top you look over 50 square miles of blinking lights: Los Angeles and its sister cities sleeping (under blankets) or playing! Creating movies, songs, fashions, news. Inviting you to join in the fun of ace swing bands, sneak previews, Symphonies Under the Stars, and coast-to-coast broadcasts.



3 **SECOND FEATURE:** Wide-angle (and wide-eyed) shot of you entering the grounds of the San Francisco World's Fair—(just a few hours from Southern California)—a magic gold and white city on a magic island—spectacular exhibits, the fun-zone, the colorful displays of products from East and West.

TRAVEL IS FASTER, COSTS LOWER—WHY WAIT?

Even from New York, Southern California and the San Francisco World's Fair are just overnight by plane; 2½ to 3 days by train; 4 to 7 by auto or bus. And vacation costs in Southern California average 21.8% under those of 20 other leading U. S. resorts. Accommodations for every taste in Los Angeles, Hollywood, Pasadena, Glendale, Beverly Hills, Santa Monica, Pomona, Long Beach and other cities in and near Los Angeles County.

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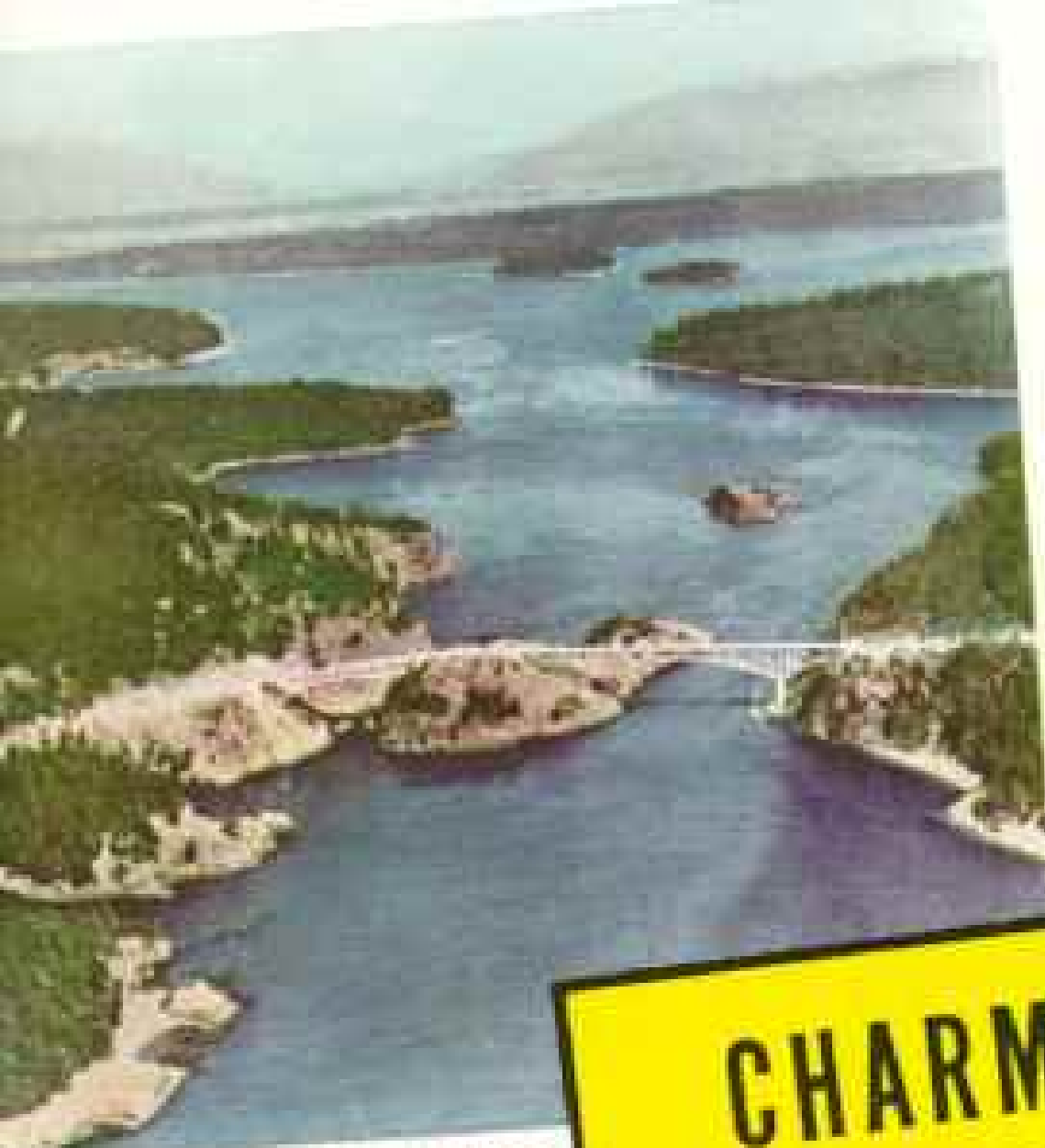
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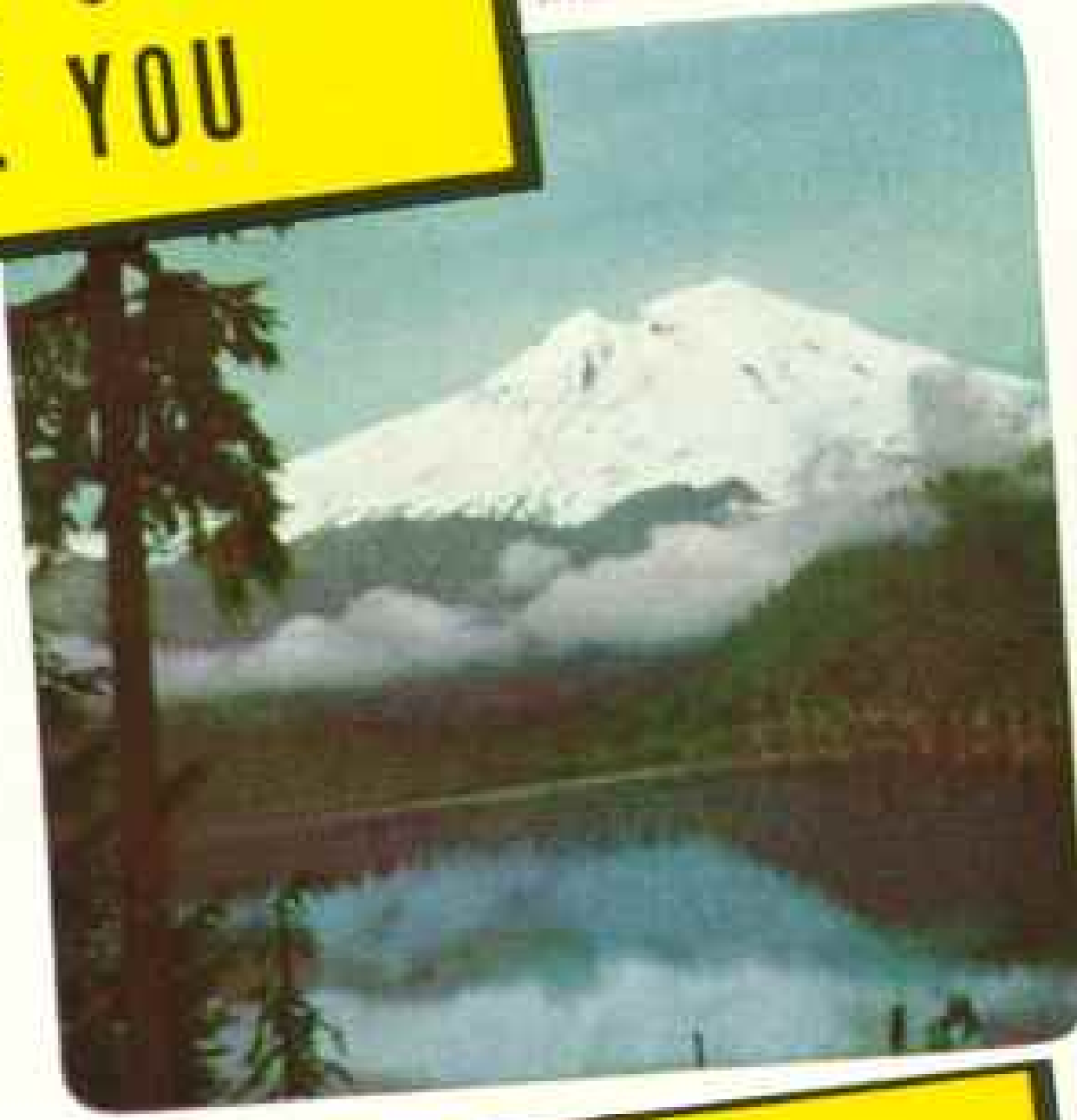


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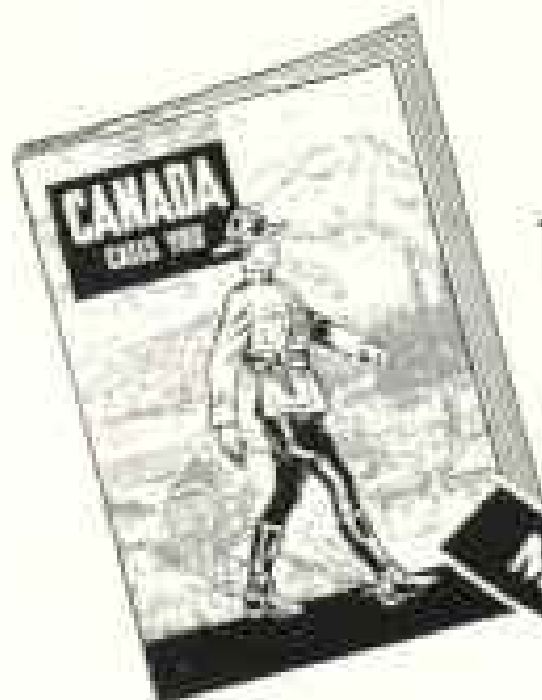
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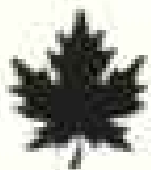
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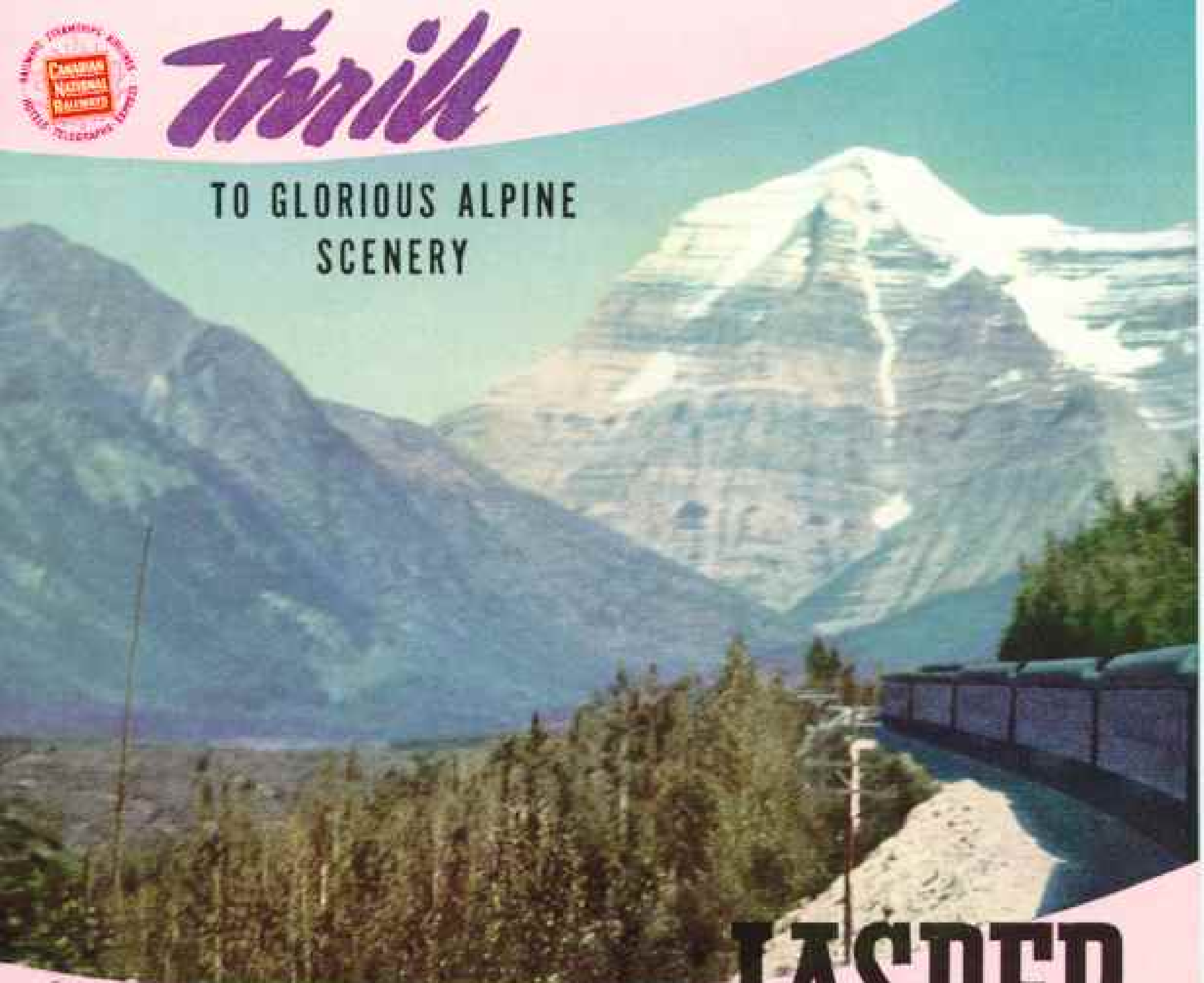
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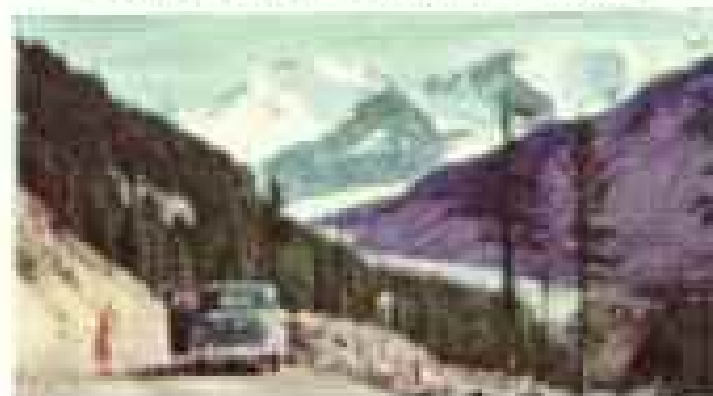
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blood may cause the patient to see a doctor. But by this time some damage has usually been done, making treatment longer and more difficult.

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A Page of Misnomers



GLASS SNAKE—This brittle little creature, which snaps off its tail at a touch and grows a new one, is not a snake at all. Although it has no legs, it is a lizard, as proved by its ear openings and movable eyelids.



BOMBAY DUCK—In the culinary realm, misnomers are common. Bombay Duck is not duck, but a small marine Asiatic lizard, the dried flesh of which is served as a relish in India.



FLYING FOX—This rodent is no relation of the fox. It is a species of squirrel that has wing-like membranes stretched from front to back legs, which permit it to soar from branch to branch.



AUTOMOBILE INSURANCE—Automobile Insurance also is something of a misnomer. For it covers far more than the car itself. It protects your home, your savings, your earnings, everything you have, including your good name, from the threat of damage claims resulting from an accident.

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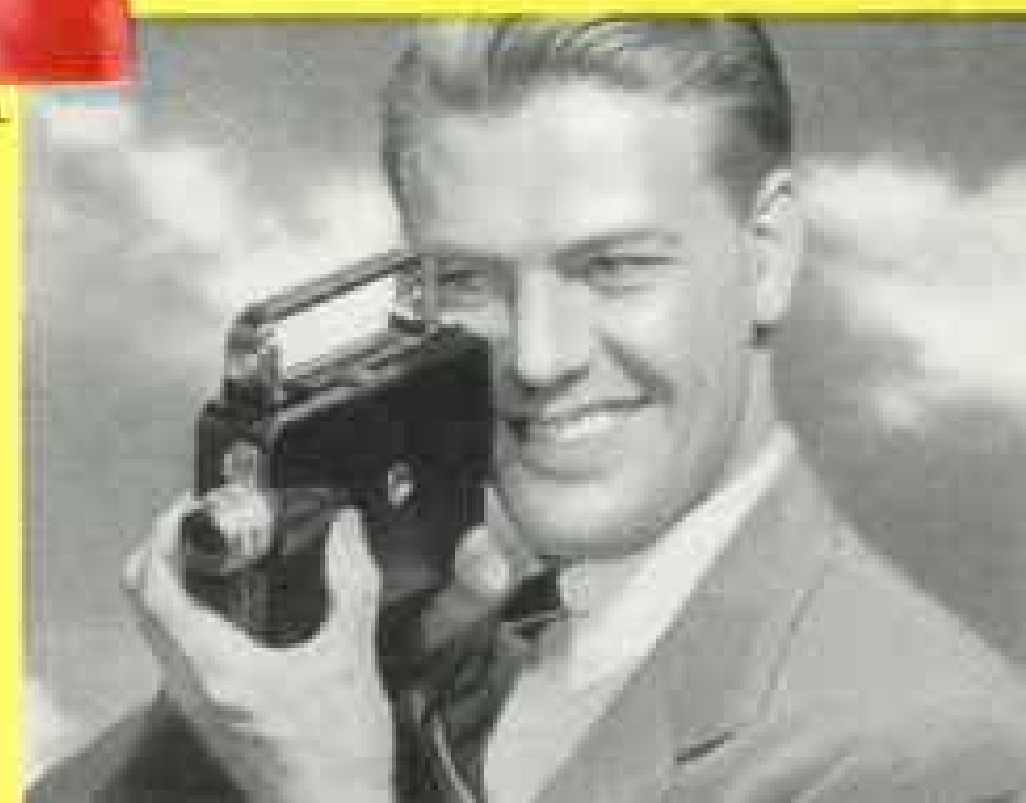


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NOTE: Alaska's huge glaciers are actually moving ice rivers. Often, reverberations of the ship's whistle dislodge great sections of ice which crash thundering into the fjord waters.

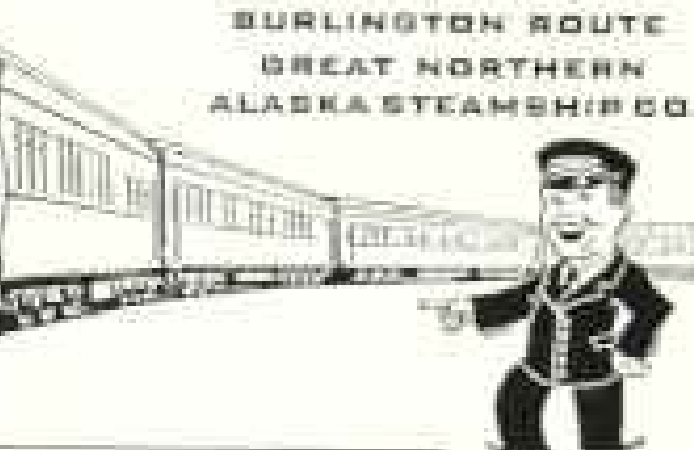
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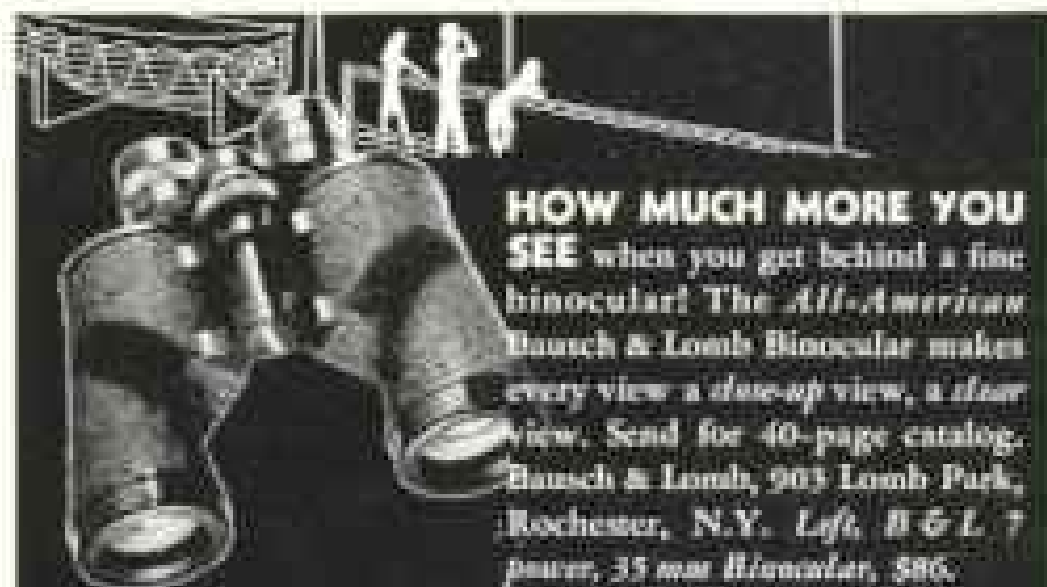
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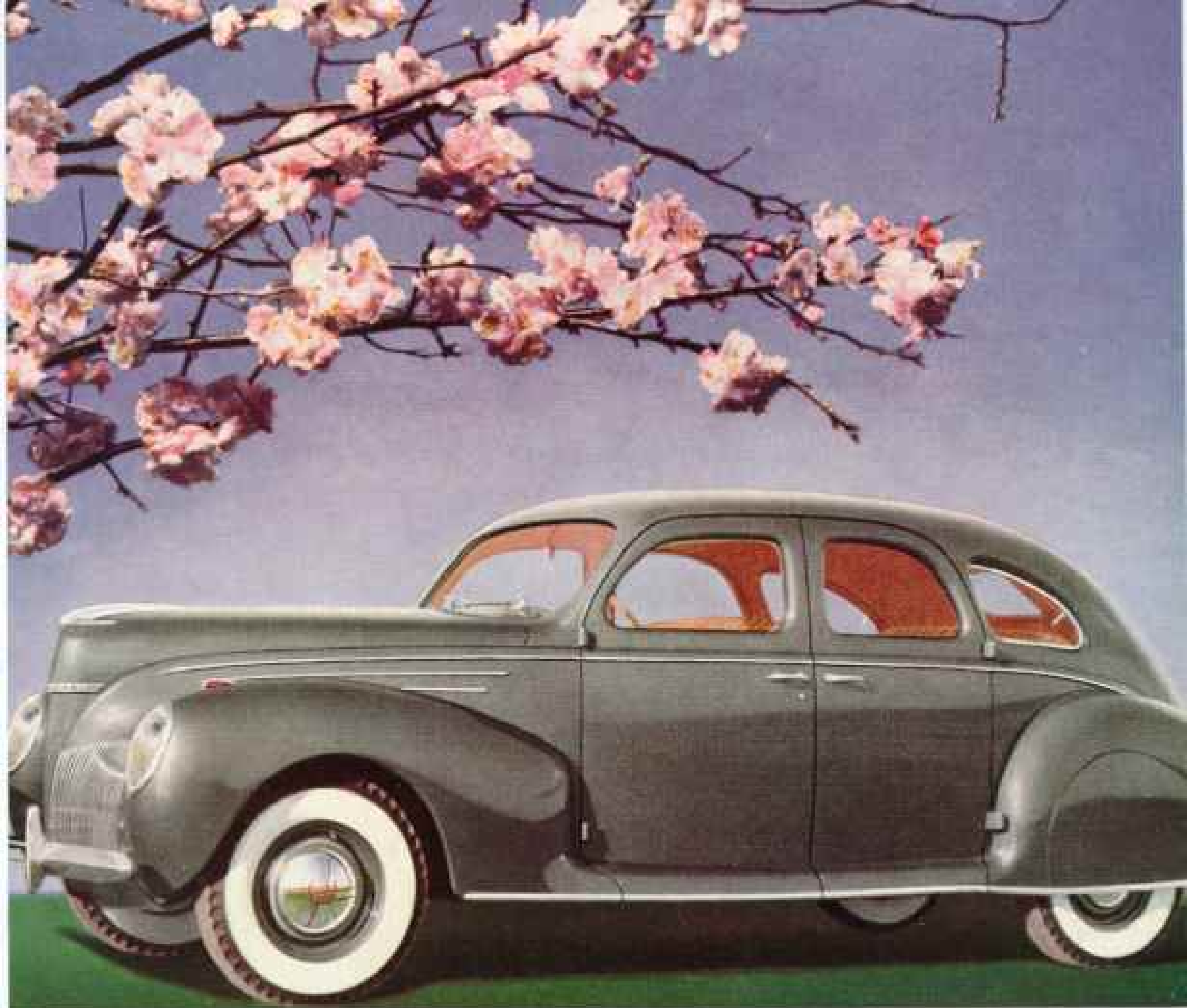
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