

VOLUME LXIV

NUMBER FIVE

THE NATIONAL GEOGRAPHIC MAGAZINE

NOVEMBER, 1933



CONTENTS

TWENTY-FOUR PAGES OF ILLUSTRATIONS IN FULL COLOR

Special Supplement: Aerial Photograph of
Greater New York

New York—an Empire within a Republic
With 49 Illustrations WILLIAM JOSEPH SHOWALTER

Color Highlights of the Empire State
35 Natural Color Photographs CLIFTON ADAMS

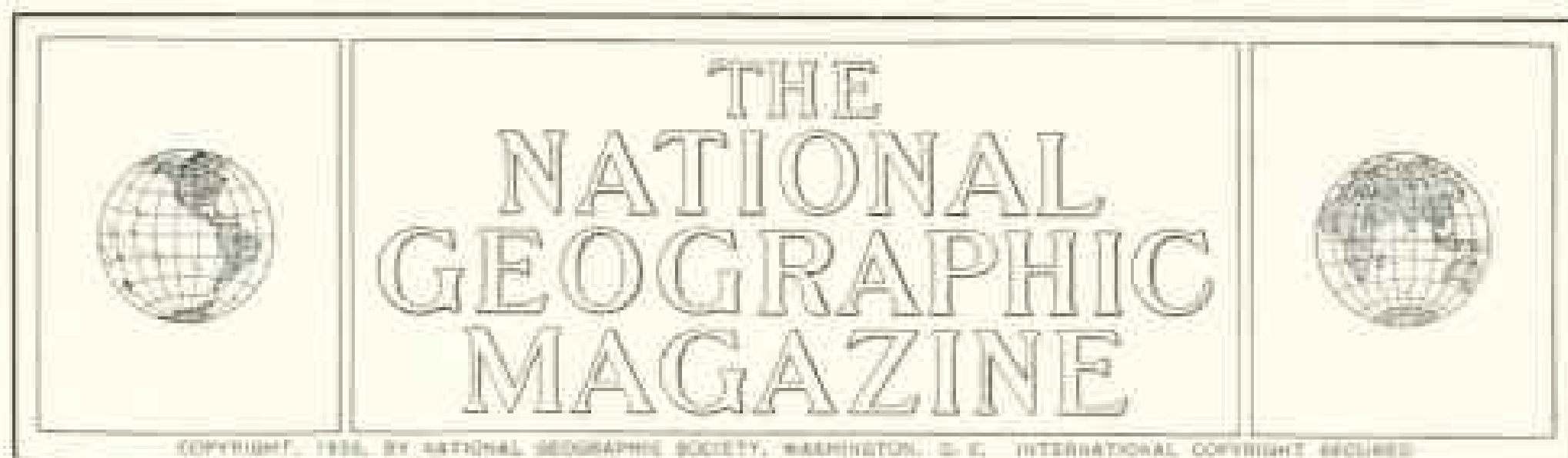
To the Home of the Cock-of-the-Rock
With 50 Illustrations ERNEST G. HOLT

"As the Tuan Had Said"
With 19 Illustrations GEORGE M. HANSON

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

\$3.50 A YEAR

50c THE COPY



NEW YORK—AN EMPIRE WITHIN A REPUBLIC

BY WILLIAM JOSEPH SHOWALTER, SC. D., LL. D.

AUTHOR OF "VIRGINIA—A COMMONWEALTH THAT HAS COME BACK," "CHICAGO TO-DAY AND TO-MORROW," ETC., ETC.,
IN THE NATIONAL GEOGRAPHIC MAGAZINE

MORE than eleven years before Plymouth Rock and less than three years after Jamestown, a sword-girt figure in steel corselet and plumed helmet stood proudly defiant before a band of hostile Indians. The scene was the shore of a lake in a mountain-bordered valley, the time the morning of July 30, 1609.

As the redskin warriors rush toward him with bloodcurdling war cries, the intrepid adventurer is unperturbed. Not until the savages approach within bowshot does he move. Then he raises his flaring-muzzled arquebus and fires. Three of the four leaden slugs find their mark. Two chiefs fall dead and one of their braves clutches at a mortal wound.

Samuel de Champlain, the great French explorer, to win the favor of the Hurons of the St. Lawrence country, thus brought war into that delectable land which we now call the State of New York (see page 516).

THE MARTIAL IROQUOIS LEARN FEAR

The immediate result of that shot on the shores of Lake Champlain was victory. Though the martial Iroquois for generations had schooled themselves to face death in every form that savage cunning and barbaric cruelty could invent, still, for the moment, they could not stand up against this new, strange weapon that spoke with the voice of thunder and flashed with the tongue of lightning.

Who can measure the full consequences of that shot!

The enmity toward the French it engendered in the breasts of the Iroquois forever sealed that land to French colonization and made the Iroquois lifelong allies of the English, who were soon to arrive.

It made northeastern New York the Belgium of the colonial wars, with the fertile Champlain Valley as the immediate objective, but with all America as the ultimate prize. It raised Crown Point and Ticonderoga, and led Wolfe and Montcalm—the one to victory and the other to defeat, but both to death—to that fateful field on the Plains of Abraham before Quebec.

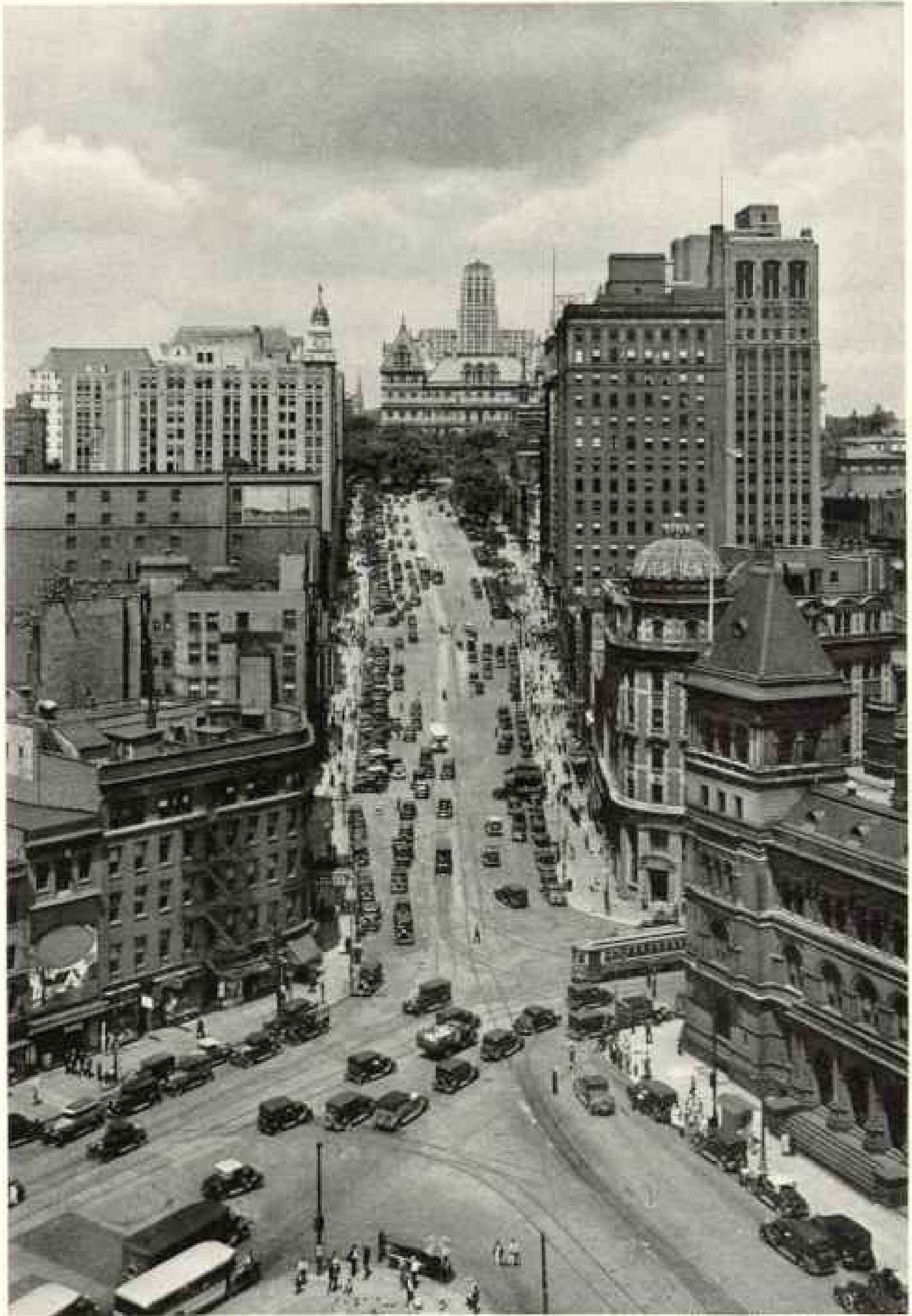
AN EMPIRE LOST TO FRANCE

That shot, indeed, led to the lowering of the flag of France from the parapets of New France and to the hoisting of the Union Jack of Britain over the latitudes above the St. Lawrence.

We well might believe New York would speak French to-day instead of English; that there would be no United States, if Champlain had come first to the forest at the foot of the Adirondacks with peace instead of war.

However that may be, events in the State of New York always have had a major bearing on shaping the course of America. They touch all of us every day.

Statistics seldom sparkle, but once in a while some of them tell so eloquent a story that they are actually dramatic. Their measure of New York's place in our country's economic situation discloses that the State, with only one-sixtieth of the Nation's



Photograph by Clifton Adams

HERE BEATS THE ADMINISTRATIVE HEART OF THE EMPIRE STATE

Albany has a continuous trading history dating from 1614, when Fort Nassau was established. Presidents of the United States, Chief Justices of the Supreme Court, and Secretaries of State have found the New York Governorship a training ground for national statesmanship. Approached up State Street, the Capitol stands on the hilltop, with the State Office Building looming behind it (see text, page 577).

land and only one-tenth of its population, contributes five-eighths of its bank clearing; earns one-third of its taxable income; possesses one-fourth of its bank deposits; produces one-seventh of its manufactures. In scores of other ways they add to this brilliant record of human achievement.

Whoever wanders from the overpowering roar of the mighty, man-made canyons of Manhattan, up the Hudson and through the Mohawk Valley to Buffalo, and thence to the inspiring thunders of the waters of Niagara, noting as he goes the mighty artery of commerce and industry that ties them together, discovers that within ten miles of this most-traveled lane in America 80 per cent of the State's population work like the beavers that once roamed where they live, to serve varied needs of the Nation.

New York's people have ever been ready to capitalize every advantage of geography. They built their chief city at the crossroads between New England and the seaboard Colonies farther south. Presently foreign shipping came in increasing volume, and countinghouses flourished.

"CLINTON'S DITCH"

Then the trade of the Mississippi Valley grew consequential and the several States began to battle for it. Even George Washington lent his prestige to the endeavor to hold it for Virginia.

But De Witt Clinton outwitted them all. Never had old Cato cried out more earnestly or more persistently, "Delenda est Carthago," than De Witt Clinton urged that



Photograph by Clifton Adams

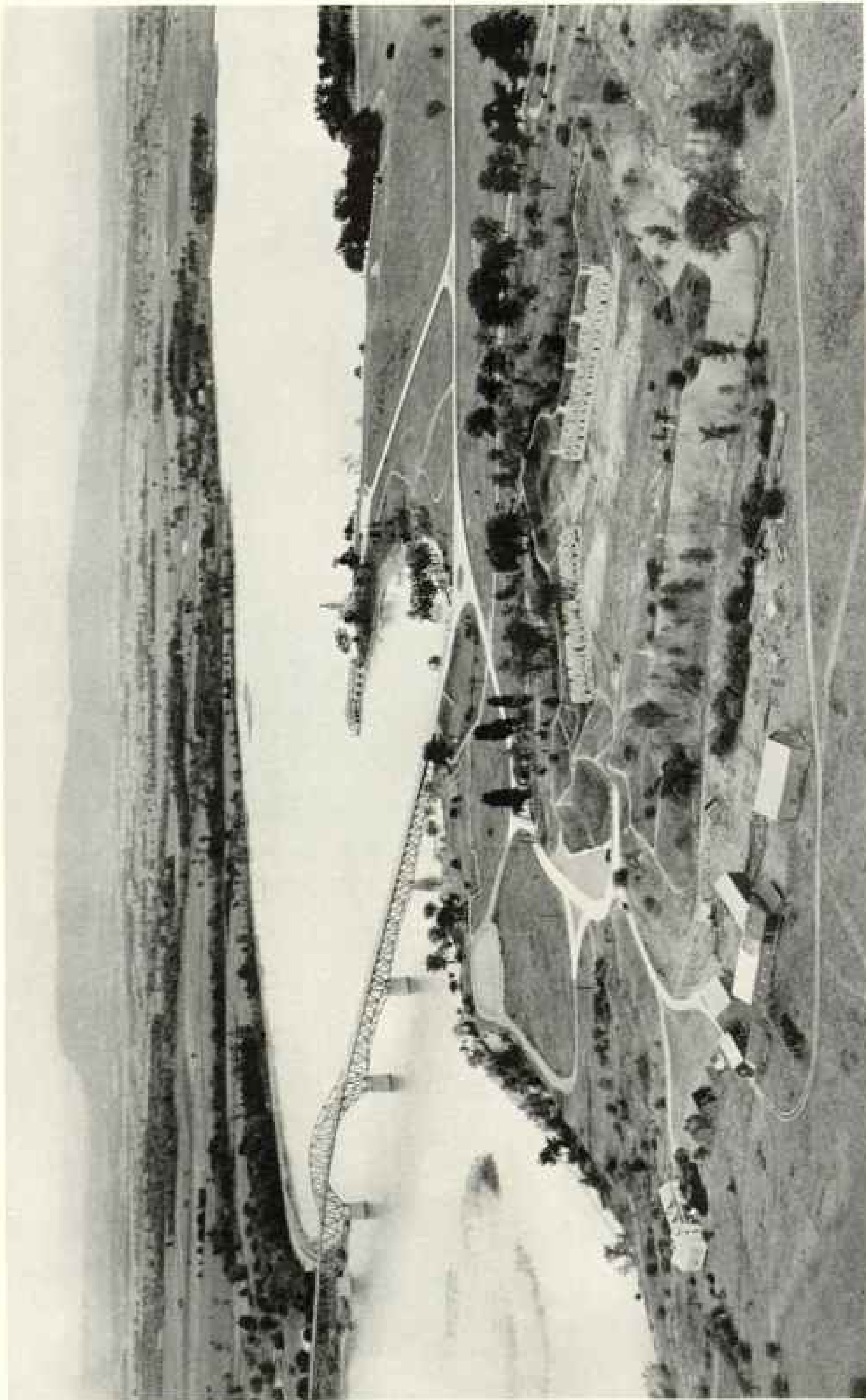
SKANEATELES TEASELS HELP US DRESS WELL

The burs are used in the manufacture of woolens to raise the nap on the cloth. With all the progress of manufacturing methods, the designers of textile machinery have not been able to make a satisfactory substitute for these natural combs, the springiness of whose needles is just right for finishing the surface without injuring threads.

"The Erie Canal must be built!" It was a momentous undertaking in those days to raise fifty million dollars for a waterway.

"Clinton's Ditch" won, and presently the lion's share of the Mississippi Valley trade was moving through the Mohawk country and down the Hudson, because it could float to the sea on lake and canal and river, while other States labored and tugged over the mountains in Conestoga wagons, railroad inclines, and the like.

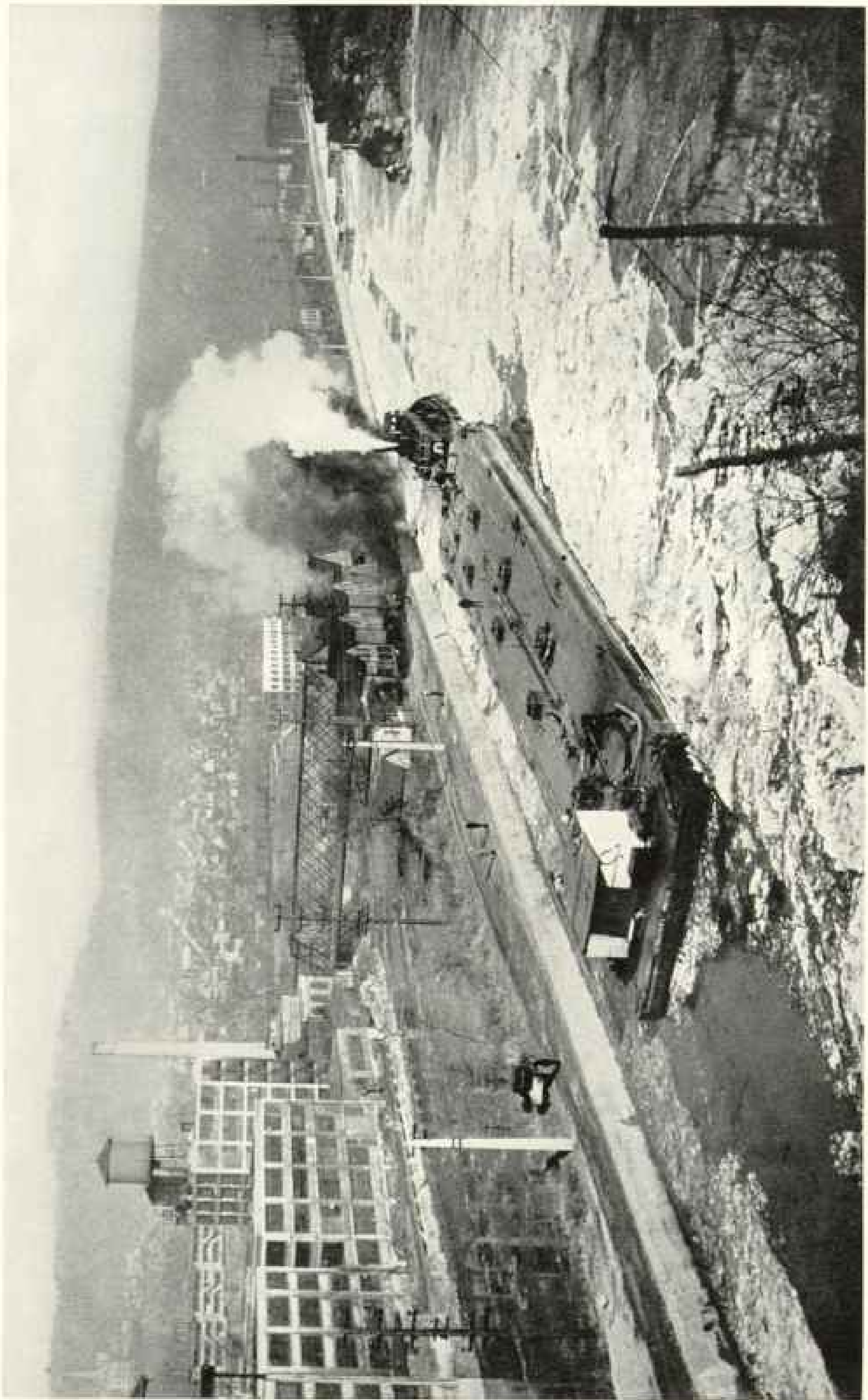
On my travels around the State I crossed and recrossed many times the old ditch, with its locks in ruins and its towpath long a stranger to the hoof beats of mules.



Photograph by Fairchild Aerial Surveys

NEW YORK'S HISTORY BEGAN ON LAKE CHAMPLAIN WITH A SHOT THAT HAS REMADE THE WORLD'S MAP

Whether Champlain's battle with the Iroquois occurred at Crown Point or Ticonderoga is still argued. The State is restoring the old forts at Crown Point. Fort St. Frédéric (French) stood by the lake, where the shore line curves in the left foreground. The outlines of Fort Amherst (English), with barrack and parade grounds, are seen at the right. Beyond are the Champlain Bridge and the memorial lighthouse (see text, pages 313 and 351).



Photograph from Scrymgeour-Underwood

BARGE CANAL NAVIGATION BATTLES THE ICE AT LITTLE FALLS

The modern successor to "Clinton's Ditch" was built with the hope that it would continue to serve New York as the old Erie Canal had done before the rise of the railroads. This new waterway has a depth of 17 feet and is capable of carrying motorship cargoes ranging from 1,500 to 1,800 tons. It uses the Mohawk River wherever navigable (see text, pages 515, 518, 565, 568, and map, pages 520-1).



Photograph by Green R. Loudon

ARTISTS WORK ALONG THE STREET AT WOODSTOCK

This picturesque village in the heart of the Rip Van Winkle country in the Catskills is the Provincetown of the State. Palenville, where the sharp-tongued spouse of Rip resided, and the mountain where he slept are only a few miles away (see text, page 528).

When it creeps beside the stately new Barge Canal, it looks like a ghost of the long ago. By the time the railroads were ready to take over its burden, it had paid for itself in tolls. It had found, in the words of Washington, the Western settlers standing on a pivot, where even the touch of a feather would incline them any way; and it had inclined them to trade with New York.

EMPIRE OF PEOPLE, WEALTH, SCENERY

Gone is the glory of Erie Canal. The élite, who once traveled through the State atop its leisurely moving barges, now roll at high speed in modern motorcars on superhighways, rush along on world-famed express trains, or fly like birds along the sky paths, seldom giving it either glance or thought.

But New York, both the State and the city, whatever their unrivaled position, will ever owe homage for their primacy to De Witt Clinton and that symbolic ditch.

Never has a State possessed a clearer title to its sobriquet than the land of the

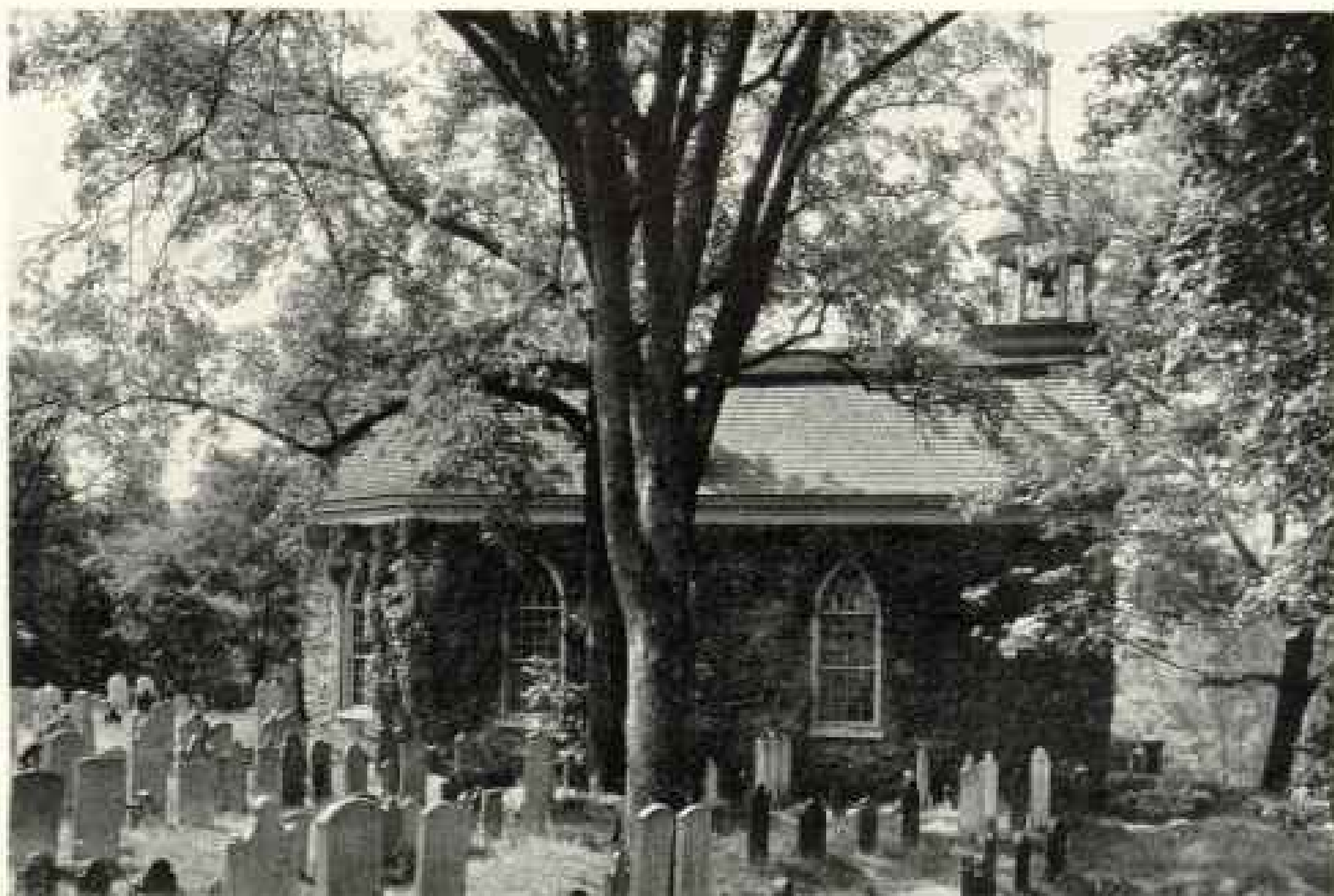
Hudson, the Mohawk, and the Genesee holds to its name of Empire State.

Whether measured by the hosts of its people, by the magnitude of its wealth, by the extent of its industry, by the splendor and variety of its scenery, or by the magnificence of its program for the public weal, New York inspiringly lives up to that title.

With more than twelve and a half million people, it is indeed an empire, outranking Canada by a margin of two million and coming close to doubling Austria. It has two people for every one on the entire Continent of Australia and three for every two in the Union of South Africa.

With thirty-seven billion dollars of wealth, it stands ahead of half of the nations of the earth. Even the whole United States, as recently as 1870, could not match that figure.

Most assuredly in the variety and splendor of its scenery it is an empire. After rambling throughout the entire State—grid-ironing Long Island; checkerboarding Westchester County; zigzagging up the Hudson and down the Champlain country; criss-crossing the Adirondacks and Catskills;



Photograph by Clifton Adams

IMMORTALIZED BY IRVING

Many of the early Dutch settlers rest beneath the ancient stones of Sleepy Hollow Churchyard at Tarrytown. Along the highway that skirts it, Washington Irving laid the scenes of Ichabod Crane's wild ride to escape the Headless Horseman.

skirting the St. Lawrence and Lakes Ontario and Erie; peeping into every corner of the Niagara front; exploring the Genesee area; threading in and out among the interior lakes, from little Conesus to big Cayuga, and from beautiful Skaneateles to gorgeous Otsego; reveling in the beauties of the valleys of the Mohawk, the Chemung, the Susquehanna, and the Delaware, I think I know something of Empire State scenery, and I am ready to say of it, as Wallace Nutting says of the Hudson, that here we find "civilization set in beauty."

AN ADVENTURE IN CONSERVATION

The magnificence of its park system, the perfection of its parkways and boulevards, the fine quality of its schools, the care it gives its dependent population, and the plans it projects for the future, all stamp it as imperial alike in understanding, vision, and purpose.

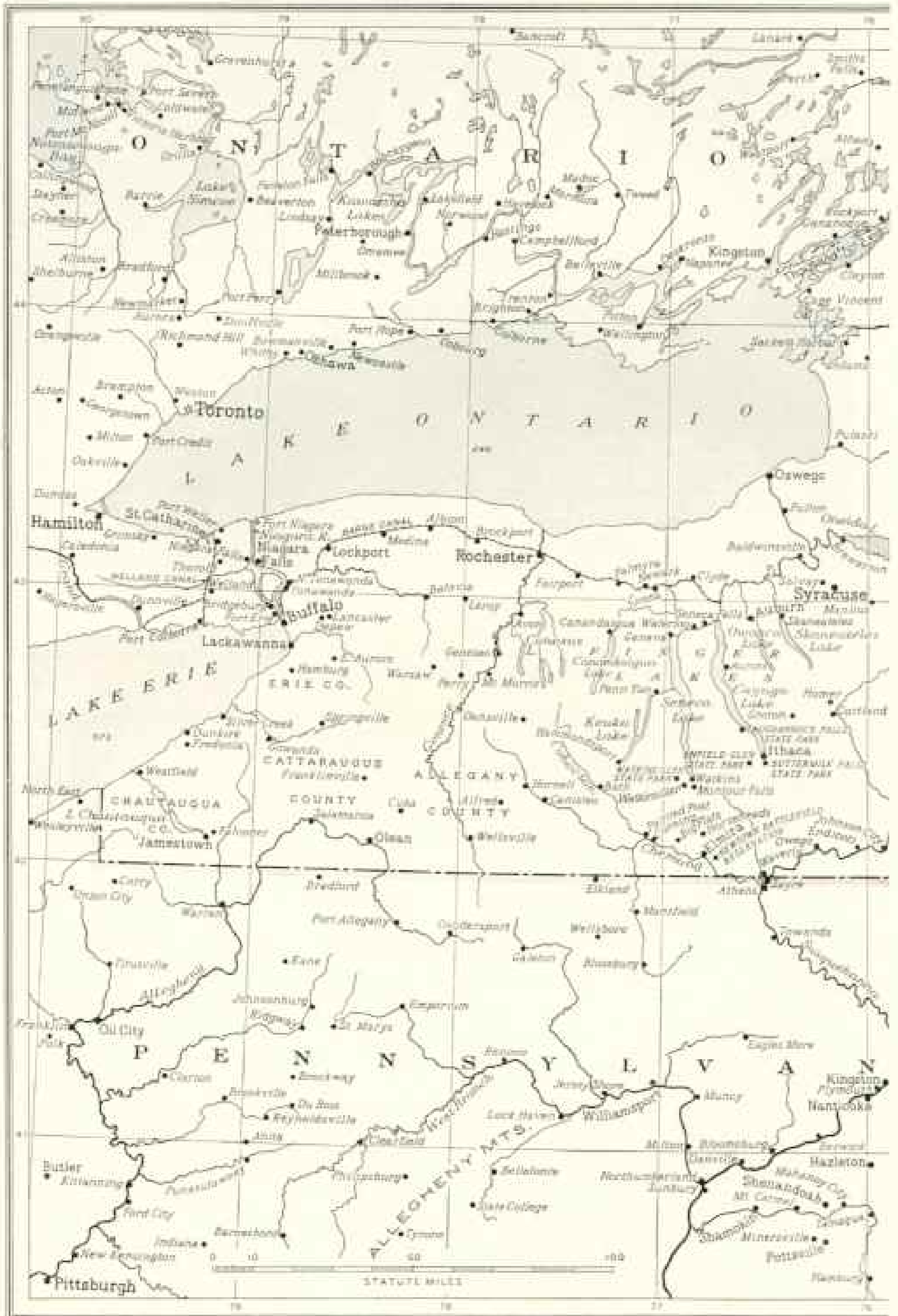
There is no finer chapter in the history of any State than that which deals with the deep concern New York shows in the conservation of its scenic, historic, and recreational resources.

This concern is a fitting companion piece to the ever-growing care with which the State educates its youth—a growth represented by a tenfold increase in expenditures for elementary and high-school education in 30 years.

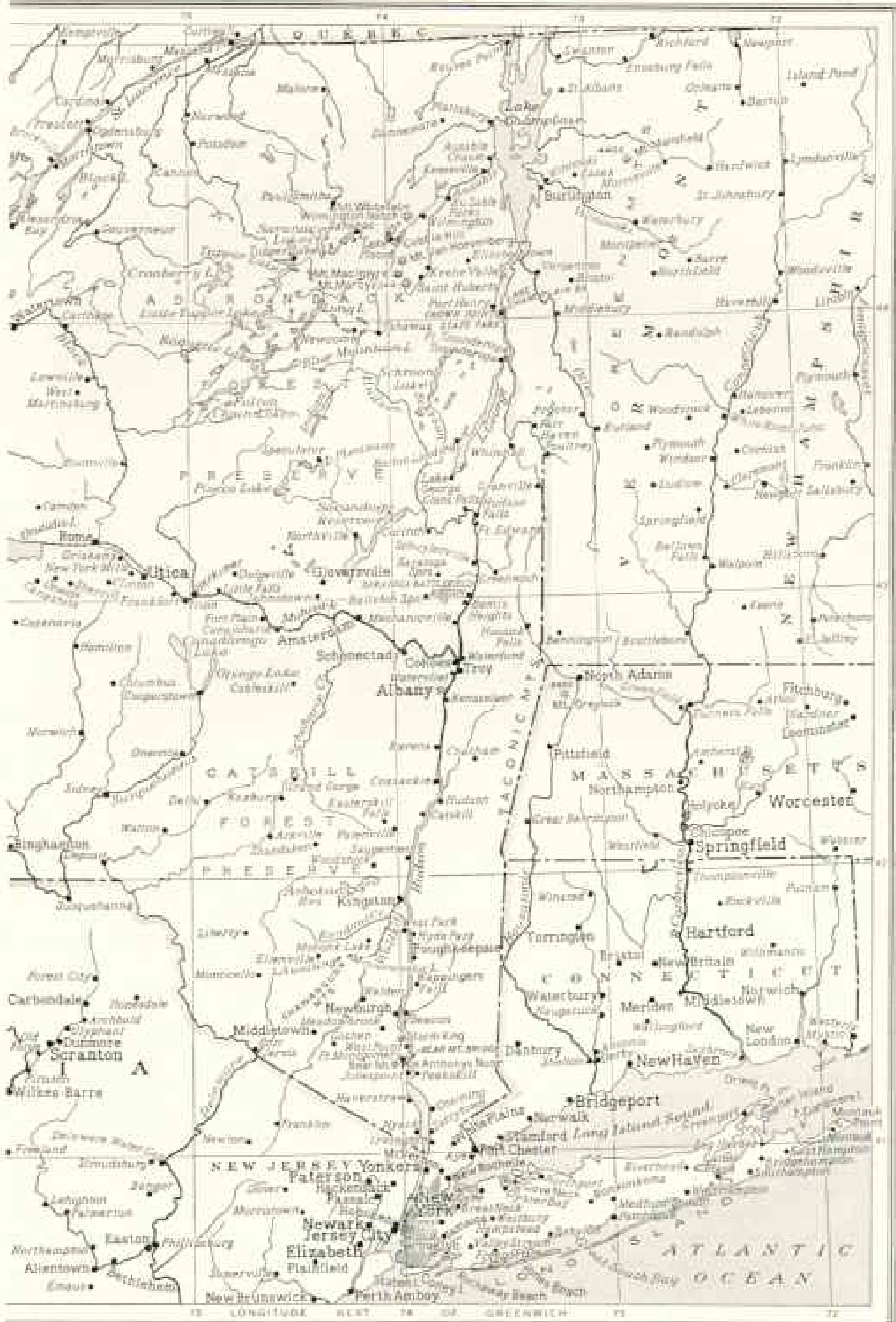
From Lake Champlain to Niagara Falls, from the western end of Chautauqua County, on Lake Erie, to the eastern tip of Suffolk, at Montauk Point, New York has set up a series of 60 parks, of varying type and area, to provide recreation centers, to save scenic regions, and to safeguard historic shrines, and is developing them in a manner that no great community has ever surpassed and few have equaled.

We can probably get our best picture of the spirit of the Empire State in the maintenance of these parks from the words of President Franklin D. Roosevelt. When Governor, he wrote:

"On behalf of the people of the State of New York, I extend an invitation to all travelers to visit the Empire State, and to use and enjoy the facilities for public recreation that are to be found here, especially the great system of public parks. The hand of



A MAP OF THE STATE OF NEW YORK—AN EMPIRE TEEMING WITH CITIES



Drawn by Newman Bamstead and J. S. Allen

AND TOWNS, HUMMING WITH INDUSTRY, ABUNDING IN SCENIC BEAUTY



Photograph by Fairchild Aerial Surveys

A HIGHROAD WINDS ITS WAY TO THE SKIES

This airplane view of the magnificent way being built to the top of Mount Whiteface shows Lake Placid with its islands, and at its distant end the village of Lake Placid, where the Olympic Winter Games were held in 1932 (see Color Plates XVIII, XIX, XXI, and text below).

friendly greeting is offered with the pledge that New York will do everything possible to make your visit pleasant and memorable."

ADIRONDACK FOREST IS LARGEST IN EAST

With its more than two million acres of State-owned land, the Adirondack Forest Preserve is the largest but two in the entire United States, and they lie in the Far West.

Up to the present year only the hardy mountain climbers and the strenuous ski folk could know the joy of the summits of the Adirondacks. The vistas from the heights of these lofty peaks are superb.

But New York came to realize that for every individual who can climb to the summits of high mountains, there are a score who have not the strength of muscle and power of wind for such feats; yet each of

the latter would get as much joy out of these vistas as the mountain climber.

So, through the State Highway Commission and the Conservation Commission, grand old Whiteface was selected as one peak in all that magnificent company of mountain monarchs which should be opened to those who must do their mountain climbing in automobiles, and a magnificent memorial highway has been built to the crest.

Imagine, if you can, an area almost as large as Connecticut and Rhode Island together, full of impressive mountains, studded with lakes, crossed in every direction by highways that now run through deep forests, now carry one along glorious rivers, now pass through sequestered, cultivated valleys, and now meander through the wild slashes of the woodman's ax of yesteryear. Such is the Adirondack region.



Photograph courtesy New York State College of Agriculture

APPLES AID EDUCATION

New York's orchard belt lies along the south shore of Lake Ontario, and the Baldwins and greenings it produces are famous in every market. College students pick the fruit to help pay for their tuition.

But if your mountaineering has been in the White or Green Mountains of New England or in the Blue Ridge or the Alleghenies of Pennsylvania, Maryland, or Virginia, do not think of these roads as crossing high notches or wind gaps in unbroken ridges.

For they do not. The mighty peaks of the Adirondacks do not rise from range-long backbone mountains. Rather, they spring out of short, independent ridges, each standing off by itself, detached from its neighbors by the streams that lave its feet, and just as likely to run east and west as north and south. So wherever the roads go, they follow canyons rather than cross notches and wind gaps.

That recognized authority on the Adirondacks, Morris Longstreth, says that if he were showing off the Adirondacks he would

start in at Northville, which is just above Sacandaga Reservoir and Gloversville; take his party up through the beautifully wooded country to Speculator; then go north and along the west shore of Indian Lake, thence heading west to Blue Mountain Lake and on to Raquette Lake.

From the latter he would head east again by way of Long Lake, Newcomb, and Tahawus to Schroon River. There he would turn north, heading up to Elizabethtown, turn west to the beautiful Keene Valley, then up that to Saint Huberts. There he would retrace his steps and go down the east branch of the Ausable to the Forks and turn up the west branch through Wilmington Notch to Lake Placid and Saranac, coming out at Paul Smiths.

When, in 1932, the Winter Olympic Games came to Lake Placid, all agencies,



Photograph by Fairchild Aerial Surveys

MIGHTY GEORGE WASHINGTON BRIDGE LINKS JERSEY AND GOTHAM

Supported by four cables each a yard in diameter and all together capable of carrying the weight of the ten biggest battleships in the American Navy, this imposing structure, the longest suspension span in the world, is 3,500 feet long between towers 80 feet higher than the Washington Monument. A lower deck, to be added ultimately, will carry four rapid-transit railroad tracks (see text, page 550).

State and local, conspired to make Lake Placid the winter sports capital of America's eastern seaboard. At a cost of \$125,000, the State built a bob run on Mount Van Hoevenberg which is unexcelled even by the famous run at Schreiberhan.

As the simplified spelling of the Lake Placid Club phrases it, bobsled racing is indeed "the sport that lifts your hat into your hat."

The run is approximately a mile and a half long, with a maximum drop of 15 per cent, a minimum of $8\frac{1}{2}$, and an average of slightly less than 10. On the turns the width ranges from 10 feet to 22, and some of the sharpest curves have stone wall banks 22 feet high.

The curves at Whiteface and Shady Corner are hairpins, and the one at Zigzag is an S curve. The surface in the racing season is of glare ice made by freezing a mixture of snow and water, the latter, about 20,000 gallons a day, being sprayed on the

track from a pipe line four feet underground.

As a team prepares to take off, the polished runners are shined up a bit more, the driver and two of his companions take their seats, the announcement that the course is clear is telephoned from the bottom of the hill, and the starter drops his flag.

The fourth man gives the sled a shove. It breaks the starting string and the race is on. This fourth man continues to push down the incline until the sled has all the velocity he can give it, and, with a jump that would do credit to a flea, he lands in his seat behind his companions.

And down that winding, banked, icy gutter they go! As they pass each station their time is announced. They speed to the hairpin at Whiteface in a score of seconds, gliding along at breath-taking speed. As they round the curve, they shoot up on the side wall until their bodies are horizontal instead of perpendicular.



Photograph from Wide World

THE SUCCESSORS OF MAUD S. STILL RACE AT GOSHEN

Every one of the trotting champions in America from Flora Temple's day is a descendant of Rysdyck's Hambletonian out of Charles Kent's mare by Abdallah, and at least 75 per cent of the standard-breed trotters trace to the great sire. The automobile has forced the harness horse into the background on our roads and city streets, but Orange County clings to its first love.

They are past the curve in a flash and heading on to Shady Corner, a hairpin curve in the opposite direction. Coming out of that at a gait which catches the breath of the beholder, they head for the Zigzag. Into it they go, and on to the banked turn. As they round the reverse, they flop over, their heads moving through a full half circle as their sled takes the opposite bank.

WHEN SKIERS DROP 95 FEET

As thrilling as bobsled racing is, I am inclined to vote first honors to ski-jumping as I saw it at Intervales, Lake Placid.

The Intervales Jump is 293 feet high from the top of the tower to the base of the hill. From the top of the tower to the point where the jumper leaps into the air, the incline descends 120 feet in going forward 262.

With his skis waxed and polished to perfection, the skier starts at the signal. By

the time he has reached the take-off point on the packed and smooth snow, with the starting grade at 35 degrees, he is splitting the wind.

As he comes to the take-off, which is ten feet higher than the top of the lower hill, he springs, and that spring, added to his previous momentum, carries him far out over the hill, which drops away just a little less than his own path through the air. If he jumps 200 feet, he lands just about 95 feet lower than he was at the take-off.

To fall 95 feet in a 200-foot jump on skis seven feet long, at a speed of 100 feet a second, or more than a mile a minute, and to land upright and so perfectly balanced as to be able to continue down the hill and to the end of the run-out, with a graceful about-face there, requires everything an athlete has—courage, strength, nerve, and balance.

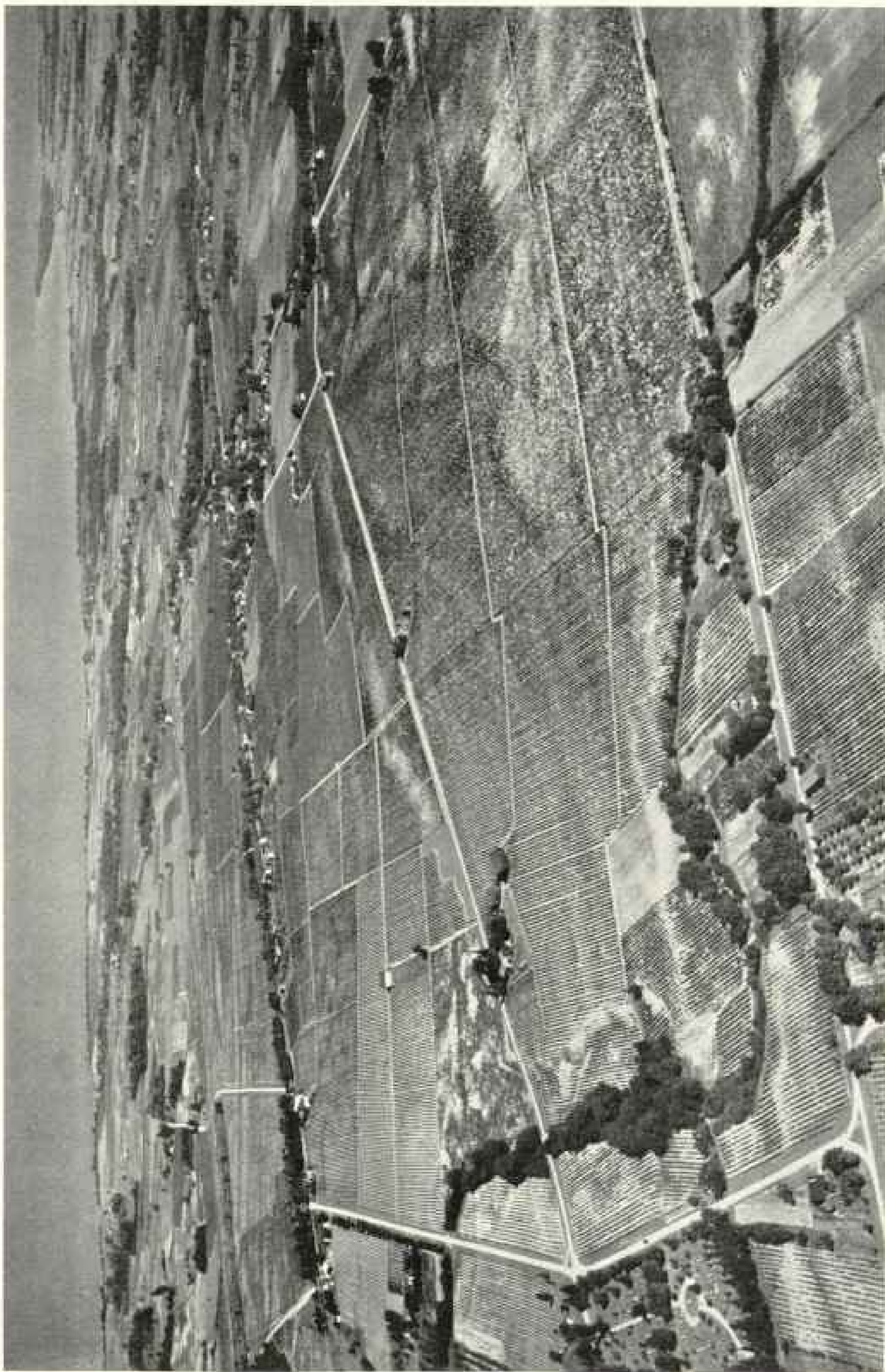
At Lake Placid, in the Catskills, at Bear Mountain, and in the Taconics, skiing,



Photograph by C. S. Robinson

MAGIC CARPETS COVER THE LANDS OF THE FINGER LAKES

An air view of the Keuka country (Bluff Point in center) suggests why this section of the Empire State lays such a deep hold upon the fancy of every visitor. The blue waters of the lakes are interlaced with the Cassinlike landscapes in patterns of breath-taking beauty (see Color Plate XIII).



Photograph courtesy Watch Grape Juice Co.

GRAPES, GRAPES, AND MORE GRAPES GROW IN THE HEART OF THE CHAUTAUQUA COUNTRY

The vineyards in the Westfield area are unsurpassed. The Lake Erie shore line is seen in the distant background. The picture covers about six square miles of territory. The tempering effect of the Empire State's lakes extends northward by many miles the range of profitable horticulture (see text, pages 561, 565).

ski-jumping, figure skating, ice hockey—what fast and furious fun they all involve! The arena built for the Olympic Games in 1932 stages beautiful spectacles in ice pagentry. The children take to skiing and figure skating as naturally as ducks take to water, and it is a sight to see a three-year-old acting like a veteran on skis that are as long as he is high.

THE DEWEYS BUILD A UNIVERSITY CLUB

Melvil Dewey, a son of Amherst, who had founded the American Library Association, the American Library Bureau, the American Metric Bureau, and the Spelling Reform Association, was a victim of hay fever. His wife, who had founded the American Home Economics Association, was a sufferer from rose cold. After searching the whole country over, they found at Lake Placid one place where they could work in peace, and here they decided to organize a university club in the wilderness. The club should be a non-profit organization whose mission would be to provide vacations at the lowest possible cost to those librarians and college professors who lack sufficient funds to pay commercial rates for such entertainment.

The Catskill Forest Preserve is by no means so large as the Adirondack area, but is more friendly. The quaint villages one meets everywhere in its dreamy valleys carry the spell of Rip Van Winkle land and the charm of the old Dutch days. The State owns nearly 200,000 acres of forest land in these mountains, and almost every little community in the entire area, both within and without the State boundaries, is a summer resort where beautiful estates share with small cottages and season hotels the landscapes and delights of that favored region.

IN RIP VAN WINKLE LAND

The streams of the Catskills are not large, but what they lack in size they make up in beauty. Here are the headwaters of the Delaware, and on the western edge the eastern branch of the Susquehanna flows full-panoplied out of lovely Otsego Lake. To the north runs Schoharie Creek, with its head cut off and carried away through the Shandaken Tunnel to meet the cry of New York City for water, water, and more water.

Indeed, the mighty metropolis at the mouth of the Hudson is forever busy studying how it can get more water out of the Catskills, and is even now in a legal battle

with New Jersey as to whether the headwaters of the Delaware River itself may be brought to the people of Manhattan.

Motoring through the Catskills, whether from Kingston or Catskill, is a real adventure into a realm of beauty.

The Ashokan Reservoir, the keystone of New York's water supply, is up from Kingston. In an article in the NATIONAL GEOGRAPHIC MAGAZINE some years ago I described this 10,000-acre lake, its building, and the water supply it heads. It is truly a man-made Como of the Catskills.*

Southwest of Catskill is Palenville, the home of Rip Van Winkle and his sharp-tongued wife. Who that ever saw Joe Jefferson recreate Washington Irving's immortal character has not desired to go to Palenville and Kaaterskill Falls and Grand Gorge in quest of the spot where Rip Van Winkle had his long sleep?

Well, Palenville looks to-day just as it was described in Irving's tale—with its trim white houses—and the mountains are not changed.

ROXBURY REVERES THE MEMORY OF JOHN BURROUGHS

Or who that has loved John Burroughs has not yearned to go to Roxbury, his birthplace, to honor his memory? Some one said God made the Catskills and Irving put them on the map, but that it was Burroughs who brought them home to us (see p. 540).

Longstreth has most happily described the Catskills in a paragraph when he calls them a well-watered mountain land compounded of Cooper's tales and the Psalms of David, deep forests and green pastures, living heights and still waters. There are no jagged peaks, no lava flows, no vast stretches of sand or ice.

But let us go down from the mountains for a look at the Empire State's economic life and industry.

Nearly one-fifth of all the life insurance in force in America, both ordinary and industrial, is held in New York. Approximately half the Nation's imports, measured alike by tonnage and value, enter the United States through the customhouse at the mouth of the Hudson, and more than half of our total export tonnage clears through that port. One-seventh of all the net retail sales in the United States were made in

* See "New York—The Metropolis of Mankind," by William Joseph Showalter, in the NATIONAL GEOGRAPHIC MAGAZINE, July, 1918.

COLOR HIGHLIGHTS OF THE EMPIRE STATE



© National Geographic Society

Finlay Photograph by Clifton Adams

THE SUN MAKES TAUGHANNOCK FALLS SEEM LIKE SHEER DRAPERY

Above the southwest shore of Cayuga Lake is the 215-foot drop from the silvery stream above to the emerald pool below. The cataract is the highest in the United States east of the Rocky Mountains, and is as mild as Niagara is turbulent.



A SCHOOL TEACHER WHO FOUNDED A UNIVERSITY.

On the campus of Cornell University, at Ithaca, "Far above Cayuga's waters," stands the bronze statue of Ezra Cornell. He wrote: "I would found an institution where any person can find instruction in any subject."



© NATIONAL Geographic Society

Finlay Photographs by Clifton Adams

TESTING NEW FIRE ENGINES AT ELMIRA

Fire-fighting apparatus and fire-extinguishing chemicals have been products at Elmira since 1845. Fire alarms in the Orient and in South America summon Elmira engines.

COLOR HIGHLIGHTS OF THE EMPIRE STATE



BOATING ON OTSEGO LAKE AT COOPERSTOWN

The "Glimmerglass" of James Fenimore Cooper's immortal tales, Otsego Lake is forest-bordered and mountain-girt, except where Cooperstown lies at its foot. The eastern branch of the Susquehanna has its source in this lake.



© National Geographic Society

Finey Photographs by Clifton Adams

FRESHMEN AND JUNIOR GIRLS AT CORNELL TAKE TO RACING SHELLS

Rowing for both men and women is a part of the Cornell interclass athletic program. The boathouse is on Cayuga Inlet. The girls are preparing to enter their four-oared shells for a practice row.

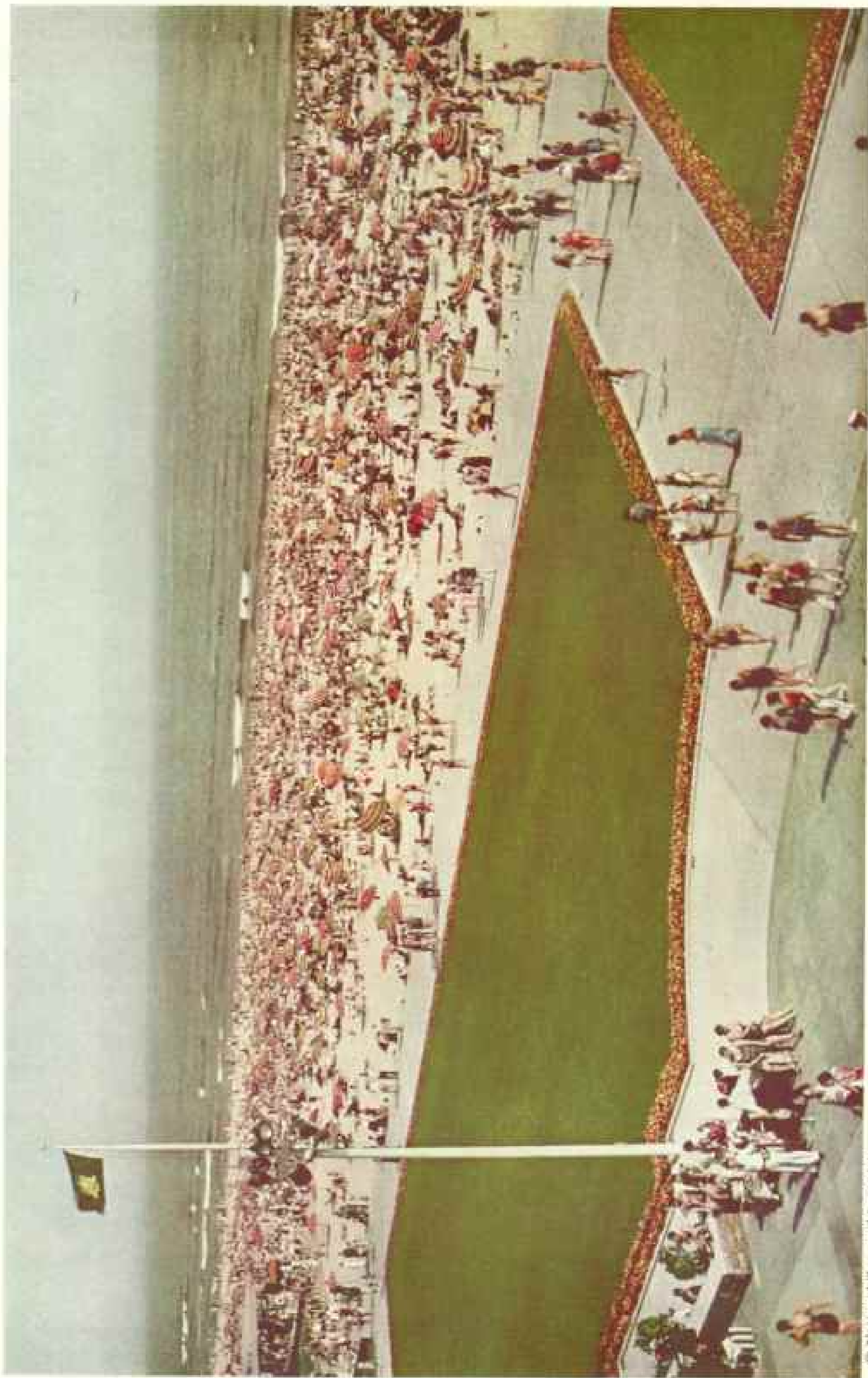


© National Geographic Society

THE LIGHTHOUSE AT MONTAUK POINT, LONG ISLAND, WAS BUILT IN 1797

It has two lights, the upper one flashing white every ten seconds, and the lower one with a fixed beam of red. Adjacent to it is a State park. Many gather here for excellent fishing, golf, polo, and other out-of-doors recreation. Montauk Beach lies one hundred miles "out to sea" from New York City and is a popular rendezvous for yachtsmen and big-game fishermen.

Finley Photograph by Clifton Adams



© National Geographic Society

ON THE STRAND AT JONES BEACH, LONG ISLAND

The State Conservation Department has provided two bathhouses with a combined capacity of 15,000 bathers at a time. The surf-bathing beach is kept scrupulously clean, and there is more than half a mile of still-water beach on Great South Bay. Concrete-surfaced parking places can accommodate 12,000 cars.

Finey Photograph by Clifton Adams



© National Geographic Society

Display Photograph by James A. G. Davey

A RIVER GARDEN OVERLOOKING THE HUDSON, WITH THE PALISADES IN THE BACKGROUND

John D. Rockefeller, Jr., has acquired the river-front property that embraces the Palisades and turned it over to posterity for preservation. The large estates on the east side of the river are famous for their beautiful gardens.

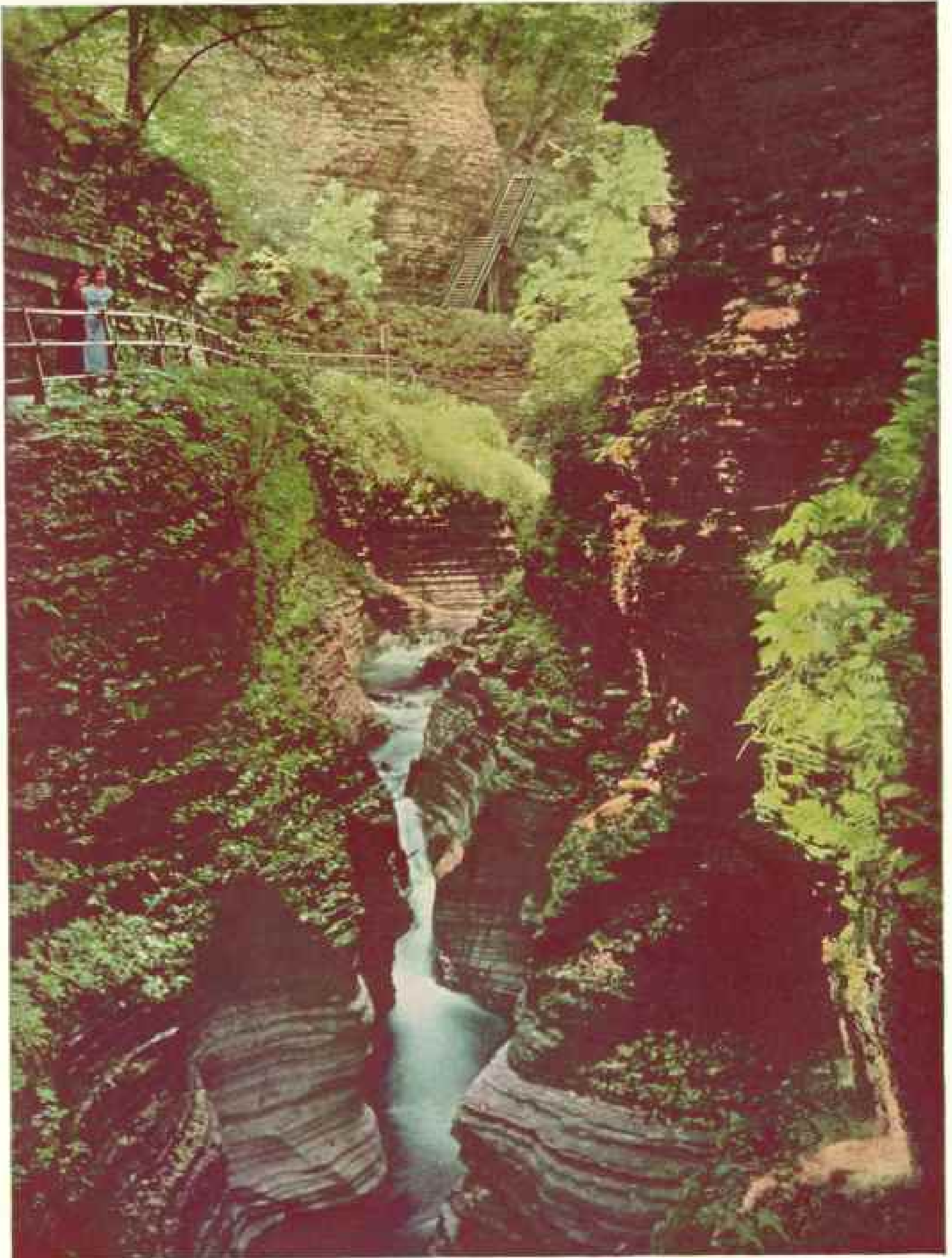


© National Geographic Society

AZALEA AND LILAC TIME IN THE "FLOWER CITY"

Before the development of the northwest Mississippi Valley, Rochester was known as the "Flour City," from the number of flour mills operating there. To-day it has become the "Flower City." At its annual lilac festival it exhibits 184 varieties of lilacs; it has gathered almost every species of conifer that grows, and its collection of rhododendrons and azaleas in Highland Park is one of the finest to be found.

Floral Photograph by Clifton Adams



© National Geographic Society

Finlay Photograph by Clifton Adams.

IN THE HEART OF WATKINS GLEN

Most of New York's natural wonders have been acquired and are being cared for by the State. The Watkins Glen State Park, one of the oldest in the system, has eight waterfalls, a magnificent display of rock stratifications, numerous bridges, and cliff-clinging paths. The Watkins area is underlaid with salt.

New York in 1929—\$7,000,000,000 out of \$49,000,000,000.

The Empire State's rôle in the manufacturing realm is a particularly interesting one. There are 16 industries in which its products constitute more than one-half of the total output of the entire country and 29 others in which its share of the Nation's production is more than a third.

With the gradual growth of manufacturing west of the Alleghenies, there has long been a falling off in New York State's relative standing in many industries; but as there has been a recession of rank in the making of these wares, there has been a corresponding expansion in the fabrication of clothing. This expansion has been so notable that it has more than made up for all the losses in other fields and enables New York still to stand out as the leading industrial State of the Union, with one-seventh of all the Nation's manufactured wares to its credit.

There are only seven States in the Union whose total output of manufactures of every kind surpasses clothing alone in the Empire State. These seven States are Massachusetts, New Jersey, Pennsylvania, Ohio, Michigan, Illinois, and California.

NEW YORK DRESSES THE NATION

In 1929 New York-made clothing at factory prices was valued at approximately \$2,700,000,000. It included three-fourths of the Nation's production of women's apparel and nearly one-half of the country's clothes for men.

The Dutch practically began their colony on the strength of the fur trade, and the latest census shows that New York is still active in marketing furs, accounting for two hundred and twenty-eight million dollars' worth of manufactured fur goods out of a total of \$277,000,000 for the whole United States.

Practically all of the industries in which New York holds this sort of leadership are of the lighter kind. The scepter for the heavier industries has largely passed into the hands of other communities.

Specialization in industry applies to communities as well as to wares. Rome calls itself the Copper City, and makes about one-tenth of the Nation's output of copperware (see page 550). Gloversville is pre-eminent in the manufacture of gloves, and turns out more of them than any other community in the country (p. 544). Roch-

ester is the optical and photographic-equipment capital of the Nation, producing more than a third of the optical goods of the United States and most of its photographic supplies (see pages 564-5).

NEW YORK PAYS FOR ITS ADVANTAGES

Sometimes those of us who are not New Yorkers have been inclined to complain that the Empire State seems to get more than its fair share of benefits, particularly more than its share of the country's income. Especially are we inclined to think this true of the metropolis itself.

When thus we complain, perhaps it is because we lose sight of the other side of the ledger—the measure of how much New York produces for the country.

If you were told that every great irrigation project of every State in the West, from Yuma and Yakima to Shoshone, has been built from funds supplied to the Federal Government by the State of New York and is maintained by funds from her citizens, you would be astonished.

Likewise, if you were told that every dollar of all the Federal-aid money the Government has spent so unstintedly in helping all the States to develop their highway systems comes from New York, you would be amazed.

But wait! As the old showboat captain of radio fame exclaims, "That is only the beginning." For when Uncle Sam sat down to reckon up what the State of New York did to help him pay for the running of his Government in 1932, he discovered that she supplied him with income taxes and internal revenue receipts reaching the grand total of \$744,000,000. He next found that if New York had paid her taxes on a per capita basis, her share of the national excises would have called for only \$269,000,000. When he deducted this amount from the \$744,000,000 actually paid in, he found that New York had given him \$475,000,000 more than would have been required under a per capita quota.

That \$475,000,000 certainly proved a godsend to Uncle Sam in meeting his ever-intensifying problem of financing the operations of an increasingly exacting household. He found that with it he could pay for each and every one of the following items in his budget: every dollar voted to every State for Federal aid, whether to roads, National Guard, forest protection, or agricultural experimentation; the entire



Photograph by Edwin Levick

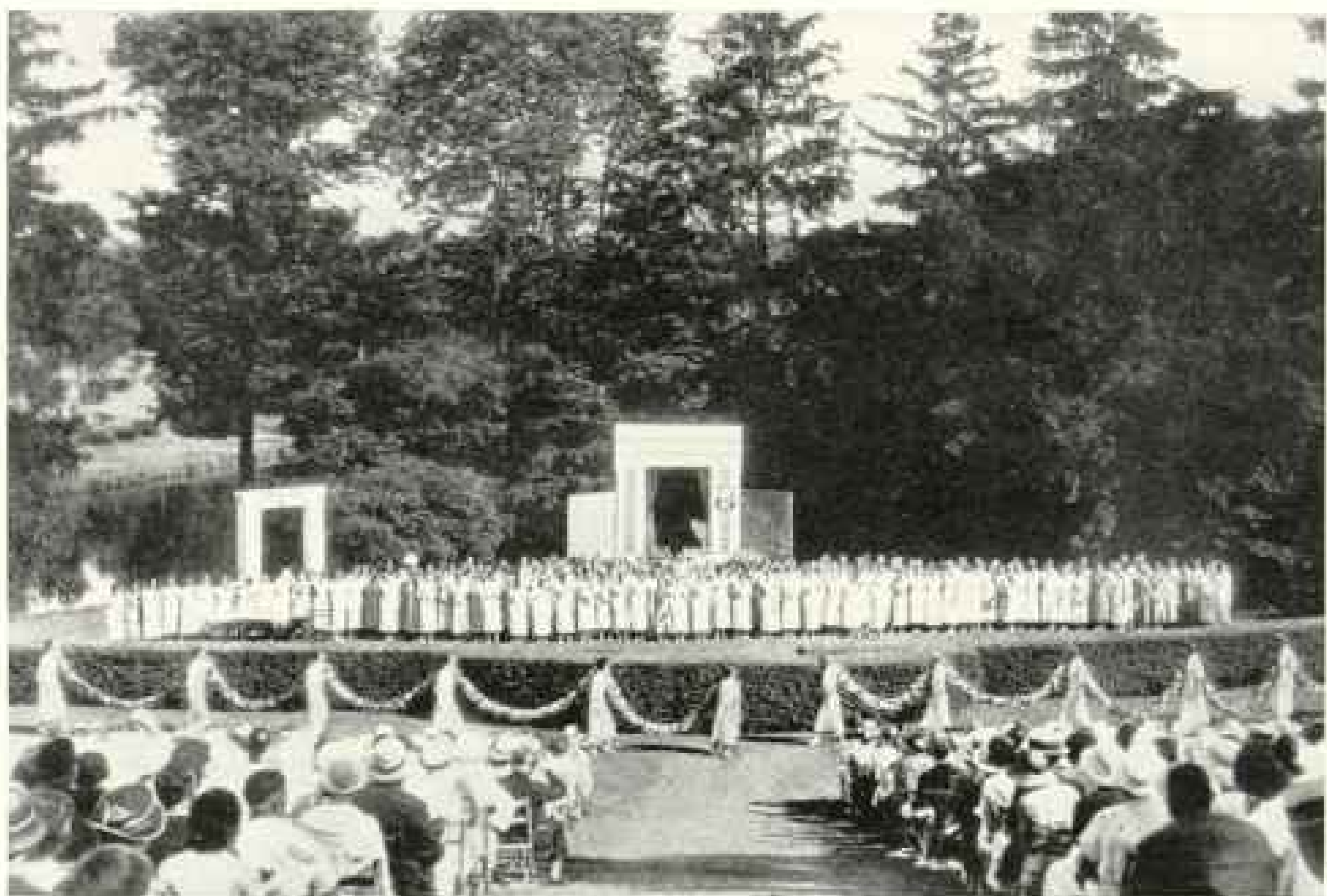
YACHT RACING IS A GLORIOUS SPORT ON LONG ISLAND SOUND

From the days when the *America* captured the Royal Yacht Squadron Cup to the time when the *Enterprise* vanquished gallant Sir Thomas Lipton's *Shamrock V*, American interest in yachting has been high. The Larchmont Yacht Club's regattas have seen as many as 218 craft competing.



GIRL SCOUTS PADDLE THEIR OWN CANOES NEAR BRIARCLIFF MANOR

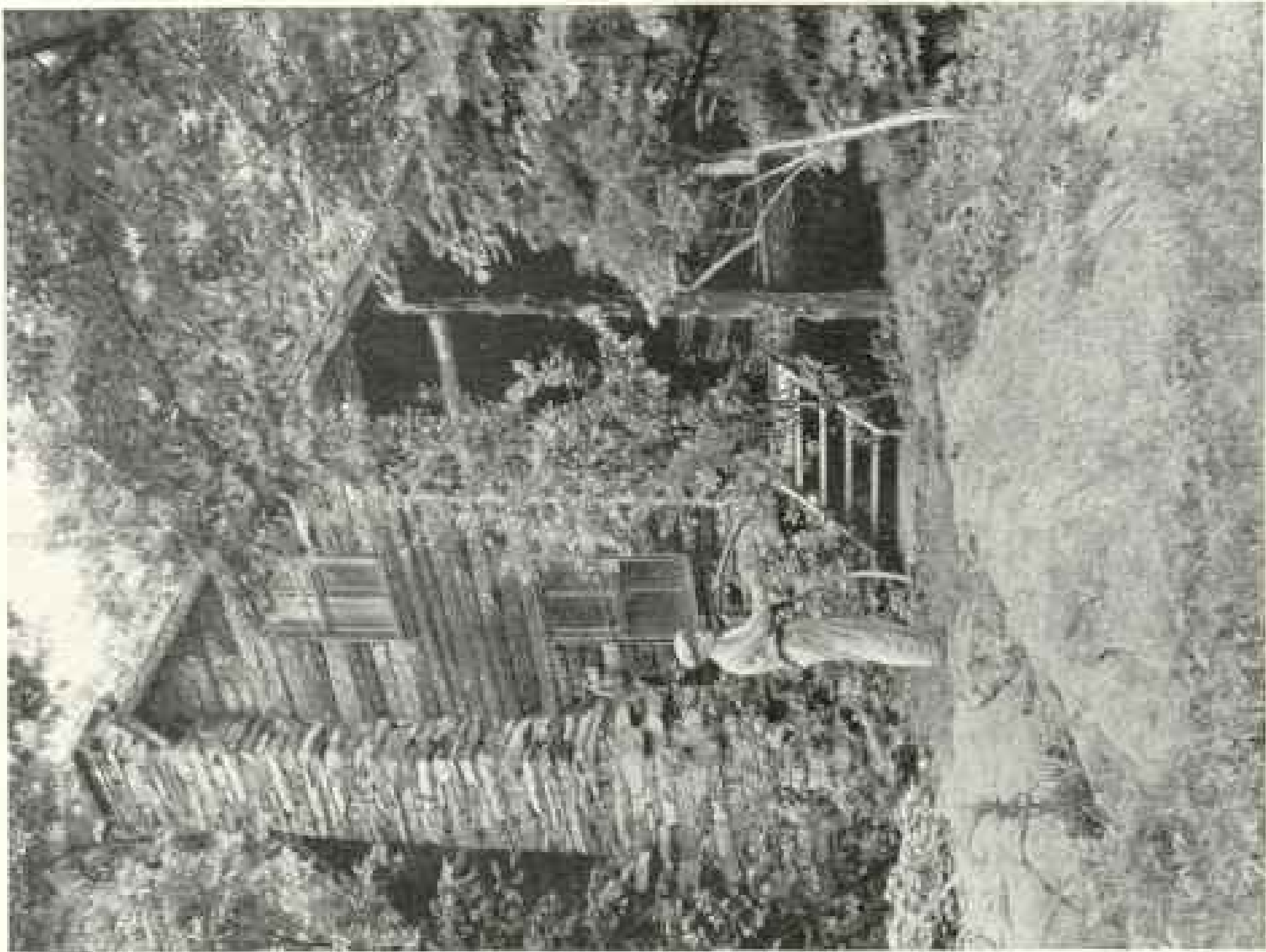
New York City has choice vacationland environs—from mountains to sea recreation spots for every taste and pocketbook. This splendid place is southeast of Ossining.



Photographs from Keystone-Underwood

VASSAR TRADITION CLINGS TO THE DAISY CHAIN

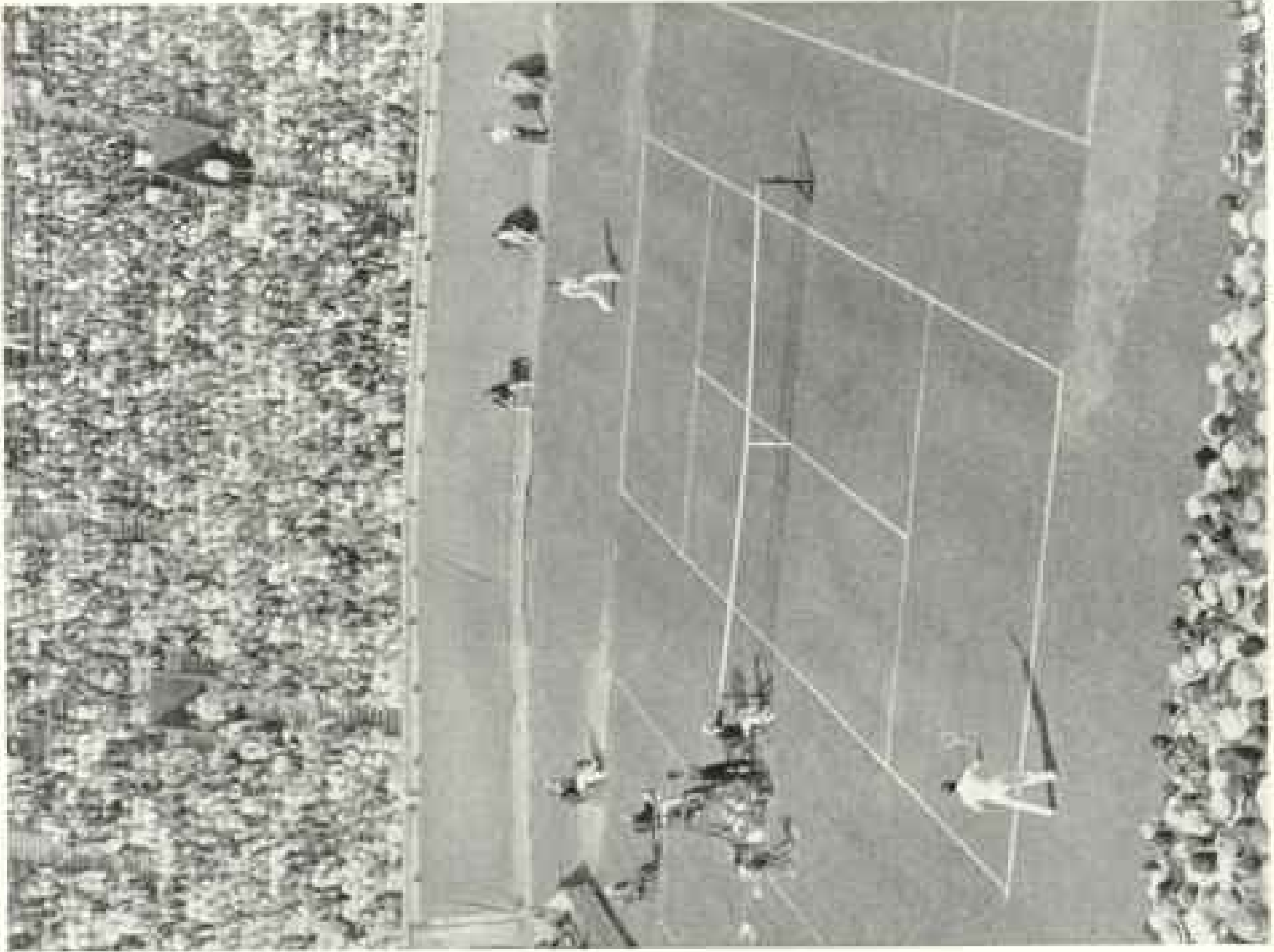
Founded in the year that witnessed the outbreak of the Civil War, the college at Poughkeepsie has shared with Wellesley, Mount Holyoke, Smith, Bryn Mawr, and Barnard a distinctive place in the province of higher education for women.



Photograph by Clifford Adams

JOHN BURROUGHS HID AT SLAUSIDES

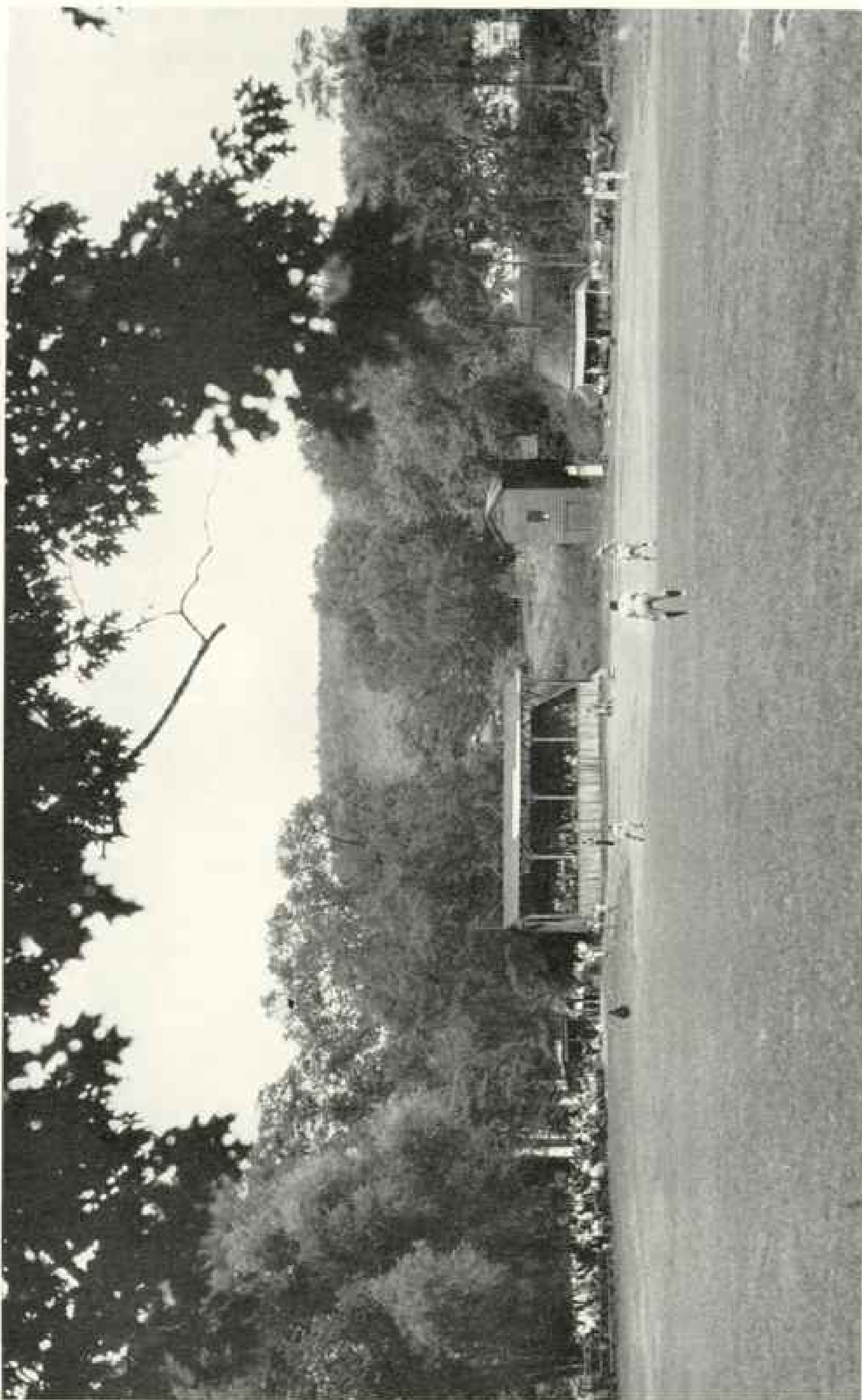
When the beloved naturalist became famous by glorifying the homely, he sought solitude in the wilderness near West Park, on the Hudson, in order to find time to write (see text, page 578).



Photograph by Edwin Levick

BRITONS BATTLE FOR AMERICAN HONORS ON LONG ISLAND

Frederick Perry of England, at Forest Hills, captured the American tennis title by defeating Jack Crawford of Australia after Crawford had won every other crown of the 1933 tennis season.



Photograph by Clifford Adams

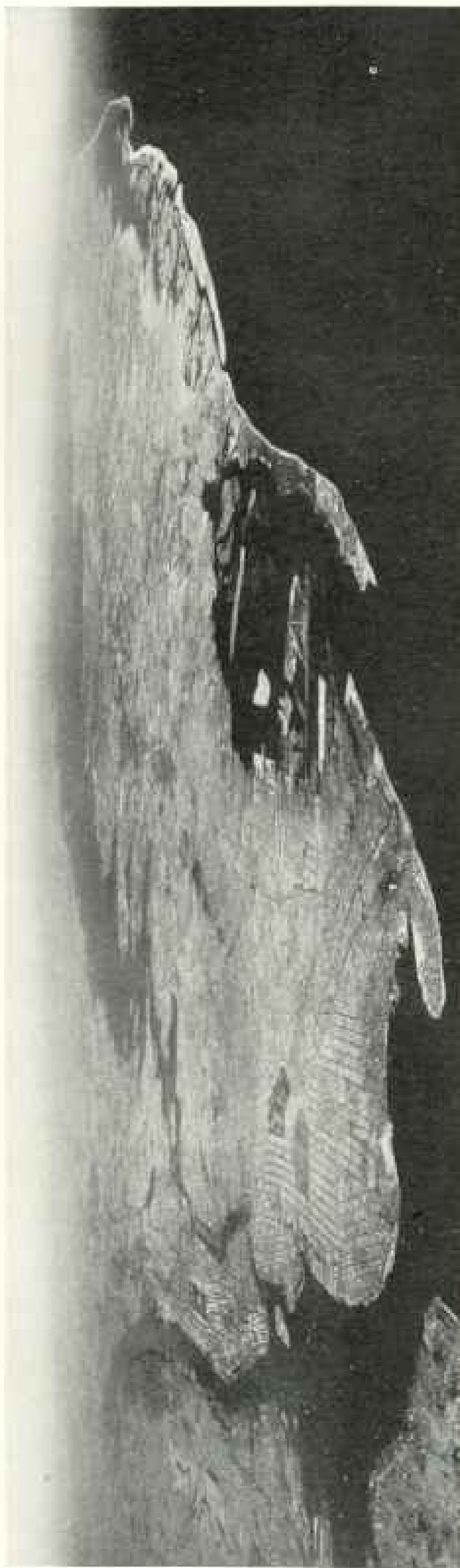
THE BIRTHPLACE OF "THE GREAT AMERICAN GAME" IS COOPERSTOWN

At Doubleday Field baseball was born in 1839 (see text, page 552). Abner Doubleday, for whom the field was named, and who later helped frame the first rules, became a corps commander in the Army of the Potomac and directed the opening day's battle at Gettysburg. Cooper Park, near by, is the site of Otsego Hall, where James Fenimore Cooper wrote his Leatherstocking Tales.



Photograph by Edwin Levick

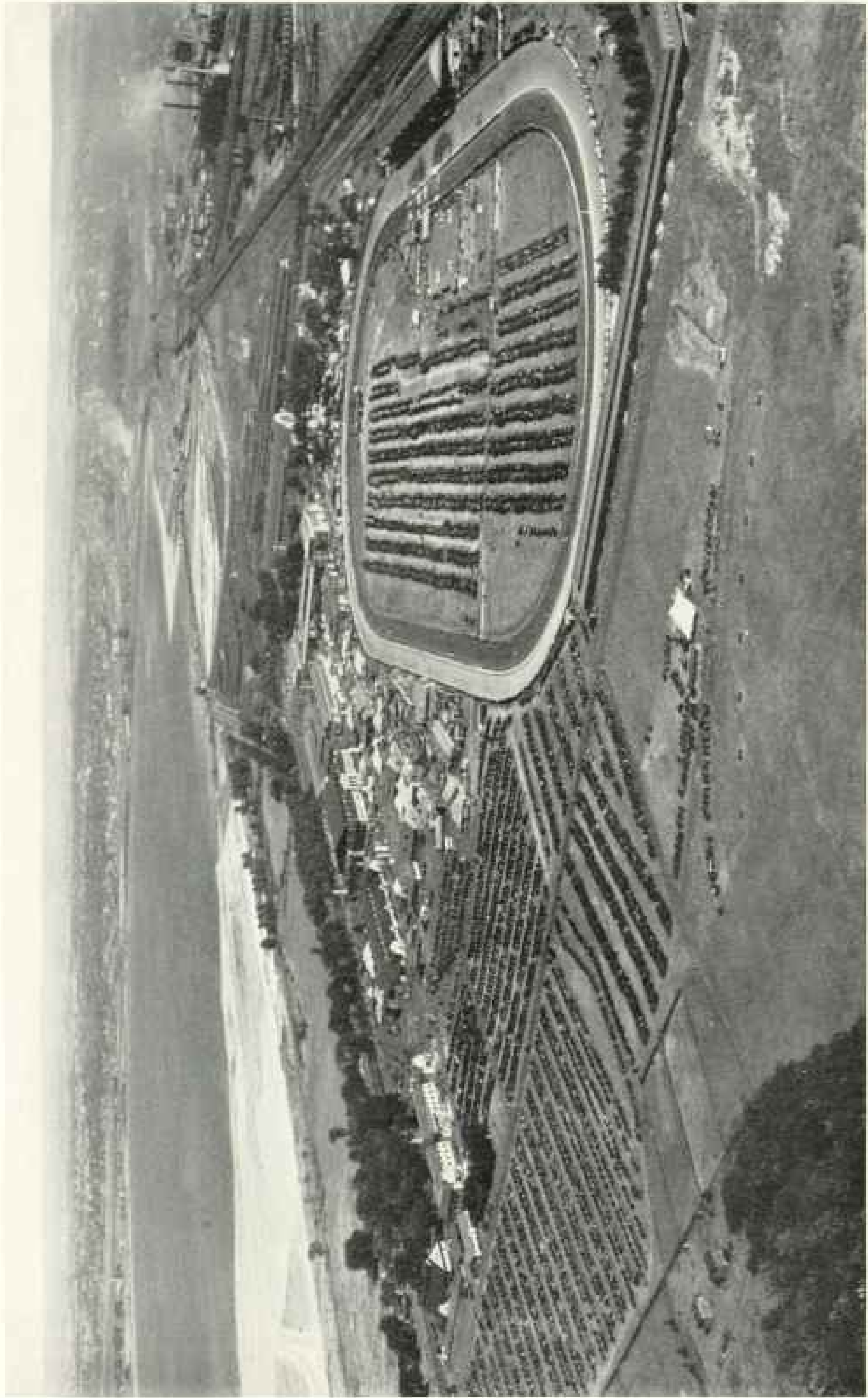
MEADOWBROOK FIELD, WESTBURY, LONG ISLAND, HAS WITNESSED MANY SUCCESSFUL BATTLES IN DEFENSE OF THE INTERNATIONAL POLO CUP



Official photograph U. S. Army Air Corps

FROM FIVE MILES UP THE KINGDOM OF MAN-MADE SPIRES AND CANYONS FLATTENS TO A PLAIN

The aerial camera of Lieut. C. D. McAllister and Capt. Albert W. Stevens, Army Air Corps, registered portions of New Jersey, New York, and Connecticut, as well as New York City and most of Long Island. East River may be seen connecting New York Bay and Long Island Sound (see Supplement to this issue).



Photograph courtesy New York State Fair

BLUE RIBBONS ARE ASSIDUOUSLY SOUGHT AT SYRACUSE

The Fair Grounds are owned by the State, having been acquired under an act of the Legislature. Situated in the western environs of the city, they have an area of 100 acres. Automobile parking at the fair is done with military precision; thus the arrivals and departures are handled safely and rapidly (see text, page 568).



Photograph by Clifton Adams

GIRL OPERATORS SEW GLOVE FINGERS AT GLOVERSVILLE

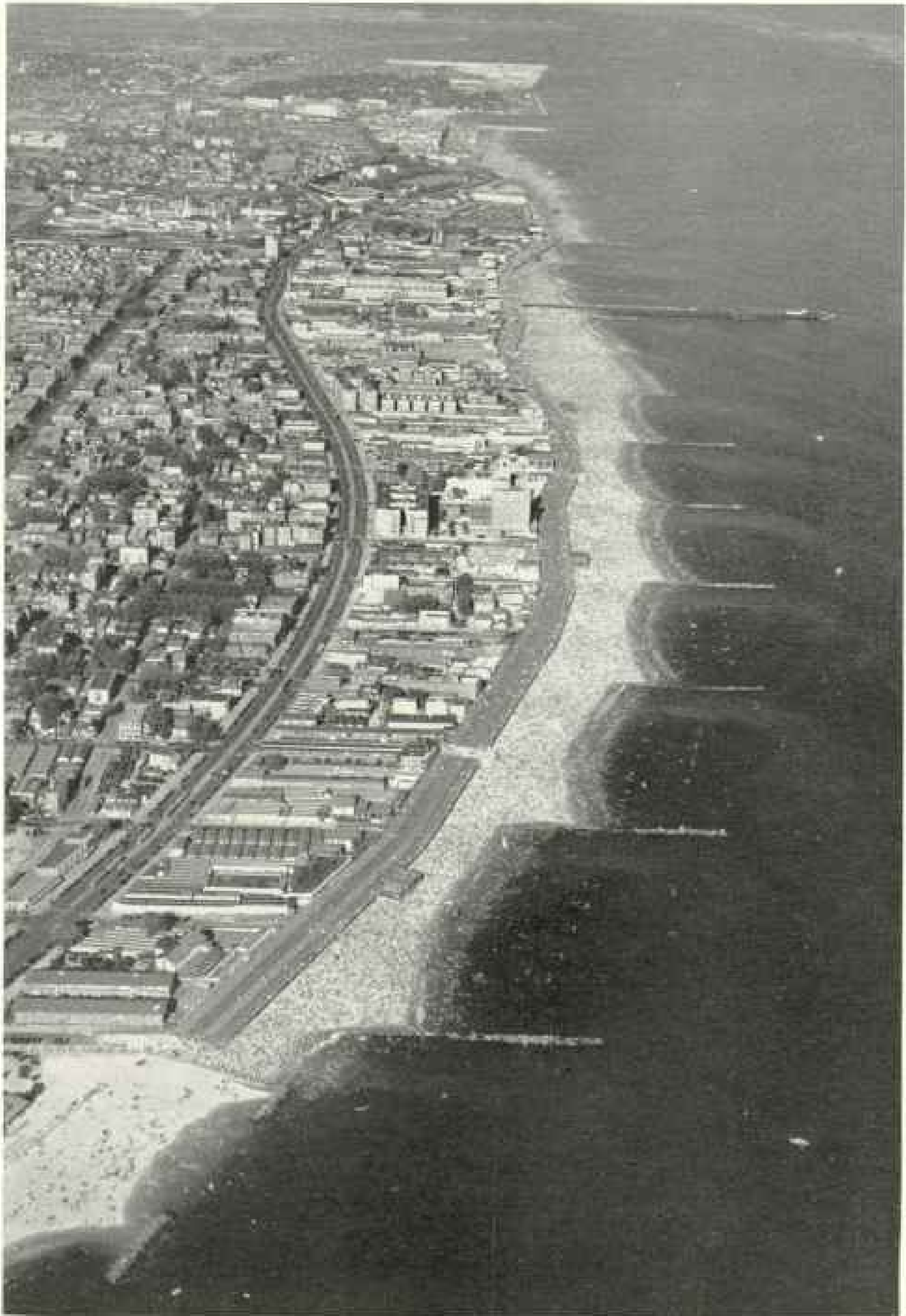
The manufacture of leather gloves and mittens in America centers in Fulton County, New York, with Gloversville as the hub of the industry. The county produces approximately three-fifths of the Nation's output.



Photograph courtesy Cluett, Peabody and Co.

MODERN METHODS REIGN IN A TROY SHIRT FACTORY

The most up-to-date equipment is used, even to a microphone and loudspeaker to give directions and make announcements to operators. The collar museum referred to on pages 577-8 is maintained in this establishment. The thousands of Troy steam laundries all over the United States proclaim that the place of their origin was the city at the head of navigation on the Hudson.



Photograph from Fairchild Aerial Surveys

CONEY ISLAND, THE MECCA OF MILLIONS

During the long summer season this world-known amusement area is daily and nightly invaded by huge crowds seeking escape from the hot city. Excursions by water from New York began about 1840. By 1875 steam railroads were operating, giving way later to fast electric lines. The extensive beach is covered not with boulders, but with humanity at play.



Photograph from Fairchild Aerial Surveys

PRESIDENT ROOSEVELT'S REFORESTATION IDEAS WERE BORN AT HYDE PARK

Lying between the Albany Post Road and the Hudson River, only a few miles above Poughkeepsie, the inherited ancestral acres of President Roosevelt reflect simplicity. To the east of this scene is the cottage where the Chief Executive and the First Lady go for quiet.

expenses of the legislative branch of the Government, including the Library of Congress; the entire cost of the judicial branch, including all Federal courts and prisons; the cost of the independent offices and bureaus, from the Smithsonian Institution and the National Museum to the Interstate Commerce, the Federal Trade, and the Civil Service Commissions; the cost of the Department of the Interior, including the General Land Office, the Bureau of Reclamation, the Geological Survey, the Bureau of Indian Affairs, the Office of Education, etc.; the whole outlay for the Department of Labor; the cost of the Department of Justice; and the expenditures required in the scientific bureaus of the Department of Commerce, from the Bureau of Standards and the Coast and Geodetic Survey to the Bureau of Fisheries, the Patent Office, and Bureau of Mines.

In other words, all that Uncle Sam gives the States in Federal aid, as well as all that he spends to maintain two of the three

branches of the Government and three departments of the third branch, plus all that he spends for scientific research in a fourth department, plus the maintenance of the independent offices, can be met out of New York's added quota of taxation.

HENRY HUDSON FAILS TO FIND CATHAY

It was a matter of only two months after Samuel de Champlain, with his bell-mouthed musket, shot himself out of the empire his explorations had won (see text, page 513) until there rounded Sandy Hook and entered what is now New York Bay a little craft that was to be the forerunner of those vast fleets which through the generations have sailed in through the Narrows and dropped anchor there.

It was the *Half Moon*, bearing an exploring skipper whose orders were to seek a new way to Cathay.

But, though Henry Hudson never found such a route, his romantic voyage up to where Albany stands to-day allowed him to



Photograph from Fairchild Aerial Surveys

WEST POINT SEEN FROM THE AIR POINTS EAST

Between West Point and Constitution Island the huge chain, with links weighing from 100 to 150 pounds, was stretched to block the British during the Revolution. Here are trained and educated the farm and city boys who later become our military experts (see Color Plate XXIII).

carry back to Holland word that eventuated in the birth of a colony in America. In its 44 years of existence, that colony was destined to bequeath to posterity many things that have since given color to the history of New York and have even reached out into the molding of the Nation.

Three of the six Presidents New York has given to the United States (see text, page 577) have sprung from the sturdy Dutch stock that followed in the wake of the *Half Moon* and peopled the Valley of the Hudson.

Many of America's earliest fortunes were accumulated from the fur trade set up by the Dutch in the hinterland of the Hudson; and these in turn have helped in a major way to found our vast transportation systems and to establish our basic industries.

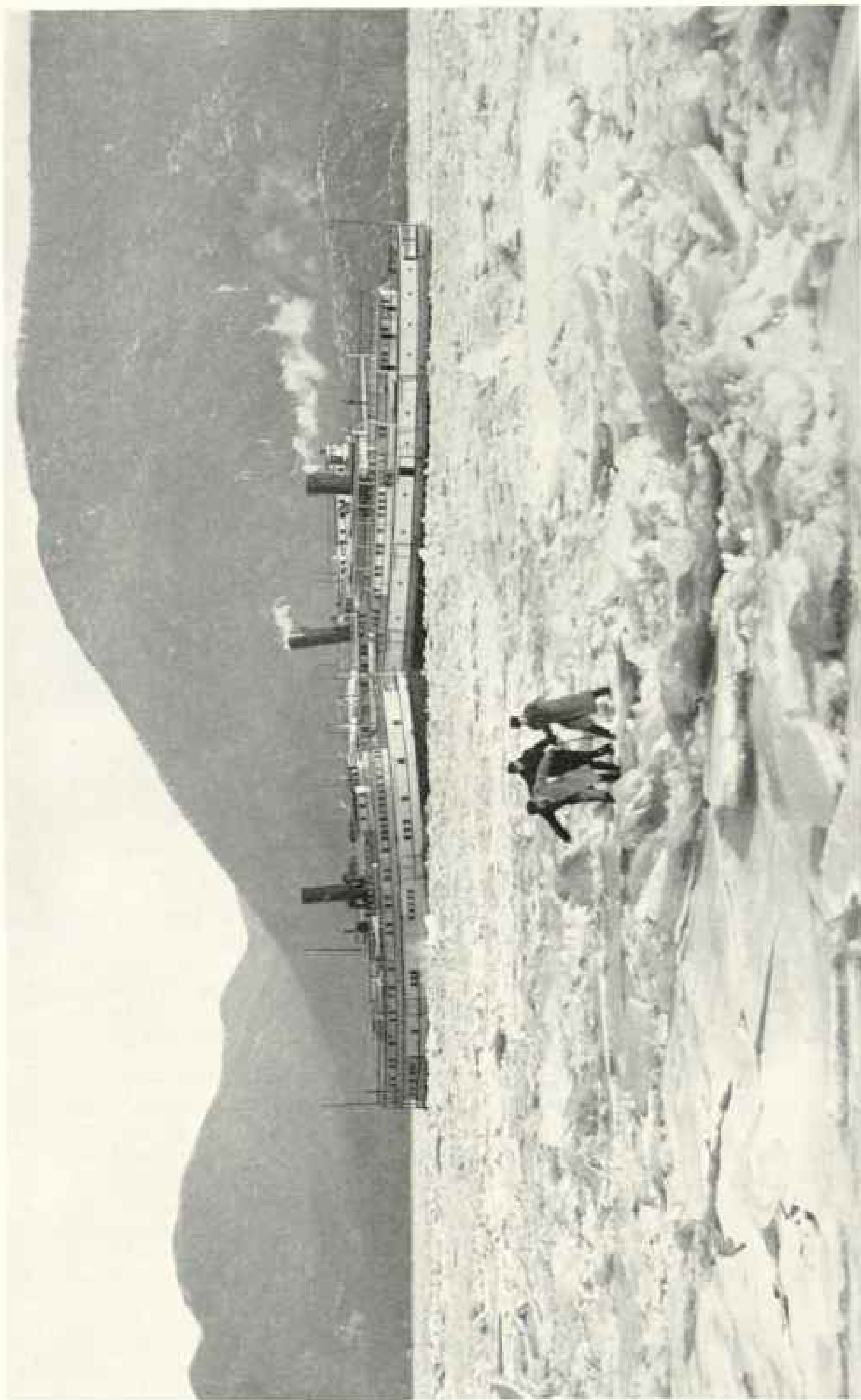
With patroons instead of barons, kills for creeks, koopmen in lieu of merchants, schouten in place of judges, schepens sub-

stituting for aldermen, and with clothes and customs just as different as words and phrases, it is but natural that the Dutch lent themselves readily to caricature, and that vivacious writers like Washington Irving, in a day when satire was popular, did not overlook the opportunity. Fun-poking perhaps has detracted not a little from the just renown of the rôle of the Dutch.

THE HUDSON GROWS OLD GRACEFULLY

Whether one views the Hudson River from the deck of a day boat, from the observation platform of a Twentieth Century Limited, from the tonneau of his own car, or from the cockpit of an airplane, the scene, as he makes his way from the heart of the metropolis to the head of navigation, grows more appealing with the passing of the years (see Color Plate XXII).

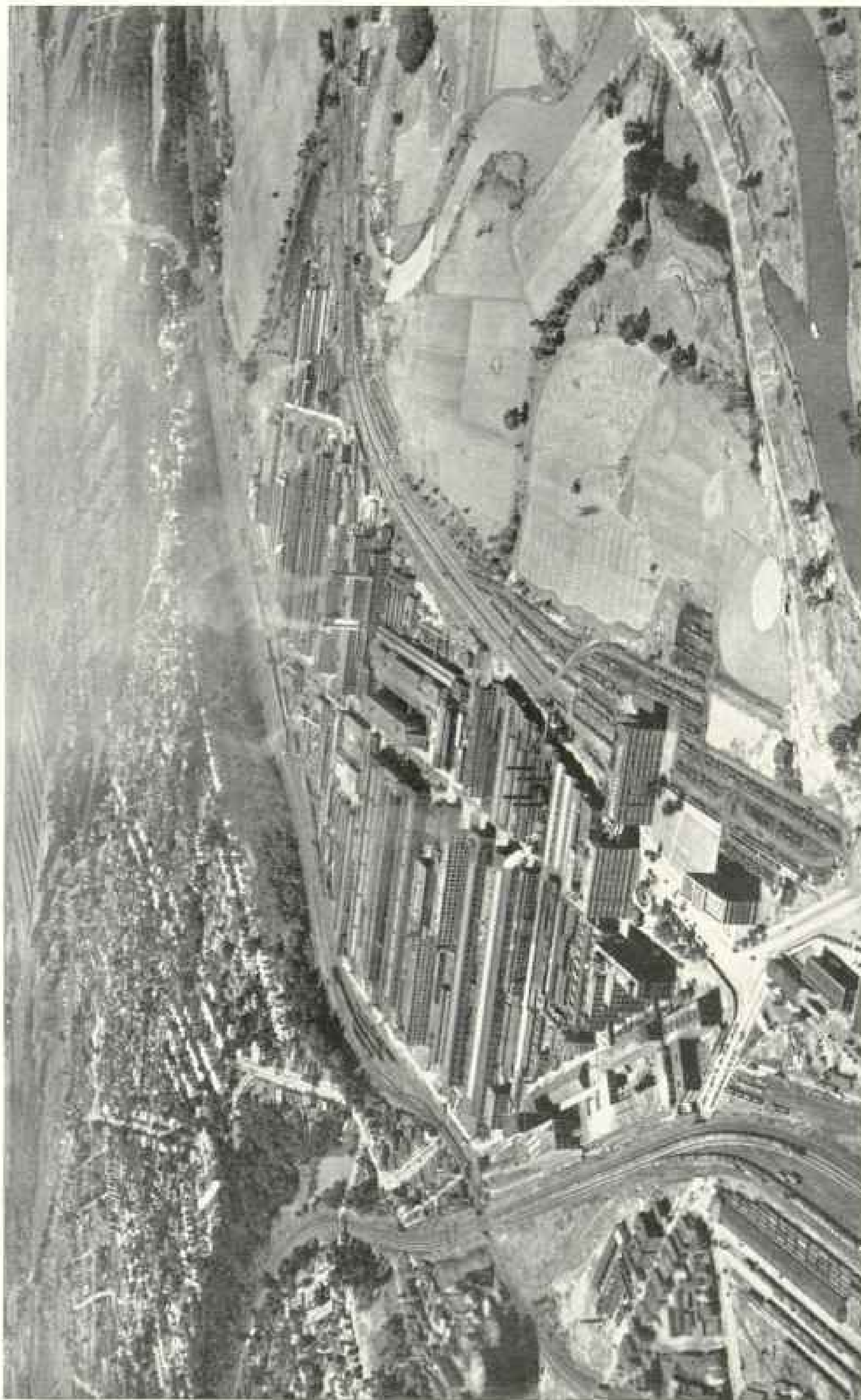
History weaves its romances into every mile. Nature reveals what an infinity of moods it can display. Industry surprises



Photograph by International News

WINTER TAKES COMMAND OF THE HUDSON

Early in 1929 Newburgh saw the stream frozen over suddenly. All passengers were rescued from the ice-locked steamers, and officers walked ashore for supplies. The Indians found this river an easy highway from the mountains to the sea. Early explorers mistook it for the short route to India. It nursed the first venture in steam navigation (see text, page 531) and upon its bosom is borne the greatest craft of all times.



Photograph courtesy General Electric Co.

GENERAL ELECTRIC'S "HOUSE OF MAGIC" BUILT THIS MIGHTY PLANT

One of the romances of American industry, it is said, was the outcome of a tip given to Thomas A. Edison by a traveling salesman. Learning of Mr. Edison's desire to move his factory to the rural districts, the salesman told him of some unfinished buildings in Scheheretady. They were quietly inspected, approved, and purchased with the cooperation of merchants in that city. The works normally employ 20,000 people (see text, page 577).



Photograph by Clifton Adams

SOLDERING SMALL WHISTLING TEAKETTLES AT A HOME PLANT

This factory is a branch of a company founded by Paul Revere just after the Revolution. The community at the head of the Mohawk calls itself the "Copper City." Here Sir William Johnson established the eastern boundary of the Five Nations.

one here and there with the versatility of its touches, commerce adds a pleasant flavor to the vistas, and transportation gives piquancy to the picture.

Few pleasures can surpass a sail through the Narrows on an early-morning Atlantic Highlands boat, past all that spreading fleet of liners and tramps alike that have arrived in the night and await the formalities of the port before going to their berths and piers.

How different is the scene from that of the day when Hudson rounded Sandy Hook, or when Howe sailed from Staten Island to Long Island, preliminary to expelling the Americans from Manhattan; or when, the war ended, the British sailed away and peace at last came to America!

The giant George Washington Bridge, with its towers that top the Washington Monument by nearly a hundred feet, its span that doubles the dimensions of any other New York bridge, its cables that are a full yard in diameter, and its cost, ex-

ceeding that of any other two bridges in the world, forms a fascinating new element in the lower Hudson scene (see page 524).

In the entire 150-mile stretch from Troy to Manhattan, the total fall of this imperial river is only five feet—four-tenths of an inch to the mile. The Hudson up to Troy is really a fjord, a bit of the sea come inland.

WESTCHESTER: A LANDSCAPE STUDIO

The counties which border the Hudson all have more than a normal share of beauty and interest, but every one agrees that Westchester is entitled to a blue ribbon for its application of civic planning principles.

Cornering at Yonkers and Bear Mountain and stretching across to Long Island Sound from New Rochelle to Port Chester and along the Connecticut line, Westchester, with its parks, parkways, boulevards, lakes, reservoirs, magnificent estates, and resplendent villages, is the highest broad-scale exposition of the landscape gardener's art.



Photograph courtesy General Electric Co.

WORKMEN ASSEMBLE A HUGE HYDROELECTRIC GENERATOR

The size of these great transformers of water power into electric current being built at Schenectady may be gauged by comparison with the figure of the man standing between the spokes of the big wheel in the background (see text, page 577).

Motoring over its roads, one gets a delightful foretaste of what the 37,000 miles of surfaced highways in the State offer in joys of the open road.

FULTON, FATHER OF STEAM NAVIGATION

What a new era in world commerce was born when Robert Fulton first navigated his craft between New York and Albany on that 17th day of August, 1807! The doubters who had come to scorn literally remained to cheer when the *Clermont* chugged away from her wharf.

Robert Fulton never claimed that he had put anything new in his boat—only that he had succeeded in adapting properly the work of other men for practical ends.

To-day the world has more than 32,000 ships of a hundred tons' burden or more, the total gross tonnage of which is approximately 70,000,000. Of this vast fleet all but 2 per cent are propelled by steam, because Robert Fulton was able to steam up to Albany in 32 hours and down to New

York in 30, with a breeze over his bow both up and down the river.

The front of the State of New York that lies above Albany and east of the Adirondacks loses nothing by comparison with the lower Hudson country in either the fascination of its landscapes or the romance of its history. From Crown Point and Ticonderoga to Bemis Heights and Saratoga, history on many an occasion stood on a pivot, and the way in which the State is restoring Crown Point, Saratoga, and Bemis Heights, and the manner in which the Pell family is rebuilding Fort Ticonderoga as it was, win the appreciation of every lover of our early history (see illustration, page 516, and Color Plate XXIV).

When Ethan Allen and his brave Green Mountain Boys surprised the British at Ticonderoga and demanded its surrender at the hands of the sleepy-eyed, half-dressed commandant, the munitions he captured gave Washington new hope, for these supplies were sledged through the snows of the

New England winter to the Commander-in-Chief at Cambridge.

And when Burgoyne, trying to apply a military nutcracker to the patriot army in the upper Hudson area, got caught in the same sort of trap he tried to set, despair changed to hope. For that victory, by bringing the French to the American side, gave America a support at sea, without which there might not have been a Yorktown.

As for Lake Champlain, we may well believe that but for MacDonough's brilliant victory there in the War of 1812, in front of Plattsburg, the British might have at last succeeded in the wedge-driving tactics they had essayed so often in earlier wars, and might have marched in triumph to New York, splitting the Nation in twain, as they had so desperately sought to split the Colonies.

WHERE BASEBALL WAS BORN

New York west of the Adirondacks and the Catskills may not have a Hudson River, nor a Lake George or Champlain, but it has a Roland of arresting landscape for every Oliver of delightful panorama east of the mountains.

For the Hudson country's Tarrytown and its romances of the Dutch, there is the Susquehanna's Cooperstown and its thrilling tales of the Indians. Washington Irving's Knickerbocker Stories and James Fenimore Cooper's Leatherstocking Tales balance one another in their fascination and make the authors two of the Empire State's best-loved men of letters.

One who cuts across country from Little Falls, where the great Ice Age forced the Mohawk to reverse itself,* and motors down by the beautiful Otsego Lake to Cooperstown is gradually prepared for the glorious scene that greets him there. Yes, it is the "Glimmerglass" country (see Color Plate III). I also visited the little baseball field where Abner Doubleday invented and started on its amazing career "the great American game" (see page 541).

No matter where one has traveled, he will still stand enchanted in that summer fairyland which has come to be known as the Finger Lakes country. Little wonder that the Indians of the long ago believed that

the Almighty put his hand down upon the area and left his fingerprints there. Other lands have lakes that are rare as Killarney itself, but here civilization has set itself all over the splendid slopes that separate these sky-mirroring waters, and has carpeted these slopes with Brobdingnagian rugs of fairer pattern than ever came from the looms of Persia or Turkistan.

In no State have public-spirited citizens contributed lands so generously for parks. To such people as the Tremans of Ithaca, the Harrimans of the Bear Mountain country, the Letchworths of the Genesee, and many others whose gifts and whose services have been of like merit, posterity will ever owe gratitude for the splendid areas they have set aside in perpetuity for the enjoyment of all.

In a previous article I told the story of Niagara's dramatic rôle in war and in industry.* (See Color Plate IX.)

Niagara, of course, is the scenic masterpiece of New York; but across the State from there to Ausable Chasm stretches a series of glens and gorges each beautiful enough to be the boast of any State, but all constituting a veritable galaxy of witching spots where white water has cut its way through level-lying strata of shale, some layers thin as paper and as easily broken and others massive and resistant. Watkins and Enfield Glens, the Buttermilk and Taughannock Falls, and the gorges of the Genesee are splendid examples of white water at work (Color Plates I, VIII, XII).

Wander with me down the Chemung Valley from Painted Post to Corning, Horseheads, Elmira, and Waverly, and I care not where you have traveled, you will still appreciate the panorama you see there. In the Horseheads-Big Flats country, where the ancient Chemung left its bed and cut a new way through the mountains to Elmira, is an area the geologists of the world like to visit to read its Ice Age story in the rocks and the soil.

And below Elmira lies the Battlefield of Newtown, where Gen. John Sullivan, in the heart of the Iroquois territory, put down, once and for all, those fierce raids the Indians and their Tory allies had been staging in the middle period of the Revolution.

* See "Pirate Rivers and Their Prizes," by John Oliver La Gorce, in the NATIONAL GEOGRAPHIC MAGAZINE, July, 1926.

* See "Niagara at the Battle Front," by William Joseph Showalter, in the NATIONAL GEOGRAPHIC MAGAZINE, May, 1917.

COLOR HIGHLIGHTS OF THE EMPIRE STATE



THE RAINBOW OVER NIAGARA GORGE, BELOW THE HORSESHOE FALLS

This prospect of Niagara from Queen Victoria Park on the Canadian side is one of its fairest. With the American Falls in view across the river, one may see here the full effect of the drop of the waters from the heart of a continent.



© National Geographic Society

Finlay Photographs by Clifton Adams

NIAGARA AS SEEN FROM PROSPECT POINT

This view has the American Falls in the foreground and the Horseshoe Falls in the background. Niagara's flow during a pre-diversion decade was 93,150,000 gallons per minute, twenty-seven times that of Victoria Falls in Africa and forty-one times as great as the amount passing at Iguazú in South America.



© National Geographic Society

A CANADIAN LAKE STEAMER DISCHARGING GRAIN AT THE CANADIAN POOL TERMINAL AT BUFFALO

Finny Photograph by Clifton Adams

Buffalo, with its 29 elevators, the aggregate capacity of which is fifty million bushels, is not only a foremost milling center in the United States, but also the bottle-neck of the grain trade. Within an overnight train ride live 60 per cent of the people of the United States and 70 per cent of the people of Canada.



OLD FORT NIAGARA PARADE GROUND AS RESTORED BY THE WAR DEPARTMENT AND COÖPERATION OF PATRIOTIC ORGANIZATIONS



© National Geographic Society

GLIDERS AND SAILPLANES AT THE FOURTH ANNUAL NATIONAL SOARING AND GLIDING CONTEST AT ELMIRA

Embry Photographs by C. H. Brown, Adams



© National Geographic Society

A LAKE GEORGE LIGHT

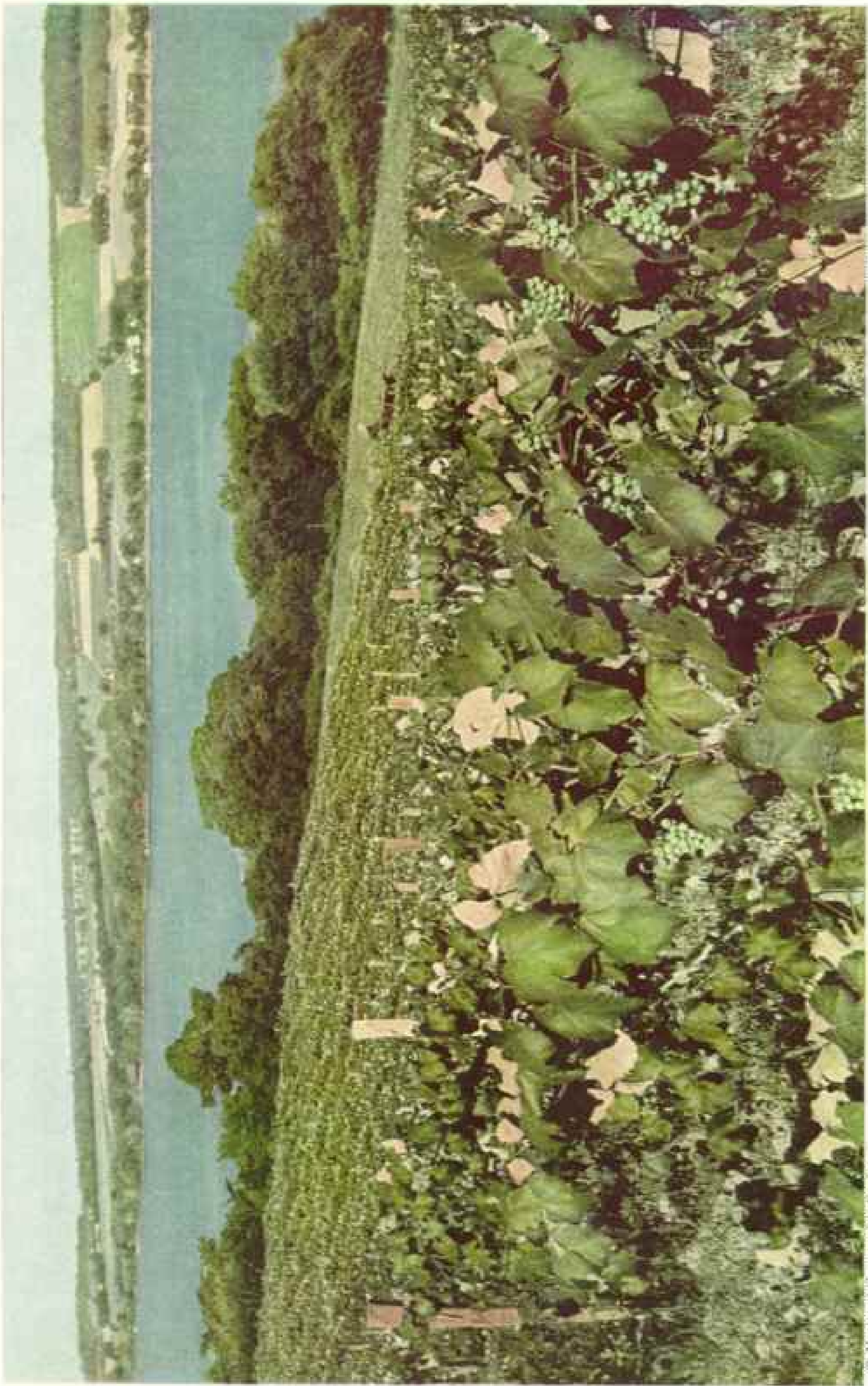
Situated south of The Narrows, this lighthouse, off Bolton Landing, enhances the beauty of an already pleasing scene.



Factory Photographs by Clifton Adams

TRIPPING DOWN THEIR ROCKY STAIRS

The waters of Buttermill Falls, six miles south of Ithaca, form a swimming pool below. The area is one of the inspiring chain of State parks.



© National Geographic Society

A VINEYARD ON THE SLOPES OF KEUKA LAKE, SOUTH OF PENN VAN

Friday Photograph by Clifford Adams

Concord, Delaware, Niagara, Tokays, and other well-known varieties of grapes are grown in the Finger Lakes region. At Hammondsport, near by, there is a revival of the light-wine industry. There, too, Glenn Curtiss had his airplane factory and experimental laboratory and in 1914 made his famous tests with the original Langley plane.



THE ALBRIGHT ART GALLERY AT BUFFALO

This structure, situated on the shore of the lake in Delaware Park, and the art objects it contains, are the pride of the city. It was the gift of John J. Albright and is the home of the Buffalo Fine Arts Academy.



© National Geographic Society

Finlay Photographs by Clifton Adams

A COLLECTION OF ART GLASS AT CORNING

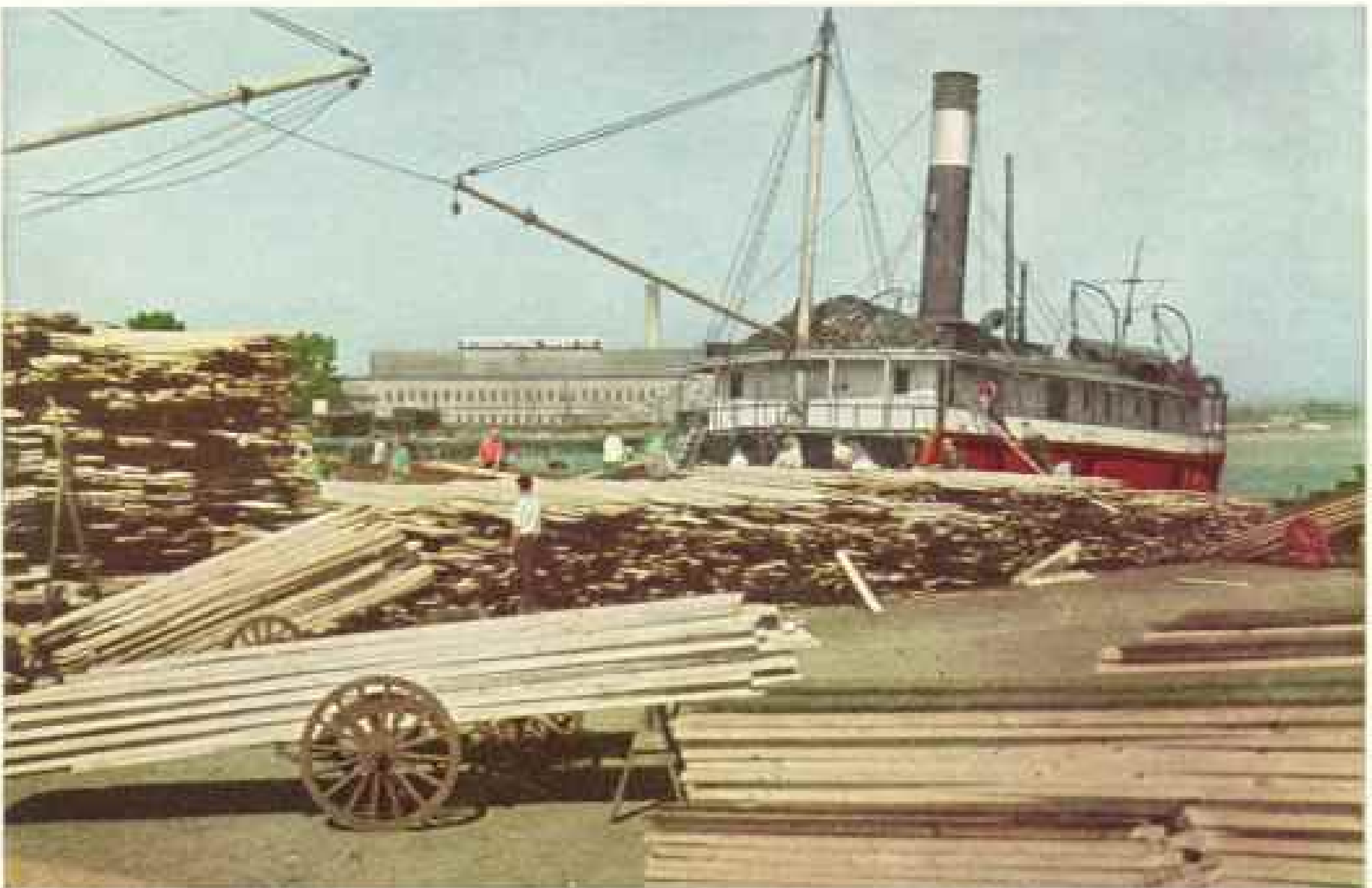
This city on the Chemung River has long been famous for glass products. It produced the first commercial electric-light bulb, a new type of thermometer tubing, and the first copper-ruby glass.

COLOR HIGHLIGHTS OF THE EMPIRE STATE



THE ONEIDA COMMUNITY HOUSE AT SHERRILL

John Humphrey Noyes little dreamed when he organized his small band of adherents that he was laying the foundation of one of America's foremost organizations of workers in art-silver.



© National Geographic Society

Finlay Photographs by Clifton Adams

A CARGO BOAT DISCHARGING LUMBER AT NORTH TONAWANDA

Canada furnishes millions of board feet of lumber to the United States every year. Situated on opposite sides of the Barge Canal, the Tonawandas are midway between Buffalo and Niagara Falls.



A LITTLE RED SCHOOLHOUSE NEAR CANANDAIGUA LAKE

New York's educational system is headed by the Board of Regents of the University of New York. The State maintains no university, but uses its educational funds to provide scholarships in approved institutions for those pupils who make the best records in the high schools.



© National Geographic Society

Finlay Photographs by Clinton Adams

AN OSWEGO-BOUND GRAIN BARGE TIED UP AT BREWERTON LOCKS

Gone are the mules and the towpath, but in their stead are the more efficient electric and steam towboats which haul strings of barges.

Long Island may be somewhat apart from the remainder of the State of New York, with its Sound setting it off; but, as the playground and truck garden of the giant metropolis that lies astride the East River, it constitutes one of the focal points in the dramatic story of the Empire State. From the heart of Brooklyn, where the British began their sweep that was to make New York City theirs to the end of the Revolution, to the tip of the island, where Captain Kidd is reputed to have buried much of his treasure, history and tradition invest the entire area with romance. From the low-lying reefs that front the sea to the beetling bluffs that abut the Sound, there are landscapes that would challenge the brush of a Corot.

The duck ranches of Canoe Place and the cauliflower fields of the Riverhead section; the playgrounds of Jones Beach, Rockaway, and Coney Island; the magnificent estates of Great Neck, Glen Cove, and Oyster Bay; the greensward towns of the Hamptons, from West Hampton through Southampton and Bridgehampton to East Hampton; the highland area that stretches through Jamaica and Hempstead to Ronkonkoma and Medford Station, all beckon the traveler (see Color Plate V and illustration, page 545).

Long Island resembles the outline of a whale with its head facing the upper and lower bays of New York and the flukes of its tail reaching out into the sea at magnificent Montauk and Orient Points (see Color Plate IV).

The highways and boulevards of the island are the admiration of road engineers everywhere. The Southern State Parkway, with its grade separations, is a companion piece to the beautiful Mount Vernon Boulevard of Virginia, and is soon to be matched by a Northern Parkway of equal beauty, with a connection between the two which will make one of the outstanding circular drives in all America. Such ancient turnpikes as the Jerusalem, the Hempstead, and the Bethpage have come to be busy traffic boulevards, and the Sunrise Highway is the last word in motor-road engineering.

The total population of Long Island in 1930 was 4,103,000, which is approximately three times that of New Zealand and a shade more than that of Cuba. The expansion of the population in Nassau and Queens counties in the last decade reached the amazing percentage of 140 in the case of the former

and 130 in the case of the latter. No city in the United States, except New York itself, has a larger population than that which finds its home on Long Island.

THEODORE ROOSEVELT IS ENSHRINED AT SAGAMORE

There is one pilgrimage on Long Island that will always be dear to the heart of American travelers. It leads to a simple tomb overlooking the harbor of Oyster Bay, where rest the ashes of Theodore Roosevelt—soldier, statesman, and historian. A rectangular iron fence surrounds the plot, and an unpretentious slab marks the grave. One looks out over the blue waters of Oyster Bay and up the hills of Cove Neck to Sagamore.

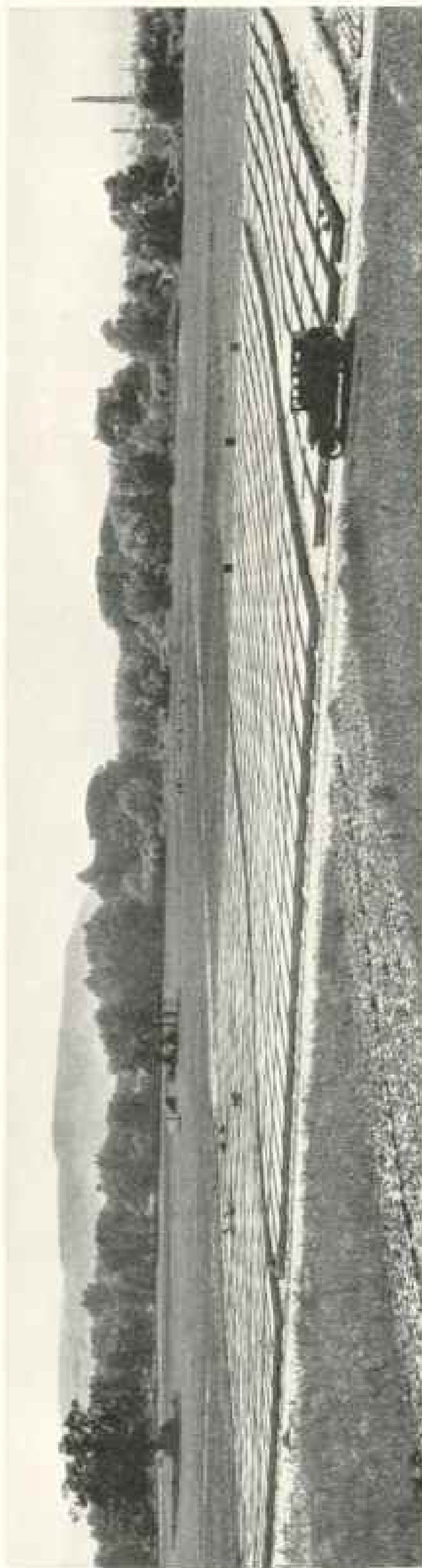
Let no one assume that the sections which have been mentioned are by any means all of the fair areas of the great State. For the Genesee country wins one's heart; the territory along the St. Lawrence from Massena Point to Cape Vincent, past Ogdensburg, Alexandria Bay, and the Thousand Islands (see p. 581) heightens enthusiasm; and the "great seas of fruit trees" between Oswego and Niagara, into one figurative bay of which could be put the heralded orchards of England, excite one's admiration, whether at blossom time or harvest season. Likewise the Chautauqua, Cattaraugus, and Allegany section holds its own in scenery in a land where competition is strong.

The traveler roundabout the State of New York readily discovers that much of the attractiveness of its rural scene is due to the marks of careful tillage upon the face of its fertile acres.

With a population that is five parts urban and one part rural, there is a vast demand for milk—New York City itself must reach out 300 miles for its supply. Dairy farms therefore abound everywhere. And they call not only for grasslands, but also for cornfields and general crops, with the resultant mosaics of color, alike in the Hudson Valley, the St. Lawrence region, and the Mohawk country.

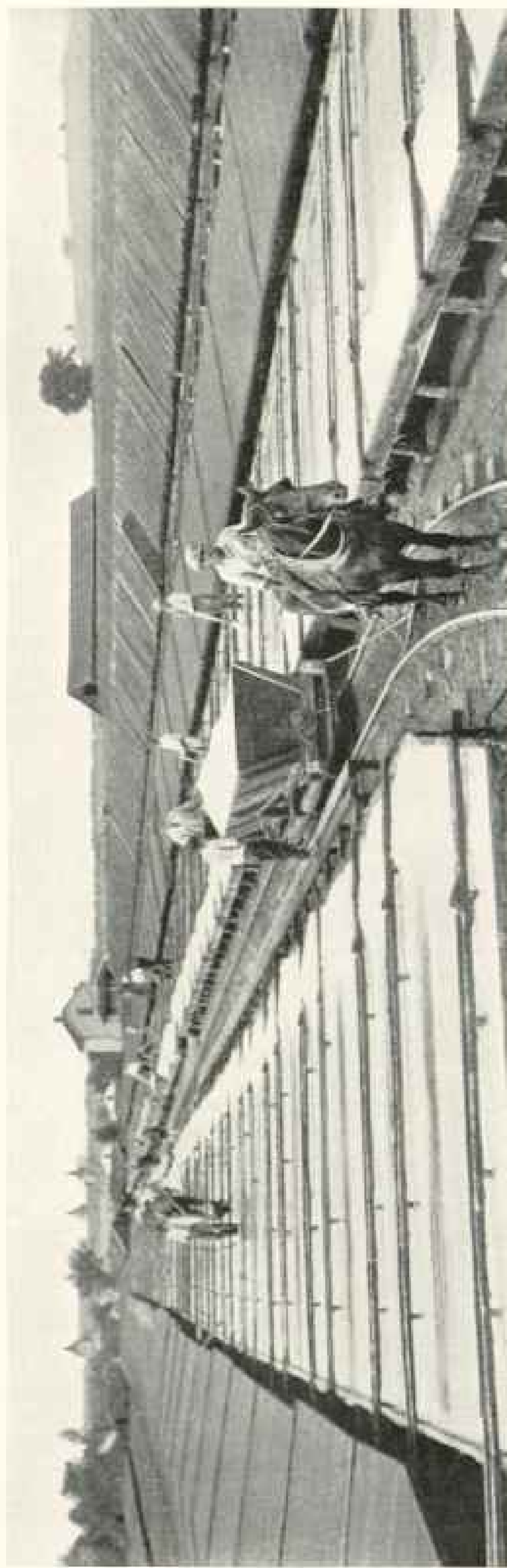
In 1929 the State produced 800,000,000 gallons of milk, enough to fill a vat ten feet deep and four and one-half wide, extending from the southern end of Manhattan to the eastern end of Lake Erie via Albany.

The vineyards, the orchards of small fruits, and the truck gardens that flourish



Photograph from Franklin T. Fisher.

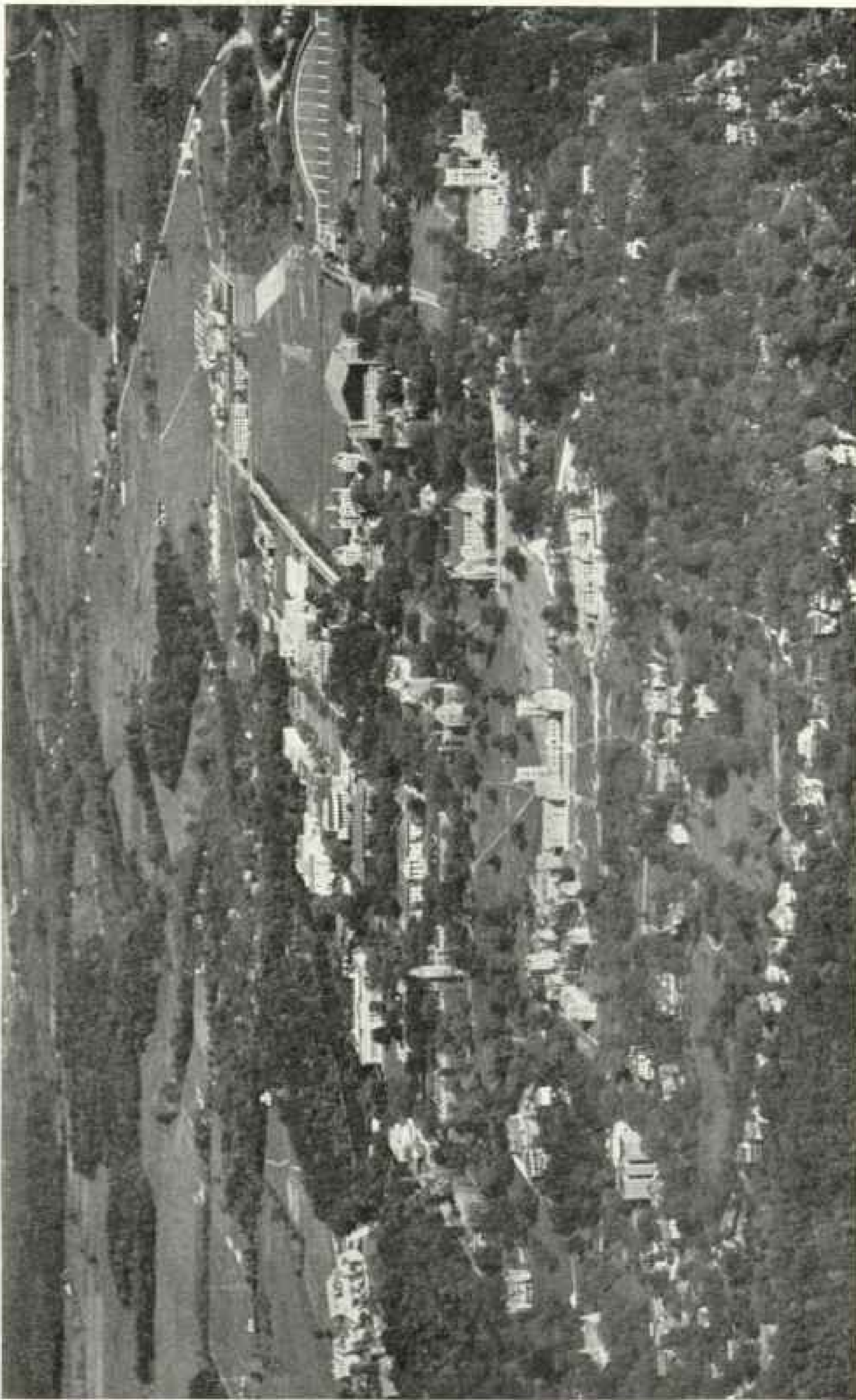
THE STATE FOREST NURSERY NEAR HORSEHEADS PROPAGATES CONIFERS TO ADORN THE COUNTRYSIDE



Photograph by George B. King.

FROM SYRACUSE SALT COMB SUCH PRODUCTS AS WASHING SODA, CHLORINE, AND BLEACHING POWDER

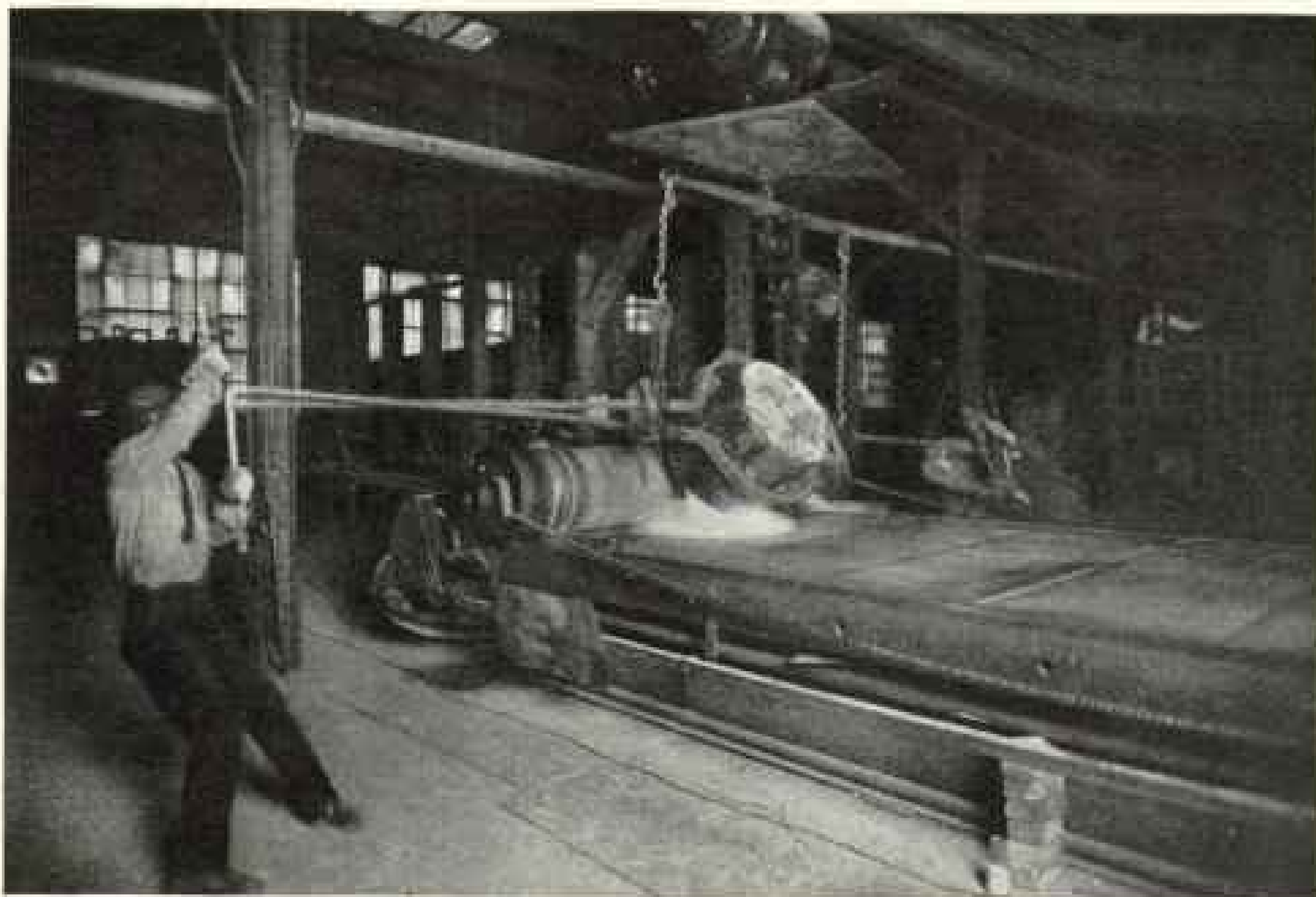
The salt is converted into brine by forcing fresh water into the underground deposits at Tully, twenty miles away. The brine in turn is pumped through pipe lines to the factory, where the water is evaporated and the white crystals are used in making many chemical commodities (see text, page 568).



Photograph by Troy Studier

CORNELL UNIVERSITY, AT ITHACA, IS ONE OF AMERICA'S GREAT SEATS OF EDUCATION

At the right is Cornell Crescent and at its left Drill Hall. To the left of Drill Hall and above (upper right) are the edifices of the State College of Agriculture. The rotunda next to the College of Agriculture is Bailey Hall, the university auditorium, and just behind it are the new Home Economics Buildings. Myron Taylor Hall, the law school, stands in the right foreground. The towered building at the center is the library, and to the left of it are the buildings of the famous Engineering College (see Color Plates II and III).



ROLLING LENS GLASS AT ROCHESTER

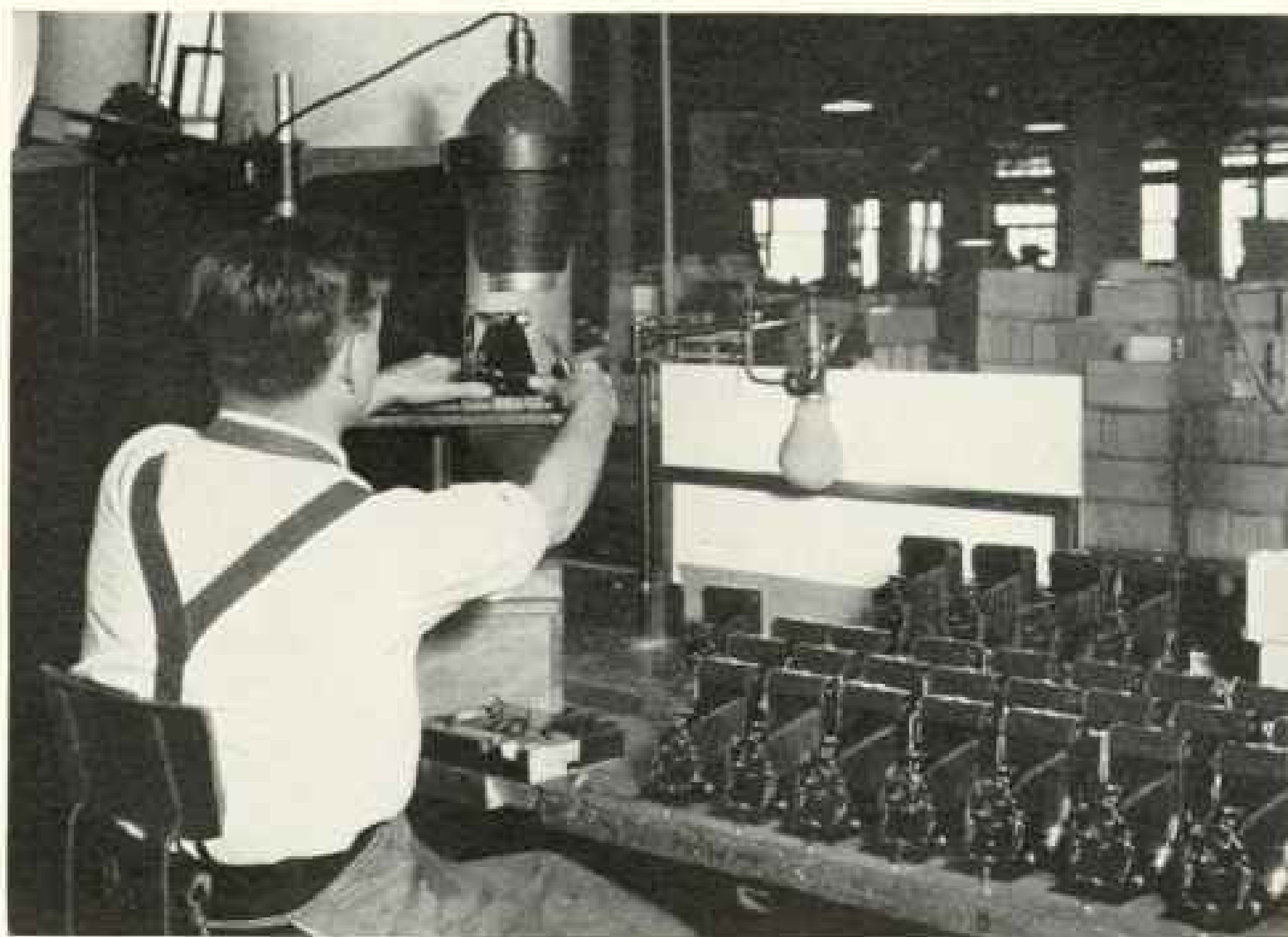
Poured on a heated steel table, the molten, white-hot material is flattened out with a huge motor-driven, heated steel rolling-pin. When it hardens sufficiently, the resulting pancake of glass is pushed into one furnace and then another until the annealing process is completed.



Photographs courtesy Bausch and Lomb Optical Co.

REMOVING GROUND LENSES FROM GRINDING BLOCK AT ROCHESTER

It is fascinating to follow the scores of operations through which perfect eyeglass lenses are produced. From the pouring of the glass, the cutting of the squares, and the curving of the lenses to the grinding and the testing, the thoroughness of the processes is matched only by the vast output of the factory (see text, page 568).



Photograph by Clifton Adams

A KODAK INSPECTOR ADJUSTS VIEW FINDERS

The Eastman Kodak works at Rochester also make 200,000 miles of motion-picture film annually—enough to make eight bands of film around the waist of the earth. Cotton from the sunny South, saltpeter from Chile, sulphur from Texas, wood alcohol from Tennessee, hides from the Argentine pampa, silver from Mexico, and potassium bromide from the salt brines of the Great Lakes are brought together in the manufacture of film (see text, page 568).

on the slopes that environ the inland lakes, because the warming waters of the latter cut short the frosts of the springtime and hold back those of the fall, add as much to the beauty of the area as they add to the prosperity of the region. The vineyards in the Chautauqua country and around Keuka Lake are especially noted, and the demand for grape juice continues apace, even in the face of 3.2 beer (see Plate XIII and p. 527).

Conservation has attained its best in New York and adds much to the lure of the Empire State. In 1932 a total of 50,000 acres of idle land was planted, a part of the 15-year program of reforestation which is expected to involve the acquisition and replanting of a million acres.

Six forest-tree nurseries are maintained with a capacity of 135,000,000 trees, with 50,000,000 available for replanting every year. Nearly 300,000,000 trees have been planted to date on the State's reforestation program. The Conservation Department maintains four game-bird farms, fourteen

fish hatcheries, thirteen fish-distributing stations, and eleven game refuges.

The Empire State is wedded to its inland waterways. Through its canal system as a whole it is possible to send ships of 10-foot draft and 300-foot length from New York City into Lake Champlain, to Duluth by way of Buffalo or Welland, or to Watkins and Ithaca by way of Seneca and Cayuga Lakes (see map, pages 520-1).

A NET OF INLAND WATERWAYS

Remembering that it was Clinton's four-foot ditch across the State that laid the foundations of her greatness (see page 515), and at the same time brought vast benefits to sister States as well as to herself, New York boldly undertook in 1905 to build the Barge Canal between the Hudson and the Niagara, with offshoots to Rochester, Oswego, and the Finger Lakes. It was opened in 1918. The total cost of this important waterway project to date amounts to nearly \$200,000,000.



Photograph by George R. King

MACHINES COMB HEMP PREPARATORY TO ROPEMAKING AT AUBURN

In the process it is necessary first to lay the fibers parallel. Then they must be twisted into threads, which in turn are twisted into strands. Several strands make a cord, several cords a rope, several ropes a hawser, and several hawsers a cable.



Photograph by Clifton Adams

WELLSVILLE REFINES EASTERN OILS

Kansas, Oklahoma, Texas, and California oil fields outclass the Pennsylvania-New York district in production volume, but the first American area holds its own for quality, putting out several of the famous brands of motor lubricants.



Photograph by Fairchild Aerial Surveys

THE BEGINNINGS OF A GREAT SPA

Saratoga Springs was long the summer rendezvous of the elite. Now the State is undertaking its development as a superb health center, with a monumental Hall of Springs and many bathhouses of the type of the Washington Baths pictured here.



Photograph by Clifton Adams

THE SENECA OIL SPRING, NEAR CUBA, NEW YORK

The University of the State of New York and the New York State Oil Producers Association jointly erected a marker which tells the spring's history. Discovered by the Senecas, who valued its oil for healing, it was permanently reserved to them under the Treaty of Big Tree, in 1797.

With the opening of the Barge Canal, Buffalo has seen herself soaring back into first place as the milling center of America, having passed both the Minneapolis-St. Paul and Kansas City districts (Plate X).

With its present facilities, the Barge Canal can handle about 20,000,000 tons of freight a year. Ships laden with sugar have made the voyage from Philadelphia and through the canal to Chicago in 17 days (see page 517).

To a large group in New York the Barge Canal seems a white elephant when they consider the interest and amortization charges. To another group it appears a most hopeful adventure in transportation. The latter point out that it has trebled its traffic in 10 years; that in all but two years since its opening it has shown an increased business, and that during the recent depression it has shown a consistent gain at a time when virtually every other line of transportation has been undergoing a shrinkage—and this in spite of the fact that its principal commodity, export wheat, is almost at a standstill.

Some have wanted to cede the canal to the Federal Government and get Uncle Sam to enlarge it. Studies of Army engineers indicate that this enlargement would cost \$500,000,000, or as much as the Panama Canal.

THE GREAT LAKES-TO-OCEAN WATERWAY

There is fear in many groups in New York that if the St. Lawrence ship-canal project is adopted, the international cross-roads of America will move from the mouth of the Hudson to the middle reaches of the St. Lawrence. The feeling of those who hold this view is that the Empire State will have to contribute a third of the funds for Uncle Sam's share in a project which, if it attains the success its proponents claim for it, will result in stifling New York. At the same time it will produce no corresponding benefit to the States of the West, but will yield immeasurable advantage to Canada, since transshipment will still be necessary, because, they assert, it is impossible to build ships equally at home in fresh and salt water.

New York has 69 cities with a population of more than 10,000, of which seven stand in the 100,000 class and six in the 50,000 class. New York City* has more than

half of the population of the whole State. Buffalo, the metropolis of Erie County, with its splendid system of parks connected by drives, boulevards, and parkways, ranks ninth among the industrial centers of the United States and is one of the ten leading ports of the world, although it lies at the foot of an inland lake (see Color Plate XIV and illustrations, pages 582-3).

No one could visit Rochester, with its falls, its beautiful parks, and its busy industries, without agreeing that here is one of America's most livable cities (see Color Plate VII). Rochester makes enough "movie" film every year to belt the earth eight times. Kodak Park has to "cook" four tons of silver every week, transforming it into nitrate of silver to make the emulsion for the films and photographic paper Eastman produces. Nearly 7,000,000 pounds of cotton linters go into the making of film, and there is a saying that on the smooth side film is first cousin to cotton and on the emulsion side cousin-german to sterling silverware (see page 565).

Cleanliness must be next to godliness when motion-picture film is made. A speck on Greta Garbo's nose or a splotch on Mary Pickford's cheek would ruin a picture. So the smokestacks of Kodak Park are among the highest in America, and 20,000,000 gallons of water a day are pumped out of Lake Ontario. The gelatine on your film is as chemically pure as that in the desert on your dinner table.

It is an impressive sight to see Bausch and Lomb melting tons of sand, mixed with chemicals according to the most accurate of formulæ, and then pouring the great pots of white-hot liquid upon a table and rolling it into the giant pancakes from which come most of the spectacles of America. For forty years the two founders of this concern toiled away before their business began to grow. But now Bausch and Lomb are known the world around and have one of the largest optical works on earth (see illustrations, page 564).

The Taylor Instrument Company, whose specialty is the manufacture of instruments for registering temperature, humidity, pressure, and the like, have a world of interesting processes, but none quite so fascinating as the manufacture of clinical thermometers (see page 579).

Syracuse is a radiant city in a beautiful land. Salt gave Syracuse its start, but today the community takes rank as one of the

* See "This Giant That Is New York," by Frederick Simpich, in the NATIONAL GEOGRAPHIC MAGAZINE, November, 1930.



© National Geographic Society

July Photograph by Clifton Adams

A LILY POND AT HOOSICK FALLS

In the ponds of Hoosick Falls about 100,000 roots of both hardy and exotic varieties of water lilies are planted annually, some of them imported from Japan, China, Egypt, and India. Lotus plants also are grown here.



(1) National Geographic Society

Finlay Photograph by Edwin L. Wheeler

A FAIRYLAND OF ICE AND SNOW IN THE ADIRONDACKS

Into such surroundings leads the new highway to the top of Mount Whiteface. Even the hardy ski folk pack their skis and lunches in motorcars for the ascent of the mountain.



© National Geographic Society

Photo Photograph by Edwin L. Weiland

A GOLDEN-HAIRED DAUGHTER OF THE VIKINGS ON SKI HILLS, LAKE PLACID CLUB GROUNDS

Hither come beginners to take lessons under such veterans of the skis as Erling Strom and Rolf Monsen. Children are particularly apt in mastering the use of these "sled runners." The mountains in the background form the ramparts of the Lake Placid Basin.



A CLASS IN THE STATE COLLEGE OF CERAMICS

The Legislature in 1900 founded a School of Clay Working and Ceramics, which it placed under the control of Alfred University. The school has since been raised to college rank, with four-year courses. The pottery pictured has been made by students and is ready for the kilns.



© National Geographic Society

Finlay Photographs by Clifton Adams

IN AN AMSTERDAM RUG FACTORY

This busy little city is one of the largest carpet-and-rug-making centers in the New World. The women in the picture are "finishers" adding the final touches. Amsterdam rugs and carpets provide foot comfort and decorative charm throughout America.

COLOR HIGHLIGHTS OF THE EMPIRE STATE



SWIMMING IN THE BLUE WATERS OF LAKE MINNEWASKA

The area between the Rondout and Wallkill valleys in the Shawangunk Mountains abounds in beautiful lakes, Mohonk and Awosting being rivals and neighbors of Minnewaska. Each has its partisans and devoted admirers. At Mohonk were held important early conventions to promote world peace.



© National Geographic Society

Finley Photographs by Edwin L. Wisner

PAIR PASSENGERS ON A "HUSKY" RIDE

Dog drivers with teams of Canadian "huskies" spend the winter at Lake Placid and bring the thrills of mushing in the Far North to civilization. Cobble Hill and Mount Whiteface are seen in the near and distant backgrounds, respectively.



© National Geographic Society

Finlay Photograph by Clinton Adams

THE PROSPECT FROM ANTHONY'S NOSE, LOOKING DOWN THE HUDSON TOWARD JONESPOINT

The road at the left leads to Peekskill; across the river is Bear Mountain. The Storm King Highway, running north on the west side of the river, passes West Point. Where it rounds the nose of the mountain of the same name, it has been blasted out of the face of the cliff.



© National Geographic Society

GRADUATION EXERCISES AT THE UNITED STATES MILITARY ACADEMY AT WEST POINT

From its founding in 1802 to date, West Point has graduated nearly 10,000 officers of the United States Army. The Secretary of War personally presents their diplomas. From General Swift's services in the St. Lawrence Campaigns in the War of 1812 to those of General Pershing in the World War, West Pointers have added to the renown of their Alma Mater.

Display Photograph by Clifton Adams



THE RESTORED SOUTH PLATFORM AT FORT TICONDEROGA

Built by the French in 1755, this old fort changed hands repeatedly during the quarter of a century that followed. Crown Point and Ticonderoga were the keys to New York from the days of Champlain to those of Washington.



© National Geographic Society

Finlay Photographs by Clifford Adams

A "KILLARNEY" OF THE ADIRONDACKS

Lake Pleasant, with the town of Speculator on its north shore, was chosen by Gene Tunney as a training camp while maintaining that physical fitness required to hold a world athletic championship.

most versatile in America (see pages 543 and 562). Famed for its typewriters, air-cooled automobiles, office furniture, and other nationally used products, Syracuse is also distinctive as the capital of the Six Nations. Here the sachems of the several tribes meet in "The Long House," as they met centuries ago, to consider the problems that have changed so vastly since these powwows began.

TRACES OF "THE LONG HOUSE" REMAIN

A pitiful remnant of a once mighty Nation they constitute. Their reservations are islands in the jurisdiction of the State of New York.

Their Indian ancestors were admittedly a great race. From the Carolinas to Kentucky and from Maine to Minnesota their fame and their prowess were household words. Their sense of justice and their unexampled courage were matched only by the terror of the vengeance they exacted when they felt themselves wronged.

It is doubtful whether one person in ten would guess the fifth city of New York. It is Yonkers. Adrian van der Donck, who once owned its site, was a young Dutch nobleman, or *Jonkheer*, and it was an easy transition to Yonkers from *Jonkheer's* land.

The city has some of the largest carpet factories, sugar refineries, and elevator plants in America.

Few States have capitals so fortunately located or capitals with as rich a history. Four of New York's six Presidents have been Governors of the State—Van Buren, Cleveland, and the two Roosevelts—and have lived in Albany. Another son of New York who won the Presidency by vote of the people, but lost it at the hands of the Electoral Commission, was Governor Samuel J. Tilden.

With its new port, dedicated to world trade in 1932 and capable of accommodating 90 per cent of the freight ships afloat, Albany proudly heralds to the world that it is the second freight transshipment center in the United States (see page 514).

Utica, a fair city of the Mohawk Valley, is a center of the knit-goods industry in America.

Schenectady made a bold bid for position among the cities of the State in the 100,000 or more population class, under the 1930 census, and came only a few thousand short. As the home of the General Electric Company, where Steinmetz, Coolidge, and Long-

muir have delved so deeply into the mysteries of matter and have made many an apparently unfathomable secret arise to serve the needs of everyday life, Schenectady has become a household word in America.

The designation of the research laboratories of the General Electric Company as "The House of Magic" may not be a very apt one from the standpoint of the earnest scientists who labor there, but to the layman who visits that land of the wizard explorers of natural law it fits. Temperatures that transform the most evanescent gases into solids match others that transform the most refractory solids into gas; revolving disks that mechanically fly, but optically stand still, becoming four wheels turning in opposite directions, play a score of tricks on the eye; photo-electric cells assort objects by their color; apparatus that whistles when smoke comes its way arouses wonder. These are but few of the hundred playthings constructed here that soon evolve into products on the markets of the world (see pages 549, 551).

SCHENECTADY LOOKS TO THE FUTURE

Household air-conditioning plants constitute the next step beyond household electric refrigeration, and will follow the telephone, the radio, and the electric refrigerator into your house and mine.

The General Electric Company is now building a new type of boiler that will make coal contribute about twice as much power as it ever has yielded before. The coal makes "steam" out of mercury. That "steam" drives one turbine. But when mercury vapor has finished its work, it still has heat enough to make steam from water, which in turn drives another turbine.

One finds it almost impossible to conceive of the immense power generated by some of the other types of big turbines produced at Schenectady. Some of them have been built with a rating of 160,000-kilowatt power—power enough and to spare for raising a 1,000-ton ship 59 feet every second.

Binghamton, strikingly located astride the eastern branch of the Susquehanna, is making a bid for a place beside Rochester in the manufacture of photographic supplies. The shoe factories of the neighboring town of Endicott turn out footwear known far and wide.

Troy is a mild-mannered city; but, for all that, it makes America and much of the



Photograph by Clifton Adams

HERE MARK TWAIN MADE THE WORLD HIS DEBTOR

In this octagonal study on the Quarry Farm near Elmira, Samuel L. Clemens penned much of his most enduring work. Parts of the classics of American boyhood, "Tom Sawyer" and "Huckleberry Finn," were composed before this fireplace.

world wear its collars. In one factory there I found a museum of autographed collars with the signatures of such notables as Theodore Roosevelt, Ramsay MacDonald, the Prince of Wales, Woodrow Wilson, Georges Clemenceau, and Admiral Togo. Four-fifths of all of the collars made in America are manufactured in this city at the head of navigation on the Hudson. Troy is also noted for shirts (see page 544).

As one of the homes of Mark Twain, Elmira has made the world its debtor. Quarry Farm is a shrine of New York as much as Cooperstown and Irvington. Mark Twain's ashes rest in the local cemetery, but his spirit roams wherever people love humor.

After extensive investigations, the National Glider Association selected the Elmira section as the ideal spot for its annual meetings and competitions. With a terrain closely answering to the needs of gliding contests and with air currents meeting the conditions required for powerless aviation, Elmira was a ready choice (see Color Plate XI). A prize has just been set up for the first racer who will make the full 166 miles from Elmira to New York City in a single glide.*

As the home of the American - La France fire-engine factory, Elmira has given protection to almost every city in the land and has quickened the pulses of small boys who have watched fire apparatus answering an alarm (see Color Plate II).

Jamestown is a famous center of metal furniture manufacture. A large colony of Scandinavian metal workers has settled there, and the annual output of the furniture factories of the city and surrounding country was

valued at \$27,000,000 by a recent census.

Chautauqua County, of which Jamestown is the principal city, is at once New York State's major grape-producing area and its most historic meeting place of summer religious and educational assemblies. On the shores of the beautiful lake of the same name, the Chautauqua idea was born. It swept to the ends of the Nation before its growth was arrested by the modern competition of motion pictures and automobiles.

Poughkeepsie, with her boast as the Queen City of the Hudson and her intercollegiate

* See "On the Wings of the Wind," by Howard Siepen, in the NATIONAL GEOGRAPHIC MAGAZINE for June, 1929.

boat races, and Amsterdam, the second city in the world in the production of rugs and carpets, are important communities (see Color Plate XX).

Watertown, where the Five- and Ten-Cent-Store idea was born, when Frank Woolworth persuaded a local merchant to let him set up a five-cent table in the former's department store, is the largest city in northern New York.

All Americans hold Newburgh in reverence as the place where Washington repelled the idea of a crown, and for its Hasbrouck House, now a State shrine, where he bade his army farewell.

ROME A PIVOT POINT IN HISTORY

It is pleasant to wander up to Rome, where old Fort Stanwix stood, for here the American flag received its baptism of fire under circumstances that will be forever heroic in the hearts of the American people.

Hither came Col. Peter Gansevoort to defend the Mohawk Valley from the invasion of the British, Tories, and Indians, who were marching to the Hudson for a junction with Burgoyne under St. Leger. Out of a commandeered white shirt, a drafted red petticoat, and an impressed blue blouse, they were able to fashion a flag of accepted design.

While Gansevoort defended the invested fort, brave old Gen. Nicholas Herkimer was marching to his relief with a force of militia. Ambushed at Oriskany, Herkimer was wounded; but, propped up on his saddle beneath a tree and smoking his pipe, he continued to give the orders which made possible the sortie and the victory at Fort



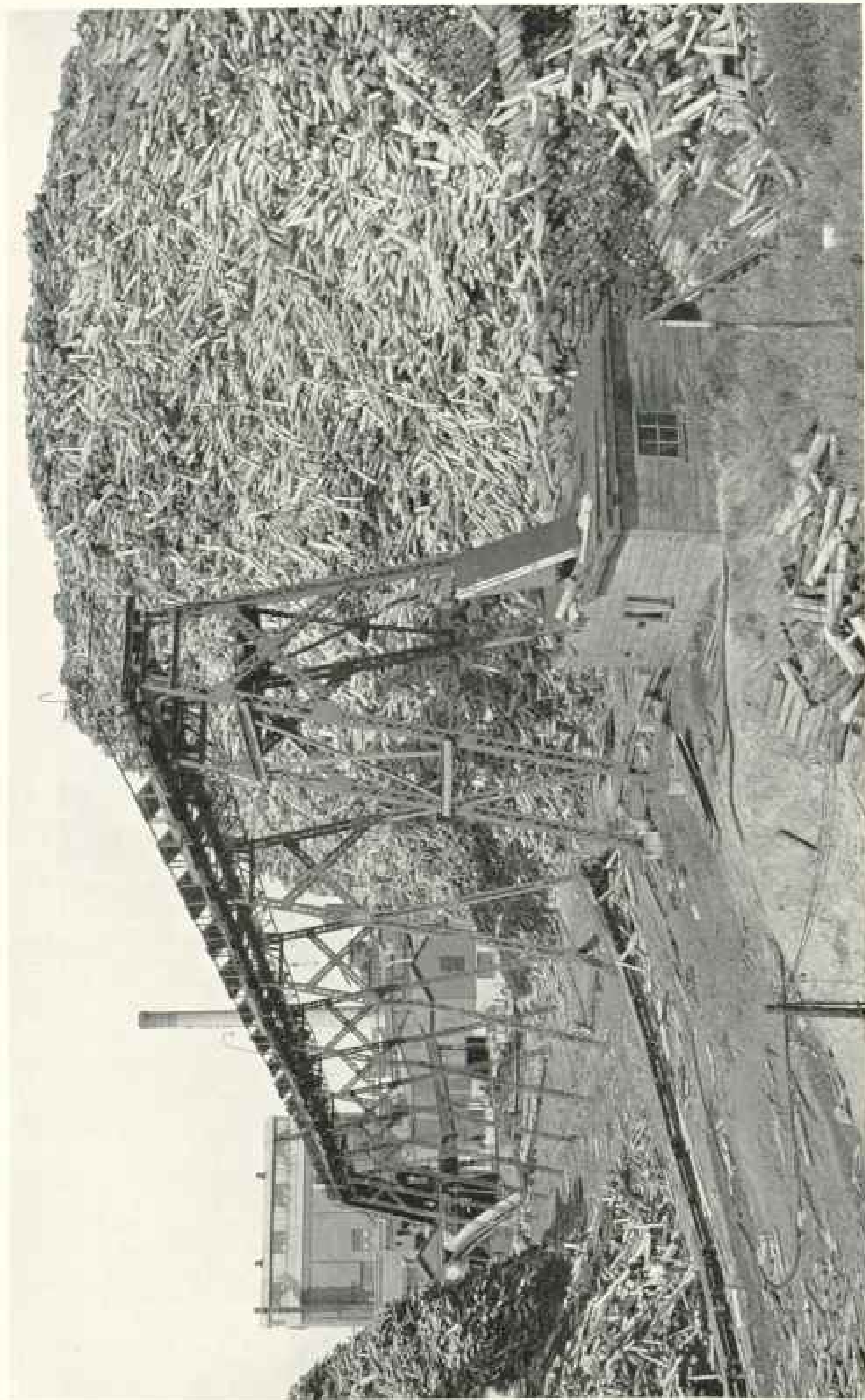
Photograph from the Taylor Instrument Co.

CLINICAL THERMOMETERS MUST BE ACCURATE

After the infinitesimal thread of mercury has been pumped into the tube and the thermometer has been allowed to cure, its 212° mark is fixed and the whole scale laid off. The operator at the right is inspecting and checking calibrated instruments (see text, page 568).

Stanwix and the rout of St. Leger and his Tory and Indian followers. Without the victory at Fort Stanwix, there might have been defeat at Saratoga.

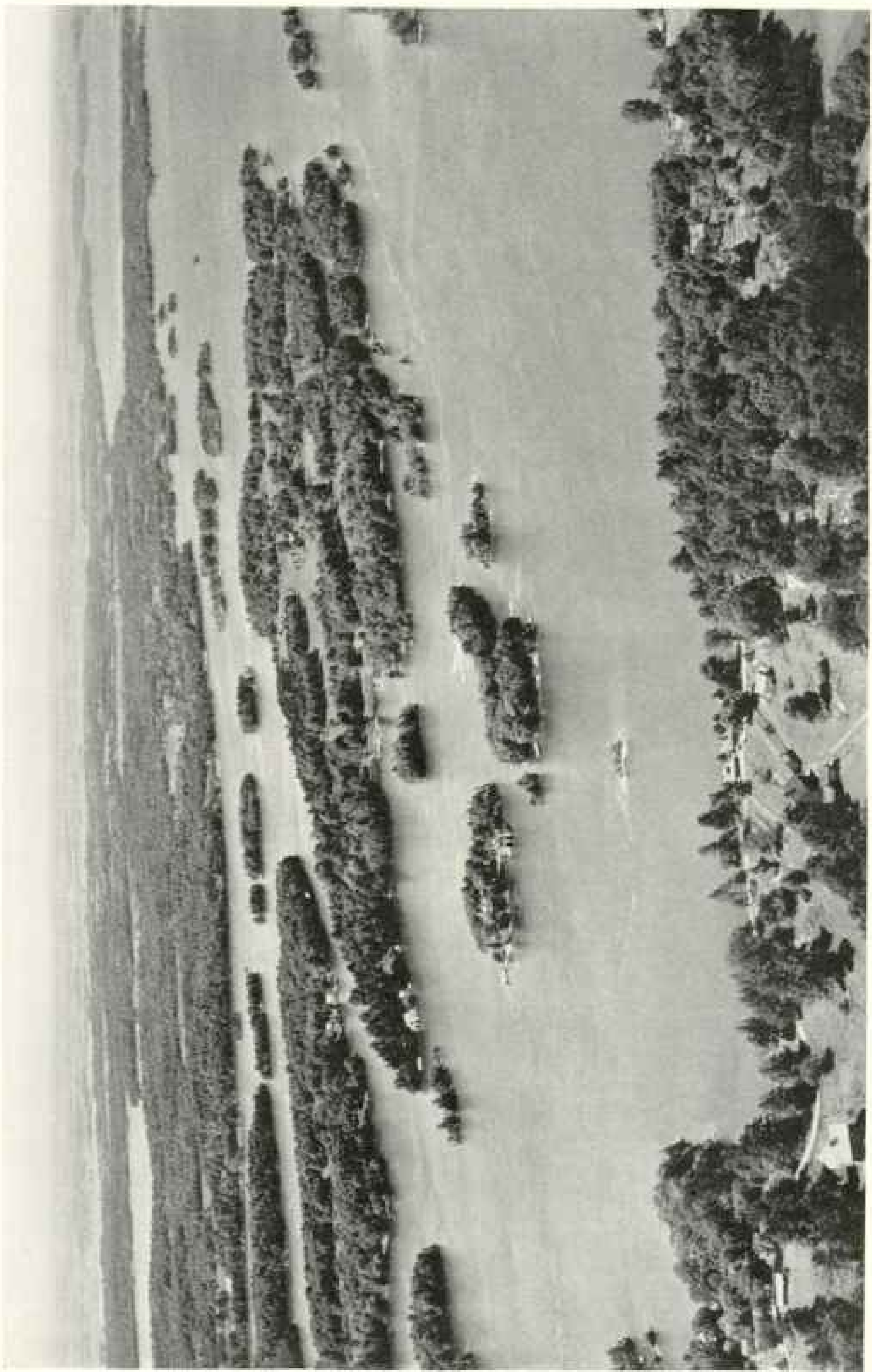
Mount Vernon, New Rochelle, and White Plains, triple towns of Westchester; Auburn, Ithaca, and Geneva, a triad of gems that bedeck the Finger Lakes; Corning, with its plants specializing in high-grade glass; Gloversville, with its hundred glove factories; Oswego, with its dreams of becoming the Great Lakes gateway to the Hudson; Ogdensburg, with its anticipation of the triumph of the St. Lawrence International Waterway idea; Oneida, with its striking organization that has made



Photograph by Clifton Adams

YOUR MORNING PAPER MAY HAVE COME FROM THIS PULPWOOD PILE AT AN OGDENSBURG MILL.

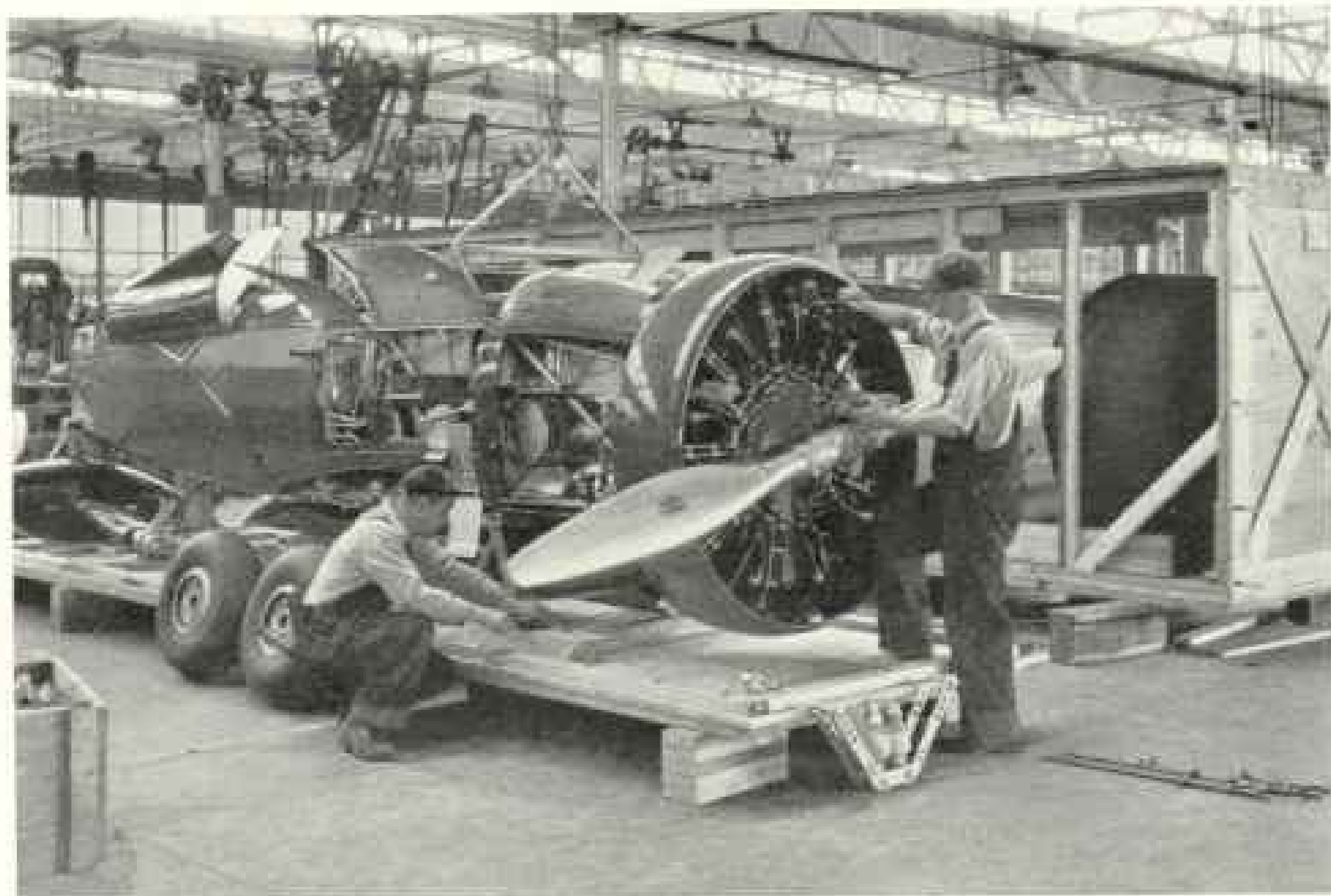
New York manufactures more paper than any other State in the Union. In 1929 the value of its output was approximately \$1,500,000,000. Michigan took second rank with a \$97,000,000 production. Maine, however, took first place by a very narrow margin over New York in the wood pulp used. Each State had more than a million tons to its credit.



© Canadian Airways Limited.

THE ST. LAWRENCE RIVER FLOWS MAJESTICALLY AMID THE THOUSAND ISLANDS

No river has a more glorious beginning. Born as the spillway of the Great Lakes, it races through the enchanted isles at its head, as if stirred by its new-found freedom. Indians called the area "The Garden of the Great Spirit." Champlain exclaimed, when first he beheld it, "Les mille Isles!" An actual count revealed more than 1,600 islands.



Photograph from Curtiss Aeroplane Co.

PURSUIT PLANES ARE BUILT IN A BUFFALO FACTORY

Destined for shipment to China and Argentina, they help to give the Empire State approximately one-fourth of the aircraft manufactures of the Nation.

Community Silver famous throughout America; Cortland that overlooks most cities in the State in point of elevation—all of these municipalities bear witness to the versatility of the Empire State and prove that the esthetic and the industrial can march hand in hand.

Nor can we forget Seneca Falls, where bloomers first bloomed, where woman's rights exponents held their first convention, and where enough pumps are made every year to win for it the jocose nickname of Pumpstown.

There are literally scores of other live communities, like Auburn and Batavia, Canandaigua and Dunkirk, East Aurora and Fulton, Geneva and Hornell, Ithaca and Johnstown, Kingston and Lockport, Malone and Norwich, Olean and Penn Yan, Rye and Salamanca, Tonawanda, Valley Stream, and Whitehall, that are pleasing stars in New York's galaxy of municipalities.

A STATE OF MANY UNIVERSITIES

The educational system of New York has kept pace with every other major activity of the State. Enrolled in its universities, colleges, and professional schools were 150,-

000 students in 1930, which was more than twice as many as there were in any other State in the Union.

Although there never has been a State university and probably never will be one, the "Regents of the University of the State of New York" are one of the most influential bodies in the whole field of higher education.

The problem of higher education has been solved in a different way from the method used in most States. Instead of setting up a State university, this Board of Regents every year awards 750 scholarships, five to each assembly district, to that number of boys and girls. These scholarships entitle them to tuition through to graduation in any approved college in the State.

Scholarships are not awarded on the basis of a competitive examination after high-school graduation, but rather on the full four years' record in the high-school course. The State students are therefore the cream of the product of the high schools.

New York University is the largest institution in the State in the size of its student body, the total enrollment having recently passed the 40,000 mark. Columbia stands



Photograph by Fairchild Aerial Surveys

NIAGARA SQUARE IS THE HUB OF BUFFALO

In the metropolis at the foot of Lake Erie center the heavy industries of the Empire State. Its more than 3,000 factories cover four-fifths of all the lines of manufactures in the United States.

second, with nearly 38,000 matriculates, and the College of the City of New York, with 32,000 students, ranks third. There are nineteen universities and colleges in the State which have an enrollment of more than a thousand each.

Syracuse and Cornell, Fordham and Rochester, Hunter College and St. John's College of Brooklyn, all have student bodies of more than 5,000 and their work is known throughout the land.

West Point and Vassar, Barnard and Colgate, Adelphi and Elmira, Hamilton and Union, Wells and Hobart—but what is the use of trying to exhaust the list of fine institutions with fascinating histories in an empire like the State of New York?

A GALLERY OF HEROES

No State has laid fewer claims for the great men that have ennobled her history than New York; and yet, when we take account of the achievements of those who have wrought mightily in the making of America, we see that New York has produced many national heroes.

It was Sir William Johnson who saved the day for the Colony when its extinction

was threatened by the French. No man ever understood better the Indians' mental processes or won more fully their confidence than did Johnson. It is hard to believe our Nation could have won its freedom but for his work in pre-Revolutionary days.

The rôle of Gen. Philip Schuyler was somewhat dimmed in the Saratoga campaign by the impatience of the Congress and the advancement of Gates, but modern historians agree he had so maneuvered his forces in the Burgoyne campaign that the victory reaped by Gates was all but inevitable, and that Gates reaped where Schuyler had sown.

No one can truly evaluate the contributions of leading men to America without giving to Alexander Hamilton high rank among the immortals who brought the Nation into being and gave it the direction that has led it to its present power and influence.

Heading one school of thought, as Jefferson headed another, in the shaping of the Federal Constitution, Hamilton was forever Jefferson's bitter opponent. But, for all that, the historic instrument is the outgrowth of the welding together of the best there was in the political philosophies of



Photograph by Clifton Adams

FRONTIER CUSTOMS INSPECTORS AT ROUSES POINT HAVE THANKLESS JOBS

But on both sides of the Canadian border they seem bent on making the crossing of the line as pleasant as the regulations under which they work will permit.

both. Although John Adams himself once referred to Hamilton as that "—— brat of a Scotch peddler," Hamilton was the confidant of Washington and accepted son-in-law of Gen. Philip Schuyler.

While the world will ever acclaim the service of Thomas Jefferson in connection with the Louisiana Purchase, one needs only to look a little deeper to see how much America owes Robert R. Livingston in the acquisition of that immeasurably important area for America!

It was William H. Seward who had the vision to foresee something of the future of the huge peninsula of Alaska and it was his negotiations that led to its acquisition by the United States from Russia. His foes, in derision, called Alaska "Seward's Ice Box," but the whole country rejoices in what our fathers called "Seward's Folly."

Grover Cleveland's vigorous paper on the Venezuelan Boundary case gave new strength to American foreign policy and marked a new era in our international relations. In the perspective of history he will doubtless rank among the truly great who have occupied the Presidential chair and guided the destinies of the Nation.

Of the 77 Justices who have been members of the Supreme Court of the United States, ten have come from the State of New York. To John Jay, George Washington entrusted perhaps the most difficult task of the new Government, the organization of the Nation's court of last resort. Three New Yorkers now have seats on that august bench: Chief Justice Charles Evans Hughes, and Justices Harlan F. Stone and Benjamin N. Cardozo.

New York! A Redskin dominion before becoming a Paleface empire; land upon which pivoted world issues in colonial times and the fate of the United States during the Revolution and the War of 1812; devoted friend of Washington in guiding the destinies of a nascent Nation; pioneer, bringing the trade of the Mississippi Valley to the sea; in due time the Empire State! Perhaps nowhere else in the wide, wide world is there so much of scenic beauty, romantic history, vital industry, commerce, and financial potency bound together in an area of equal proportions. The traveler leaves you with regret, but with a new appreciation of your past and present and of the destiny toward which you move!

A JOURNEY BY JUNGLE RIVERS TO THE HOME OF THE COCK-OF-THE-ROCK

Naturalists Enter the Amazon, Voyage Through the
Heart of Tropical South America, and Emerge
at the Mouth of the Orinoco

BY ERNEST G. HOLT

LEADER OF THE NATIONAL GEOGRAPHIC SOCIETY VENEZUELA-BRAZIL EXPEDITIONS

With Illustrations from Photographs by the Author

OUR big freighter had won her game of hide-and-seek with a West Indian hurricane, and now, 13 days out of Jacksonville, she stood against a sullen brown flood from the southwest. She had steamed against it all day long, alone except for occasional native boats, whose sails of brown, blue, or red gave promise of a colorful picture to come. Over the starboard rail there was nothing but muddy sea and night's darker canopy; on the port beam, only a low black line along the horizon. Then the quartermaster put over the helm, the ship slipped to leeward of the end of the black line—and we caught our breath.

The familiar smell of salt spray was gone from the easterly trades. In its stead came a delicate perfume, hauntingly sweet, the entrancing odor of wet earth, of leaves, of blossoms unseen; while above the low black line rose a dull-red three-quarter moon etched with a fretwork of branches.

Another turn and the electric lights of Pará (Belém) blinked through the darkness; a startling rattle of anchor chain, a splash, and we had arrived in Brazil.

MARKING AN UNEXPLORED BOUNDARY

Two years before, Brazil and Venezuela had determined to mark their common boundary, which, according to treaty, follows the watershed of a rugged chain of mountains that extends from British Guiana more than 900 miles southwestward to the banks of the upper Rio Negro. Because this remote region was not only geographically unexplored, but was totally unknown zoologically, the National Geographic Society had obtained special permission of the governments concerned to attach a party of naturalists to the official commissions appointed to carry out the

boundary demarcation. It was my privilege to be intrusted by The Society with the natural-history investigations.

The first work was done during the dry season of 1929-1930.* On that expedition our party traveled with the Venezuelan Commission from Ciudad Bolívar up the Orinoco and down the Casiquiare to join the Brazilians on the frontier, but transport difficulties and the consequent loss of time prompted the Venezuelans to approach the international boundary this season from the southern side.

Accompanied by Charles T. Agostini and Emmet R. Blake, I had come to rejoin the Commissioners, through whose splendid coöperation our investigations had gained such a propitious start in the previous season. The rendezvous was Manaus, nearly 900 miles up the Amazonas (Amazon), one of the mouths of which we had just entered (see map, page 589).

"There are few situations more intriguing to the traveler," writes another who has ridden at anchor here, "than to be lying at midnight off Nossa Senhora de Belém do Grão Pará.

"Blackness toward the west, and silence. How it calls to the heart of a wanderer! Naked Indians on the shores of the Xingú. Alligators basking in the mud. Birds of gorgeous plumage and strange fruits. . . . It pulls with the force of a primal passion."

Since 1500, when Pinzón filled his casks from a sea of sweet water while yet no landfall was made, and especially since 1543, when Orellana returned to Spain to spread tall stories of female warriors and a golden city of Manoa, this mightiest of rivers has kindled imagination.

* See "In Humboldt's Wake," by Ernest G. Holt, in the NATIONAL GEOGRAPHIC MAGAZINE for November, 1931.



ON THE EQUATOR EVEN THE RIVETS CAST SHADOWS STRAIGHT DOWNWARD

Messrs. Blake and Agostini climbed to the top of the funnel as the steamer crossed the line a short time before reaching Pará.

A stream that opens its mouth so wide that the Thames, with all the kinks ironed out, would barely reach from lip to lip, gargles an island larger than the Kingdom of Denmark, and every second spews forth 4,000,000 cubic feet of muddy water to stain the ocean for 600 miles, still quickens the pulse. *O Rio Mar*, the Brazilians call it, the River Sea.

COLORFUL PARÁ

And as the *Biboco* swung idly with the tide that evening, even our traveling salesman stood staring into the night as if he would pierce the blackness and discover for himself that which Orellana had sought—a way out. He had been sent to the Amazon to sell pickles and baked beans to a people who will no doubt still be wedded to dried fish and manioc when the Yankees have repudiated pie!

Pará amply fulfills the promise of her sailboat heralds. From those same sails, now massed in the morning sun at the fish wharf, and from the market square, thronged with housewives and servants come to select the day's menu from gorgeous piles of fruits and vegetables, to the calcimined walls, the outdoor murals, and even the roofs, the eye is assailed by a riot of color almost incredible to one newly arrived from the more somber North. Colors here may scream, but never clash. A house of shell pink may abut a neighbor of orange or of cobalt blue, and the result, under these magic skies, is harmony. Perhaps the real magic, though, lies in mellowness.

Founded in 1615, Pará looks every day of her 300-odd years, and belies her looks. Aside from a few churches, it is doubtful whether there are many buildings really old. Grasses and weeds lift defiant heads



Photograph by Capt. Albert W. Stevens

BUSINESS AT PARÁ CENTERS AT THE WATER FRONT

The boat basin which indents the shore line beyond the park and plaza is called *Doca do Ver-o-Peso* (Dock of the See-the-Weight). At the right of it stands the four-spired market.

from the crevices of roof tiles and the cobles of the streets, and blotches of mold and lichens creep inexorably over the walls. But these bespeak the exuberance of the Tropics rather than senility. The mellowing effect, however, is the same.

Notwithstanding her age and her population of more than 236,000, Pará is still beleaguered by the jungle. She is at once in and of the jungle. While she must fight ceaselessly to prevent recapture of her streets, even her houses, it is to the forest that her nonindustrial, nonagricultural people owe their very existence.

Wild rubber for a time made Pará's name a household word in the industrial world. Rubber has since fallen upon lean days, but the people have merely turned to other gifts of the forest, though less effectively. Warehouses that once reeked of crudely smoked latex now are heavy with the sickly

sweet, copralike odor of Brazil nuts, or are piled high with conical bales of piassaba.

The city is clean, neatly ordered, and up-to-date, despite an economic depression that has endured for more than 20 years, since 1910, when the rubber boom burst like an overdistended toy balloon. There are tramways, motorcars, telephones, motion-picture theaters, and parks that are a delight to the soul.

Yet there must needs be a fly in the ointment. The water supply still dribbles inadequately from three old tanks set together on an iron tower halfway up from the docks. Only he who, soaped from head to heel, has had the bath shower suddenly sicken and die can justly appreciate the joyful spurt from a faucet with 75 pounds' pressure behind it!

When the day is done, the Pará merchant pulls down the rolled iron shutters



Photograph by Charles Martin

THE COCK-OF-THE-ROCK MERITS HIS SPLENDID CREST

Most beautiful bird in the world, the author calls this shy dweller of the deep forest (see text, page 621). So wary is it and so dark are the fastnesses in which it lives that his camera could not catch it alive in its native haunts. This specimen from the Serra Imeri has been mounted by one of the taxidermists of the National Museum, Washington, D. C.

of his shop, eludes his business cares in the dark, narrow streets down town, and slips away to the gay neighborhood of the Grande Hotel. Here the young people promenade in the park while the band plays, or meet for the cinema. It is here, too, that one finds the *Americanos*, gathered about little spider-legged tables on the sidewalk beneath fine old mango trees.

But it was not for us to drop into these delightful ways of life. We docked at Pará on a Saturday, but, thanks to the kind offices of United States Consul George E. Seltzer, our supplies and equipment were soon passed through the customs, and we

sailed for Manáos next morning on the *Belém*, of the Amazon River Steam Navigation Company.

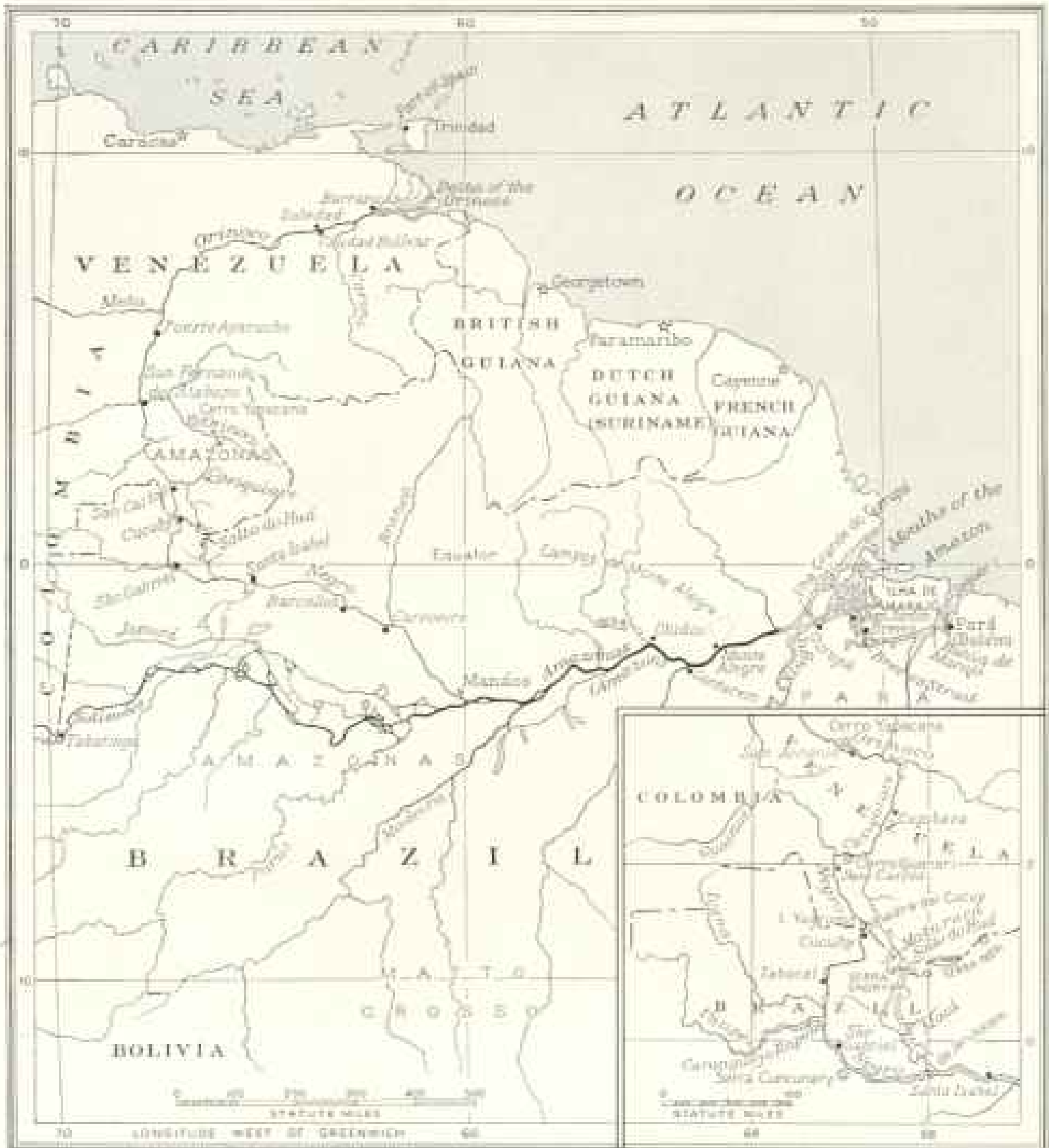
A big, twin-screw triple-decker she was, blunt-nosed and square of stern, perfectly designed in the Netherlands for the comfort of the Amazon traveler. A crowd packed her decks when we came aboard; but a blast from the whistle started an epidemic of back-patting, some tears, and a general rush for the gangplank; and when the confusion subsided we were left with a mere handful of passengers. Here, as at home, the *bon voyage* is a fetish, though with more reason in a region where all travel is by water and cities are days instead of hours apart—where the journey from Pará to Manáos, for example, requires more time than the passage of the North Atlantic.

Wherever privacy is not essential, solid wood is replaced by wire screen in the construction of the cabins to permit a maximum of ventilation while assur-

ing protection against mosquitoes. Even during the day, therefore, the staterooms are comfortable unless struck by the sun. Nevertheless, most of the native passengers use them merely as dressing rooms and spend much of the day as well as the night in their hammocks, which are slung in a place especially provided on the top deck.

FOUR MEALS AND BERTH, TWO DOLLARS!

This custom may account in part for the fact that a passenger in pajamas is considered fully dressed. But if he appeared in shirt sleeves, no matter how immaculate, he would be thought ill-bred.



Drawn by A. E. Haldstuck

THE EXPEDITION TRAVERSED NORTH-CENTRAL SOUTH AMERICA

Landing at Pará, the naturalists proceeded by native steamer up the Amazon to Manaus; thence up the Negro to Santa Isabel. There they joined the Boundary Commission's flotilla to work up the Casiquiare and Maturacá to the Brazil-Venezuela line. The return journey was made via the Casiquiare.

Much time is spent at two long parallel tables on the open second deck aft of the staterooms. Here, if one would view the shifting panorama of river life and scenery, he has only to lift his eyes from his plate. But that is not easy; there are many plates, and the native dishes are good.

The daily round begins with coffee at 6:30, to be followed by a 5-course breakfast at 11, tea at 3, and a 6-course dinner at 6:30, just after sunset. At 8 p. m. a

steward chases about the deck and serves black coffee to any loiterer he may find.

For eight full days of such meals, a berth for eight nights, and transportation for nearly 900 miles, the fare, at the rate of exchange then prevailing, was just \$15.40! But the company draws the line at soap and towels, and the passenger who would wash must supply his own.

The first day we steamed northward along the eastern shore of Jaguar Island,



THE "JACARETINGA," A SMALL ALLIGATOR, IS OFTEN SHOT FOR FOOD

Only the tail is used. The four muscular bundles that make of it such a powerful weapon, when cut into fillets and fried, are not unlike fish in flavor. The peon is wearing on his chest an old-fashioned porous plaster—for health, not for ornament.

rounded its point into the vast expanse of the *Bahia de Marajó*, and lost ourselves in monotony. Upstream and down, only the indistinct blending of sky and water marked the horizon; to right and left, a level blue line of tree tops indicated the position of the distant shores, all detail obliterated by a haze of water vapor that made binoculars useless for studying even the nearer islands.

Little left to look at besides the brown river itself, its surface whipped by the trades into short, choppy waves, we followed the lead of the native passengers and turned in for a siesta.

Just before sunset we entered *Breves Strait*, one of numerous deep, narrow, winding channels through which the tide ebbs and flows between the *Pará* estuary and the Amazon proper, and which dissect the terrain into a maze of jungle islands. Here we tied up at a small place to take wood for the boilers.

So insatiable are these iron maws that wood stations have become typical institutions of the low country and account for

most of the steamer's stops during the first two days. For hour after hour, sometimes far into the night, men and boys with coppery torsos gleaming with sweat run across the plank in endless line to dump 10-stick loads with resounding thumps on the steel deck (see page 592).

Such energy and endurance confound northern notions about the lethargy of the Tropics! Some of the boys are so small that only their widespread toes peep from beneath the gunny sack worn like a monk's hood to guard against crawling things.

If one boat consumes so much wood, what of the hundreds that have plied this route since the first steamer paddled the Amazon in 1852? Yet clearings, even about the wood stations themselves, make scarcely a break in the green walls that spring from the very water. And the huts of thatch that straggle along the channels stand on piles in the river's edge, as if refused a land hold by the jealous forest. Nature tolerates no bare ground.

Mangroves persist for a time, alternating with rank beds of giant arums and other



WIRELESS AND A BEACH UMBRELLA CONQUER THE WILDERNESS

The Brazilian Boundary Commission maintains permanent headquarters at Manãos, with which field parties keep in communication by radio. Since the designated hour for messages was from 11 a. m. until noon, the operators found good use for a gaudy sunshade.

aquatic plants to form marginal tangles beloved of the anachronous hoatzin. Behind them rise ranks of the graceful assai or the indispensable *miriti* palm, sometimes in immense stands; yet both are but components of a forest of amazing complexity—a forest of figs, Cecropias, rubber trees, hardwoods of a hundred species; little trees and big, whose white boles shine through enmeshing lianas like bleached skeletons entangled in gallows ropes (see page 594).

Towering above them all, giant Ceibas fling orchid-bejeweled arms wide to the sun. They are monarchs among trees, but, like all the rest, slaves to the vine!

SAILING A SWEET-WATER SEA

Mid-morning of the third day we passed the little whitewashed town of Gurupá, atop the high right bank, from which steps descend to small piers. At one side were brown walls of an ancient fortress, and a mildewed church on a green, close-cropped lawn. We were now in the Amazon proper, though this part is only a channel around the southeast side of Gurupá Island.

Above Gurupá, the Xingú discharges waters collected on the plateau of central Matto Grosso, hundreds of miles to the south. Somewhere near its sources the gallant British explorer, Col. P. H. Fawcett, disappeared in 1925. On his last previous expedition, five years before, he had taken me as his sole companion into that same wild region, and had played godfather at my baptism into wilderness exploration.

Before long we were again steaming between banks so remote that little could be discerned on them. However, they were notably higher and clothed with forest of a new type. These wide reaches of open river are usually placid enough, but are occasionally swept by squalls that give a nasty time to any small boat caught far from shore.

No matter how many travel books he may read, the newcomer to the Amazon is never prepared for the reality. He is impressed according to mood. He may turn his gaze ahead to a distant horizon with no thin hazy line of shore intervening between blue and brown, and let his imagination



WOOD CARRIERS TOIL TO FEED THE RAPACIOUS ENGINE FIRES

Despite the enormous quantity of timber cut as fuel for the steamers that have paddled the Amazon for some 80 years, the forest does not retreat (see text, page 590).

wander the width of the continent, to where the river takes its source in Andean snows within sight of the Pacific; or he may look into its depths and see only mud.

My own impressions are of too much water, too much food, languorous weather, and the inevitable result of the combination. But we never missed the cool evenings on the top deck, or the splendor of sunsets such as only tropics—and deserts—produce.

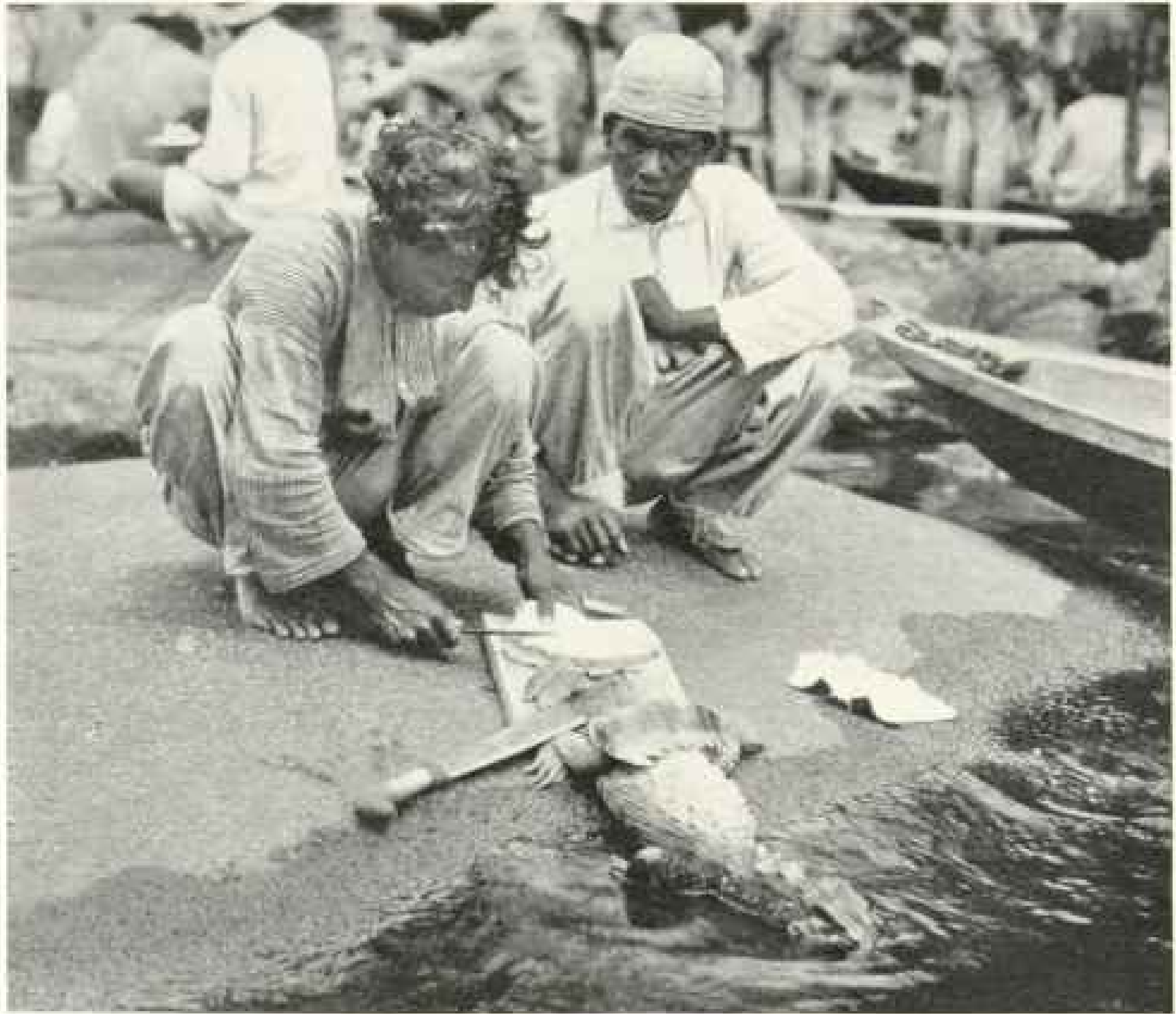
One does miss the huge snakes, jaguars, monkeys, and brilliant-plumaged birds of which he has read so much. Animals in a forest a mile away might as well be on the moon! In the narrow channels and by-passes one hears the raucous screams of parrots and macaws, but unless the birds happen to fly overhead he sees nothing. And were he to go ashore, the wild creatures would still elude him unless he knew where and how to look—that is, all save the insects! Even the giant waterlilies, with

leaves like 8-foot platters, contrive to hide themselves in secluded lagoons.

A CENSUS OF THE RIVER FISH

Actually, the river teems with life, unseen though it may be. Its drainage claims 748 different kinds of fish—nearly a third more than its closest competitor, the Congo—including familiar little guppies, electric eels, four-eyed fish, murderous piranhas, and the gigantic pirarucú, whose dried flesh in bales befouls the air of every ship's hold in Amazonia (see page 597). This monster, with maximum length of 15 feet and weight of 410 pounds, is easily the largest strictly fresh-water fish extant; yet it is only a fly-weight compared with its mammalian neighbor, the manatee, which may exceed a ton. Thus, among all South American animals, the palm for sheer bulk goes to the gentle river cow.

Of the aquatic creatures, the casual traveler sees only the dolphins, which somer-



BENEDICTO AND RAYMUNDO PREPARED THE JACARETINGA STEAKS

These tidbits from the tail proved a savory addition to the menu, although the author had difficulty in forgetting that they were alligator flesh (see page 590).

sault ahead of the steamer after the manner of their briny cousins the world over.

There are water birds in abundance, too, if one can only look in the right places. With binoculars we identified many of such typical species as the wood ibis, roseate spoonbill, cocoi heron (South American representative of our great blue), American egret, water turkey, cormorant, Spix's goose, great-billed tern, and the South American least tern. The last is known to the Brazilians as *trinta-reis*; but since thirty reis at present exchange are worth about a sixth of a cent, the term is not only depreciating, it is positively opprobrious!

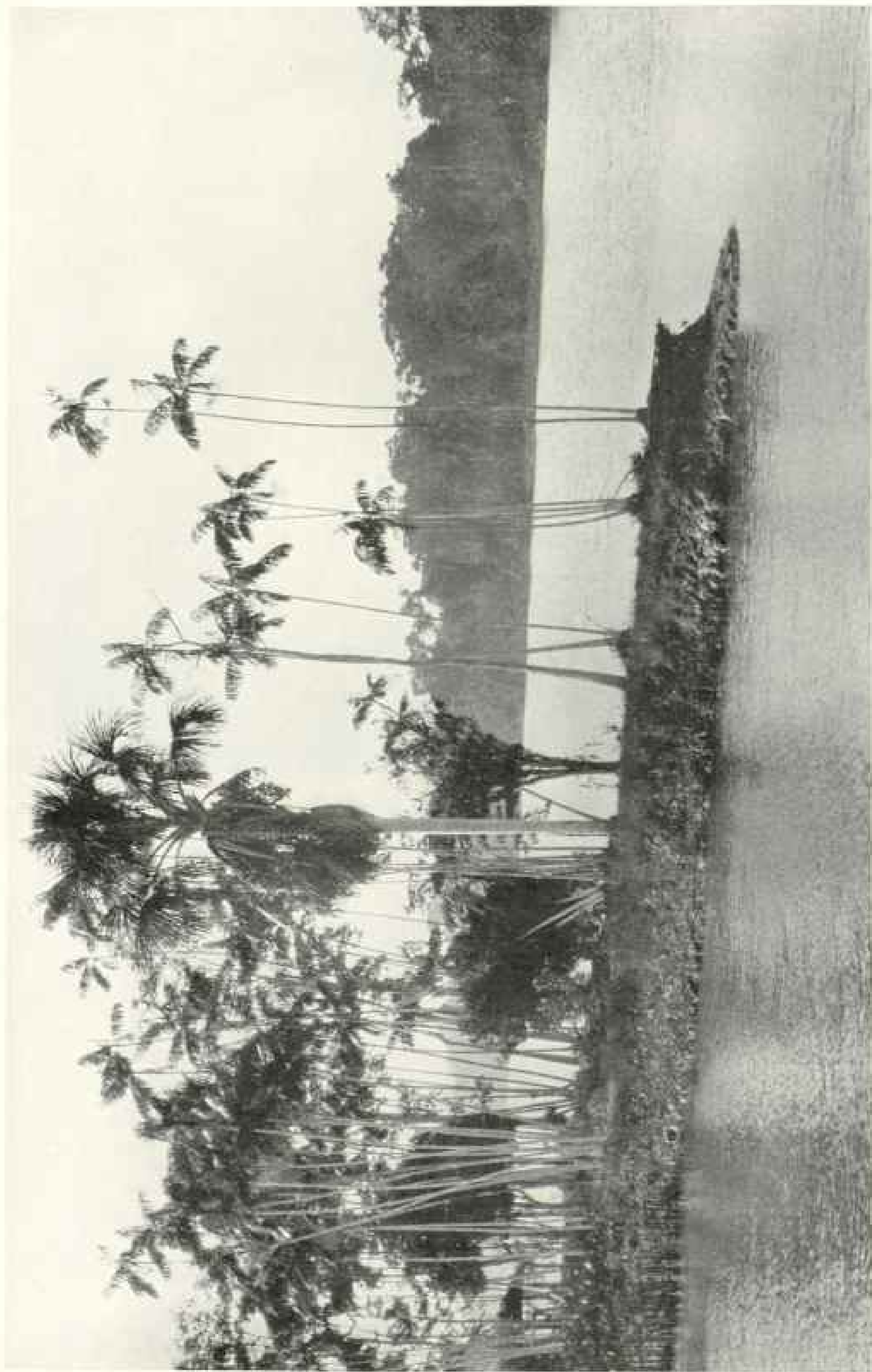
At the wood stations we were almost sure to find colonies of caciques, large black-and-yellow orioles half as big as a crow and much noisier. Their 18-inch nests of woven grasses often hung from the branch tips of some small tree in the midst of the greatest

human activity. What remarkable faith in man, you think, as you climb to rob a nest. Then, with a yell, you drop to the ground and rush madly for the river. Knowing that no mere man will stand before an onslaught of angry hornets, the birds use a nest of those short-tempered insects as a nucleus for their colony (see page 627).

SPECIES OVERLOOKED FOR 300 YEARS

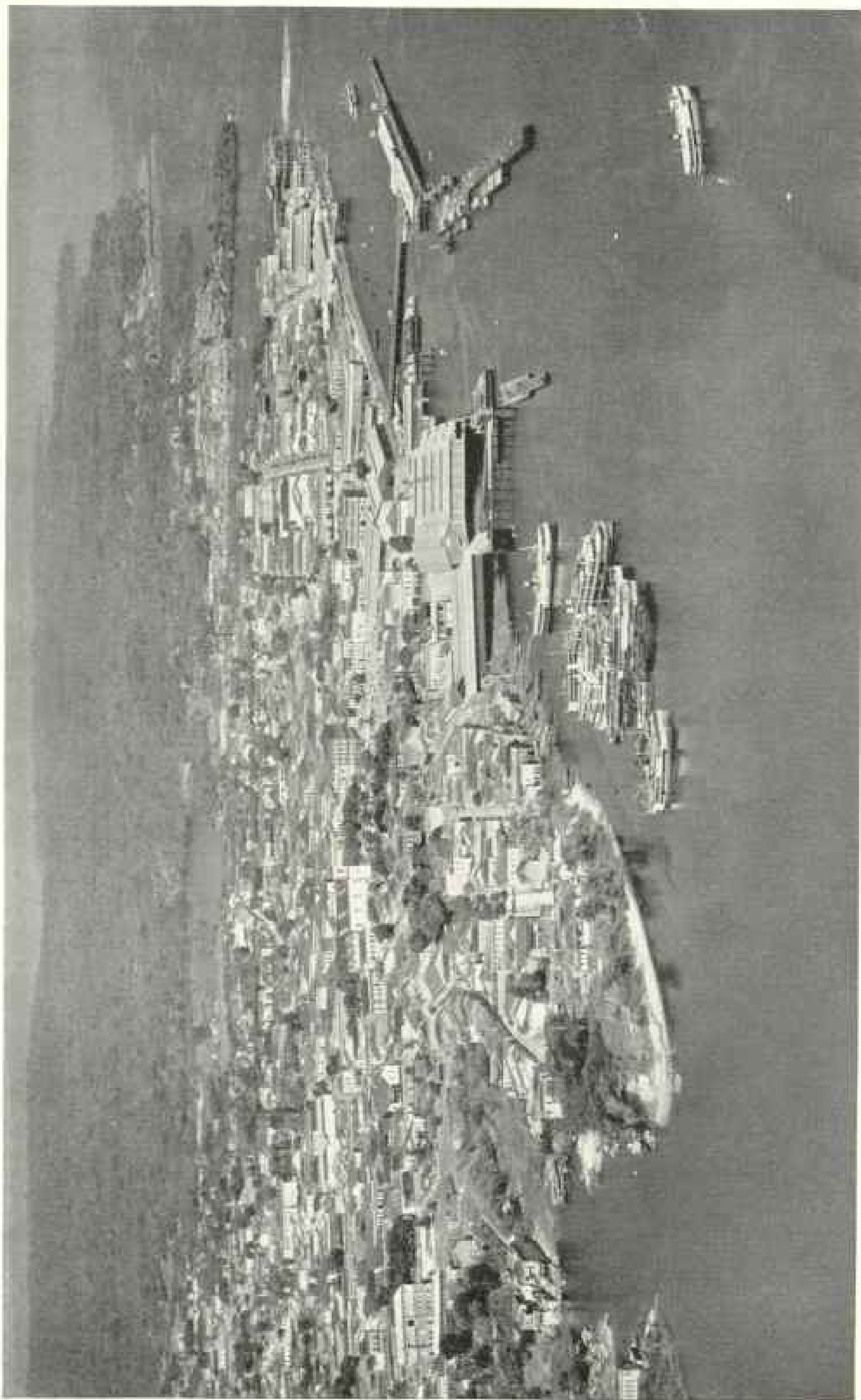
At a wood station one morning we collected two demure little honey creepers that turned out to be of a species totally new to science. This was on a section of the Amazon that has served as a highway for scientific expeditions for 300 years! The fact that new species can still be found along the main stream speaks eloquently for the richness of the avifauna.

On the fourth morning we awoke to see mountains rising some distance back from



THE EXILED POET MIGHT WELL BE HOMESICK FOR THE PALMS OF BRAZIL.

The lower course of the Amazon is preeminently a region of these trees, and sometimes the *mirim*, one of which lifts its fans at the center, occurs in enormous stands. It supplies the native with timber and roofing for his house, fiber for his ropes and hammocks, and food for his tabbe, while the slender assai supplies the drink.



Photograph by Capt. Albert W. Stevens

LOOKING DOWN THE RIO NEGRO AT MANAÓS, ONE SEES ITS BLACK WATERS MIX WITH THE YELLOW AMAZON (UPPER RIGHT)

A startling anachronism across this modern city conjured out of the wilderness when the rubber boom brought wealth beyond the most extravagant dreams of the natives (see text, page 296). The structures thrust out into the stream are floating docks.



THOUGH PLAYFUL, THE TIGER CAT MAKES A ROUGH PET

This animal is rather common in the forests of the Orinoco and upper Rio Negro. About the size of the North American wildcat, it has much the same habits.

the north bank. True, they barely exceeded 1,000 feet, but through the mists of early morning they loomed big and blue above the plain. Remarkable, too, this plain is not forested; its pebbly, porous soils support only a sparse cover of bunch grasses and open patches of small gnarled trees. These are grazing lands, the Campos de Monte Alegre, offshoots of the vast open cattle country of northern Amazonia.

On the opposite bank, near Santarem, more than 200 persons from Alabama and adjoining States, dissatisfied with the outcome of the Civil War, sought to begin life anew in 1866. About 50 were left at the time of Herbert H. Smith's visit, in the early seventies, but now not more than 12 or 15,

including the second generation, remain.

At Obidos, a small town perched on a north-bank bluff, the mighty river rushes through a single channel less than a mile and a quarter wide. The significance of this is plain when one recalls that the Amazon is estimated to carry a fifth of all the running fresh water in the world, drained from 2,722,000 square miles, to form the largest system of inland waterways on earth.

A MODERN CITY 450
MILES FROM A
RAILROAD

Naturally, the tide is here stopped short, though it has already traveled some 500 miles inland and at times rises more than a foot. Above Obidos the river again widens out. In fact, at Tabatinga, 1,200 miles farther up, it is more than half a mile wider than at Obidos.

After eight days the steamer turns from the Amazon against the coffee-colored tide of

the Rio Negro. The change from brown to black is sudden and startling. No more so, however, than the arrival, eight miles farther on, at a modern city of 42,000 set in the midst of a jungle (pages 595, 599).

Manaos lies 450 miles from the nearest railroad, and that but a moribund line around the rapids of the upper Madeira; yet we find well-paved streets, electric lights, tramways, automobiles, and the best ice cream I have ever tasted. There is even a magnificent opera house (p. 598), though it stands empty, a sad monument to the hey-day of rubber,* when for a moment manioc

* See "The Amazon, Father of Waters," by Dr. W. L. Schurz, in the NATIONAL GEOGRAPHIC MAGAZINE for April, 1926.

and pirarucú yielded to champagne and *pâté de foie gras*. But the biggest and tallest structure of all is the brewery, a veritable skyscraper as buildings go in Amazonia.

Against the town's recorded history, dating from Orellana's visit, the rubber boom is only an interlude. Nevertheless, the large number of boats that lie rotting at the water front seems an ironic reward for the British skill that made these modern port works to rise and fall with the 40-foot pulsations of the Negro.

At Manaus we found food and shelter in another Grande Hotel. This one occupied the upper floor of a massive two-story building very much the worse for wear, and no doubt much older in appearance than in fact. It brought to mind an ancient, time-stained fort, and seemed just as impregnable when we returned from visiting the brightly lighted cafés down town to find ourselves locked out. There was a bell, but it brought no response. I leaned against the heavy door that had refused to budge, and fell headlong into the hallway!

The bell had half awakened a doorman in a hammock at the head of the stairs, and, without stirring, he had pulled a cord that drew the bolt. Nothing could be simpler; but how embarrassing when one's young assistants are watching their leader with appreciative eye!

The search for a suitable boat, the alterations to fit it to our special needs, the selection of men, and the purchase of supplies filled our days in Manaus. Ultimately everything was in readiness, and we took passage on the small stern-wheeler that once



Photograph by Kurt Heimerdinger

BRAZILIAN RIVERS TEEM WITH FINNY SPOIL

Paddling out into the Amazon in his small boat, this native has harpooned a huge pirarucú, the largest strictly fresh-water fish extant (see text, page 592).

each month paddles 425 miles up the Negro to the head of steam navigation, at Santa Isabel. She was the same little boat that had taken Dr. Hamilton Rice's expedition up the Branco some years previously.* She also carried some of the Commission personnel and outfit. A queer spectacle she made when she steamed out of Manaus harbor in the late afternoon of October 3, the lower deck half hidden by canoes lashed, bottom out, to the stanchions, and with our own 32-foot *batelão* in tow alongside (see page 599).

* "Exploring the Valley of the Amazon in a Hydroplane," by Capt. Albert W. Stevens, in the NATIONAL GEOGRAPHIC MAGAZINE for April, 1926.



IN THE SILENT THEATER OF MANAÓS SLEEPS THE PRIDE OF FORMER YEARS

During the rubber boom the Teatro Amazonas rang to the strains of grand opera, but now it stands virtually unused, a magnificent reminder of halcyon days (see text, page 596). The mosaic dome is brilliant with the national colors—green, yellow, and blue.



HE DOES NOT ROW WITH THIS OAR

The huge paddle, carried by a boy at Capibara, is designed for steering. It is lashed to the stern of a boat and manipulated by means of the double handhold provided by the fork at the end. It was necessary to bring such a rudder into play when the expedition motor was wrecked on the Casiquiare (see text, page 629).



THE "PARAHYBA" TAKES ON FIREWOOD AT CARVOEIRO.

This steamer carried the Geographic party, as well as a considerable part of the Boundary Commission personnel and supplies, 425 miles up the Rio Negro, from Manaus to Santa Isabel. A few years previously she took the expedition of Dr. Hamilton Rice up the Rio Branco.



MANAOS CHARCOAL MEN CLATTER ALONG PAVED STREETS BESIDE TROLLEY TRACKS

After voyaging up the Amazon for 900 miles between forest walls with hardly a gap, the traveler turns into the mouth of the Rio Negro and beholds with amazement a modern city of handsome buildings, electric lights, boulevards lined with artistically trimmed fig trees—all created as if by magic from the jungle (see text, page 596).



FARMERS FIGHT MOISTURE ON THE LOWER AMAZON

In the intensely humid climate corn would rot if stored indoors as soon as gathered. When brought from the field, it is hung up on racks to dry in the sun. Agriculture among the natives has not progressed beyond the simple stage.

Above *Manáos* the broad *Negro* widens still further until it becomes a lakelike expanse nearly 20 miles from bank to bank. In lesser width it stretches away northwestward for hundreds of miles toward the Colombian frontier, and for the whole of its course of 600-odd miles up to the first rapids, it is beset with countless forested islands of every size and shape. In the lower reaches these usually are long, narrow tongues splitting the stream into a labyrinth of channels that demand a pilot's best, especially when the river leaves its banks.

A SQUALL ON THE NEGRO

Where the islands are far apart, the *Negro* appears more than ever like a big lake. In such a place we met the first real worry of the expedition.

Near midnight I was awakened by a commotion on deck, and, turning out, found that a sudden squall had whipped the river into nasty seas. But that was not all; with the pitching of the steamer our *batelão* had broken loose and had been swept by the gale against the bank, where it was being pounded upon the marginal trees. Men

sent off in a rowboat were unable to recapture it until the steamer herself put about to help them.

The Negro was one of the principal sources of wild rubber in the boom days, and is now correspondingly dead commercially. Aside from a little *piassaba* fiber and some *balata* from the headwaters of the smaller tributaries, there are no natural products to fill the place of rubber. Some rubber is still gathered, coagulated into round balls, and shipped to *Manáos*, though it brings scarcely enough to pay the freight (see page 611).

The steamer's cargo is made up of goods shipped by *Araujo & Cia.* from *Manáos*, and of products consigned to the company in exchange for merchandise. An agent of the company travels on the steamer, and at every stop the country folk flock aboard and crowd about his cabin.

Upon consummation of their deals, boxes and bales are passed out from the deck below and the transactions entered in the agent's book. Often the steamer merely slows down, while a dugout is put off from shore, tied on, and carried along as the men do their trading. The principal



WHEN THE INDIAN TRAVELS, HE CARRIES HIS ENTIRE HOUSEHOLD

The whole family go, and with a pot, a few fishhooks, bow and arrows for baggage, are prepared to live indefinitely off the country. Rapids present no obstruction to an outfit such as this at São Gabriel, Brazil.

goods bought by these people are tobacco and foodstuffs. Even that staple, *farinha*, the coarse, sawdust meal made from manioc root and used generally throughout the whole region of Amazonia, comes from the steamer instead of from their own cassava patches.

The river was not at its lowest stage, and throughout its lower course the shore line consisted of tree trunks and bush tops. How far the water reached back into the forest we could only conjecture; but even here there was little difficulty in getting specimens of birds, though they were not so numerous as in upland forest.

Two hundred miles above Manaus the Rio Branco, pouring its white waters into the dark flood of the Negro, reproduces on a gigantic scale the phenomenon that occurs when cream is poured into coffee.

THE JUMPING-OFF PLACE

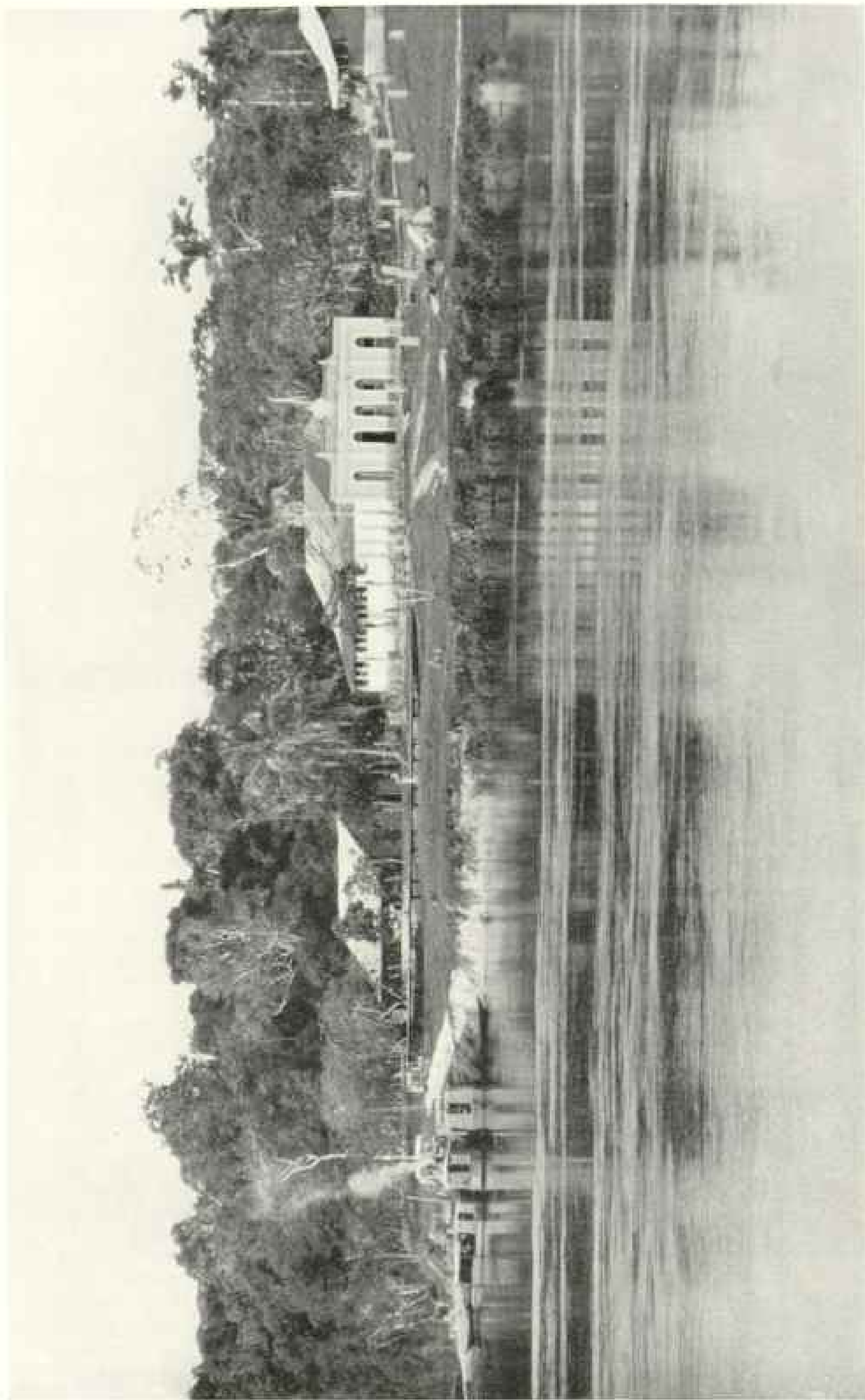
After five days the steamer comes to the end of her run at Santa Isabel; to the end, too, of the ragged fringe of society that spends its days mourning the lost bonanza of rubber. Beyond is wilderness, not untrod, but certainly unspoiled. It is broken

only by the single small town of São Gabriel and the occasional groups of thatched huts that seem to follow, at long intervals, most Amazonian streams to their uttermost reaches.

Notwithstanding its importance, Santa Isabel itself displays only three houses, standing in a grass-carpeted clearing, though behind them a wide, pleasant trail leads through the forest to two or three other houses hidden a little way downstream (see page 602).

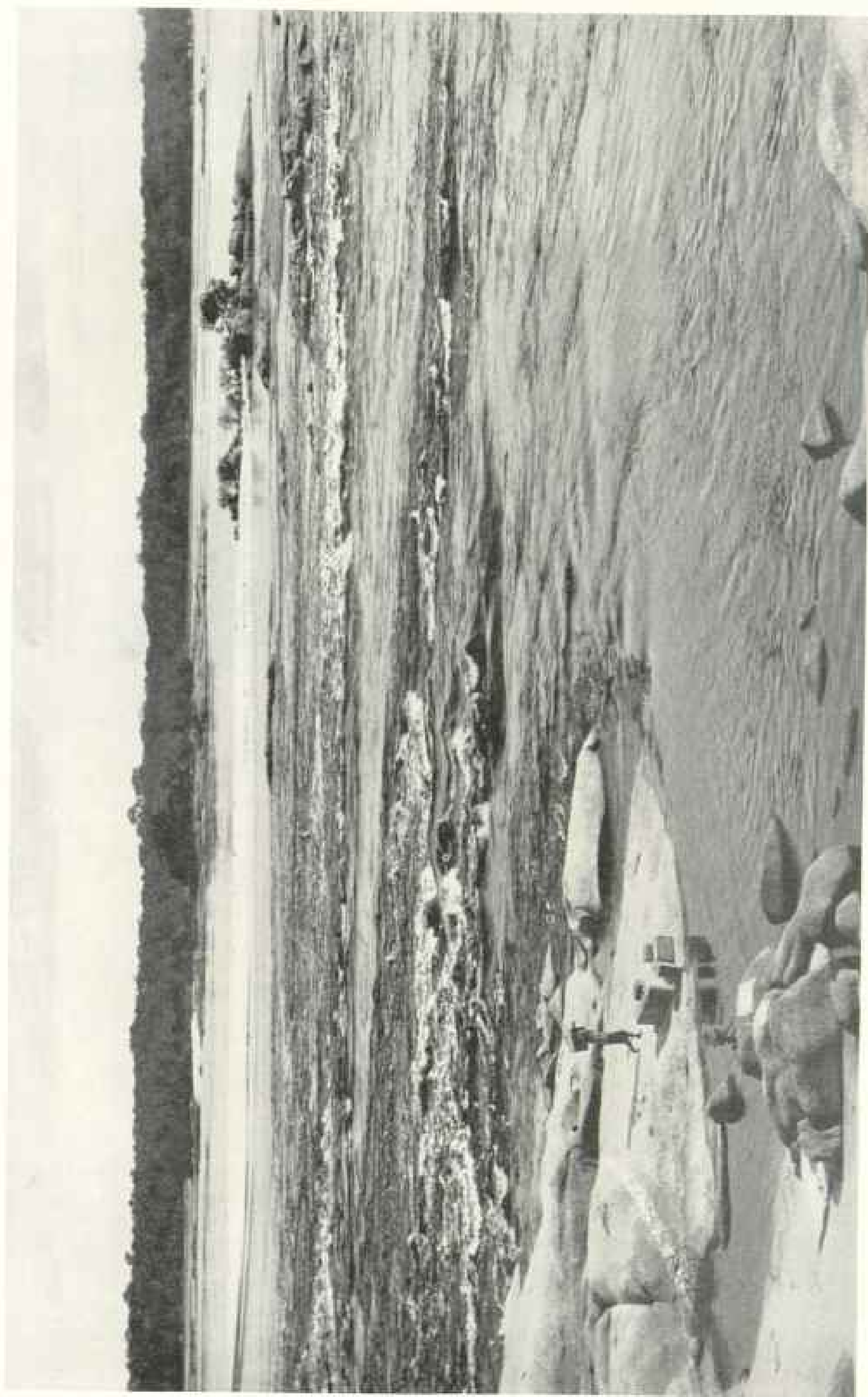
At Santa Isabel the monthly steamer is met by a 10-horse kerosene launch with a covered boat lashed along each side. In this outfit freight, mail, and passengers, if any, are conveyed 200 miles farther, to São Gabriel (see pages 618, 626). There, if one is still venturesome, he may transfer above the rapids to a smaller, 3-horse launch and journey on to the military post of Cucuhy, at the Venezuelan frontier.

The equipment and supplies left over from our last season's work awaited us at Santa Isabel. They had been brought down from Cucuhy, where we had parted with the Brazilians the previous February. Our first task was to rescue this material



AN ANCHOR MARKS SANTA ISABEL ON THE MAP

As head of steam navigation on the Rio Negro, it merits the nautical symbol. However, three houses standing in a small grassy clearing are all that greet the eye at this remote outpost of commerce. The scientists' shelter was the building at the right (see text, page 601).



COFFEELIKE RIO NEGRO FURNISHES ITS OWN CREAM WHERE IT FOAMS OVER ROCKS

Looking across the river, one gets a fair idea of the difficulties the navigator faces. This rapid at São Gabriel is only one of a series that obstructs the upper course of the stream for 25 miles and makes necessary frequent portages.



THE COOK LAYS IN A SUPPLY OF SIRLOIN

Without adequate cold-storage facilities, the steamers of Amazonia are obliged to carry their meat on the hoof, and, of course, the animals have not been trained to walk the plank.

from the ravages of mold and rust, the worst enemies, not even excepting insects, that the scientific worker has to fight.

A new telephoto lens, unused for a few days, had been attacked in its case by mold and a spot was etched on the objective. A tent that had not been removed from its original container was mildewed through and through. Upon opening any box that had been closed in this intensely humid climate for eight months, one would be almost struck down by the stench of mold.

Eager to try out a new sheet-iron stove, and to impress his own versatility upon our native cook, Blake graced one of our first camp meals with a batch of biscuits and a mince pie. One bite, however, and Agostini and I swore he was trying to poison us. The lard had gone rancid and gasoline had leaked into the flour!

While awaiting the main Brazilian contingent, we obtained many interesting birds in the near-by forest, though the drowning of their calls by the din of myriad cicadas singing in unison often made it difficult to find them.

To get night birds, which are much more numerous than at home, we had brought a special electric jacklight. During the day these creatures hide in dense places in the forest, but at evening they come forth to course for insects and to sit in the trails and call to one another. Their eyes, glowing bright red under the beam of light, make easy targets, but the first bird we shot turned out to be an opossum!

The same jacklight was our best aid in collecting the several species of frogs and toads so vocal throughout the region.

Upon the arrival of the Commission we set out in a flotilla of launches and other small boats up the Negro for the mouth of the Cauabury, 85 miles farther on. The Negro, still strewn with innumerable verdant islands, is even more beautiful above Santa Isabel than below. Much naked rock appears about the margins of the islands and occasional banks of pure-white sand lend contrast to dark water and encompassing green, while now and then a granite hill springs unexpectedly above the level roof of the forest.



MANAÓS WATER-FRONT DWELLERS HAVE COPIED FLOATING DOCKS

Two giant logs serve in lieu of steel pontoons under this river home. The natives like the idea used by the British (see illustration, page 595) and adapt it to their own needs.

During midday hours the Negro's unrippled surface emits a glare that is both intense light and heat; and to one traveling in midstream, remote from the picturesque features of its banks, the broad river sometimes becomes as monotonous as a fog and assumes much the same unreality. Where the bow wave breaks, the water is like clear coffee, but when one gazes out at a natural angle the smooth surface of this vast mirror presents a barely perceptible difference from the sky, which it reflects in minutest detail.

Where the Cauabury makes its contribution to the Negro, the island of Jerusalem lifts smooth skirts of granite high above the swirling waters. From its summit, shorn of its crown of forest to make room for a big hut of thatch, the rugged peaks of the Cordilheira (Cordillera) can be seen piercing the horizontal haze far to the north—in another hemisphere, in fact, for the Equator passes between.

Those peaks were the goal toward which our expedition was venturing; for somewhere among them was a roaring cataract,

the Salto do Huá, where the Maturacá rushes through a granite trough to form a natural marker on the Brazil-Venezuela line, and it was there the season's work was to begin. Getting there was purely incidental (see illustration, page 619, and map, page 589).

It was planned to ascend the Cauabury to the Maturacá, then work our way up the latter to the Salto; so Jerusalem was chosen as a base. The native family accommodatingly relinquished their big hut for the storage of our extra supplies, and a radio outfit was set up to maintain communication between the Commissioners on the remote and otherwise isolated frontier and their headquarters in Manaós (see page 591).

Moored beside a broad expanse of bare rock, we found the heat unusually intense. Agostini stripped to the waist while skinning birds, and when I happened along I was horrified to see his back black with blood-sucking gnats the natives call *piums*, a species of *Simulium* related to the black-fly of the North woods. I marveled at



EUPHEMISTIC ORNITHOLOGISTS MISNAMED THIS FELLOW "TRUMPETER"

"Grunter" would represent more accurately the kind of noise he usually makes. Easily tamed, such birds may be seen on the main streets of almost any backwoods village, where they lord it over domestic fowl of every sort.



MANY PETS ARE TURNED OUT TO SHIFT FOR THEMSELVES

Throughout tropical America, it seems to be the custom of the country people to catch the young of all kinds of creatures, raise them to maturity, and then release them. This sun bittern was found at San Antonio, on the upper Orinoco. Though entirely free and unrestrained, he always remained in the vicinity of the village (see text, opposite page).

his indifference, but insisted that he put on his shirt.

This was our first meeting with piums in any numbers. By contrast, other insects especially abundant here were butterflies. I had never seen so many of these creatures so gorgeously beautiful, save perhaps at Santa Isabel.

From the natives of Jerusalem we could learn little of the Cauabury other than that the few balata workers who had frequented its banks had been run out three years before by hostile Macús descending upon them from the Maiá River.

The natives of the main river, themselves Indians only slightly touched by civilization (*caboclos*, the Brazilians dub them), had a wholesome respect for their wilder brethren, but we prevailed upon some to accompany us as pilots and boatmen.

By a lucky chance I engaged the services of a rather undersized chap named Benedicto, who had once worked balata on the Cauabury. He not only proved to be the best riverman of the lot, but was one of the best all-round woodsmen I have ever known.

It was under favorable auspices, then, and with high morale that we purred into the 200-yard mouth of the Cauabury for the short run up to the Salto. Had we not measured the map and found the air-line distance only 62 miles?

The Cauabury is black like the Negro, perhaps a little blacker; its banks are high, firm, and clothed with splendid forest; and its first aspect is placid enough to reassure the most timorous. Black deception!

Within the hour we were brought up abruptly by a granite dike thrown across the stream in a jumble of rocks over which the river poured in a wild, beautiful cascade apparently impossible of passage. And over the boiling spume, like a messenger from home, slowly circled a fish hawk. Cosmopolite that he is, he seemed strangely out of place down here in the company of screaming parrots and yelping toucans.

THE STRUGGLE BEGINS

It was early morning when the fight began, and for two long, weary days our army—there were about 75 of us all told—toiled like so many ants to get the boats through the rapids. The smaller craft were pushed and pulled by brute force through narrow channels between the rocks, but such methods could not be applied to the

heavier boats. These had to be hauled with the aid of block and tackle, with logs for rollers, over dry granite.

On the third morning we took our cocoa and hard-tack by candlelight and, as soon as the pilot could see, got under way on the only full day's run of the ascent.

In the half-veiled light and morning stillness the river, dotted with little islets set with clumps of lovely *Bacteris* palms duplicated by reflection in the black water, was like a scene from fairyland. The part of goblins was admirably played by four otters that came swimming along, craning their long necks, the leader repeatedly raising head and shoulders high out of the water to grimace at us. Later, two dolphins broke water some distance ahead; a cocoi heron flapped heavily along the shore; large toucans sailed across the river; and a great-billed tern coursed it.

In contrast to the last graceful bird, a couple of grotesquely solemn wood ibises stood on a flat rock and watched unmoved our noisy passing. Perhaps the most interesting creatures seen that day, however, were a pair of sun bitterns (see opposite page). These birds are of such peculiar structure that ornithologists place them among the rails and cranes rather than with the true bitterns, and accord them separate family rank.

ONLY ONE HABITATION; THAT ABANDONED

In the afternoon we stopped to hunt for limes in an old clearing where stood a mud hut with gaping doors. Forlorn and forsaken since its caboclo builders fled before the Macús three years before, it is the only human habitation in the entire length of the Cauabury.

Night found us at the foot of another major rapid. This one had a fair channel, so we anticipated no trouble. A long piassaba cable was attached far upstream and let down to the boat, a number of men climbed into the empty hull, the motor was started, and the men began to haul away on the cable. Inch by inch the boat mounted against the terrific current until she reached the very peak of the rapid.

Smooth water lay only a few yards ahead. Then the motor stalled!

Being rather fond of the boat, I shot a last photo as a remembrance and turned away. But the men frantically took a turn about a stanchion with the cable and, by a miracle, it held (see page 608).



TO BE CATALOGUED, SPECIMENS MUST BE AT LEAST PROVISIONALLY IDENTIFIED
The author is measuring, in the field laboratory improvised on the Geographic boat at Salto do Huá, some of the more difficult birds taken on the Brazil-Venezuela frontier.



THE ENGINE CHOSE A BAD SPOT TO BECOME TEMPERAMENTAL.

When the *N. G. S.* was at the very peak of this surging rapid, with her nose almost under water, her motor sputtered and died. She was saved from crashing on the rocks below only by the miraculous strength of the thin piassaba line at which the men were tugging (see text, page 607).



EXPOSED ROOTS WALL THE CASIQUIARE AT LOW STAGE

Springing from the Orinoco as a full-grown river and emptying into the upper Rio Negro, the stream furnishes a year-round navigable connection between the two. The expedition employed Indian hunters in a native canoe to precede the larger boat and obtain specimens of wary creatures that would have been frightened away by the sound of the motor.

A tense moment, but only the beginning. The next day we almost came to grief again when our boat was swept against a bank and heeled over. The day following, the pull proving too hard for the peons, two of us threw our weight on the cable, while Blake plunged into the water to push. His feet slipped and he was being swept under the boat to certain death against the racing propeller when the men nearest him made a lucky grab.

Notwithstanding their heart-breaking work, the peons' good humor never flagged. Their stamina and toughness were astonishing. Our own legs and feet were bruised and torn by the rocks despite our shoes;

and we could hardly bear to touch a cable unless our hands were protected by gloves. Yet these peons, who often had to tow the boats for long stretches without rest, hauled bare-handed on the rough native ropes without apparent discomfort, and stumbled barefoot for hours at a time over sharp rocks that would have completely disabled a white man.

A FLOATING CAMP

Our boat was more than transport; it was a floating camp. Meals were cooked and eaten aboard, specimens prepared during intervals when we had a free run, and at a table improvised from a packing case



NOT A PSYCHOGRAPH, BUT BLAKE AND AGOSTINI SKINNING BIRDS

In the magnificent forest at the base of the Serra Imeri, they were driven to refuge under the net, not by mosquitoes, but by swarms of blowflies.



A FLAT ROCK AND INGENUITY SUBSTITUTE FOR MACHINE SHOPS

Service stations do not abound in the wilderness—despite the evidence of our own roadsides. After the motor failed at a critical moment (see illustration, page 608), Agostini and Blake made repairs which served until the engine was completely wrecked on the Casiquiare.



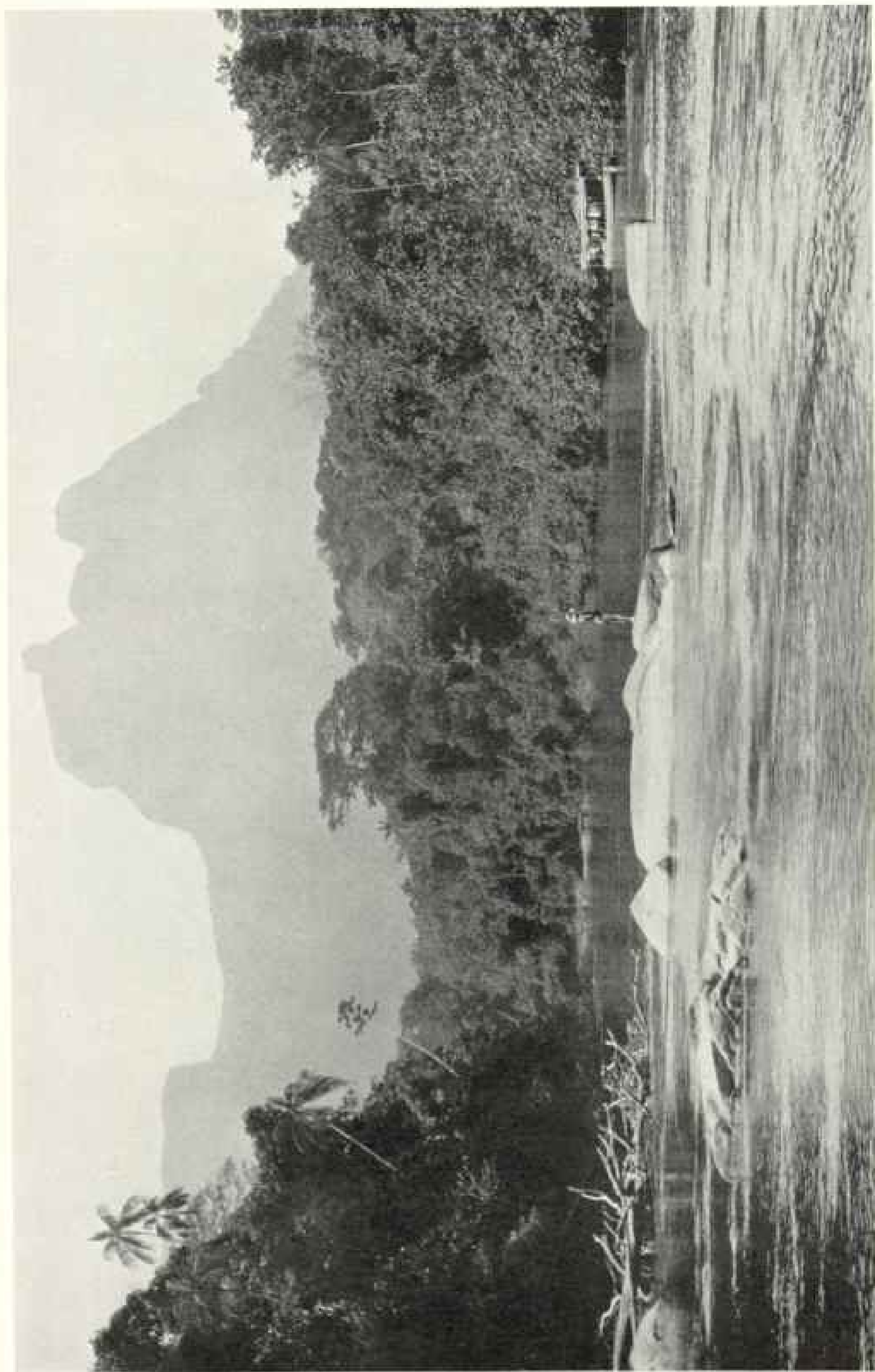
BLOTTERS THAT CEASE TO BLOT REQUIRE FREQUENT CHANGING

To dry plant specimens so quickly and thoroughly as to prevent the attacks of mold and preserve as much as possible of the original colors of the flowers was a problem.



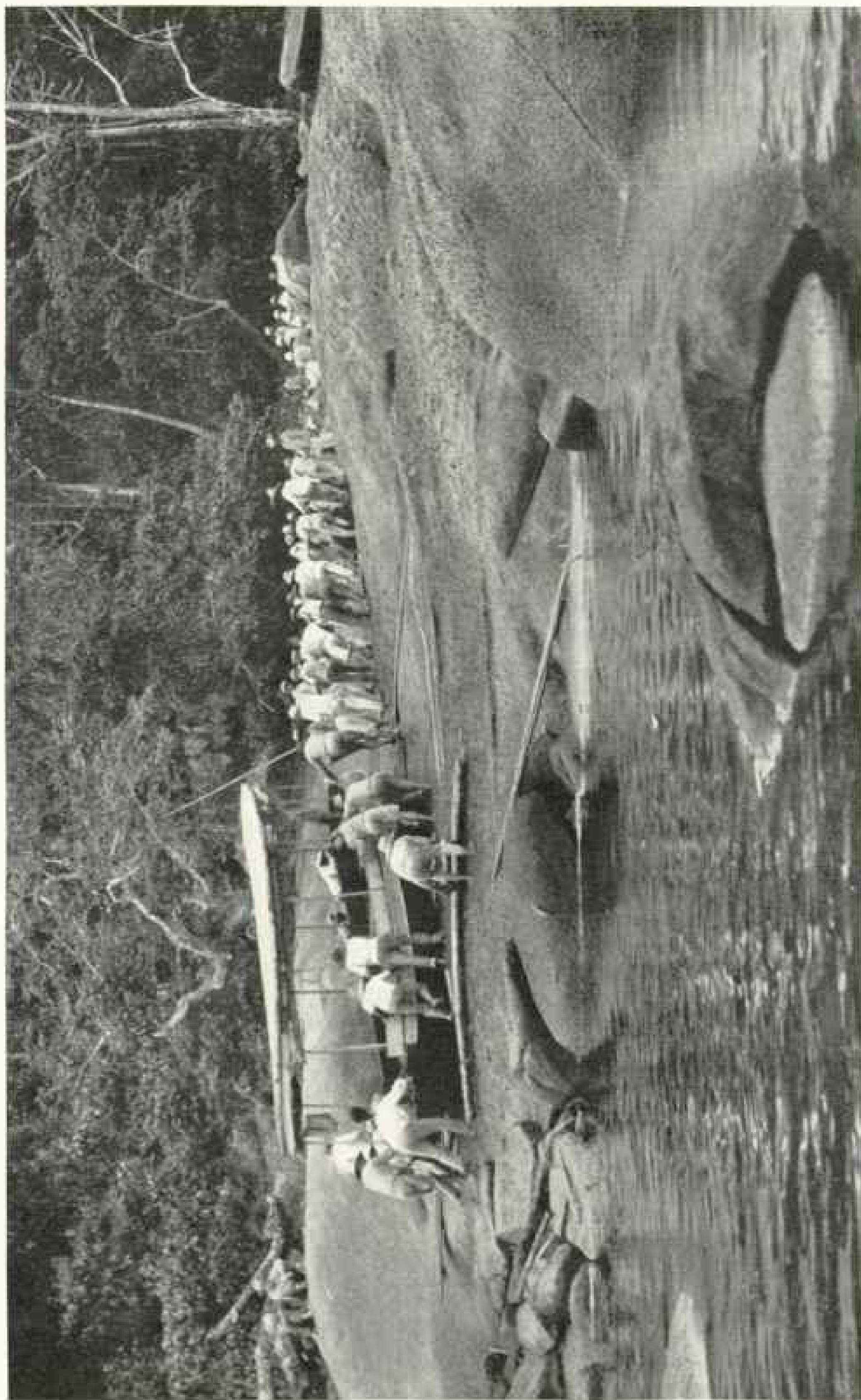
RUBBER SPECULATION PROVED THE CURSE OF AN EMPIRE

"Black gold," balls such as these being loaded into a canoe at Barcellos, Rio Negro, were called in the boom days, when the price of crudely smoked latex skyrocketed until the whole Amazon Valley went mad. Legitimate agriculture, abandoned during the excitement, has never recovered.



WILDERNESS REIGNS WHERE PEAKS OF THE SERRA ONORY OVERLOOK THE RIO CAUABURY

To a remote land of primeval loveliness, teeming with all manner of wild life, the Geographic boat chugged its way. This was excellent hunting ground for naturalists. The towering mountain in the background rises abruptly from a heavily forested plain.



OVERLAND NAVIGATION MEANS BACK-BREAKING TOIL.

Within an hour after starting up the Rio Caubury, the expedition encountered a rapid through which only the smaller boats could be passed. The larger craft, including the launch shown here, had to be hauled up out of the water and dragged across a dike of dry granite. The portage cost two days' delay.



FIRST PRINCIPLES OF PROPULSION SUBSTITUTE FOR A WRECKED MOTOR

Fortunately the breakdown on the *Casiquiare* (see text, page 629) occurred near a place where Indian workers were available. They cut saplings and poled the *N. G. S.* to the Orinoco.

I snatched a moment now and then to catalogue specimens and keep records up to date. At night we slung our hammocks beneath the canopy, and when rains came we had only to drop the canvas curtains. Even our clothes were washed on board, and it was from the gunwale that we took our evening plunge, the real high point of the day.

One must have loafed in water that does not chill to understand the joy of a swim in a tropic stream, a joy that neither cannibal fish nor crocodile can mar.

The delays gave me many opportunities for sallies after birds, and I kept the boys well occupied. Often, while our cargo was being portaged around a rapid, they had to carry on with the preparation of specimens under trying circumstances, sometimes being obliged to work on the bare rocks in the broiling sun, and always beset by hordes of piums. Frequent showers, often catching us in the midst of a portage, caused much trouble, too, for one of our major problems was to dry our specimens, particularly the plants.

From the Cauabury to the Maturacá was a leap from the frying pan into the fire.

The Maturacá is no more than a creek, a lowland stream meandering aimlessly between the foothills of the Cordilheira and some outlying spurs. The narrow channel is a succession of hairpin turns, shallows, deep pools, and small but stiff rapids, so choked with logs and fallen branches that it was necessary to keep a gang of axmen ahead of the boats.

LOST IN THE JUNGLE

If on the Cauabury we had voyaged overland, here we navigated the woods! Overhead the tree tops almost meet, and huge moss-covered stones replace the naked boulders of the sunny Cauabury. But the gloom gave immediate respite from the clouds of piums that had pursued us all the way from Jerusalem.

Just within the mouth of the Maturacá we came upon the only sign of wild Indians found on the trip—an old bridge of saplings thrown across the stream.

Following my custom of making the most of the lunch stop, I went ashore at noon one day to hunt in the fine forest of the right bank. Soon I located one of those mixed bands of birds whose erratic presence con-



AFTER THE MOTOR FAILED, SAPLINGS BECAME FIRST PUNT POLES, THEN OARS

Up the Casiquiare the disabled boat could be pushed along (see opposite page), but down the Orinoco it was necessary to lash paddles to the poles and row.

stitutes such a contrast to the normal stillness of the tropical forest and gave my full attention to keeping it in sight, following it up quickly as soon as the specimens shot could be retrieved.

When at length I had secured as many birds as could well be prepared during the remainder of the day, I started back to the boat—and suddenly realized that I did not know which way to go.

For one of long woods experience to get lost in broad daylight was absurd, but the situation was not funny then. Though the low terrain was crisscrossed with streams, I felt that I could recognize the Maturacá all right, but it was so crooked that there was no assurance of reaching it by walking in any direction other than exactly that whence I had come. And should I stand again on its banks, which way should I turn? There might be ax marks to indicate the passing of the Commission; there might not. But what would tell me whether our own boat lay upstream or down?

And if I failed to find the right river, what then? The nearest caboclo house was at least 50 miles away—a journey impossible of accomplishment through a path-

less, swampy jungle, even if I had had a compass to guide me, which I had not. The Commission, I was sure, had long since moved on; and, having left no broken twigs along my trail, I knew that my own small party could never track me.

I had no matches with which to raise a smoke, even could it have been seen. I did fire a signal with my gun, but knew as I did so that I was too deep in the forest to be heard.

As I quartered back and forth in an effort to pick up my trail, I found myself increasing my pace, and realized that my breath was coming faster and faster, and my mouth getting dry. To avoid panic, I forced myself to sit down.

I detail this for the benefit of those who may never have paused to consider what it means to be lost, with no traffic policeman handy to direct the way. The conventional terrors of the jungle—ferocious wild beasts, huge snakes darting swiftly from ambush to crush out one's life in their relentless coils or to deal a slower, more horrible death by poison—meant nothing to me, for I knew them to be dangerous only in the imagination of fanciful writers.



EMERGENCY BIRD SKINNING PRESENTS DIFFICULTIES

The expedition boat was arranged as a field laboratory, but because of the numerous rapids in the Rio Cauabury and the many portages necessitated by them, Blake and Agostini were frequently obliged to carry on their preparation of specimens while exposed on the bare rocks to a torrid sun and the attacks of myriad blood-sucking gnats. The radio operator was an interested spectator.

But I also knew what a cold and cheerless bed the sodden forest floor would make. I knew the heartbreak of trying to force a way through tangled jungle with hunger gnawing at one's stomach, and the growing weariness that comes when one no longer feels the pain. I knew how utterly vain the popular idea that the tropical forest abounds with edible fruits, ready to be plucked by the hungry.

Fear of the Macis never crossed my mind. Death by their swift arrows would be like a sudden accident, nothing to contemplate with dread. But to starve, to become gradually weaker until not strength enough remains to brush the ants from one's mouth and eyes—panic lies on the road of such thought.

Of course, I ultimately found my way back to the river, recognized a spot we had passed that morning, and followed up the stream until I reached the boat. There were no rents in my clothing, no telltale scratches on hands and face, and I threw down my bag of birds with a nonchalance that fooled even our keen-eyed Indians. I hope they never learn to read!

And right here I wish to explode another popular fallacy. Indians are *not* endowed with any mysterious special sense of direction. When they enter unfamiliar territory they are very careful to bend over or break green twigs and sprays of leaves as they go along. Often there are considerable intervals between such markers, and it is difficult for the unpracticed eye to pick them up, yet the bent twigs indicate the direction of travel. The Indian takes no chances.

THE FRONTIER AT LAST

On the 13th of November, 22 days after leaving the Negro, we emerged unexpectedly from the gloom of the forest tunnel through which, like moles, we had been crawling, into a spot of brilliant sunshine falling upon a small circular lake perhaps 200 yards across. On the opposite side, what was left of the drying Maturacá dashed down over a ledge of granite in a coffee-and-cream cascade that flecked the surface of the lake with foam.

As a fish hawk had winged encouragement to our assault on the first rapid, here



FOR A DIET THE LEAST ANTEATER CONFINES ITSELF TO INSECTS

Though it resembles a small squirrel in size and has a prehensile tail like the opossum, it is related to neither. Its heel pads are so developed that it can grasp a twig with its hind feet and stand bolt upright. This specimen, held by Agostini, had not been tamed; it was merely phlegmatic like the sloth and perfectly harmless.

a familiar water turkey sat on a snag in the lake and welcomed us to our goal; for this cascade was the Salto do Huá. Like two children out of school, Blake and Agostini, as soon as the prow touched shore, were racing over the rocks to see who would first set foot in Venezuela (see page 619).

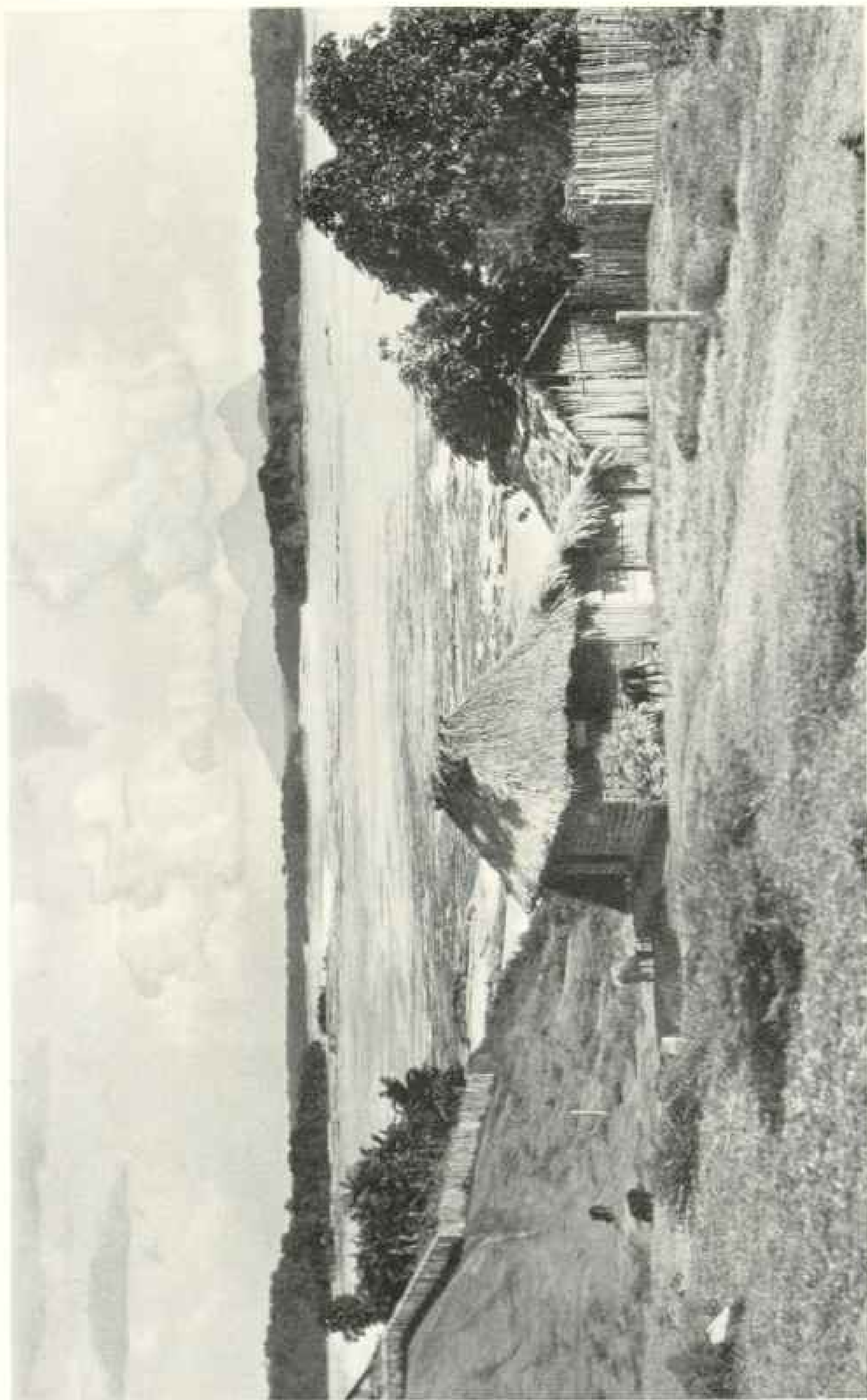
The Commission pitched camp on one side of the falls, we on the other, for the available open space on the rocks was limited and we needed all the sunshine we could get. As it was, our boat was moored against the forest wall. One stepped from the kitchen tent directly into the forest, and the boys' tent was set under a tree; thus the question of getting specimens and equipment properly dried remained perennial. A hat hung up at night would have a fine crop of mold flourishing on the sweatband in the morning. Hammocks assumed the permanent odor of a sour dishrag. The atmosphere was not merely humid, it fairly reeked with moisture.

Though we had come some 1,500 miles from the ocean, we had climbed only 279 feet above its level. Despite this lack of altitude and the fact that we were almost

astride the Equator, the temperature was pleasantly cool. Instead of the intense heat often supposed to prevail in the tropical forest, our standard Government thermometers registered a maximum of 89 degrees Fahrenheit. Sometimes the temperature would drop as low as 71 degrees, and one day it did not rise above 78.5 degrees. But the relative humidity at 7 a. m. was often 98 per cent!

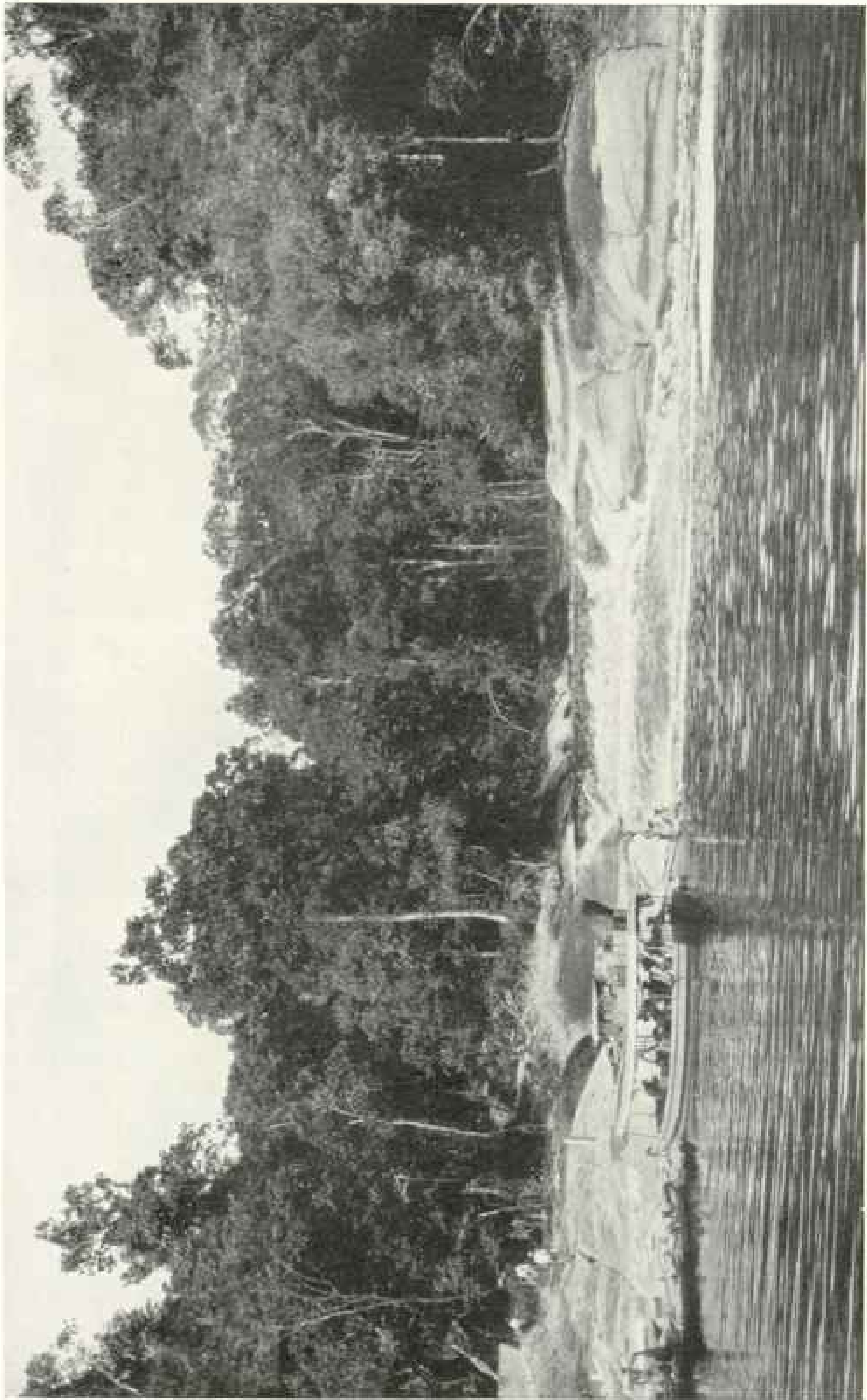
The Commission's task was to locate the key hill from which the international boundary follows the watershed of the Cordilheira, then survey and mark the divide. To determine where it lay, among the maze of detached peaks, hills, and separate mountains springing from a seemingly level plain, was indeed an undertaking. Exploring parties were immediately sent out to open trails to the Cordilheira, and we, of course, were right at their heels. But it was not until the engineers had felled the trees on a mountain top to set up their astrolabes that we got any conception of the terrain.

Stretching away interminably to the northeast, the rugged peaks and shoulders



SÃO GABRIEL THE NATIVES CALL THIS LITTLE VILLAGE ON THE UPPER NEGRO

It is so far from the rest of the world, however, and the roar of the rapids—continuous for 25 miles—is so boisterous that one wonders how the inhabitants expect to hear their patron saint when he blows his trumpet summons (see text, page 626). The Serra Curicuriary rises in the distance.



AT THE SALTO DO HUÁ THE NATURALISTS SLEPT IN BRAZIL AND TOOK THEIR MEALS IN VENEZUELA

After the expedition reached the international boundary at the dwindling cascade that is one of the definite treaty points, the Commission tents were pitched at the left of the falls, and the author's party set up their shelters on the forest-crowded rocks at the right (see text, pages 605 and 617).



HAULING HEAVY BOATS THROUGH RAPIDS SHARPENS APPETITES

The peons do not balk at a steady diet of corned beef, rice, and beans. Supplied with plate, cup, and spoon, they need no other aids to the manipulation of food.



ORANGE TREES WEAR SKIRTS AT TABOCAL

The upper Rio Negro is scourged by a plague of leaf-cutting ants that make it very difficult for the natives to raise any kind of vegetable or fruit. These *saabas*, as the ants are called, have been known to defoliate a full-grown tree in a single night. The thatch barriers are designed to prevent such ravages.



THE KITCHEN CANOE WAS FLAGSHIP OF THE FLEET

At any rate no other craft commanded such careful attention of the peons. The range was ingeniously improvised from a battery of empty gasoline tins, the bottom filled with sand to prevent burning the boat.

of the Cordilheira rose in rank after rank until lost on the horizon under masses of cloud, an unknown land for hundreds of miles. In the opposite direction a flat-topped mountain and a number of hills and ridges lay here and there, as if thrown from the Cordilheira like fragments from a shattered column.

Fifty miles to the northwest the granite boss of the Piedra del Cucuy rose to accentuate a limitless plain (see page 623). But most impressive of all was the vast, unbroken blanket of forest extending in every direction as far as the eye could reach—and beyond—obliterating every feature save the mountains, humped beneath it like brickbats under a carpet.

THE MOST BEAUTIFUL BIRD IN THE WORLD

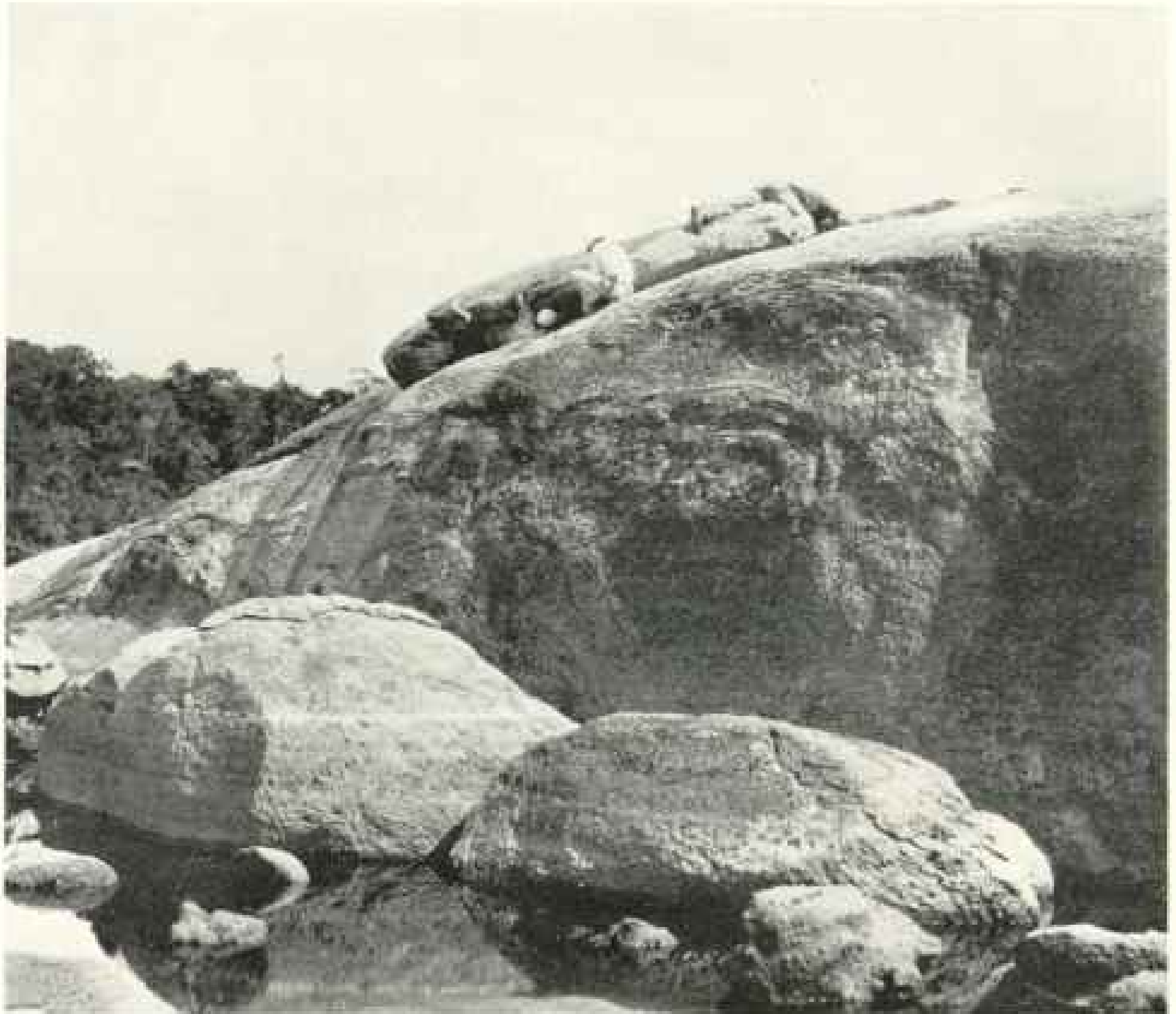
On my very first climb to the engineers' lookout I got my biggest thrill of the expedition. I had bagged a yellow-and-black tropical finch (named *canadensis* by some misguided ornithologist) and was stalking a big, slate-colored grosbeak with coral-red bill when sheer amazement froze me in my tracks. But snaps shooting at strange things

had made my trigger finger automatic, and as the crash of my gun startled me back to my senses, an unbelievable creature fell to the ground. I hesitated, hardly daring believe that an ambition of twelve years had come so suddenly to fruition, then stooped to pick up the most beautiful bird in the world (see page 588).

I had shot the cock-of-the-rock, a marvelous fowl resplendent in a coat of flame, with a double crest sweeping from tip of bill to occiput, like the ridge of a Roman helmet. That is, the male is so colored. The female is demure and brown and its crest is reduced to a mere suggestion of its mate's.

It is a shy bird and has chosen for its haunts the occasional isolated hills and the lower mountain slopes of the Guiana highlands—a region little disturbed by white men and only thinly populated by Indians. We obtained several additional specimens, and found one nest, very much like a robin's, fastened to the bare face of a huge split boulder; but it was empty.

We were not so fortunate, however, as to see the remarkable dance of this crea-



CREVICES OF MIDSTREAM ROCKS HARBOR SWARMS OF BATS

In collecting these creatures, the naturalists used the method of boys getting a rabbit out of a hollow log. Blake at the top drove the prey with a stick to Agostini, who caught them in his hand or in a small insect net. The cook held the bag.

ture, in which a score of birds of both sexes gather on the bushes surrounding an open space while a male goes through an extraordinary performance on the ground. While the audience cheers approvingly, this bird, with lowered wings and outspread pumping tail, walks round and round, scratching the ground and springing into the air. When it tires, another male takes its place. There seem to be no data as to the duration of these marathons.

THE ANTICS OF THE "GIGOLO BIRDS"

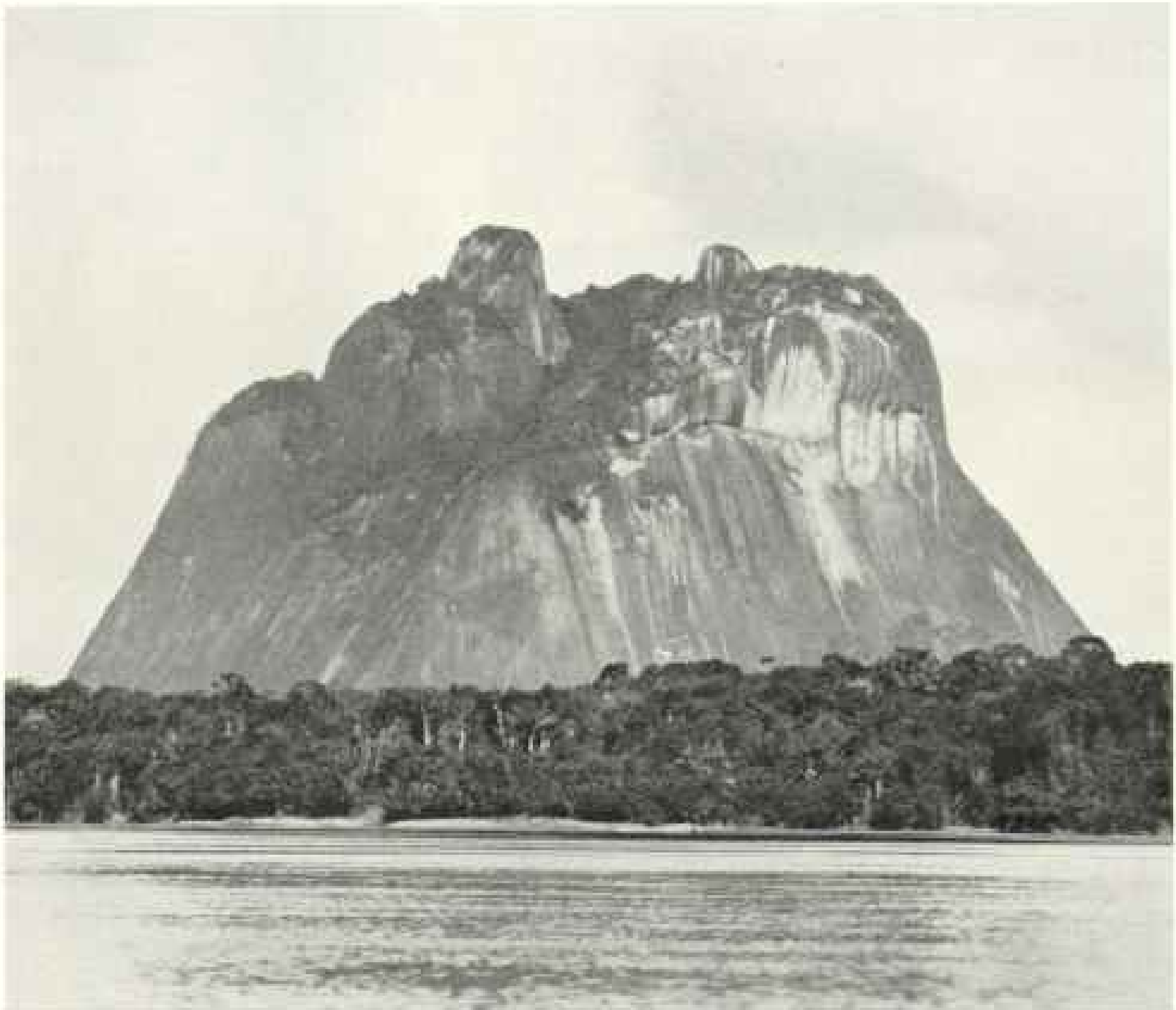
Other dancers of these hills, far more numerous and even more accomplished, are the manakins. There was one little fellow with jet-black coat and bright-blue cap; another, of the same diminutive size, exactly like him except that the blue cap is replaced by one of white; and a third of

the same stature, with orange head and red boots.

All are denizens of the deep shadows of the undergrowth, and in the dusk might well be mistaken for little black-coated gnomes, as they go so seriously about their intricate dances. But some one, in the spirit of the times, has called them "gigolos," because the dancing seems to be done at the bidding of the females.

What a country for birds, for all kinds of game, for that matter! I had never seen guans and bush turkeys so abundant, nor tinamous. Monkeys, which usually manage to keep pretty well out of sight, were positively common; and here I met for the first time the short-tailed cacajao.

Of more ornithological interest were giant goatsuckers, like whippoorwills inflated to the proportions of a barred owl; little fin-



PIEDRA DEL CUCUY STANDS NEAR THE JUNCTION OF THREE COUNTRIES

A huge granite boss towering above the forested plains of the upper Rio Negro in Venezuelan territory, it is almost a boundary post. The river here separates Venezuela from Colombia, and Brazil lies just to the right of the mountain (see text, page 621).

foots, with the body of a duck, feet of a grebe, bill of a rail, and allied to none; an antbird (*Corythopsis torquata*) that walks on the ground like a pipit, but flips its wings instead of pumping its tail; or a wren (*Microcerculus cinctus*) with a ventriloquial voice; an astonishingly long-drawn musical whistle given from the ground, where the bird walks undiscovered in the cover of brush and low vegetation, though its wonderful notes may fairly ring in one's ears.

But, next to the cock-of-the-rock itself, the bird that is most inseparably associated in my mind with this expedition is the minero (*Lathria cinerea*). It is common everywhere along the streams, particularly in low places where the forest is likely to be damp and gloomy, and its explosive call bursting suddenly overhead is disconcert-

ing, to say the least. This bird followed Orellana down the Amazon, and the description of its call and actions, in the chronicle of that explorer's famous expedition of 400 years ago, constitutes one of the earliest records of a South American species that can be definitely identified.

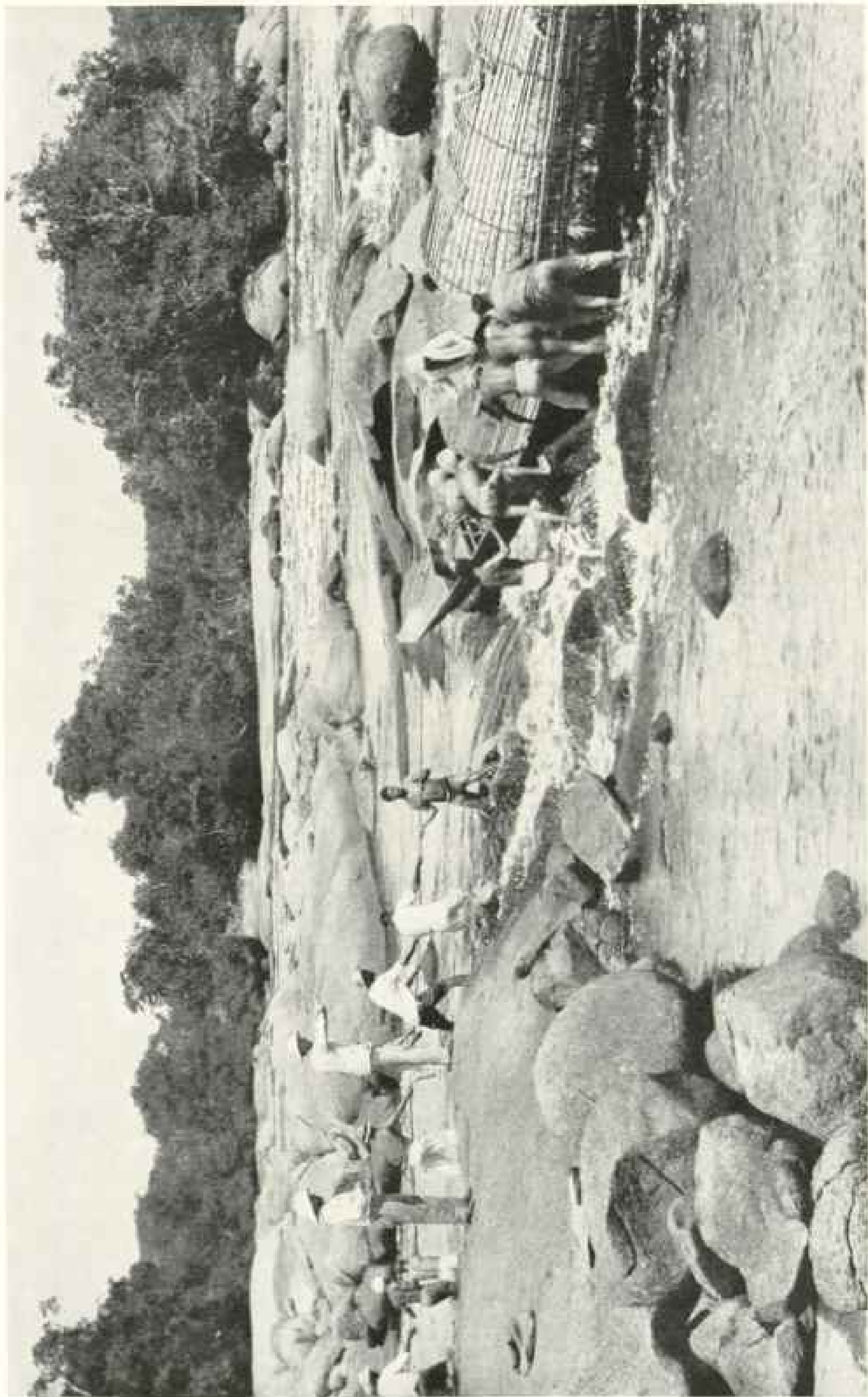
There were things besides birds to take one's attention on the frontier. After some days of annoyance from a small bump on my back, which I had attributed to a chigger, I discovered that I was playing host to a young warblefly. By means of three rings of retrorse spines the larva is able to maintain its hold in the flesh even against severe squeezing, and it must be killed before it can be removed.

All too soon came the time to depart; but the rivers were steadily falling and we were in danger of being marooned in the



BOATS DELIVER PANCAKES BY THE TON AT CIUDAD BOLÍVAR

In the more populous districts of the Orinoco the pulp obtained from the tuberous roots of the *cassava* plant is patted into 30-inch flat disks and baked instead of being made into coarse meal, as in Brazil. The huge cakes, called *cassô*, are wrapped in plantain and palm leaves.



HAULING BOATS THROUGH RAPIDS BECAME MERE ROUTINE.

Such struggles as this account for the fact that, although the expedition was 21 days in covering the air-line distance of 62 miles from the mouth of the Rio Caubury to the Brazil-Venezuela line, only five days' supply of motor fuel was consumed.

forest. With our crew augmented by eight men, through the abandonment of one of the heaviest boats when her bottom was dragged out, we felt able to shift for ourselves. Letting the Commission go on ahead of us, we proceeded at our own pace. But what a pace! To haul up through rapids is one thing; to shoot them, entirely another.

From the start we were in all kinds of trouble on account of the logs and brush that choked the Maturacá. Rushing down with the current in the narrow, tortuous stream made control of the boat difficult, and before reaching the Cauabury we had smashed her top into overhead logs and caught the stanchions on protruding snags until her whole superstructure had assumed a rakish slant astern.

In the open Cauabury, we picked up speed with a vengeance; and there is nothing that brings more joy to the Indian soul than to get somewhere without effort. Where prudence would have dictated a portage, Benedicto was soon shooting the rapids with all the sang-froid of a voyageur in a Canadian canoe. His success was his undoing.

We were approaching the head of the last rapid but two, the motor humming along beautifully. Then, before I could stop him, Benedicto charged the boat down a surging channel that turned to the left about a big half-submerged boulder in midstream. Our kicker was about as effective in that current as a paddle.

The stern of the heavily laden boat swung out, taking the racing propeller with it, and we struck broadside, right in the middle of the worst water. But not before I had very audibly consigned the outfit, our precious collections, and particularly Benedicto, to perdition, and looked about for a place where I might have some chance of swimming ashore.

With a frightful grinding crash, the boat heeled over sickeningly—and stuck! It stuck so fast that all 15 of us couldn't budge it until every box and bale had been brought ashore in the dugout. Then, when it was finally dragged off its pedestal, it leaked like a sieve and cost us enough cotton for calking to stuff a hundred birds.

On no other trip had I been so often on the ragged edge of disaster and come through without a scratch or the loss of a specimen. It was getting to be uncanny.

Back at Jerusalem there was mail from home and newspapers from Pará. We learned that while we had been fighting rapids another struggle had been going on that had placed a new government in control at Rio de Janeiro. Not the slightest repercussion had reached us, however.

We parted reluctantly from the Commissioners, they to return to Manaus, we to continue up the Negro. We had little gasoline left, however; so when we reached São Gabriel we were obliged to wait for a shipment from Manaus by the monthly steamer and launch.

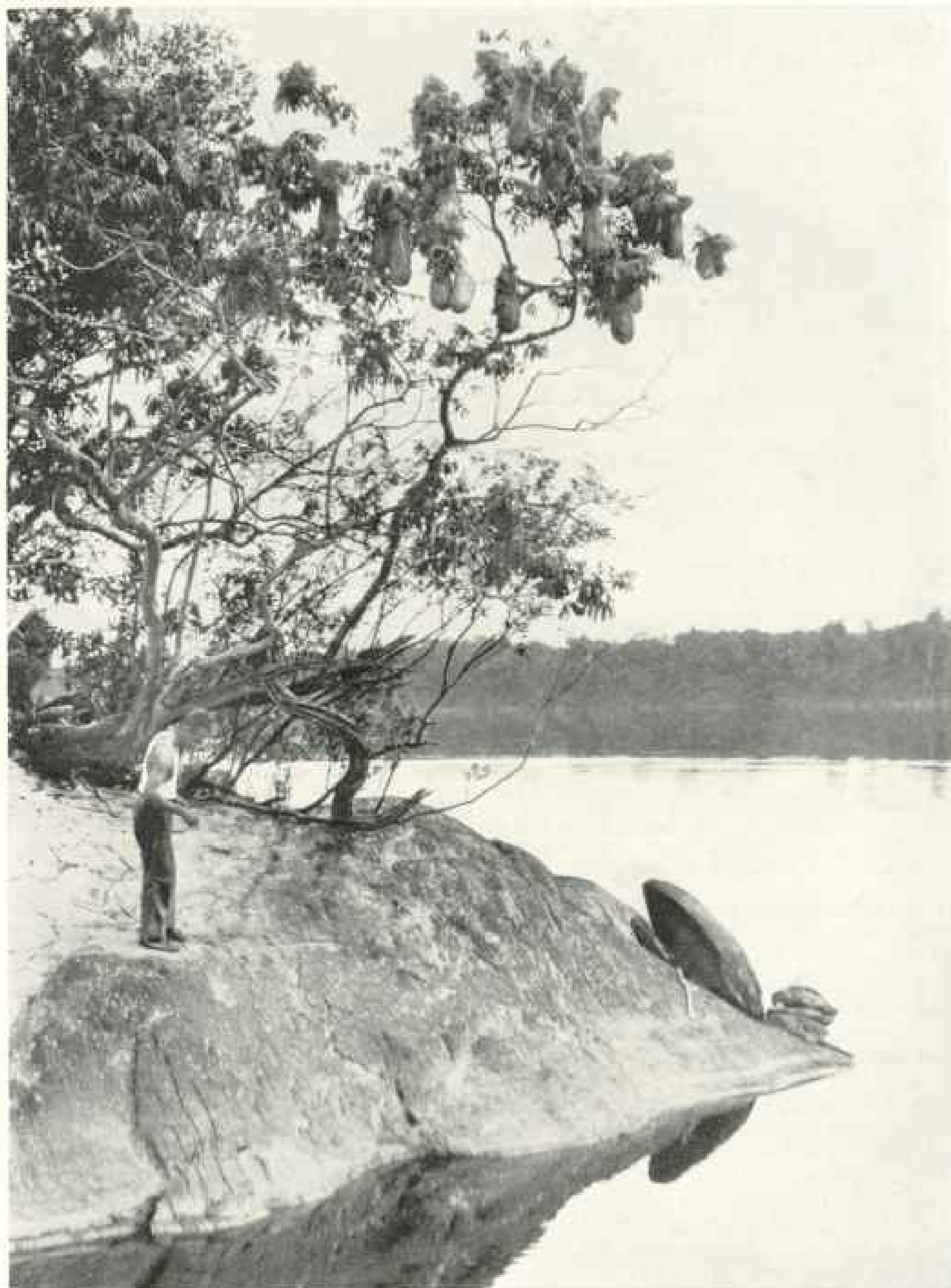
The village, crowning a hill about the middle of a 25-mile stretch of rapids, stands on the loveliest spot on the Negro, but a poorer place to reprovision could hardly be found (see page 618).

MANIOC MEAL AND MONKEY MEAT

It is good management for an expedition to obtain locally as much as possible of its food supplies. In Amazonia, therefore, farinha at once becomes a staple to rank with beans and rice, and monkey meat is accepted as a matter of course. But, filled with the enthusiasm of a first trip to the Tropics, and with that divine fire of curiosity that is supposed to spring eternal in the scientific breast—and plagued by that chronic vacuity of stomach inherent in vigorous youth—my two assistants varied the camp menu in strange ways.

We were majoring in ornithology, so to speak, and rare blends of parrot and toucan, or a tinamou stew flavored with a dash of ant-thrush, naturally became the order of the day. In fact, the body of almost any bird large enough to yield a morsel of food found its way into the pot as soon as its skin was preserved, for we utilized as fully as possible everything collected. I was moved to mild remonstrance, however, when the boys took a cue from the natives and began shooting alligators to add variety to the fare. Fried gator tail is admittedly savory, but it is alligator just the same!

One day a hunter brought in a tiger cat, a handsome little jungle animal (see page 596), that fell to Agostini to prepare. Now, when I skin a specimen and perforce inhale odors that might well give point to some modern advertisements, my thoughts seldom dwell on the next meal; least of all do they picture the carcass before me as it might appear on the dinner table. But evidently Agostini was intrigued by the



CACIQUES BUILD APARTMENTS IN TREE TOPS

These big black-and-yellow orioles often come right into the villages to establish colonies, but in such places they invariably hang their houses around a hornet nest. Not until the expedition had reached the rocky islets of the upper Río Negro, where such protection is dispensed with, could eggs be obtained (see text, page 593).



FRESH MATERIAL FOR BREAKFAST FARE, BUT NOT FROM THE HENCOOP

At Isla Yagumo, Agostini unearthed turtle eggs deposited by the small *terrecay*. They are covered by hard shells. Those produced by the big *tortuga*, round and as large as golf balls, are encased in a leathery integument.

animal's firm white flesh, and much to my amazement suggested that we have it for dinner. My refusal was prompt and unequivocal. Nevertheless he wheedled until I gave in. But our Brazilian cook almost mutinied. The day was a busy one, and we were all hungry when at dinner the cook served an enticing sauté. I had eaten to repletion when I remembered the cat!

Revenge was both sure and swift. We enjoyed the luxury of a mud hut at São Gabriel, and I had been interestedly watching some Indian children under my window catch giant sauba ants as they issued from their burrows to launch upon their nuptial flight, and drop them into a squirming mass in an earthen pot. Either embarrassed by my question, or not understanding it, the children told me that the ants were to be used for fish bait, and disappeared.

Not long after, an Indian entered and, with the hospitality of the true woodsman, proffered a calabash of food. I smilingly accepted—to find the calabash half filled with fried ants! The wings were gone, but every leg was intact.

Our Indian neighbor out of the kindness of his heart had brought us a delicacy, so it must be eaten. What could be more appropriate than that my experimentally inclined assistants should enjoy a new dish? In fact, I insisted that they do so. Each put a single sauba—an enormous thing more than an inch long—gingerly into his mouth and began to chew. Agostini chewed slowly and meditatively, and, finally removing the débris and injecting a judicial tone into his voice, said: "It might be all right, but it's just a trifle too acid to suit my taste." Blake, on the other hand, un-



FROM THE REMAINS OF A TERMITE NEST SPRINGS A PURPLE ORCHID

Contrary to popular belief, these lovely flowers are not parasites, but epiphytes, which ask only mechanical support of their hosts. They abound in the jungle.

ceremoniously spat forth a tangled mass of legs and chiton and exploded, "Well, I'll be honest about it, it's just too much ant for me!"

With replenished fuel supply, we turned once more up the Negro, and at the bold massif of Cucuy crossed the line into Venezuela. How we collected along the Casiquiare to study the effect of the intermixing of Amazonian and Orinocan faunas; how we brought out the first collection made of many species of plants since Spruce discovered them 80 years before; how we wrecked our motor and had to resort to poles and paddles; how we obtained 1,200 birds on the isolated Cerro Yapacana—these things and others would make a story in themselves.

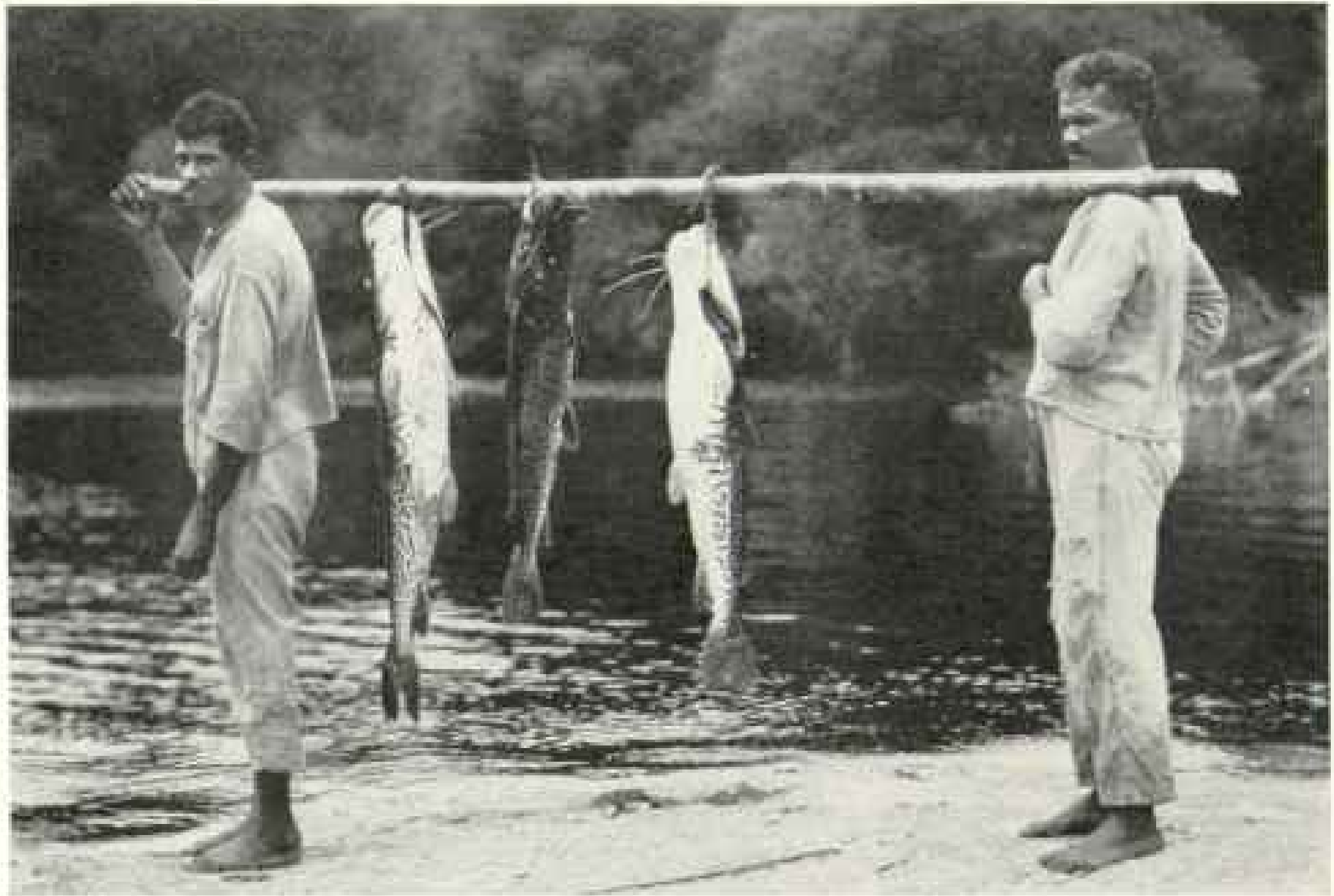
Ultimately we had reached Ciudad Bolívar, on the lower Orinoco, and, with our specimens safely stored in the hold, we

were steaming downstream toward Port-of-Spain and home.

Entering one of the mouths of the Amazon, we had voyaged 3,000 miles of continuous inland waterways through the greatest jungle on earth, and would soon depart by one of the 36 mouths of the Orinoco.

We had traversed the length of that strange artery, the Casiquiare Canal, that links the Amazon and the Orinoco like Siamese twins and makes of the Guiana highlands the largest island on earth save Greenland. We had stood upon rain-drenched mountains where never white foot had trod. Now we were leaving it all.

The other passengers had gone to bed. Only we three remained on the darkened deck to stare over the rail into the night, reluctant to miss even this remnant of the river on which we had journeyed so long.



RESPIRE FROM CORNED BEEF WAS WELCOME

The waters of the Maturach teem with fish, and the men enjoyed good sport when the expedition went into the Salto do Huá camp on the international line. The specimens shown are of a kind of catfish known as *curubim*, rather oily, but very nutritious.

But there was little our eyes could see. No moon rode the heavens, and even the stars, usually so near and so lustrous in these tropic skies, were now obliterated by a pall of smoke drifting seaward from the annual burning of the delta plantations. Over the sides was only blackness; straight ahead, only the dull silver of the channel, flanked by two inky lines of half-submerged mangroves. The immaculate egrets and flashing scarlet ibises, like most of the passengers, were asleep, and the watch was kept by the frogs and caymans, and the hordes of fiddler crabs swarming over the mangrove roots.

Noiselessly the steamer swept on. Out past the farthest point attained by the boldest of the mangroves, wading tiptoe against the tide, she slipped from the Orinoco, to be met instantly by angry whitecaps. Flat of bottom and wide of beam, she began to pitch and heave like something possessed, and the cargo of steers, thoroughly frightened, set up a terrible bawling, as if suddenly sensing their imminent doom in the slaughter pens of Trinidad.

The low fringe of mangroves receded into the general blackness of the tropic night, and, our last tie severed, we turned sadly into our bunks.

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

"AS THE TUAN HAD SAID"

BY GEORGE M. HANSON

Formerly United States Consul at Sandakan, British North Borneo

THE Sultan of Sulu in real life is not the amusing semisavage that George Ade put into comic opera three decades ago, but a decidedly modern ruler of the Sulu Archipelago, which forms a series of oceanic stepping stones from the major cluster of the Philippine Islands toward the northeast coast of British North Borneo. Appointed a member of the insular Senate of the Philippines by former Governor General Dwight F. Davis, he has become a familiar figure in Manila and has attracted attention as an aviation enthusiast (see pages 632, 642).

Although he partly acknowledged the temporal sovereignty of the United States in 1899, and completely so in 1915, he retains some of the glamour ascribed to him by the dramatist and remains locally a potentate to the native Sulus, or Moros. He formerly maintained at Maimbung, on the southern coast of the island of Jolo, a two-story frame "palace" for himself and six smaller dwellings for his wives and retinue. In 1932 a storm wrecked most of the buildings.

MOHAMMEDAN SUBJECTS OF THE UNITED STATES

Purely religious, his title connotes nothing more than leadership of the Mohammedan Church within the limits of his sultanate. The Sultan of Brunei, British Borneo, the recognized "Royal Highness" in the greater part of the territory, is inclined to regard him as a poor relation who pays tribute to Brunei; but nevertheless he is a full-fledged Sultan and has authority of a sort over perhaps 300 small islands and that part of British North Borneo with administrative headquarters at Sandakan.

In Borneo, as elsewhere, the British are good colonizers. They believe it is wiser to placate the Sulus on the Borneo side of the Sulu Sultanate than to run risk of trouble; consequently they still pay tribute to the Sultan and accord him military honors on his visits to Sandakan. He is given a salute of guns when he comes to collect his annual tribute, and is entertained for two weeks or more by British officials at Government House. Here he receives local native chiefs and other notables, who renew allegiance for the reward of his blessing.

The Sultan prides himself on being an American, though his domestic arrangements have hardly been of a kind sanctioned in the United States. Under the Koran he may have four wives at one time; and, since he has power to dismiss a wife or divorce her by waving his royal hand, the limitation of number has not been irksome. It is said that in his day he espoused many wives. He has no children, however, and the Rajamuda, or heir apparent (*muda* is a Malay word meaning "unripe"), is his younger brother. Although the 1915 treaty recognized him as the spiritual head of the Sulu Mohammedans, its terms were such as will eventually cause polygamy to be abandoned.

Matrimony is somewhat casual among the Sulus, and it is not unusual for girls of thirteen, twelve, or even eleven to be claimed as brides. When I was United States Consul at Sandakan, I had an amusing experience which impressed upon me the peculiarity of native marriage customs.

Shortly before the Sultan's visit to Borneo that year, a German landholder whom the British had ordered out of the country for the duration of the World War requested me to take charge of his rubber plantation near Sandakan. I agreed, since it was then my duty to take over representation of German interests, to go there on each pay day and check the accounts, but I declined to assume official control of the plantation. Thus I became for a short time "master" of the Malay laborers, pending appointment of a permanent superintendent.

MATRIMONY NEEDS SUBSIDY

Upon my arrival on the first pay day, the accountant, a Singhalese from Ceylon, brought to my attention a plea from Alus, the house boy, who needed an advance of \$10, Singapore currency, for wedding expenses. Alus' prospective bride, the intermediary explained, was Canapa, daughter of Samat, the chief tapper.

Canapa was rather a little girl, and, it seemed to me when her mother presented her for inspection, much too young to be thinking of matrimony. I decided a little delay would do no harm. Although the mother, herself only twenty-four, argued that Canapa was "long past eleven and



THE SULTAN OF SULU IS AMERICA'S ONLY MOHAMMEDAN RULER

Seated in the provincial treasurer's office at Jolo, Jamalul Kiram II signs for his annual payment of 6,000 pesos (about \$3,000) from the American Government. The 65-year-old potentate (see Illustration, page 642) is not the amusing semisavage of George Ade's musical comedy, but a decidedly modern ruler. He is the spiritual head of the Mohammedan Moros, a member of the Philippine Senate, an aviation enthusiast, and a traveler in the United States. A niece attended the University of Illinois.



Photographs by Alejo E. Lilius

THE SULTAN OF SULU HAS HIS OWN FLAG

The Moro swords are reminiscent of the bloody warfare of old, but the stars are a symbol of amity with the United States. When Spain ruled the archipelago, only the Spanish colors could be flown. At one time the present Sultan sought to have the use of his own banner recognized officially by the United States, but without result.



Photograph by Lieut. G. W. Goddard

PIRATE FLEETS FROM JOLO ONCE HARRIED THESE SEAS

The capital of the archipelago was formerly a center from which ferocious raiders sailed as far away as Singapore, Bangkok, and New Guinea. Now a peaceful town, one of the prettiest in the Philippines, it has spread beyond the defensive walls built by the Spaniards. Through the streets wander Filipinos, Chinese, Americans, Arabs, an occasional Hindu, Bajaos, Moros, and Moro *hadjis* (those who have made a pilgrimage to Mecca).

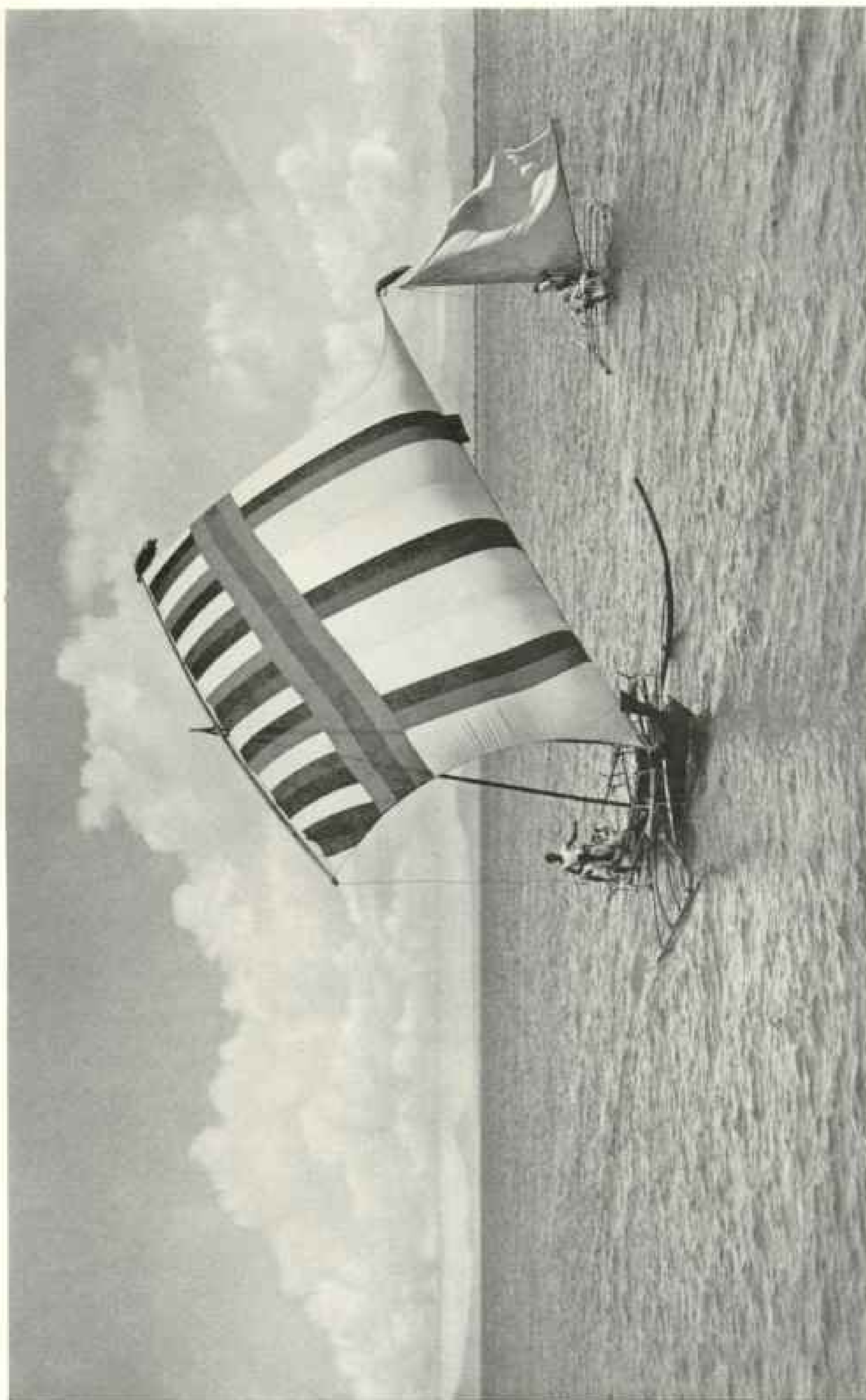
ready to marry," I announced kindly but firmly that no girl under twelve could be married without my special consent.

The mother asked if the wedding could take place when the girl was twelve. Not wishing to seem overharsh, I assented. I even offered to take a photograph of the supplicants and to give them a print as balm for their disappointment. They eagerly posed for the picture and went away seemingly well pleased.

It is the custom in the Orient to advance small sums to servants and laborers in order to keep them in service. When a native owes money to the master, or *Tuan* (pronounced *Too-ann*, with accent equal on each syllable), the law does not allow him to quit. He must stay on the job till he pays off his

debt. There was no important reason, therefore, for refusing the small loan asked for by Alus, the only danger being that after the marriage he might run away and go down the coast to his people, the Bajaos.

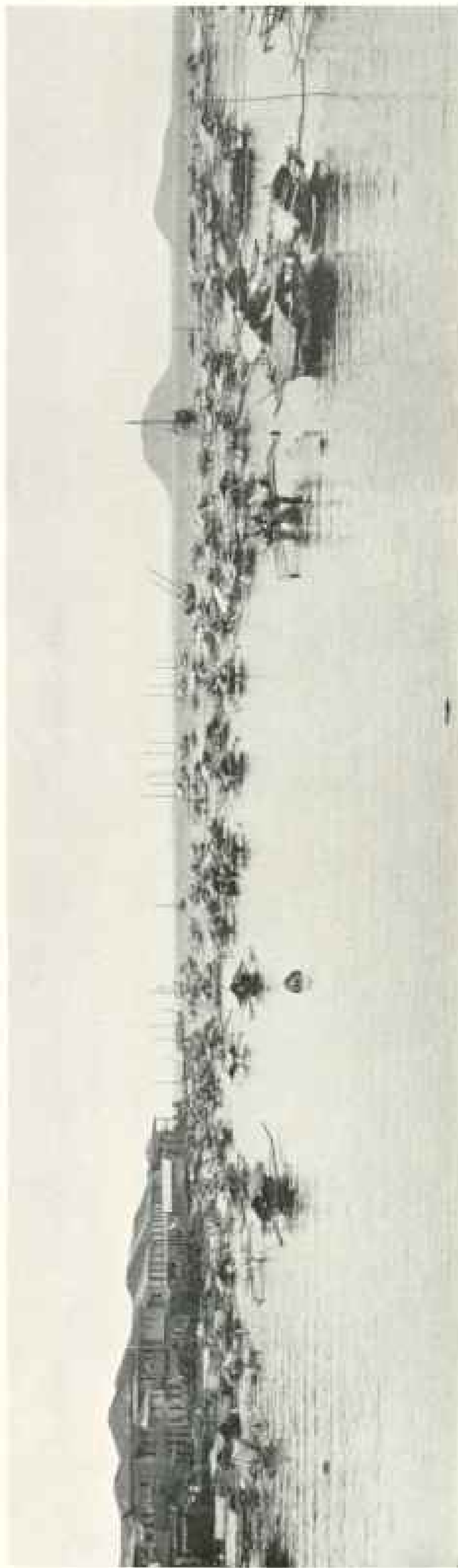
These folk, the gypsies of the Malays, avoid insects and reptiles by living in small boats along the shore, and they are almost as much at home in the water as on land. Their favorite recreation is killing sharks for the fins and teeth. Although the only weapon used in this exciting sport is a three-cornered copper dagger, with dull edges but a very sharp point, the advantage is all on the side of the Bajao. He seldom fails to drive his knife into the lungs of the shark and finish the fight quickly. Alus, eighteen and athletic, was an expert shark killer.



Photograph by K. Koyama

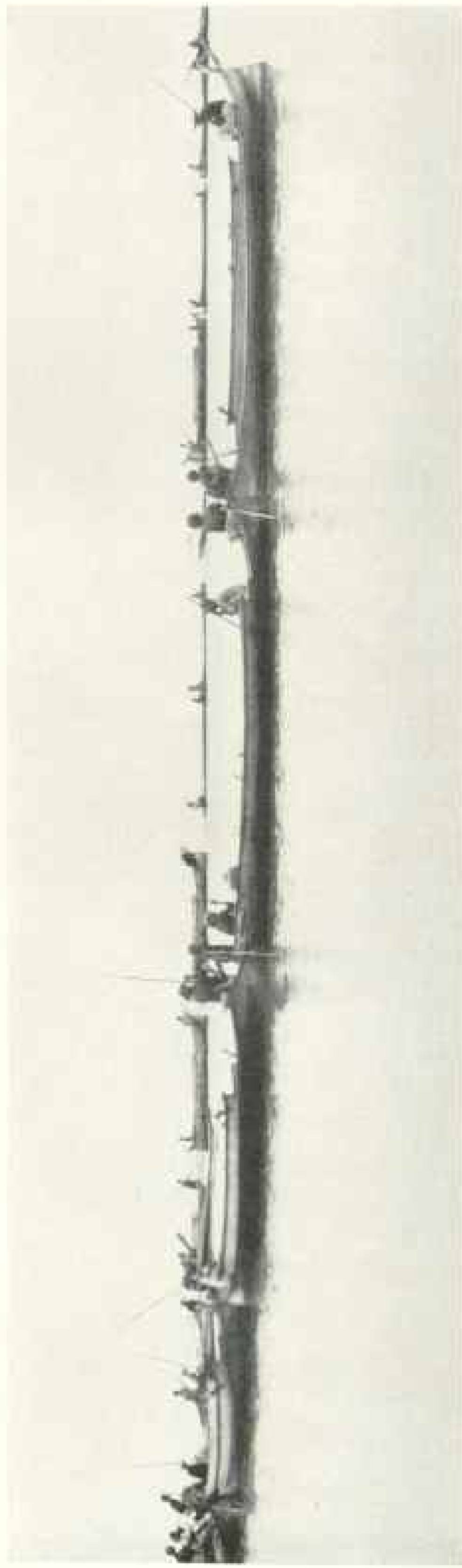
WITH SAILS ASLANT, THE "VINTAS" SKIM THE SULU SEA

These long, narrow, outrigger canoes, each hewn from a single log, move fast if the wind is astern, sometimes outstripping a motorboat. When the breeze dies, the natives drive them with paddles, worked with one foot and one hand. The stripes on the lateen sheets are made by sewing on colored strips of cloth.



WHEN A TYPHOON BREWS, BAJAO CRAFT FLOCK SHOREWARD

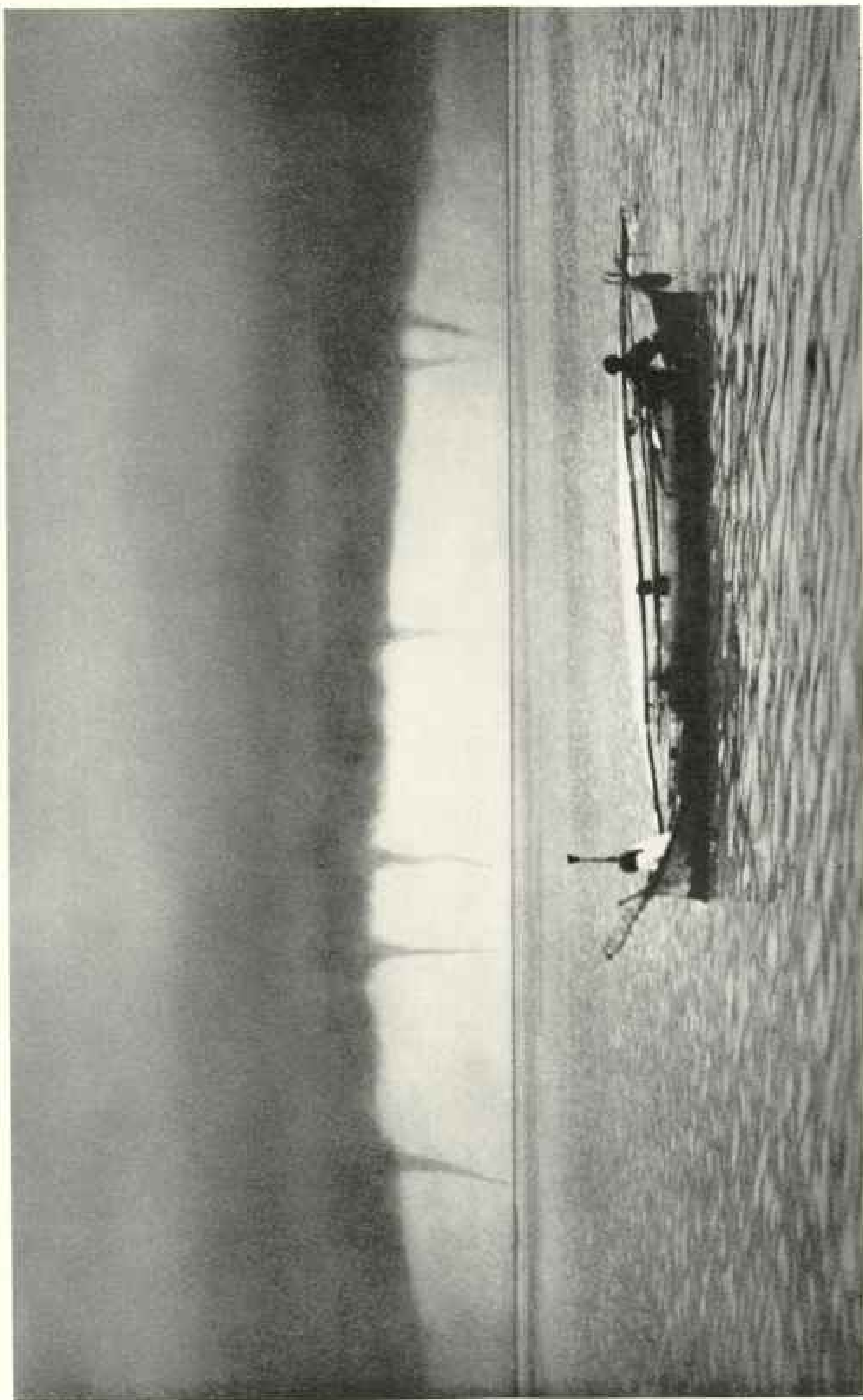
The *vintas* scurry to cover, and other fishing and pearling boats follow, to huddle near the Chinese pier of Jolo, a spot once famed for dark crimes, but now peaceful.



YELLING BAJAJOS IN CANOES ROUND UP A SCHOOL OF FISH

From a wide circle, the craft converge, the men shouting and beating upon the gunwales to frighten their quarry to the center. When the boats touch, a fence of nets is dropped around a weighted sailcloth. The weights are loosed by divers, and the sail, with its catch, is pulled up.

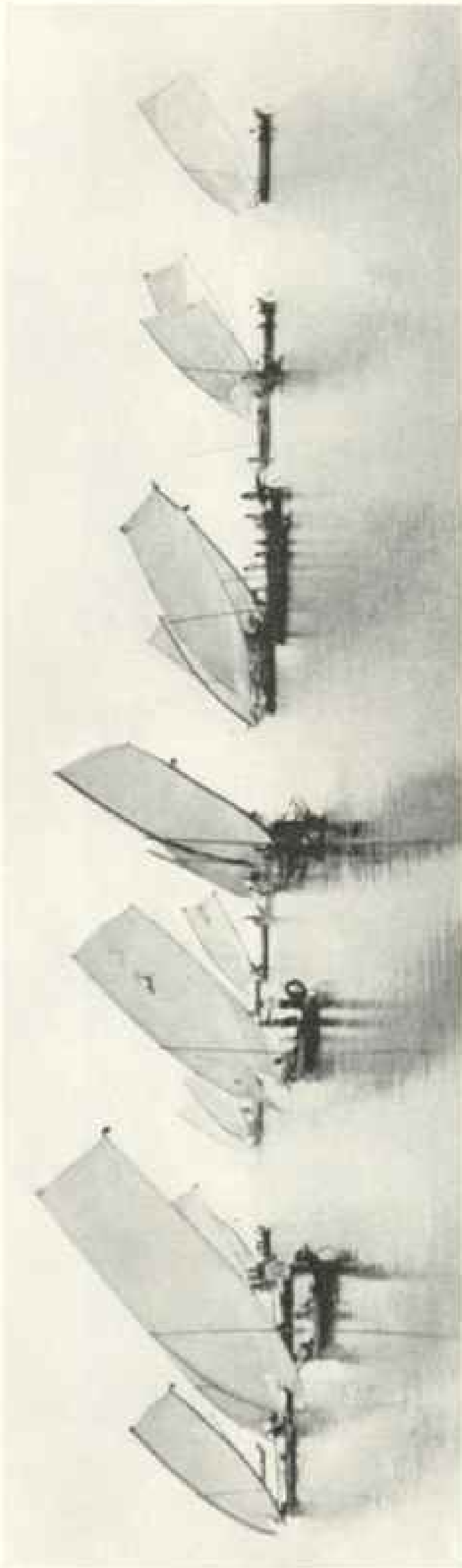
Photographs by Aloha E. Lillian



Photograph by Abdul E. Liliou

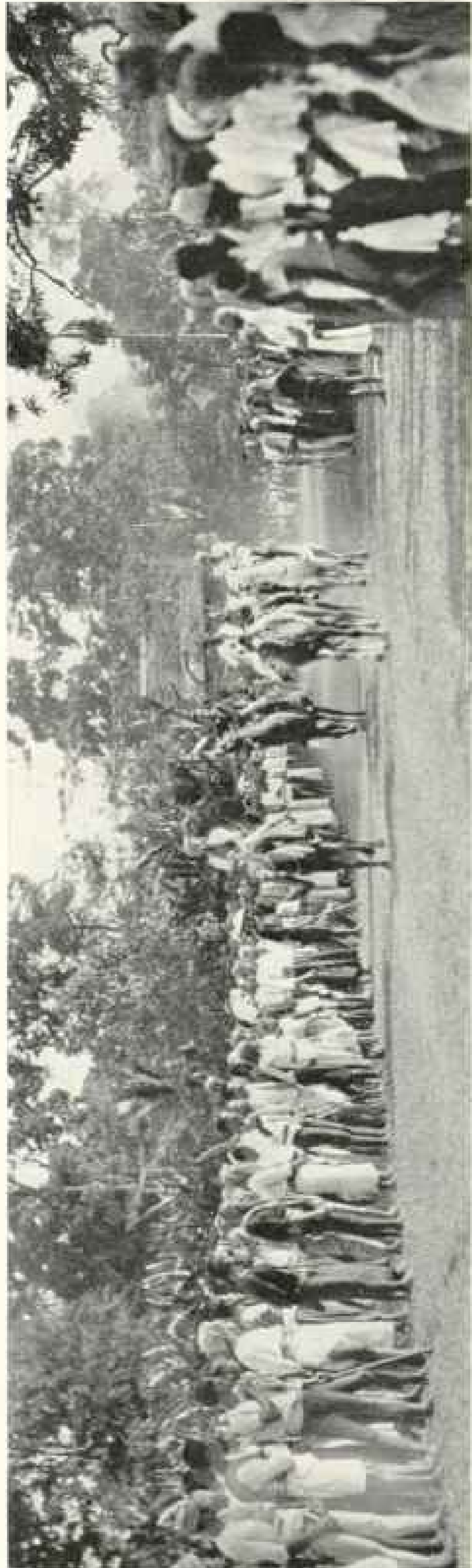
WATERSPOUTS IN NUMBERS WHIRL ABOVE THE SULU SEA

This dramatic spectacle of six terrifying and dangerous whips formed simultaneously was photographed near the Borneo coast. Such phenomena, while not common, have been observed occasionally in these latitudes.



© Arko E. Låm

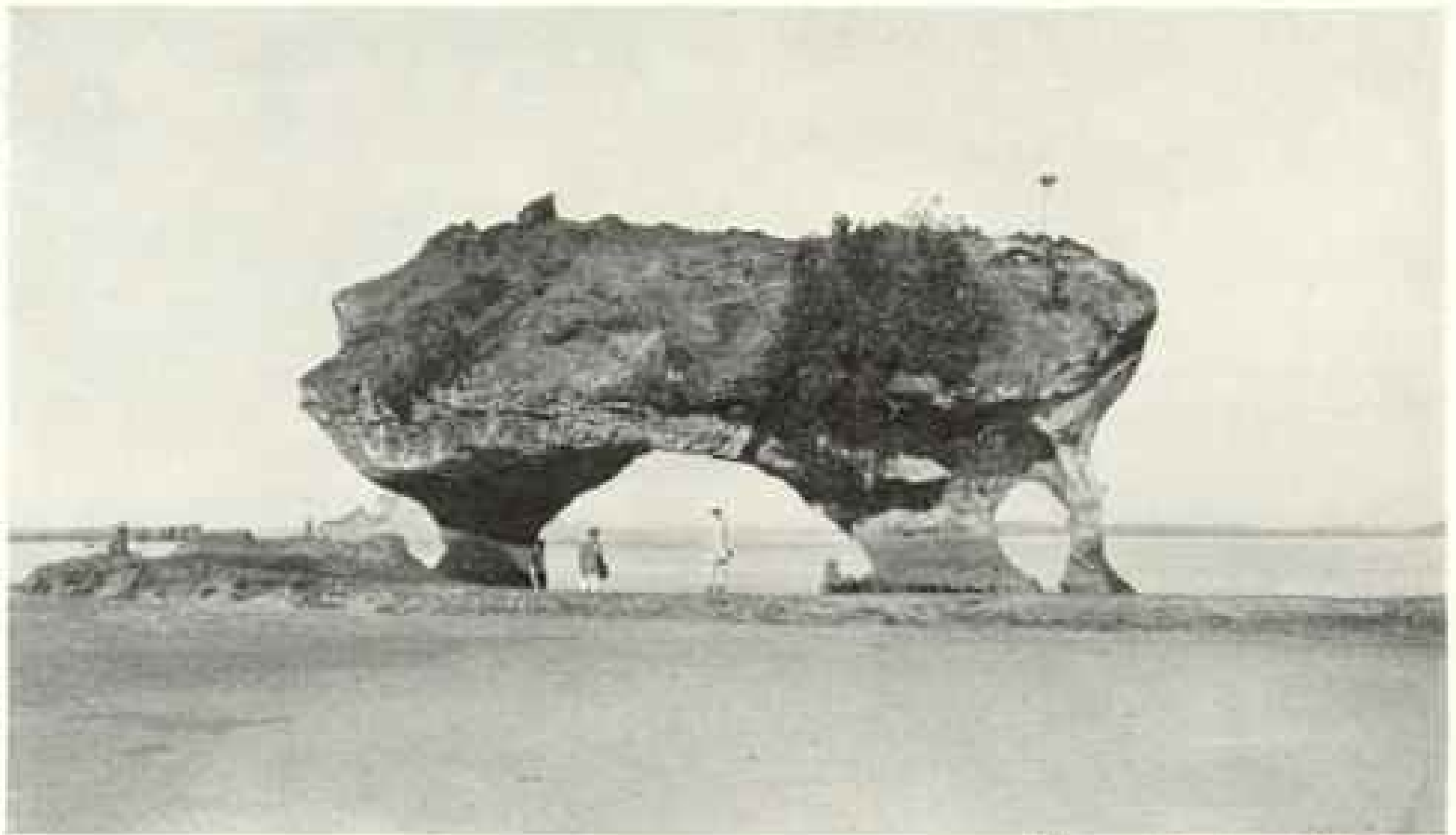
BAJAO CRAFT CONGREGATE AT SITANKI ISLAND, PRINCIPAL RENDEZVOUS OF THE SEA GYPSIES



Photograph by Arko E. Låm

JOLO ISLANDERS TURN OUT IN FORCE TO VIEW A SULLU VERSION OF THE KENTUCKY DERBY

The natives are ardent followers of sport, and they cheer their favorites in the frequent horse races with all the enthusiasm of devotees of the turf. Cockfights are also popular, and a champion bird makes his owner an important personage.



Photograph by George M. Hanson

WAVES OF THE BAY HAVE CARVED A DOUBLE ARCH FOR SANDAKAN

Near the rock gate of its excellent harbor lies the little metropolis of a British State, part of which was obtained by grant from the present Sultan's father in 1878. The marine boundary between British North Borneo and the Philippines was delimited in 1930.



Photograph by K. Koyama

MORO STAIRS HAVE NO BANISTERS

Youngsters who live in these stilt-set houses miss one joy of childhood; for a coconut tree with notches at convenient intervals for steps would make rough sliding. The thatched homes of wood or bamboo are built above the ground to keep out damp and snakes.



Photograph by Aiko E. Lillis

THE SULU SEA GYPSY LIVES BY DIVING

Two-pronged spear in hand, the Bajao goes overboard to get his fish. Many of these people have no other home than log canoes, in which they roam afar. The Sultan of Sulu once controlled the pearl fisheries here, claiming free or buying for a nominal sum the largest pearls found.



Photograph by K. Koyama

THE VINTA GOES TO MARKET HEAVILY LADEN

Besides other products, the merchants deal in fighting cocks, parrots, gay clothing, betel nuts, inlaid brassware, and such fruits as sweet mangosteens and vile-smelling durians. The Bajaos bring in shark fins, live turtles, edible bird nests, dried fish, and sometimes a pearl for sale to the Chinese.



THE CLOWN STAGES HIS FUNNIEST ACT FOR THE WEDDING GUESTS

Musicians beat their drums while he goes through his antics at Moro nuptials at Parang, a settlement on Jolo Island. The men are noted pearl and shell (mother-of-pearl) fishermen, and dive to unusual depths for their booty. Lovers of merriment, they flock in numbers to all celebrations. The long bamboo tube carried by the native in the background is the Sulu substitute for a pail or jar, and holds several gallons of water.



Photographs by Aleko E. Lilius

PARANG SOCIETY DICTATES STRIKING WEDDING FINERY

The daughter of a Moro *datu* (chief) is marrying the son of another chief. The bride has her eyebrows shaved and her face painted with a yellowish substance. Sulu women, although Mohammedans, were not required to wear veils. As a rule, the Moro feminine apparel consists of a bodice with gold buttons, a *sarong* (an unsewn skirt wrapped around the waist), and wide silk trousers. A wire corset, also, is popular (see text, page 642).



SHOTS FRIGHTEN EVIL SPIRITS FROM THE BRIDE'S HOME

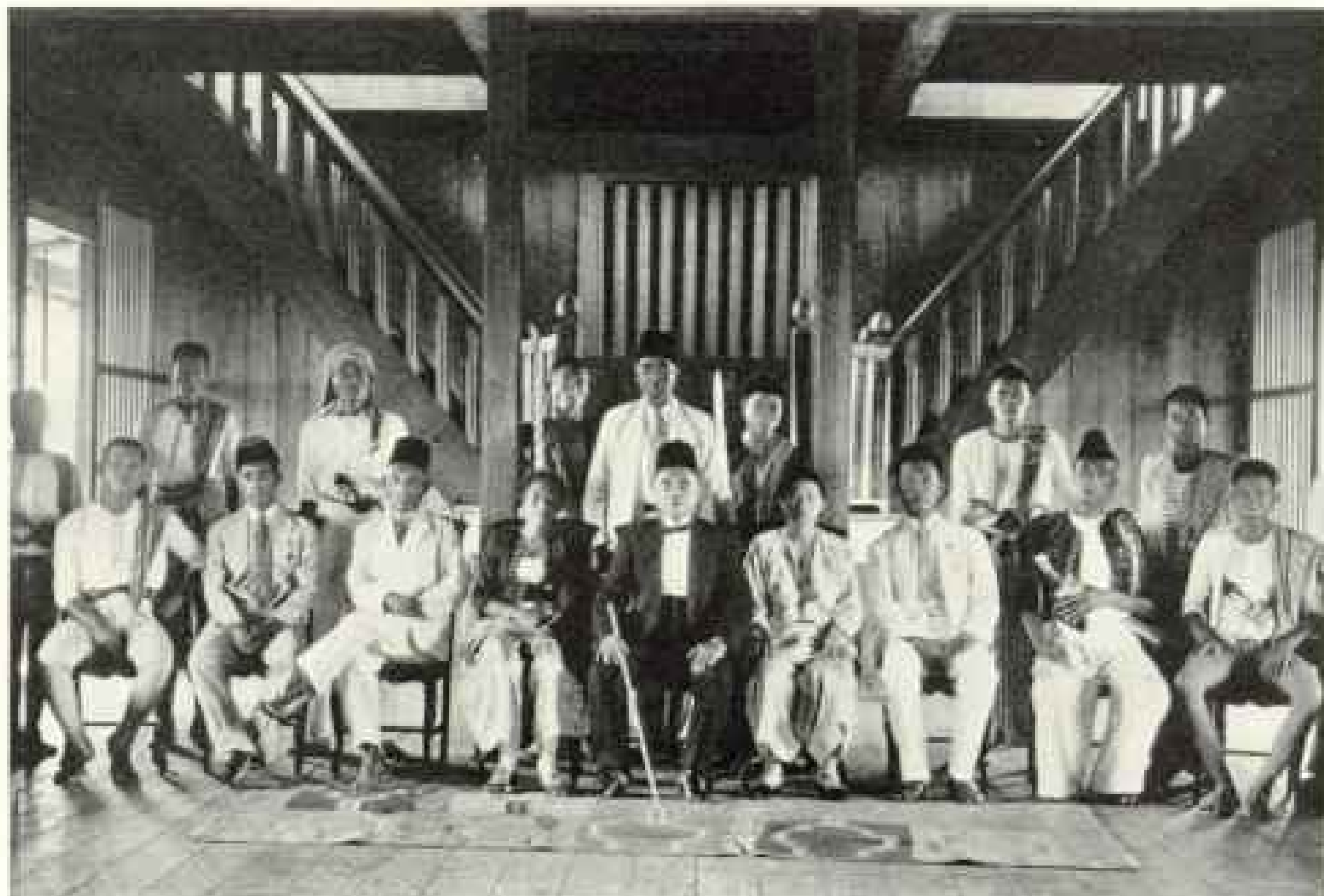
The Moro bridegroom is expected to present a cash gift to his bride's parents; if he is rich, this may amount to \$250. He also pays for the wedding feast. Some of the men wear bright turbans, close-fitting shirts, trousers like tights held in at the ankles with brass buttons, and two silk scarfs, one thrown over the left shoulder, the other wrapped around the waist as a belt. Around their hips dangles the kris, often with handle of ivory and gold, as a sign of rank.



Photographs by Aleo E. Lilius

BAJAOS BELIEVE IN MARRYING YOUNG

The boy husband touches his child bride on the forehead as a sign that she is his. The Sea Gypsy takes a wife, often only 11 or 12 years old, as soon as his parents think him able to earn a living. Ceremonies such as this on Sitanki Island, 20 miles east of Borneo and at the south tip of the Sulu Archipelago (see page 637), are accompanied by much gong and drum beating, and canoes are decorated with flags and bunting.



Photograph by Aleko E. Lilim

THE SULTAN HOLDS COURT AT MAIMBUNG

He is the head of a dynasty more than 300 years old, and his throne has existed for more than 600 years. The numerous wives attributed to him in the past have now dwindled to the two shown sitting on either side of him. They wear modern shoes and stockings as a concession to this occasion. The Sultan, like some of the members of his court, has adopted certain forms of American dress, but usually clings to the Mohammedan *fer* (see illustration, page 632).

On my next visit to the plantation, I sent for Canapa and her mother and gave them a print of the photograph I had taken of them two weeks earlier. They seemed very happy, and the mother asked again if Canapa could be married when she was twelve. Again I said yes, and told her to go ahead and prepare for the wedding. Alus also asked the same question, and I repeated my assurance to him. Canapa would be twelve at the full moon, which would occur, so he had learned from the accountant, on Sunday of the next week.

When I asked the accountant if there was a Malay priest or other Mohammedan on the estate authorized to perform marriages, he said no, and added that marriage ceremonies between Malays were usually performed by the Tuan, free of charge. The accountant was a Brahman and had little respect for the ceremonials of his sect's religious enemies, the Mohammedans.

A week after this episode the Sultan arrived and received official entertainment at Government House. I could not let the

British outdo me in showing him the courtesy due his position and influence, and accordingly I invited him and his party to the Consulate to tea. The guests included the Sultana, the Rajamuda, the Sultan's minister, and several *datuhs*, or chiefs.

THE SULTANA SHOWS GOOD TASTE

The Sultana, who was young and rather good-looking, surprised me by her intelligence and modest demeanor. Her costume, partly native, partly occidental, included the conventional Malay *sarong*, a wide cloth drawn about the body from the waist to the knees and held in place by a fold at the waist; a blouse on the order of a man's shirt, and a batik, or silk scarf, for the head. She also wore shoes and stockings, a great concession to the occasion. She may have been girdled with a wire corset, but if so she had it completely hidden under her blouse.

The Sultan was dressed in a natty pongee silk suit, made for state occasions by a Chinese tailor in the Philippines. His tie was ornamented by an immense pearl, probably



Photograph by Lieut. G. W. Goddard

WARRIORS OF BOLO, BARONG, SPEAR, AND KRIS ONCE RAIDED THE SULU SEAS

Pioneer Spaniards, with bitter memories of their seven-century conflict with the Moors, called the Mohammedans of this archipelago "Moros," and the designation stuck. Their name once a synonym for murder and treachery, these little brown men, skilled workers in metals, fought Spaniards and Americans relentlessly for their freedom. Now all is changed; they send their children to school and conduct themselves with comparative decorum.

worth several thousand dollars. He wore the fez of Islam and made rather a smart appearance. The others had on their Sunday best, and if they were uncomfortable they did not show it.

CIGARETTES MADE BY THE "FAITHFUL"
IN NORTH CAROLINA

Though he is a Sulu, the Sultan speaks Malay fairly well, and we passed a most interesting hour discussing the World War. He said it was his wish that the Allies defeat Germany; but when I asked him about Turkey, his sentiment changed. He was absolutely sure no Christian army could take Constantinople (Istanbul); for that was a holy city, the home of the Prophets of Allah! He was certain no harm would come to the Turks, for Allah was sure to fight with them. The Sultana smiled and said she was glad she was an American, because the Americans did not believe in war.

I offered them cigarettes and handed the Sultan a package labeled "Egyptian Cigarettes, Turkish Tobacco." He examined the

package critically, and when he saw the hieroglyphics he was delighted. Egyptian cigarettes, he said, were made by the "followers of the Faithful and not by Christian infidels." I did not disturb his sublime faith, though I could have told him that those cigarettes were machine-made in North Carolina from tobacco grown in Asia Minor, and supplied by the million to the English firm that shipped them to the East.

After cigarettes the Sultan declared in the exaggerated language of the East that his joy would be complete if he might have his picture taken with the Rajah from America. I answered that it would make my heart most happy to pose with him; whereupon he called me his brother and said he would treasure the photograph among his most cherished possessions.

When the Japanese photographer had been summoned, I asked His Highness to honor me by arranging the group. He directed the datus to stand aside and indicated he would like to have the Rajamuda and his private minister on his left, while the

Sultana could sit on his right, and I might have a place next to Her Highness. The two secretaries, his and mine, could stand at the back. I assured him my soul was filled with gratitude for the privilege of sitting so near the Sultana, and he accepted my appreciation with a sultanic smile.

When the pictures were finished, a few days later, I presented him with two prints, one for him and one for the Sultana, and he told me I was dearer to him than the Rajamuda, adding that if I ever came to Jolo I should be his guest at the palace and he would furnish me a suitable wife for the occasion. The generosity of his offer was exceeded only by his unquestioned sincerity.

THE SULTAN CAN PERFORM WEDDING CEREMONIES

While I was entertaining the Sultan at the Consulate, it occurred to me that it would be a fine thing to have him perform the wedding ceremony. His officiation would be an unexpected honor to Alus and Canapa and no doubt would prove highly gratifying to all concerned. The more I thought of the idea the better I liked it. I would have the young couple come back with me to Sandakan on Saturday, and invite the Sultan to another tea, where he could smoke his fill of Turkish cigarettes made by the "Faithful" in North Carolina. The wedding of Alus the Bajao and the twelve-year-old Malay beauty, Canapa, would follow. The incident was all but closed.

When I went to the plantation the following Saturday, the full moon that regulated Malay birthdays for the month had waned perceptibly. The accountant met me as usual, but no smiling Alus stood in the doorway to greet me.

"Where is Alus?" I asked.

"He is here no more. He and Canapa live in the little house behind the rubber factory with Surinin, the *kaboon* (gar-

dener), and they went to Sandakan to-day in the hope of getting to see the Sultan."

"Living with Canapa?" I muttered. "What do you mean?"

"They were married at the full moon, a week ago, as the Tuan had said, and he is at this house no more."

"Married a week ago? Who married them?"

"Why you, Tuan; you married them."

"I married them! What are you driving at?"

"It was the full moon, Tuan, and Canapa was twelve. And so they were married, as the Tuan had said. They sleep in the house of the kaboon, who is Canapa's uncle. Is not the Tuan pleased?"

Then the whole thing suddenly dawned. The accountant was right, and all my paternalistic plans for giving the house boy and his childish fiancée a wedding of regal pomp and circumstance had come to naught.

I had married them, however unintentionally, but none-the-less certainly. Because of my inexperience with native customs in affairs of the heart, I had spoken fateful words too casually. The Tuan had signified his consent and had fixed the time. That was enough.

To them marriage was the voluntary giving to each other of man and woman and the bond of union was based upon mutual faith and confidence. If it were convenient for a priest to make a record of the ceremony, well and good. If not, why bother?

As the big moon had risen in the twilight on the fateful day, and the silver gray of the quivering leaves had brightened in the first beams of piercing light that penetrated the shadows of the rubber trees, their hearts had beaten lovingly in silent affection and their hands had been clasped in trusting faith. The full moon I had mentioned so carelessly had been the harbinger of their wedding day.



NATIONAL GEOGRAPHIC SOCIETY

GEOGRAPHIC ADMINISTRATION BUILDINGS

SIXTEENTH AND M STREETS NORTHWEST, WASHINGTON, D. C.

GILBERT GROSVENOR, President

JOHN JOY EDSON, Treasurer

FREDERICK V. COVILLE, Chairman Committee on Research

JOHN OLIVER LA GORCE, Vice-President

GEO. W. HUTCHISON, Secretary

HERBERT A. POOLE, Assistant Treasurer



EXECUTIVE STAFF OF THE NATIONAL GEOGRAPHIC MAGAZINE

GILBERT GROSVENOR, EDITOR

JOHN OLIVER LA GORCE, Associate Editor



J. R. HILDERRAND
Assistant Editor

MAYNARD OWEN WILLIAMS
Chief Foreign Editorial Staff

ALBERT H. BUMSTEAD
Chief Cartographer

FREDERICK SIMPICH
Assistant Editor

WILLIAM JOSEPH SHOWALTER
Chief Research Division

McFALL KERBEY
Chief of School Service

FRANKLIN L. FISHER
Chief Illustrations Division

MELVILLE BELL GROSVENOR
Asst. Chief Illustrations Division

CHARLES MARTIN
Chief Photographic Laboratory

BOARD OF TRUSTEES

JOHN JOY EDSON
Chairman of the Board, Wash-
ington Loan & Trust Company

WALTER S. GIFFORD
President American Telephone and
Telegraph Co.

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

C. HART MERRIAM
Member National Academy of
Sciences

LYMAN J. BRIGGS
Director U. S. Bureau of Standards

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

THEODORE W. NOYES
Editor of The Evening Star

CHARLES EVANS HUGHES
Chief Justice of the United States

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

WILLIAM V. PRATT
Rear Admiral U. S. Navy, Retired

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

ALEXANDER WETMORE
Assistant Secretary, Smithsonian
Institution

GILBERT GROSVENOR
Editor of National Geographic
Magazine

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

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

CHARLES G. DAWES
Formerly Vice-President of the
United States

JOHN BARTON PAYNE
Chairman American Red Cross

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

GEORGE OTIS SMITH
Member Federal Power Commis-
sion

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

JOHN OLIVER LA GORCE
Associate Editor National Geo-
graphic Magazine

ROBERT V. FLEMING
President Riggs National Bank

GEORGE SHIRAS, Jr.
Formerly Member U. S. Con-
gress, Faunal Naturalist and
Wild-Game Photographer

ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

TO carry out the purposes for which it was founded forty-five years ago the National Geographic Society publishes this Magazine monthly. All receipts are invested in the Magazine itself or expended directly to promote geographic knowledge.

ARTICLES and photographs are desired. For material which the Magazine can use, generous remuneration is made. Contributions should be accompanied by addressed return envelope and postage.

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

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

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

NOT long ago The Society granted \$25,000, and in addition \$75,000 was given by individual members to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees of California were thereby saved for the American people.

THE Society's notable expeditions to New Mexico have pushed back the historic horizons of the Southwestern United States to a period nearly eight centuries before Columbus crossed the Atlantic. By dating the ruins of the vast communal dwellings in that region The Society's researches have solved secrets that have puzzled historians for three hundred years. The Society is sponsoring an ornithological survey of Venezuela.

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



Not a hair out of place

This serenely confident young lady has just stepped from her car. She has no fear that her hair was tousled or her gown ruffled by unkind breezes, for her car has Fisher No Draft Ventilation, latest and greatest contribution to personal appearance and comfort—to health and safety. No Draft Ventilation, in any weather, provides fresh air without chilling drafts on any passenger. In stormy weather it keeps the interior of windows and windshield safely fog-free. And in appearance it sets the new style—visibly identifies a car as modern. Doesn't all this make it more important than ever for you to have a new car—and for that car to have Body by Fisher?



GENERAL MOTORS
CARS ONLY,
CHEVROLET · PONTIAC
OLDSMOBILE · BUICK
LA SALLE · CADILLAC



Ships for nice people

Glint of gowns on a classic staircase . . . quiet, gracious hospitality . . . it all tells you of the subtle distinction so much a part of the great new *Georgic* and her sister liner the *Britannic*—England's largest Cabin ships. More than the joy of travel on a new ship . . . more than the *inexpensive* luxury of Cabin Class . . . there is a gracious art of living that's notably White Star. You will find it on the mighty *Majestic*, world's largest ship, and her huge running mate the *Olympic*—the same perfection of service, of modern cabin appointments, of tempting cuisine. Services to Ireland, England, France. Book through your local agent. His services are free.

S. S. MAJESTIC
M. V. GEORGIC M. V. BRITANNIC
S. S. OLYMPIC



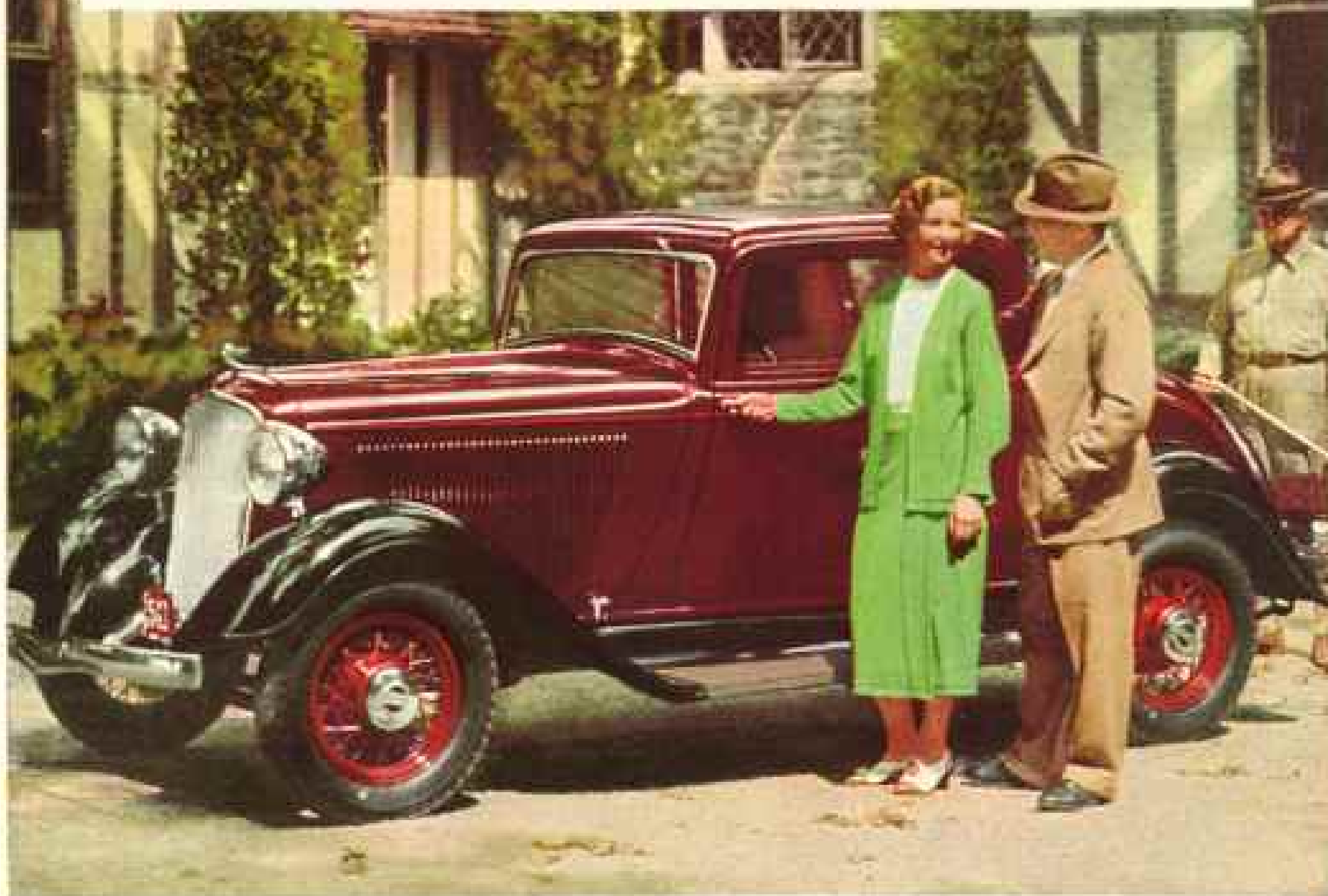
White Star Line





"We're a Two-car Family

AND THEY'RE
BOTH PLYMOUTHS!"



An Interview with JOHN ALDEN THAYER, Editor and Publisher, Ridgefield Press

UP AROUND Ridgefield, Conn., they know John Alden Thayer as an up-and-coming young editor with a lot of good ideas. And one of them, it seems, was his choice of a low-priced car—Plymouth.

He bought his first one a year ago for a trip to Maine. Within a year—so well was he pleased with its performance—he had added a second.

"The thing I like best," he told us when asked about details, "is Floating Power.

"Most cars develop rattles and squeaks, when you drive them over these 'back country' roads around here. But our old car has

been driven *hard* for 15,000 miles—and there's not a rattle in it!" And he'll give you a ride—and prove it!

That is something to remember about Floating Power engine mountings. They shield you from tiring vibration. They also help lengthen the car's life.

"Look at all three" low-priced cars. Ride in them—and compare them. Plymouth's better value will speak for itself.

Standard models priced from \$445 to \$510; De Luxe models, \$495 to \$595. All prices F.O.B. factory, and subject to change.

See the full line at any Dodge, De Soto or Chrysler showroom.

\$445
AND UP F.O.B. FACTORY, DETROIT

PLYMOUTH SIX WITH PATENTED FLOATING POWER

Genuine

EVEREADY PRESTONE

The same safe, all-winter anti-freeze sold last year for \$4.45. Concentrated—not diluted or cheapened in any way.

TWO MINUTES OF YOUR TIME in reading the facts on this page may save you many hours of driving-discomfort this winter. Do not wait until the first freezing day comes to decide the kind of anti-freeze you want. Learn the facts now.

Economy plus safety

Boil-away anti-freezes smell up the car. They are inflammable. They evaporate in warm weather, and leave your car unprotected against the next cold snap. Their one appeal in the past has been their low initial cost. But today, at the new low price of \$2.95 per gallon, Eveready Prestone is within the reach of all. And, of course, in *all-season cost* it offers real economy. That's because one filling of Eveready Prestone gives you complete protection all season long. No replacements, no costly repairs for frozen engines, no rust.

Permanence plus rust protection

With Eveready Prestone you get this permanent anti-freeze protection without the penalty of a rust-clogged radiator and overheating.

Many so-called "just-as-good" anti-freezes are being offered. Some give protection for a *limited time*; others are immediately harmful to your car. To bring you the truth "permanent" anti-freezes have been subjected to exhaustive tests.

For hundreds of hours, each product was run through an automobile cooling-system at a speed and engine-temperature *exactly duplicating actual driving conditions*. Under this test Eveready Prestone was unchanged after 1000 grueling hours. Other anti-freezes in the same test, broke down and became *definitely corrosive* to the metal in the cooling-system in from 50 to 200 hours. This test means that Eveready Prestone will protect your car for 25,000 miles of driving and upwards.

Don't buy water when you can get it out of the spigot

Don't be fooled by "tricky" prices. Laboratory measurements show that many "permanent" anti-freezes are nearly *half plain*,



This Cadillac (Model 370-C, '33) can be protected to 10° above zero with 1½ gals. of Eveready Prestone at a cost of \$4.45.



This Essex Terraplane 6 (Model 1933) can be protected to zero with 1 gal. of Eveready Prestone at a cost of \$2.95.

ordinary water. Eveready Prestone is concentrated — all anti-freeze. Here's a little revealing arithmetic:

For a 1933 Plymouth

Suppose an anti-freeze which is one-half water sells at \$1.50 a gallon, requiring 2½ gallons to protect a 1933 Plymouth to 10° below zero, \$4.31
Amount of Eveready Prestone needed to protect to 10° below zero is 1¼ gallons at \$2.95 a gallon. \$3.72

Saving \$.59

plus safe protection from rust and corrosion

Do not confuse Eveready Prestone with either alcohol or glycerine

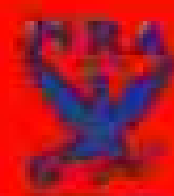
There is no other anti-freeze "the same as Eveready Prestone" or anything like it. Eveready Prestone is a distinctive, patented product. It protects your car not only against freezing, but also against rust and corrosion in the cooling-system. Its use reduces the corrosive action of water on cast iron 95%; on other metals of the cooling-system, 75%.

Eveready Prestone is approved by every car-manufacturer in America, as well as by all leading radiator makers. It is fully guaranteed by National Carbon Co., Inc. Have it put in now. It won't evaporate, or heat up your motor. With Eveready Prestone in the car, the anti-freeze question is off your mind for *the entire winter*.

Tested  Approved

NATIONAL CARBON COMPANY, INC.
General Offices: New York, N. Y.

Unit of Union Carbide  and Carbon Corporation



now **\$2.95** *a gallon*

The important thing in buying an anti-freeze is to figure cost to a definite protection point, not the price per gallon. See how reasonably you can get all-winter protection against freezing and rust with Eveready Prestone.

GALLONS OF EVEREADY PRESTONE NEEDED TO PROTECT TO THESE TEMPERATURES

CAR	MODEL	10° above	Zero	10° below	CAR	MODEL	10° above	Zero	10° below
Bulck	32-50, '32; 33-50, '33	¾	1	1¼	La Salle	340, '30; 345, '31	1½	2	2½
	60, '30; 32-60, '32	1	1½	1¾		345, '32; 345-C, '33	1¾	2¼	2½
	50, 60, '30; 33-60, '33	1½	2	2½	Nash	6-60, '31; 960, '32	¾	1	1½
	32-80-90, '33	1¾	1¾	2		800, '31; 900; 1130, '33	1	1½	1¾
	32-80, 32-90, '32	1¾	1¾	2		8-90, '31; 990, '32	1½	2	2¾
				1170, 1070, '33		1¾	1¾	1¾	
Cadillac	370, '32; 370-C, '33	1½	2	2½	Spec. 8, Twin Ign. '32	1½	1¾	2¾	
	355, '32; 355-C, '33	1¾	2¼	2¾	Anti. 8, Twin Ign. '32	1½	2	2¾	
	452, '32; 452-C, '33	1¾	2¼	2¾					
Chevrolet	'29, '30; Stand. '31	¾	1	1	Oldsmobile	F32, 6, '32; F33, 6, '33	1	1½	1¾
	'31, '32, '33	¾	1	1¾		L32, 8, '32; L33, 8, '33	1¾	1¾	1¾
Chrysler	6, '31; 8, '31; 6, '32, '33	1	1½	1¾	Packard	1001-2, 1003-4, '33	1¾	1¾	2
	C.O., C.L., '31	1¾	1¾	2		826, 833, '31; Std. '32	1¾	1¾	2
	Imp. Custom, '32, '33	2	2½	3		845, '31; Del. '32	1¾	2¼	2½
De Soto	6, '31, '32	1	1½	1½	1005-6, '33	2½	3¼	4	
	8, '31, '32; 6, '33	1	1½	1¾					
Dodge	6, '33	1	1½	1¾	Pierce-Arrow	54, '32; 836, '33	1¾	2	2½
	8, '33	1¾	1¾	2		51, 52, 53, '32	2½	3¼	3¾
						1236, 1242, 1247, '33	2½	3½	3¾
Essex	'29, '30, '31, '32	1¾	1¾	2	Plymouth	'31, '32 Fltg. Power	1	1½	1¾
						Std.; De Luxe '33	1	1¾	1¾
Essex Terraplane	6, '33	¾	1	1¾	Pontiac	'29, '31; 6, '32; 8, '33	1	1½	1½
	8, '33	1	1½	1¾		8, '32	1¾	2	2½
Ford	A, '28, '29, '30, '31, '32	¾	1	1¾	Studebaker	Dict. '31; 82, '33	1¾	1¾	1¾
	V-8, '32, '33	1½	2	2¾		6, '32	¾	1	1¾
Hudson	8, '30; 8, '31, '32, '33	1¾	1¾	1¾	Dict. 8, '32; 8, '33	1	1½	1½	
	SS, '33	1	1¾	1¾	Com. '33, '33	1	1½	1¾	
Hupmobile	H, U, '30; H, '31, '32	1¾	2¼	2¾	Pres. 8, '32	1¾	1¾	2¾	
	L8, '31, '32; 321, '33	1	1½	1¾	92, '31	1¾	2	2¾	
	220, '32; 326, '33	1½	2	2½					
	222, '32; 322, '33	1½	1¾	2¼					

COST OF EVEREADY PRESTONE

½ gallon . . \$1.50	1¼ gallons . \$3.72	2 gallons . . . \$5.90	2¾ gallons . \$8.12
¾ gallon . . 2.22	1½ gallons . 4.45	2¼ gallons . 6.67	3 gallons . . . 8.85
1 gallon . . . 2.95	1¾ gallons . 5.17	2½ gallons . 7.40	3¼ gallons . 9.62

FIND YOUR OWN CAR ON THIS CHART. *If your car is not listed, see your dealer. He has a complete chart showing every car made. The amounts of Eveready Prestone required, as shown here, do not allow for the capacities of hot water heaters. If you have a hot water heater, or if you need to protect your car to any lower temperature, down to 60° below zero, consult your dealer.*

YOU SAID WE'D
BEAT THE
RAIN HOME

THIS CAR
NEEDS ETHYL



RAIN STORMS will play tricks on you. And so will an old motor—unless it has Ethyl.

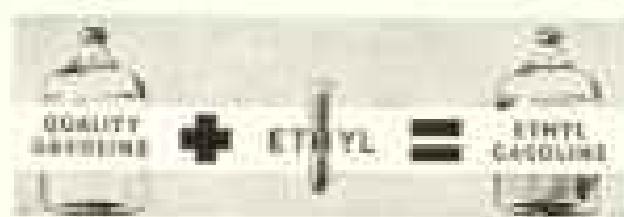
But stop beside the pump that bears the Ethyl emblem every time you need gas and then you know what your car will do.

It will run its best all the time!

You don't always want flashing pick-up—or the extra power it takes to zoom over hills in high. But when you do, you want 'em!

Stop at an Ethyl pump and discover what millions of others know

today: *The next best thing to a brand-new car is your present car with Ethyl.* With oil companies selling Ethyl at only 2c a gallon over the price of regular, you can't afford not to use it. The savings in repairs and upkeep more than offset this new low premium. Ethyl Gasoline Corporation, New York City.



Ethyl contains lead. © R. T. C. 1933



NOW
SOLD BY
OIL COMPANIES AT
only 2^c PER GALLON
over "regular"

NEXT TIME STOP AT THE

ETHYL PUMP



Why pay the price of a Packard?

PERHAPS you are debating this very question with yourself:

"Why pay the price of a Packard when I can get a good car for several hundred dollars less?"

Then read this story of Fred C. Dierking, a Chicago Packard Salesman, and the 65 Packards he sold in 1928.

The story of 65 Packards

Every one of those cars was sold on the basis of "pay a little more—keep the car much longer."

"Operating costs on a Packard," Mr. Dierking pointed out to those Chicagoans, "are no greater, and frequently smaller, than on a 'compromise car.' The heaviest expense of automobile ownership is the depreciation cost you pay when you trade in your car every two or three years. Pay Packard's slightly higher price and keep the car longer—keep it at least five years—and you will be money ahead in the end."

Thus spoke Mr. Dierking in 1928. How true were his words in the light of the intervening five years?

What a census disclosed

Here is a census of those same 65 cars made a few weeks ago: Two owners have moved away from Chicago. Three have died. Three have disposed of their cars and now own no automobiles at all. Six have traded in their Packards on other makes—a surprisingly small number in an era of shifting fortunes and positions. Eight have replaced their 1928 Packards with new Packards.

But here is the most amazing thing. *42 of the 65 owners, or two out of every three, are still driving their original 1928 Packards!*

If you were to carry such a census throughout the country, you would probably find a similar situation everywhere. You would find owner after owner who *knows*, through years of experience, that Packard is the wisest motor car investment he has ever made!

The finest Packards ever built

You would expect the Packard of today to be finer than the Packard of 1928. And it is—ininitely finer. In fact, the new 1934 Packards are the finest cars ever to bear the

Packard name—cars deliberately designed to give America a yardstick with which to measure *all* fine car values, American or European.

Today, see these great cars at your Packard dealer's. Ride in one—the new Packard Eight, the new Packard Super-Eight, or the new Packard Twelve. Compare it with any other fine car.

And remember that this Packard which so thrills you today will keep on thrilling you for years to come. Mechanically it is built to last, not five years, but far longer than that. And it has the famous Packard lines whose beauty never fades.

Yes, ride in a 1934 Packard—and compare it. We believe your question, "Can I afford to own a Packard?" will become, "Can I afford *not* to own one?"

PACKARD 1934

THE YARDSTICK WITH WHICH TO MEASURE ALL FINE CAR VALUES

The Packard 8 • Super-8 • 12
Ask the Man Who Owns One



HAVE YOU AN OUTFLARE FOOT?

Prominent foot specialists tell us that 80% of all feet are normally outflare, differing from regular or inflare feet only in the distribution of the body weight —yet regular shoe lasts will not fit properly. The new Florsheim Winfield gives the added toe room necessary for outflare feet. Scientifically correct, it relieves instep corns, eliminates "run over" shoes—and a special heel wedge shifts the weight of the body to permit easy, natural walking. Style S-495.

\$850
MOST
STYLES

The
FLORSHEIM
Shoe

THE FLORSHEIM SHOE COMPANY
Manufacturers • CHICAGO



Let Hawaii have its way with you

Here are lingering, sun-spun days to lie on the beach and watch people gliding through the waves on surf-boards. Here are nights moving deep and still to an ancient living rhythm that rests you. The faint fragrance of plumeria (frangi pani), the tang of ginger blossoms, the murmur of a distant gourd drum . . . lulling you . . . stirring in you a fascinating joy in just being alive. Come this winter. Let Hawaii have its way with you . . . for a little while.

Where January is *summer*

The thermometer never goes below 65°. And Waikiki's water is always warmer than the air—so pleasant you can't resist staying in for hours at a time. ☺ On the average of every day a big passenger liner sails for Hawaii from some Pacific port. ☺ And you can cruise by plane or steamer from Honolulu to the isles of Hawaii . . . Maui . . . and Kauai. ☺ There are 39 hotels and inns specializing in Hawaiian hospitality on the four main islands. And more than a dozen golf courses!

Low Fares

The finest, fastest ships that sail from Pacific Coast ports will carry you to Hawaii for \$110 and up. First Class. Comfortable and spacious Cabin Class accommodations, \$75 and up. A railway or travel agent in your own home town can arrange your trip.

HAWAII TOURIST BUREAU
(HONOLULU, HAWAII, U. S. A.)

1523 RUSS BUILDING, SAN FRANCISCO, CALIFORNIA
The Hawaii Tourist Bureau will, on request, mail you free, authoritative information about the Islands. For a special booklet on Hawaii, send 10¢.



"Mention the Geographic—It identifies you."

Spend Wisely

Now that you're beginning to buy again



ANOTHER HIT!—Model 110. New-type delicate tuning control, continuously variable tone control—and every other modern feature such as Police Call reception. Superheterodyne performance . . . with quality volume at a whisper or shout! Complete with RCA Radiotrons, \$52.95. Others from \$27.95 to \$179.



MASTER OF THE AIR!—This is a 12-cube "Be-Acoustic" Superheterodyne with famous, exclusive RCA VICTOR Tonalize Control. Every engineering improvement from "Radio Headquarters" is in it including Police Call reception. We won't boast about it . . . but you will. Model 280 costs, complete with RCA Radiotrons, only \$149.50. Other models from \$27.95 to \$179.

Get the latest RCA VICTOR radio that makes home life so attractive

MAYBE you haven't bought a radio recently. But better todays are here again. And here's today's better radio.

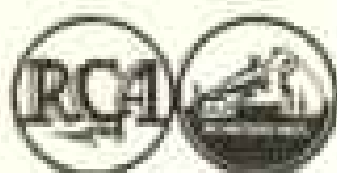
You can't make a more far-reaching sounder purchase than one of the new RCA VICTOR sets. Radio . . . with its many fine broadcast features . . . can mean so much to you. In amusement. In education. In making home even more livable. There's an RCA VICTOR set planned to meet your budget. Small sets . . . medium ones . . . big fellows. Auto radios. All give thrilling performance—all have those marvels "Radio Headquarters" can produce. Right near you is one of the many thousands of RCA VICTOR dealers. He'll show you, in value, in performance—and in dollars and cents, why buying an RCA VICTOR is wise spending! RCA VICTOR Company, Inc., Camden, N. J. "Radio Headquarters."

All prices subject to change without notice. Prices slightly higher in the West.



POPULAR FAVORITE.

It's a table model with real *tone!* RCA VICTOR Superheterodyne. Novel illuminated tuning dial, convenient tone control, police call switch. Ask to hear Model 100. \$27.95 complete with RCA Radiotrons.



GET THIS GIFT! . . . A pair of VICTOR Dog salt-and-pepper shakers . . . Write for them, enclosing 10c to cover half the cost.



RCA VICTOR Co., Inc., Dept. 63
Camden, N. J.

I'd like those VICTOR Dog shakers.
Here's my dime.

Name _____

Address _____

City _____ State _____

RCA VICTOR

RADIOS • PHONOGRAPH COMBINATIONS • VICTOR RECORDS

Sailing East of Suez?



the phrase **IMPLIES**

P & O

Those to whom the phrase means most . . . ruling Princes, officers of the British Service in India, civilians resident there, and pleasure travellers throughout the East . . . think of P & O as the pre-eminent, the traditional route. In a score of ports on the other side of the world, P & O Liners stand for the might and splendour of the West; Indians measure time by their swift and sure arrival!

When you feel the call of the East . . . for business or pleasure . . . take this route—preferred for safety and luxury since 1840. Cross to England, Gibraltar or Marseilles and embark on a P & O Liner of transatlantic size and splendour. Low rates make this voyage an exceptional value.

PENINSULAR AND ORIENTAL AND BRITISH INDIA STEAM NAVIGATION COMPANIES

Regular sailings from London, Gibraltar and Marseilles to India, Ceylon, Burma, Straits Settlements, China, Japan, Australia, New Zealand, Egypt, Sudan, Persian Gulf, East and South Africa, etc.

SEE INDIA ROUND TRIP FROM NEW YORK — 5415 up!

An outstanding value . . . across the Atlantic in famous Cunarders . . . thence to India by new s.s. Strathnaver or s.s. Strathaird or other P & O Liners. First Class, Second Class or popular Tourist Class throughout.

P & O CRUISES . . . special seasonal cruises to the Northern Wonderlands and the Mediterranean.

P & O WORLD TOURS

Information from Your Local Agent or

CUNARD LINE

25 Broadway GENERAL AGENTS New York

Golden SOUTH AFRICA

HERE'S gold in South Africa—more than half the world's annual output flows from the mile-and-a-half deep mines of Johannesburg!

There are floods of golden sunshine, and a climate that recalls the golden glow of youth!

There are golden days of sight-seeing, amid treasures of scenic beauty!

And there are golden memories of fascinating adventure for those who visit this land of colorful contrast, of mystery and romance!

For full information address—

Thomas Cook & Son—Wagons-Lits, Inc.
587 Fifth Avenue, New York

or

American Express Company
65 Broadway, New York

or any office of Thomas Cook & Son—Wagons-Lits, Inc.,
or the American Express Company.



MAKE YOUR NOSE

USEFUL

Sniff away drowsiness . . . headache . . . faintness. Sniff to steady the nerves, to clear the head for action. Sniff to relieve head colds. "Crown Lavender Smelling Salts"—pungent, quick-acting—very pleasant. Large size for dressing table. Small size for purse, desk, auto pocket. Sold at all toilet goods counters. Schieffelin & Co., 22 Cooper Sq., N. Y.

CROWN LAVENDER SMELLING SALTS

SPECIAL NOTICE: Send 10¢ to above address and receive a trial size package of Crown Bathadora—that delightful bath salt that softens water, imparts a peach-like glow, and leaves a pleasing perfume clinging to the skin.

"Mention the Geographic—It identifies you."



ESTABLISHED
1875

— May They Never Be In Want —

ADEQUATE PROTECTION FOR YOUR LOVED ONES

ASSURED BY

THE PRUDENTIAL INSURANCE COMPANY OF AMERICA

EDWARD D. BOYD, President

HOME OFFICE, Newark, N.J.

Hawaii*



FOUR magnificent new ships have tipped the scales in favor of the Pacific! Which is by way of being a royal salute to the "Mariposa", "Monterey", "Lurline" and "Malolo".

Ships designed for graceful living. From lounge to library, smoking room to stateroom—themed by Polynesia, with colors coaxed from a tropic sunset. Polishing every facet of life-at-sea to brilliant perfection. Service that reflects intuitive knowledge of when and how to please. Food that dazzles even jaded appetites. Sports glittering with the verve of gay release. Comfort fused from the priceless ingredients of luxury and modernity.

Fitting prologue, indeed, to the colorful pageant that is Hawaii—where the only season is summer and life is viewed through the eyes of youth.

Frequent sailings from the distinguished ports of San Francisco and Los Angeles to fit any itinerary.

South Seas

NEW ZEALAND • AUSTRALIA

via Hawaii, Samoa, Fiji

At last new ships ("Mariposa" and "Monterey") bring new speed and luxury into service to these magnificent unspoiled lands. A mere 15 days to New Zealand, a mere 18 days to Australia. Modest fares chart the expense and keep it low.

Even a discussion with your travel agency or our offices will prove highly interesting.

Matson Line • Oceanic Line

New York, Chicago, San Francisco, Los Angeles, Seattle, Portland

ROUND-THE-WORLD VIA AUSTRALIA . . .
8 VARIED ROUTES . . . APPEALING NEW FARES

Be Charming

A BOOKLET

"The Smart Point of View"

WITHOUT COST



MARGERY WILSON

America's authority on charm. Personal adviser to countless women of society, stage and business.



Do you know the technique of Charming self-expression? Margery Wilson's "Charm-Test," an interesting self-appraisal of your equipment for gracious living, will be sent on request, with the booklet, "The Smart Point of View" . . . to acquaint you with the effectiveness of her personalized training by correspondence.

A Finishing School at Home

In her delightful course of home-study instruction, Margery Wilson makes tangible the elusive elements of Charm and gives you social poise, presence, conversational ease, charming manners, finish, grace—the smart point of view.

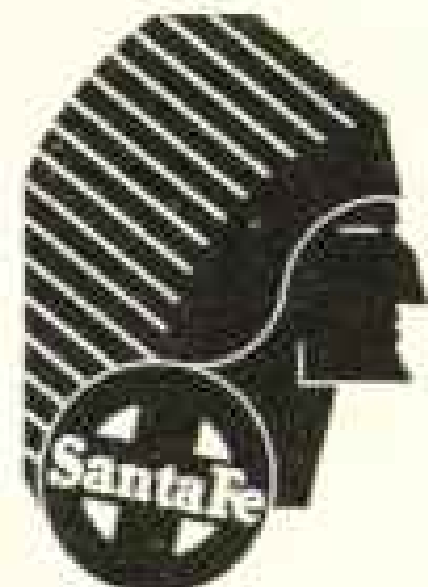
To receive the Booklet and the "Charm-Test" write to:

MARGERY WILSON

1148 Fifth Avenue

49-L

New York, N. Y.



the **TRAIL** to
sunshine

For fifty years winter travellers have followed the Santa Fe's historic Trail to Sunshine

—across the Spanish-Indian Southwest, with its Old Santa Fé and the glory of Grand Canyon

to the sunny warmth of southern Arizona and the Pacific Coast

fine trains and Fred Harvey meals are traditional on this shortest, most direct route to

California
The Chief is still Chief

W. Z. BLACK, P. T. M., Santa Fe System Lines

MAIL COUPON

1212 Taylor Exchange, Chicago, Ill.

Please send booklet concerning Santa Fe to the address below.

Name _____

Address _____

Take a walk
around this Suite
that is causing a sensation on the sea!

LOOK NORTH! Glimmering walls of richly paneled walnut, deep mattressed Simmons bed—no teeth.

LOOK EAST! Luxurious easy chairs—night table and bed lamp for each bed and a French handset telephone.

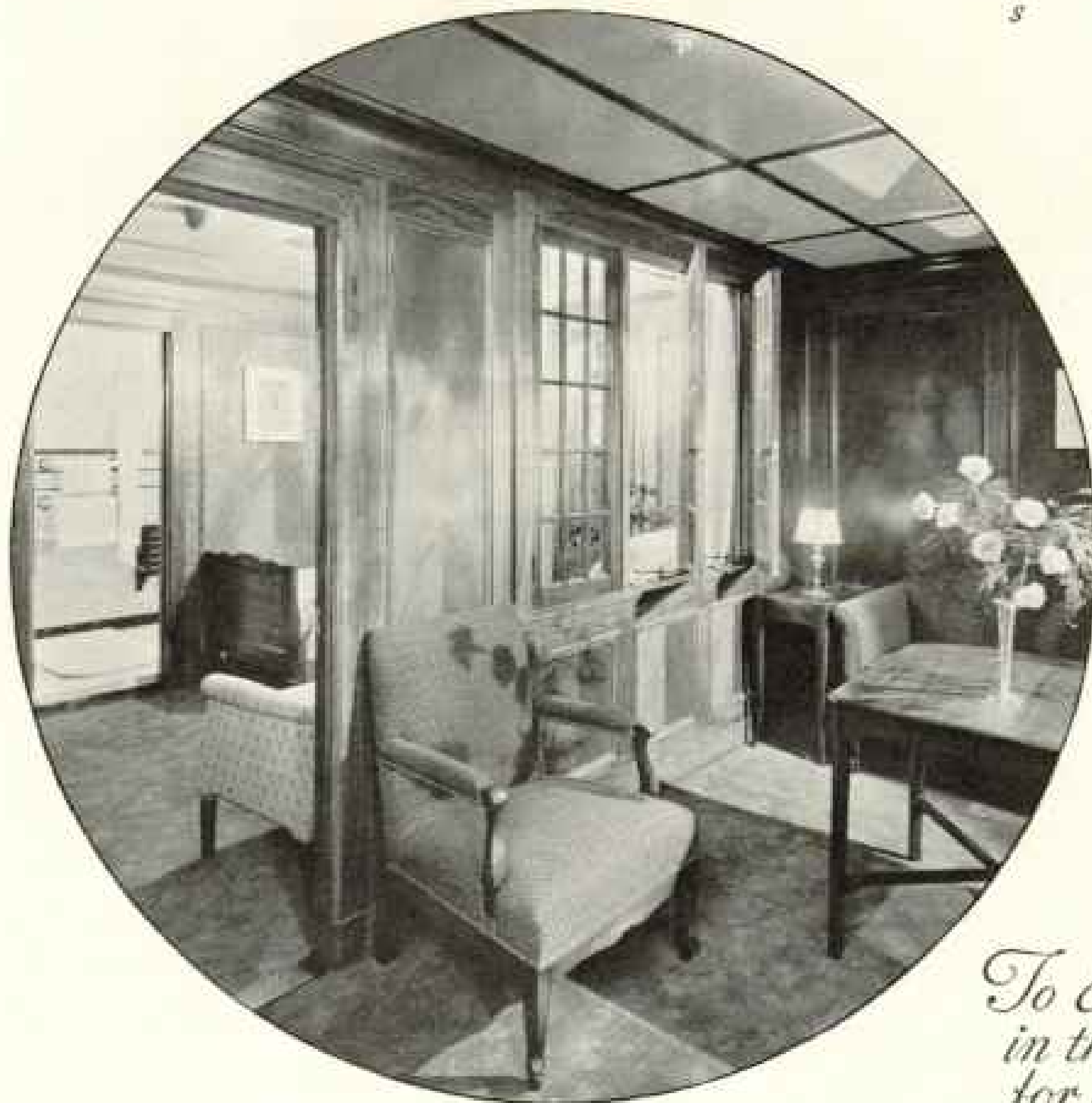
W

E

LOOK WEST! A private foyer and lovely colored bath—tiled in beautiful pastel tints.

LOOK SOUTH! Dressing table with strip mirror—hat in wardrobe—and a quiet room for trunks.

S



To Europe
in this suite
for \$220
each for two

With rooms like these, at prices like these, no wonder the new steamships *Manhattan* and *Washington* carry more passengers to Europe this year than any other two ships on the sea. The two fastest Cabin Liners—6-day speed to Europe. Apply to your local agent. Roosevelt Steamship Company, Inc., General Agents, No. 1 Broadway, New York.

NEW
S. S. WASHINGTON

NEW
S. S. MANHATTAN
S.S. President Harding - S.S. President Roosevelt



UNITED STATES LINES . . . Weekly service to Cobh, Plymouth, Havre, Hamburg. S. S. *Manhattan*, Nov. 8, Dec. 6 . . . S. S. *Washington*, Nov. 22, Dec. 15 . . . S. S. *Pres. Harding*, Nov. 1, Nov. 29 . . . S. S. *Pres. Roosevelt*, Nov. 15.

Personal

The *intimate, personal* gift is a Filmo. No one thing is so packed full of rich, lasting pleasure as personal movies — good movies, like those you see at the theater. And it takes a Filmo to make them and show them. For Filmo Personal Movie Cameras and Projectors are made by the world's most skilled designers and craftsmen in cinemachinery. They are fashioned as carefully as a fine watch. And the movies they make and project reflect their quality. So this Christmas, give a Filmo and you give more years of pleasure than any other gift can hold. *No Filmo has ever worn out!*

Filmas use Eastman 16 mm. film

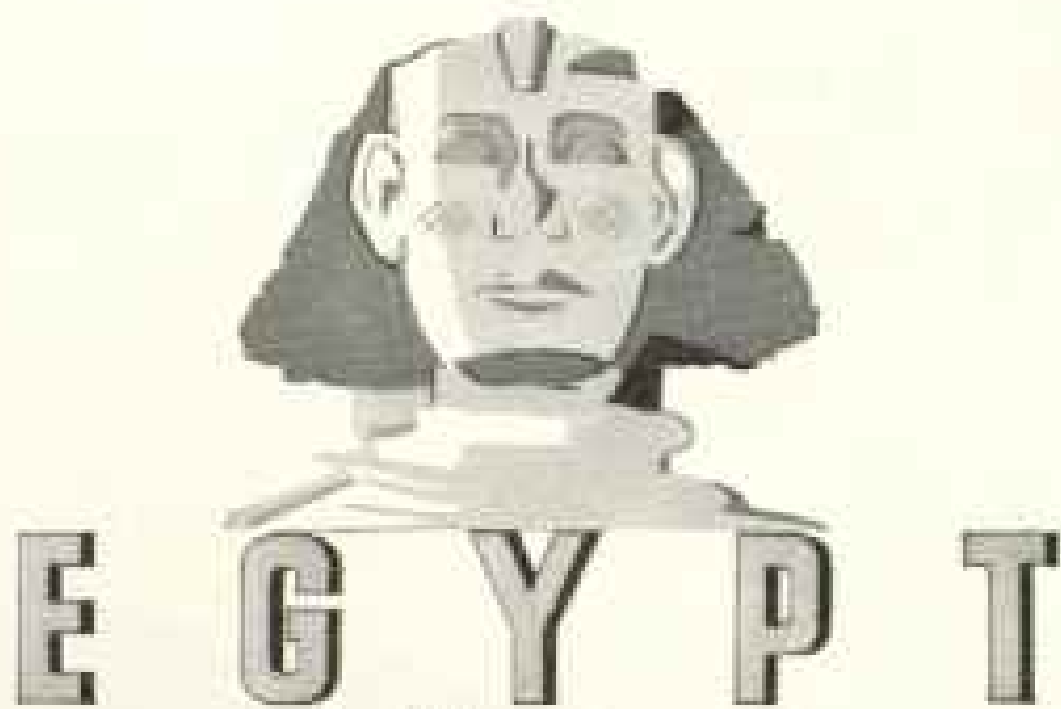


What you see, you get—with Filmo

BELL & HOWELL FILMO

PERSONAL MOVIE CAMERAS AND PROJECTORS

Bell & Howell Co., 1904 Larchmont Ave., Chicago, New York, Hollywood, London (B & H Co., Ltd.) Established 1907



... most brilliant, most cosmopolitan of winter resorts ...

The social migration begins in the Fall . . . to Cairo, lovelier and more infinitely varied than the Bagdad of Haroun-al-Raschid . . . to the resorts of the ageless and incomparable Nile. And on that river . . . to Luxor, Aswan, and on to the Second Cataract . . . Cook's own fleet of luxurious steamers and dahabeahs forms the paramount transportation service . . . regular schedule begins Nov. 29. Plan now to winter in Egypt . . . and to include in your stay the most famous river voyage in the world. Let us give you complete information.

COOK'S THOS. COOK & SON
WAGONS - LITS INC.

587 Fifth Avenue, New York and Branches

Revitalize in sunsplashed desert . . .

Like many another, you'll be pleased with this benign half-mile-high climate. No fog. Low humidity. Never-ending sunshine. . . Attractions galore to intrigue your fancy! Hunting, fishing, riding, polo, all-grass golf, aviation, tennis. . . Moreover, we have top-notch schools, delightful hotels, fine shops, theatres and ultra-modern sanitation. . . Best of all—the cost of living is very low.

Mail coupon or wire for booklet & information re: hotels, air, rail & road data. We render personal service without obligation. Winter rates and stopovers now available on Rock Island & Southern Pacific Lines.

TUCSON
SUNSHINE-CLIMATE CLUB
ARIZONA

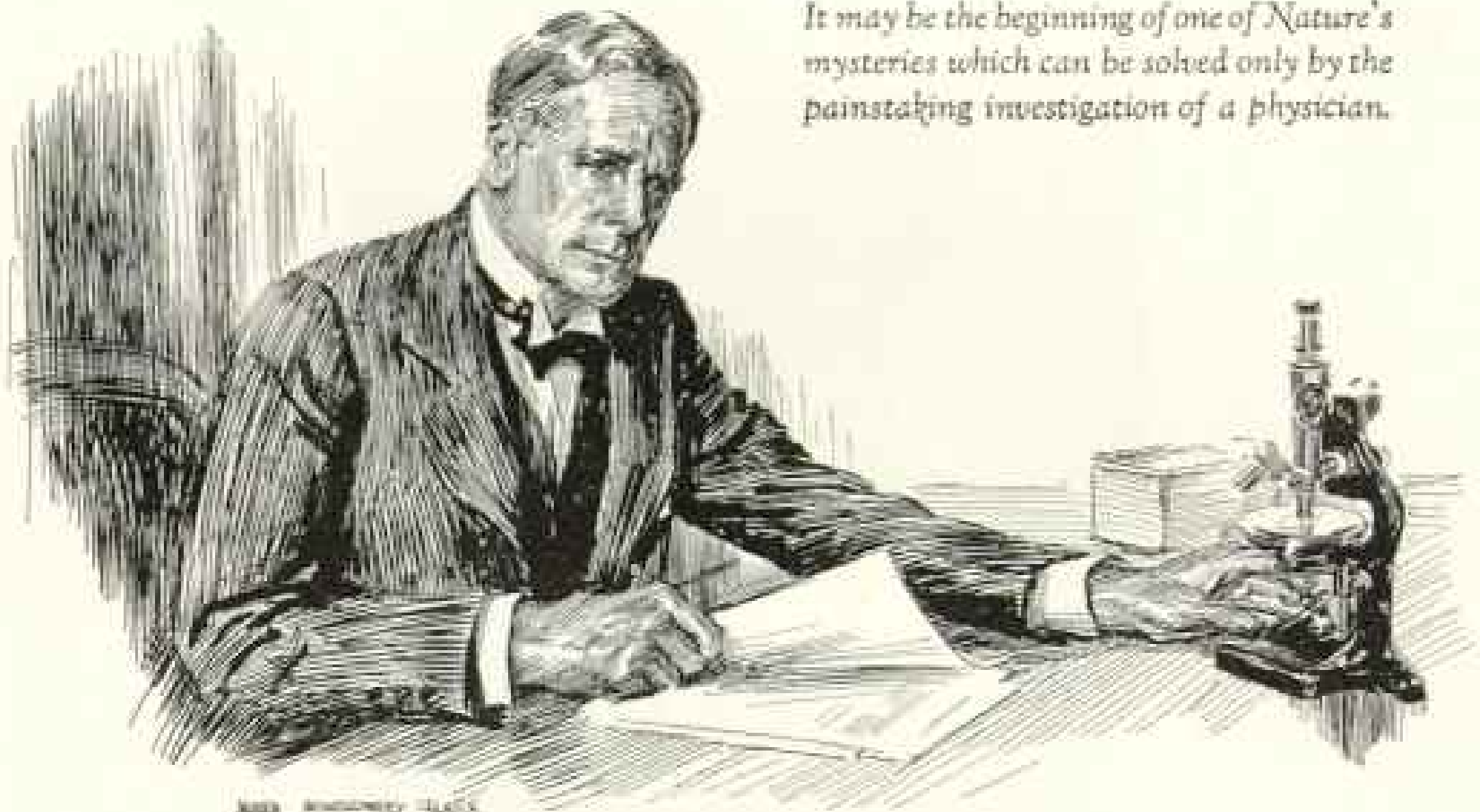
1264-A, OLD PUEBLO BLDG., TUCSON, ARIZONA
Please send me the free "Sunshine Booklet"

Name _____

Address _____

The Anemia Mystery

It may be the beginning of one of Nature's mysteries which can be solved only by the painstaking investigation of a physician.



WILLIAM B. HARRIS

When, without apparent reason, someone you care for—young or old—complains of feeling tired or exhausted and begins to lose color, becoming paler and weaker as the days go by, you may have good cause to suspect some form of anemia.

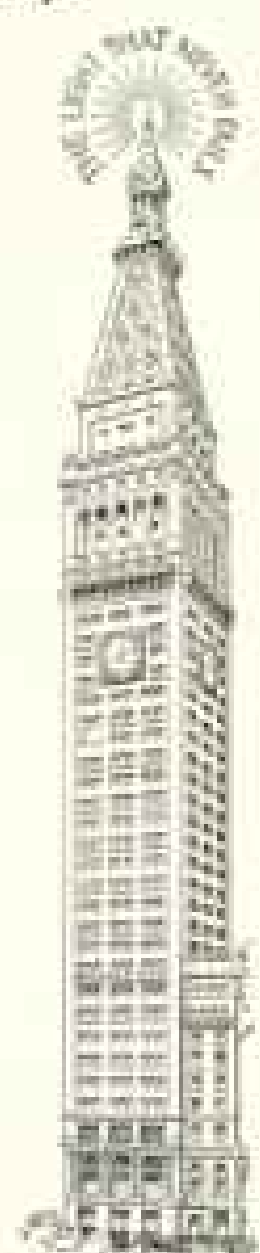
The anemic person lacks good red blood.

Sometimes anemia is a symptom of a condition which is unknown or neglected by the sufferer and which may be either slight or serious. A frequent, though small, loss of blood, a wasting disease, or infections in the body may produce anemia. If, however, the cause is diligently searched for—and can be removed or corrected—the anemia will usually disappear under proper treatment.

Anemia may also be caused by a lack in the diet of certain food elements necessary for normal blood formation—especially when there are associated functional defects (often symptomless) of the stomach and intestines. A correct diet alone sometimes conquers such anemia. But proper treatment with an appropriate quantity and quality of iron is often of fundamental im-

portance in producing a sufficient amount of blood coloring matter.

People may also become anemic because they are unable to utilize from an adequate diet the food material necessary to make red corpuscles. This may be dependent upon a deficiency in the function of the digestive organs. The most common type of such anemia is called by doctors Pernicious Anemia. Until recently it was always fatal. In 1926, however, an incredibly simple remedy was found—liver.



Pernicious Anemia can now be kept under control by the regular use of liver or an effective substitute PROVIDED A PROPER AMOUNT IS PRESCRIBED FROM TIME TO TIME FOR EACH INDIVIDUAL CASE. But—liver or potent substitutes are not a panacea for all forms of anemia. Although they save lives in cases of pernicious and allied anemia, they are frequently ineffective in treating ordinary forms of the condition.

If there is an anemia mystery in your family, don't guess about it. Ask your doctor to find the solution.

METROPOLITAN LIFE INSURANCE COMPANY

FREDERICK H. ECKER, PRESIDENT

ONE MADISON AVE., NEW YORK, N. Y.

© 1928 M. L. I. CO.

"Mention the Geographic—It identifies you."



DOUBLY WELCOME ... it's from you ... and it's

Whitman's
CHOCOLATES



The SAMPLER

America's best-known, best-liked box of candy, 17 oz. \$1.50.

The FAIRHILL

America's outstanding dollar box of candy ... \$1 the pound.



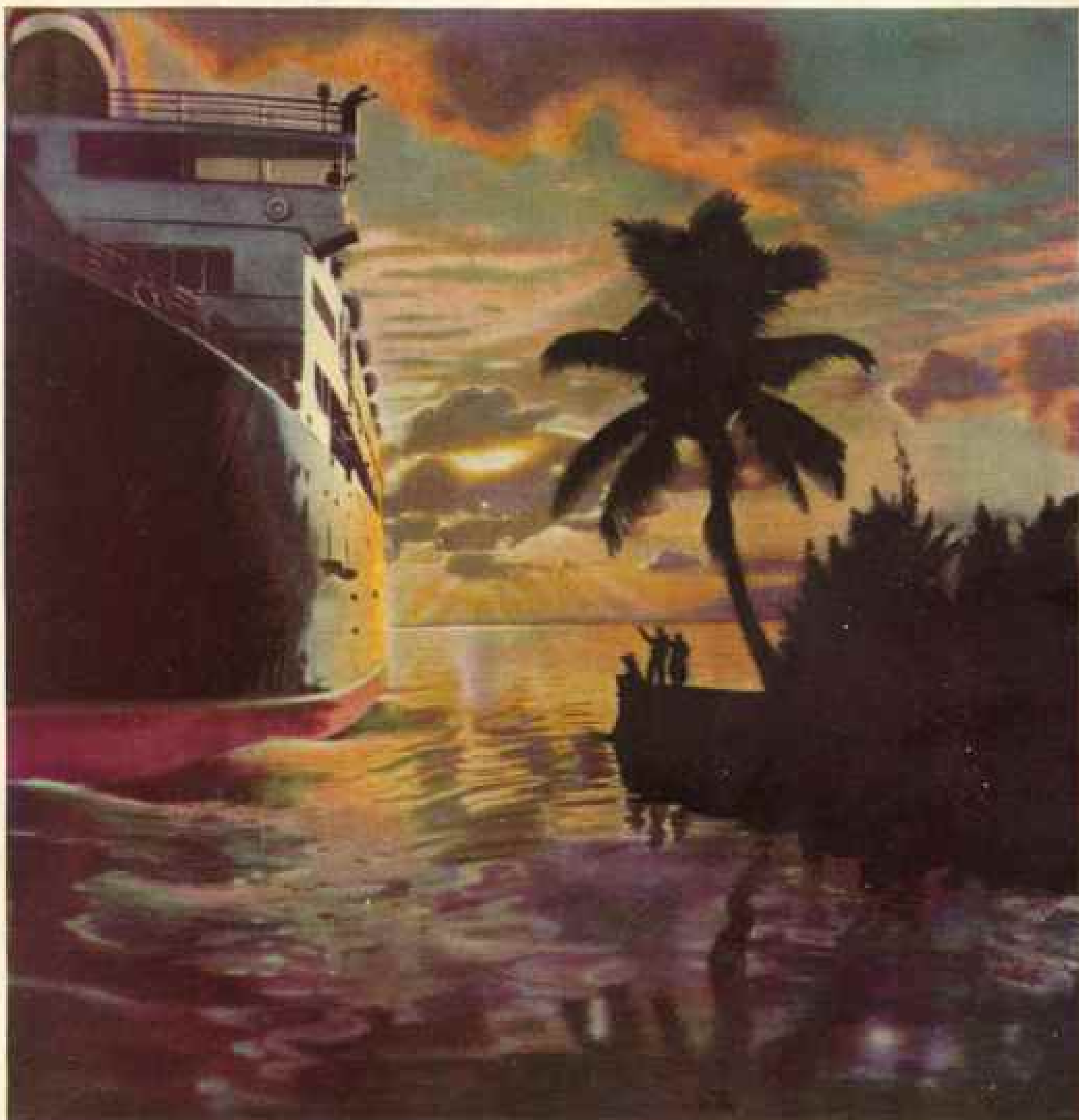
Thoughtfulness... in taking Whitman's Chocolates... is always doubly appreciated. They are from you... and each piece is the finest of its kind.

For everybody loves Whitman's smooth coatings of vanilla, bitter-sweet and milk chocolate... the luscious date, cherry, pineapple and other fruit centers... the famous honey nougat... the fine small French walnuts, pecans, almonds and Brazil nuts... the smooth, mellow mint marshmallows and cream centers... the crisp, crunchy and chewy pieces. Give Whitman's... delightful to receive... good taste to give.



© S. F. W. & Son, Inc.

The thing to do — take... give... send — Whitman's Chocolates



SAIL WITH THE SUN really South this winter, on a new GRACE "Santa." Visit strange and enchanting foreign ports o'call, where only GRACE Line stops—the travel-adventure-of-a-lifetime! Glorious days at sea, enjoying every comfort and luxury of trans-Atlantic travel. Fascinating hours ashore in Havana, Colombia (Barranquilla, Cartagena) Panama, through the Canal, El Salvador, Guatemala, Mexico; Los Angeles, San Francisco, Victoria, Seattle. A famous "Santa" Liner sails every week from New York and Pacific Coast. See your travel agent or write GRACE Line: Department NG-25, 10 Hanover Square, New York; or 230 North Michigan Avenue, Chicago; or 2 Pine Street, San Francisco.

go *Grace* line—
it's springtime
in the tropics!



WATER-RAIL CRUISE-TOUR • 'ROUND AMERICA • HOMETOWN TO HOMETOWN • LOW RATE

PEA SOUP

*as only Campbell's
make it!*

EAT SOUP AND KEEP WELL



Good Pea Soup — Campbell's Pea Soup — is so delicious to taste and so remarkably nourishing and satisfying that you find it disappearing with regularity from your pantry shelf. It has the charm of dainty sweet peas and all of their extraordinary food value. For both reasons it is invaluable for the family table—splendidly wholesome, blended with all the artistry of Campbell's famous chefs, true to the traditional Campbell's standards of quality, purity, irresistible flavor. Put it on your list today!

21 kinds to choose from...

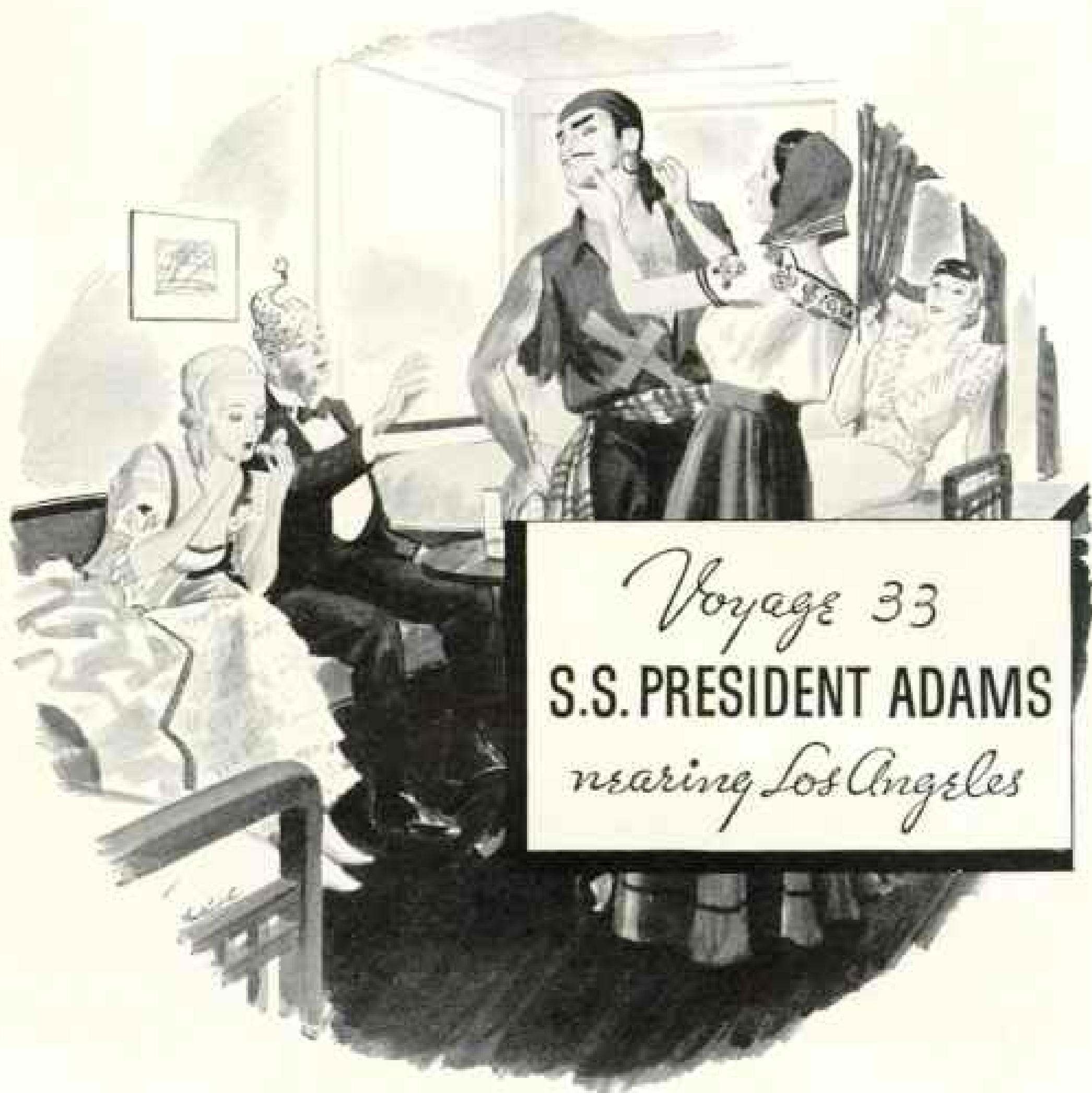
Asparagus	Mulligatawny
Bean	Mutton
Beef	Ox Tail
Bouillon	Pea
Celery	Pepper Pot
Chicken	Printanier
Chicken-Gumbo	Tomato
Clam Chauder	Tomato-Oxire
Consommé	Vegetable
Julienne	Vegetable-Beef
Mock Turtle	Vermicelli-Tomato

10 cents a can

LOOK FOR THE
RED-AND-WHITE LABEL



Campbell's Pea Soup



Voyage 33
S.S. PRESIDENT ADAMS
nearing Los Angeles

TEN MINUTES TO SEVEN. Beginning her 33rd voyage Round the World, the S. S. President Adams nears Los Angeles. In stateroom 1111, a merry party is preparing for the Captain's Dinner.

Those two young people in the center of the room were married in New York two weeks ago. For their honeymoon they chose this trip to California via Havana and the Panama Canal. The girl behind them is from Philadelphia. She's going to Shanghai to marry a young American in the diplomatic service. That distinguished gentleman on the settee is a famous engineer bound for Singapore. And his companion is a California girl returning from a school in France.

An interesting group—yes. But you'll find many like it on any President Liner, any night in the year. For President Liner passengers come from the whole, wide world to meet, make friends and part again. And they have this in common—they like the easy-going atmosphere of informality for which these ships are famed.

Every Thursday a President Liner sails from New York via Havana and the Panama Canal to California, thence to the Orient and Round the World. Every stateroom on these ships is outside,

with deep-sprung beds. Every ship has an outdoor swimming pool. And anyone who has ever sailed on a President Liner will tell you that the food is unsurpassed.

CALIFORNIA \$165 First Class
via Havana and the Panama Canal

Trans-Pacific President Liners (\$120 Tourist, \$200 First Class to California) and Round the World Liners (\$165 First Class) alternate to provide a sailing every Thursday from New York. A sailing every other week from California to New York (\$120 Tourist, \$200 First Class). Roundtrips are generously discounted, and fares for complete rail and water Round America roundtrips are from \$220 Tourist, \$265 First Class.

Your travel agent or any of our agents will gladly show you pictures of roomy President Liner accommodations and tell you all about our services—between New York and California, to the Orient via Hawaii and the Sunshine Route or via the Short Route from Seattle, and Round the World. On any of these trips you go as you please, stopover when and where you choose.

604 FIFTH AVENUE, NEW YORK · 311 CALIFORNIA STREET, SAN FRANCISCO · 110 SO. DEARBORN STREET, CHICAGO · 514 W. SIXTH STREET, LOS ANGELES
 STEAK HOUSE BUILDING, BOSTON · TRANSMONTAIN BLDG., WASHINGTON, D. C. · FOURTH AT UNIVERSITY, SEATTLE · 465 HOWE STREET, VANCOUVER, B. C.
 100 BAY STREET, TORONTO, CANADA · 634 S. W. BROADWAY, PORTLAND · UNION TRUST BUILDING, CLEVELAND · HIGHWAY PIER, SAN DIEGO.

Dollar Steamship Lines **DOLLAR** *American Mail Line*

“WHERE TO, PLEASE?”



SCARCELY a day passes—sometimes scarcely an hour in the day—that you do not go visiting by telephone. It is truly the magic carpet that transports you, quickly and easily, to places you would like to be and people you would like to see.

Who can estimate the value of the telephone in the daily lives of millions of men and women . . . in time and money saved, in increased efficiency, in security and priceless help in time of need!

Contact, communication, swift interchange of ideas—these benefits the modern world offers you. The

telephone is one of the chief instruments by which you can seize them. With it at your elbow you are ready for what may come—for opportunity, for emergency, for the brief word that may open a fresh chapter in your life.

Within the next twenty-four hours, sixty million telephone calls will be made over Bell System wires—each a separate, individual transaction, complete in itself. Yet your own calls will go through as quickly and efficiently as if the entire system had been built especially for you.



AMERICAN TELEPHONE AND TELEGRAPH COMPANY

● An interesting section of the studio-living room in the Howard Chandler Christy home, showing the mellow waxed floor. Above the mantel hangs the famous portrait of Mrs. Christy.



● Mrs. Christy, wife of the well-known artist, has inspired some of her husband's finest work.

"JOHNSON'S WAX POLISH IS CERTAINLY MORE DURABLE"

says MRS. HOWARD CHANDLER CHRISTY

● "It is a comfort to know about this economical wax method of preserving the beauty of floors and furniture. Once your things are properly waxed you know they are going to stay beautiful," says Mrs. Christy. No amount of daily wear and tear can damage the surface underneath the glowing wax polish. ● Floors and linoleum protected with genuine Johnson's Wax are sealed against dirt, scratches and stains. No more scrubbing — dusting keeps them immaculate. ● You can simplify your house work and practice real economy by ordering Johnson's Wax (paste or liquid) today. Sold by grocery, hardware, paint, drug and department stores. Send the coupon. ● Rent the Johnson's Electric Polisher from your dealer at small cost.

JOHNSON'S WAX for floors and furniture

● S. C. Johnson & Son, Inc., Dept. NG-11, Racine, Wisconsin. Enclosed is 10c. Please send me a generous sample of Johnson's Wax and interesting booklet.

Name _____
Address _____
City _____ State _____



FROM THE EARTH'S FOUR CORNERS

NATURE'S Treasure House revealed in word and striking illustration. Creatures of the Land . . . the Sea . . . the Sky . . .

Fascinating chapters from well-told tales, dear to the hearts of true sportsmen and animal lovers.

'These Seven Doors Leading to the Mystery and Romance of the World of Nature' now available at a moderate price.

OBTAINABLE ONLY FROM
NATIONAL GEOGRAPHIC SOCIETY
Dept. D, Washington, D. C.

Book of Fishes, illustrated, now	\$2.00	The Book of Birds, illustrated, now	\$2.00
Wild Animals of North America, illustrated, now	\$2.00	The Book of Dogs, illustrated, now	\$1.00
Horses of the World, illustrated, now	\$1.50	Cattle of the World, illustrated, now	\$1.50
		The Book of Flowers, illustrated, now	\$3.00

NATIONAL GEOGRAPHIC SOCIETY,
Dept. D, Washington, D. C.

Enclosed find \$ _____ for _____

copies of _____

Please mail prepaid to name and address below:
(Mailing abroad: 25 cents extra)

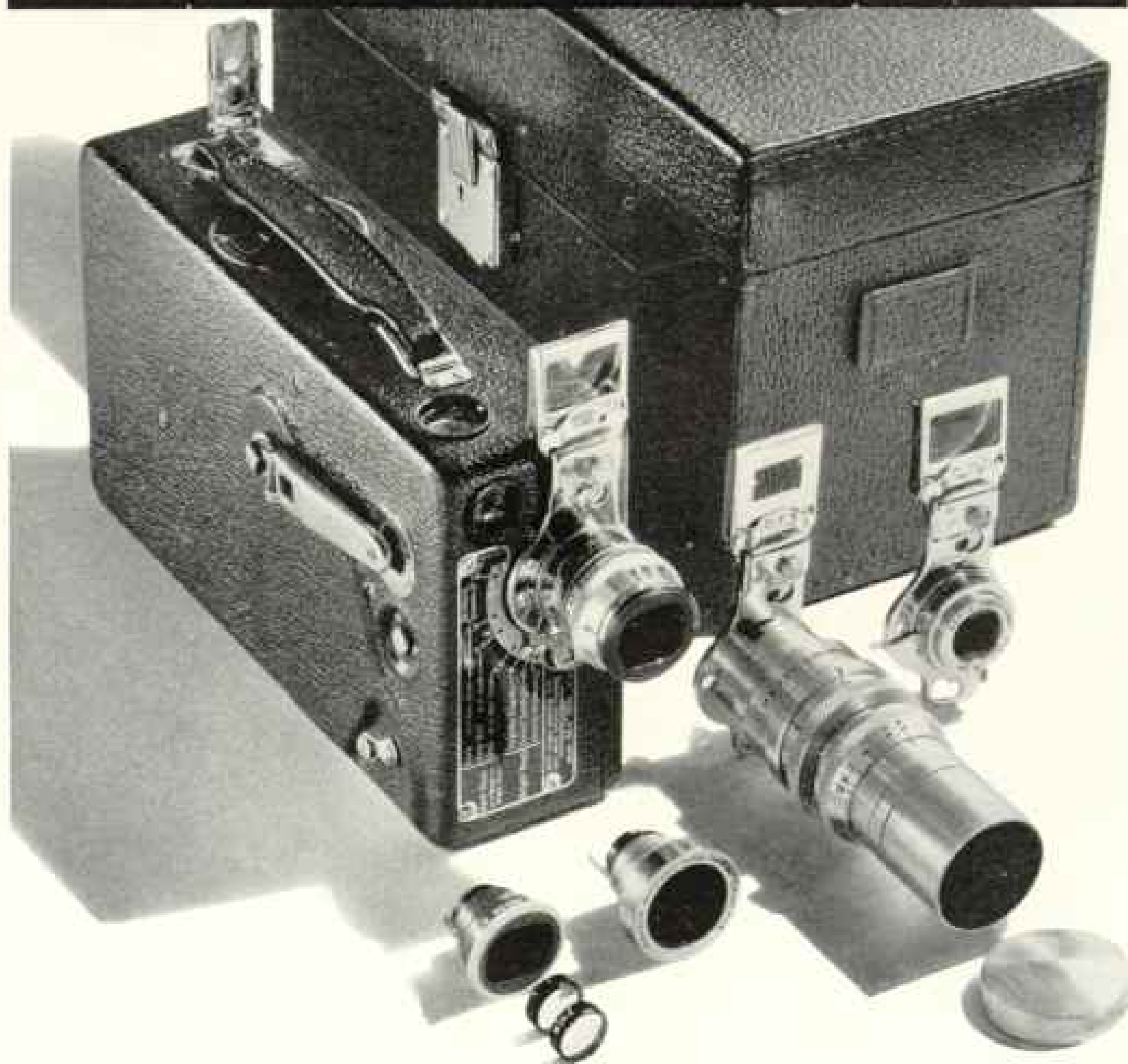
NAME _____

ADDRESS _____

Illustrated circular on request.



Your Whole "Movie Studio" is in this 6 x 10 inch case



COMPLETE EQUIPMENT for making any kind of home movies—here it is . . .

Black-and-white movies. Movies in full natural color. Distant action. Wide-angle shots in close corners. *All the equipment is here—in this 6 x 10 inch case.*

Ciné-Kodak "K" is so simple that the beginner will turn out clear, crisp movies from the first.

Yet it offers an astonishing range for the expert. You can make movies at night with inexpensive lights. You can be in the movie yourself.

Making movies and seeing yourself in movies is a really thrilling experience. The movie record of a growing family, of travels, of sports and outings,

becomes so precious that nobody should miss it. Can you think of a gift that will match the "K" in real appeal—in real value?

Christmas is Coming

Your Ciné-Kodak dealer will gladly show you both black-and-white and color movies made with the "K." Loads with full 100 feet of 16 mm. film. Price (case included) from \$110. Eastman Kodak Company, Rochester, New York.

IF IT ISN'T AN EASTMAN, IT ISN'T A KODAK

Ciné-Kodak "K"

Eastman's finest movie camera



Series D GRAFLEX

Sports or travel ahead? Series D GRAFLEX, with telephoto or regular lens, is a sure short-cut to more colorful, interesting pictures.



Series B GRAFLEX

Now is the time! Preserve forever the everyday episodes of your growing youngsters. Easy-to-operate Series B GRAFLEX will do just that—and in the hands of every member of your family.



SPEED GRAPHIC

Because Speed Graphics, in the hands of American Press Photographers, so dependably "get" the news pictures of the day, more and more camera enthusiasts are adding high-speed Graphics to their equipment.



National GRAFLEX

"Just a Handful", this small camera makes a large album-sized Graflex picture. "Footballing" or traveling soon? Take along a National GRAFLEX... and get the interesting pictures you missed last season.

"Just a Handful"



Just out! This new, interesting 28-page Graflex catalog giving complete information about these ALL-AMERICAN GRAFLEX cameras. It is yours... FREE... Write to...

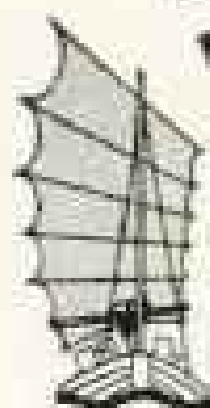


FOLMER GRAFLEX CORPORATION
ROCHESTER, NEW YORK ★ ★

Name _____

Address _____

City _____ State _____



S.S. LURLINE SOUTH SEAS & ORIENTAL *Cruise*

VALUE EXTRAORDINARY! From \$1,000
INCLUDING SHORE EXCURSIONS

CONDENSED ITINERARY: Sails from San Francisco Jan. 23; from Los Angeles Jan. 24; returning to San Francisco Apr. 14, 1934 . . . 81 days, 24,000 miles, 18 ports in South Seas, New Zealand, Australia, New Guinea, Java, Malaya, Orient. PEIPING, BALI included. *Angkor Wat, Borobodoer optional.*



A Pacific-girdling travel epic! In timeliness, itinerary, ship, experienced management and low cost—planned for perfection. *Pre-view* its luxury, fascination and *exclusive* features in BEAUTIFUL PICTORIAL PROSPECTUS (including deck plans, interiors of magnificent super-liner "Lurline") now available at any travel agency or



THE OCEANIC STEAMSHIP CO. MATSON LINE

*New York · Chicago · San Francisco
Los Angeles · Seattle · Portland*

FOREIGN SHOPPING

Shopping in foreign lands is one of the charms of travel. The funds necessary to do this shopping are always acceptable, safe, and command a good exchange value if they are in the form of

AMERICAN EXPRESS TRAVELERS CHEQUES

For sale at banks and Express offices



FOR 1934—AND READY NOW!

RCA VICTOR'S New "DUO" *(2 in 1 Music)*



- 1 *Plays the modern electrical records through tone-sensitive tubes . . . like radio.*
- 2 *With swift, new automatic record-changer—for 12" or 10", long-playing or standard.*
- 3 *PLUS superb radio reception through the new 1934 RCA VICTOR Superheterodyne set.*



WHEN you hear the new DUO you will say, "What a lot we've been missing!" This Duo instrument is new—and thrilling. It *completes and combines* all you have desired in home-entertainment . . . for any mood, any time. At about the price of *part-entertainment*. Until you've heard a Duo instrument you have no real idea of the beauty any record gives when played through tone-sensitive radio tubes. Latest RCA VICTOR electrical recordings are, of course, infinitely *more* beautiful. Now you command it all, instantly. All-electric mechanism does the work. Fast, new record-changing device handles 12" or 10" discs, long-playing or regular, automatically. Or, when you want radio, you have that, too—with modern RCA VICTOR betterments. There's a model at almost any price you have in mind! Go to your RCA VICTOR dealer. Ask him to give you some records, and a half-hour alone with the Duo, RCA VICTOR Company, Inc., Camden, N. J. "Radio Headquarters."

AUTOMATIC! PLAYS MORE THAN AN HOUR . . . UNINTERRUPTED! Console DUO shown above, Model 311, has new swift-action automatic record-changer . . . will play more than an hour, uninterrupted, with 12" long-playing records . . . will also play 10" or 12" standard records. All electrical—plays records through radio tubes! PLUS improved RCA VICTOR Superheterodyne radio . . . gets police signals . . . automatic volume and tone controls. Handsome cabinet, \$179.50 complete with RCA Radiotrons . . . Other new DUO instruments: Console, Model 310, \$94.50; Highboy Console, Model 310, \$149.00.

THIS NEW DUO Model 300 . . . Portable size and weight, only \$39.75!



With RCA Radiotrons Plays single 12 in. or 10 in. standard records through tubes. All-electric—no springs, no "winding"! PLUS a good radio set. At the price of a portable phonograph.



Do you know what records are like today?

You don't know until you've heard the rich new life-likeness and tone-purity made possible by RCA Victor's modern electrical records. The variety you can enjoy is almost limitless . . . How about hearing *Eddie Duchin's* record of "Lazy Bones" . . . or *Ramona* and her grand piano, in any of a dozen

favorites . . . or *Paul Whiteman's*, or *Leo Krizan's* new records? Or . . . *Stokowski* and the magnificent Philadelphia Orchestra's Victor record album, "Tristan and Isolde" . . . *John Charles Thomas* singing "The Trumpeter"—glorious! . . . or any of today's great voices—or instruments? It's all here for you.

SEND FOR NEW BOOK

It tells what everyone wants to know about the world's "101 Greatest Pieces of Music"—Explains and describes them in a way you'll enjoy. **Clip coupon now.**

RCA VICTOR Company, Dept. 64, Camden, N. J.

(Check one or both)

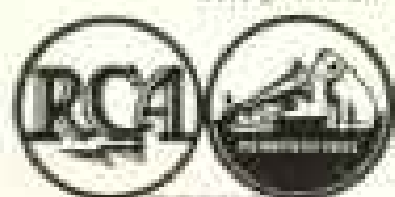
Enclosed find 10c for postage on new book "101 Greatest Pieces of Music"

Send FREE monthly bulletin of New RCA VICTOR recordings.

Name _____

Address _____

City _____ State _____



RCA VICTOR

RADIOS • PHONOGRAPH COMBINATIONS • VICTOR RECORDS

All prices subject to change without notice. Prices slightly higher in the West.

How wide is your world?

OURS is a big and an interesting world. But your particular niche isn't so big that you can't make sure it will always be as safe and as comfortable as you would have it.

Put life insurance on the job to protect *your* world. Then you can explore the rest with a light heart and an untroubled mind.

John Hancock
LIFE INSURANCE COMPANY
OF BOSTON, MASSACHUSETTS

JOHN HANCOCK INQUIRY BUREAU
197 Clarendon Street, Boston, Mass.

Please send me information about life insurance for protection.

Name

Street and No.

City State

N. O. 11-32

A Radio GUARANTEED to give WORLD-WIDE RECEPTION *every day!*

Receive broadcasts from Europe, the Orient, Australia—most anywhere on the globe you choose—*direct!* This new, laboratory-built instrument is guaranteed to tune in foreign stations 10,000 miles or more away, with full loud speaker volume and natural tone fidelity, at all seasons. What a way to broaden your world-culture! Hear news dispatches from England's stations . . . typical national music from Spain—symphonic music from Germany . . . operas from Rome . . . other fascinating programs from the ends of the earth. Superb on domestic broadcasts, too! Costs no more than many less efficient models of ordinary receivers. Send for details, specifications and performance proofs. Plan to inspect our laboratories when at Chicago's A CENTURY OF PROGRESS.



SCOTT ALLWAVE DELUXE
15-550 Meter Superheterodyne

USE THIS PROOF COUPON

E. H. SCOTT RADIO LABORATORIES, INC.
1428 Ravenswood Ave., Dept. GN-112, Chicago, Ill.
Send me full particulars regarding the SCOTT ALL-WAVE DELUXE, 15-550 Meter Superheterodyne Radio Receiver.

Name

Street

City State

FROM ROSES TO CHERRY BLOSSOMS



\$160
ORIENT

ONE-CLASS SHIPS OUTSIDE ROOMS WITH BEDS

Modern "General" liners—commodious saloons—spacious, airy, rooms with beds—splendid American food. One-Class; you are not restricted to a certain part of the ship.

Yokohama \$160, Kobe \$165, Shanghai \$185
Hong Kong \$200, Manila \$200
Round-the-World Tours . \$555

SAILINGS

GENERAL PERSHING . . . Nov. 8
GENERAL SHERMAN . . . Nov. 29
GENERAL LEE Dec. 20

"GENERAL" LINERS

See your travel or R. R. ticket agent for literature, full particulars or write STATES STEAMSHIP LINES, Foster Bldg. (Dept. Y) Portland, Ore.



SUNNY WINTER VACATION

Plan now to spend your winter vacation in this Land of Romance and Sunshine. Whether you stay in Phoenix or in the other towns in this Valley of Happiness such as Chandler, Glendale, Wickburg, Mesa, Tempe, or Buckeye, you will spend the most enjoyable winter of your life. Ride along bridle paths lined with orange blossoms, golf on sporting courses beneath the shadows of the purple mountains, or just relax under the beautiful sovereign date palms. You live longer, healthier, and happier in this warm, dry Land of Sunshine.

Reduced winter fares now effective on the Rock Island—Southern Pacific and Santa Fe Lines

PHOENIX
CHAMBER OF COMMERCE
100-A La Ciudad Del Sol

Please send me attractive free literature and booklets

NAME

ADDRESS

A R I Z O N A

To Members of the National Geographic Society

"I have to watch my GEOGRAPHIC somebody is always borrowing it," says a member

"I have our copy addressed to my office," writes another, "so I can be sure of seeing it first. Once it gets home, my family monopolize it—and the neighbors ask to borrow it."

Of course! Wherever English is used, men, women, and children read THE GEOGRAPHIC, then lend it to a friend. The friend absorbs it, too—asks about The Society's educational work and publications, joins—and then shows his magazine to still other friends—who also join The Society. That is how it grows. That is how, during the 45 years of its life, this entirely altruistic, educational, cooperative project has expanded. Millions of people—old and young—have come to know and enjoy the fascinating, informative articles and illustrations which have made THE NATIONAL GEOGRAPHIC MAGAZINE a fixture in family group reading.

You, your friend, and *his* (or *her*) friend are The Society. Its far-flung power for good makes it possible to search the earth, the sea, and the sky for accurate information, then present it in an entertaining and *understanding* way. Members are real participants in this unceasing search for knowledge, read the results in their magazine and then tell *others* about it.

To-day, you can help your Society grow, and expand its usefulness, by filling in the form below. Nominate those friends who like to see your magazine, and let them enjoy *all* the benefits of membership. Each year, members receive 12 issues of their magazine. Each monthly issue, with its gripping tales of exploration, adventure, travel, and scientific achievement, illustrated in color and amazing factual photographs—with accompanying maps—would, if bound in book form, sell for as much or more than the entire year's membership fee.



TRAILING THE VOLCANO—FOR THE GEOGRAPHIC

DETACH HERE

Nomination for Membership

To the Secretary, National Geographic Society,

Sixteenth and M Streets Northwest, Washington, D. C.;

1933.

I nominate for membership in the National Geographic Society:

(1) NAME _____

ADDRESS _____

(2) NAME _____

ADDRESS _____

(3) NAME _____

ADDRESS _____

DUES

Annual membership in U. S., \$3.00; abroad, \$4.00; Canada, \$3.50; life membership, \$100. Please make remittances payable to the National Geographic Society. Please remit by check, draft, postal or express order.

[Name and address of Nominating Member]

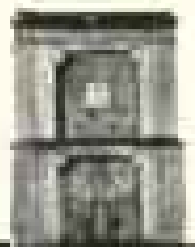
Membership Fee Includes Annual Subscription to THE NATIONAL GEOGRAPHIC MAGAZINE (11-33)

**Radio designed especially
for ADMIRAL BYRD
actually brings in the entire
World!**



Tuning from 10 meters to 570 meters—all with one single dial, McMurdo Silver's Masterpiece II, will bring you enjoyable, loud speaker reception of music and voice from points 12,500 miles away in any direction. This super instrument was designed especially for the Byrd Antarctic Expedition from specifications developed by McMurdo Silver, with the engineering department of a great eastern University acting as the admiral's radio advisor. Each one of the duplicates now being made available for private home use is laboratory built and is sold with an unconditional guarantee of complete satisfaction or money instantly refunded. Free Book completely describes this receiver and illustrates the custom-built console made especially for it. Write for literature.

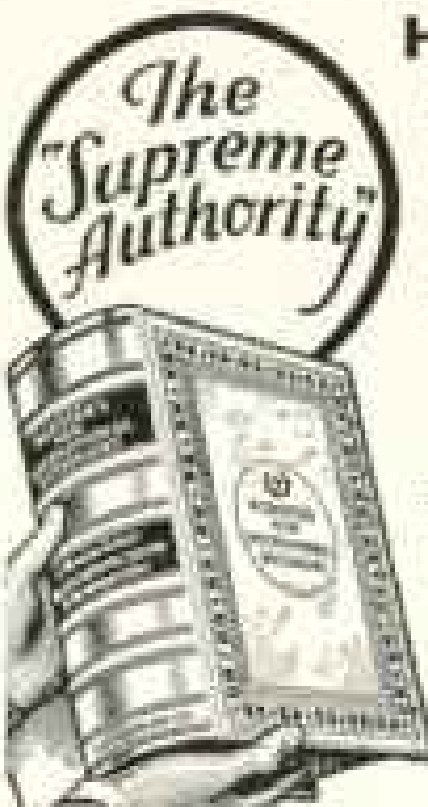
McMURDO SILVER, Inc.
1731 Belmont Ave., Chicago, U.S.A.



One of the most distinctive custom-built consoles designed to house MASTERPIECE II. This one also contains a phonograph.



McMurdo Silver's
MASTERPIECE II



HERE'S THE ANSWER

to your questions about words, persons, places—a wealth of accurate, useful, instantly available knowledge—

WEBSTER'S NEW INTERNATIONAL DICTIONARY

A Merriam-Webster

Accepted and used in courts, libraries, schools. 452,000 entries, 32,000 geographical subjects, 12,000 biographical entries. Over 6,000 illustrations. See it at any bookstore or send for FREE illustrated pamphlet containing sample pages.

G. & C. MERRIAM CO.
294 Broadway, Springfield, Mass.

**Bind "GEOGRAPHICS"
EASY WAY - AT HOME
IN MOLLOY-MADE COVERS**



Over 100,000 Customers Using This Low-Priced Service—

Write today for FREE DETAILS of amazingly simple "at home" binding service which turns your issue of the "Geographic" into beautiful, lifetime books suitable for finest library shelves. Surprisingly inexpensive. Easy—even a child can do the binding. Binders are made of finest leather-effect, durable materials embossed with National Geographic emblems and volume numbers. Write today for actual size illustrations and all details.

Write for FREE DETAILS
MOLLOY-MADE COVERS
THE S. R. SMITH COMPANY
2881 N. Western Avenue Chicago, Ill.

**Love's Hawaiian
Fruit Cake**



Rich in tropical fruits

Ye old English recipe 'gone native' will charm you and your guests. 5lb. cake, \$6.50—2 1/4-lb. cake, \$3.50—post-paid. **Love's**, Dept. A, P.O. Box 294 HONOLULU, Hawaii.

A holiday gift that's more than a fruit cake—it's romance.

**JAMES BORING'S NEW
MEDITERRANEAN
CRUISE**

on the specially chartered

S. S. COLUMBUS

Luxurious North German Lloyd cruising steamer, running mate of the Bremen and Europa. Sails from New York February 10th to every country on the Mediterranean—53 days.

The 11th Mediterranean cruise under the personal direction of James Boring assures cultured, congenial companions and an unusually complete itinerary, besides an unsurpassed ship-board. Your local agent or—

1st Class \$620 up
Tourist \$300 up

Side trips optional

JAMES BORING COMPANY, INC.
642 Fifth Ave., New York 333 N. Michigan Ave., Chicago

CHAMPION-INTERNATIONAL COMPANY

MANUFACTURERS OF

National Geographic Paper

and other high-grade coated paper

LAWRENCE, MASS.

THIS MAGAZINE IS FROM OUR PRESSES

JUDD & DETWEILER, INC.

Master Printers

ECKINGTON PLACE AND FLORIDA AVENUE

WASHINGTON, D. C.



THE NATIONAL GEOGRAPHIC DIRECTORY OF SELECTIVE SCHOOLS



Girls' Schools

ARLINGTON HALL

108-Area Woodland Park. Standard High School and Junior College. Music, Art, Expression, Dramatics, Home Economics, Secretarial. All Activities. Catalog. Carrie Sutherland, M. A., Principal, P. O. Box 118, Benj. Franklin Station, Washington, D. C.

GULF-PARK COLLEGE

Br. 1910-Box. Fully accredited Junior College for girls. 4 years high school, 2 years college. Music, art, expression, home economics, secretarial. Outdoor sports all year. Riding, swimming (salt water). Catalog. Box N, Gulfport, Miss.

NATIONAL PARK SEMINARY

Jesuit College and Preparatory School suburban to Washington. 12 buildings. Art, music, dramatics, home economics, secretarial, Journalism. Rates \$250 and up according to room. Catalog. James E. Assent, Ph.D., LL.D., Box 9113, Forest Glen, Md.

OGONTZ

School for Girls, Near Philadelphia. Grace of finishing school with educational thoroughness. Junior College. General courses. College preparation. Home-making Department. Social Hall, girls 7-14. Abby A. Sutherland, Prin., Ogontz School P. O., Pa.

WARD-BELMONT

Academy Junior college and preparatory school with special courses in music, art, expression, domestic art, physical training, secretarial. Impressive buildings. Sports. Ask for literature. Alma Paine, Registrar, Box 109, Nashville, Tenn.

WARRENTON COUNTRY SCHOOL

Colleges preparatory. Cultural courses. French—language of the house. Ideas of order and economy emphasized. Riding, sports. 40 miles from Washington. Mile. Lea M. Bouffery, Box N, Warrenton, Va.

Special

BANCROFT SCHOOL

Procedures for the retarded child. Instruction, outdoor life, play and medical care combined. Modern Equipment. Resident physician. Summer camp in Malco. Box 333, Haddonfield, New Jersey.

DIRECT YOUR INQUIRIES
TO THE SCHOOLS
EXECUTIVES THERE ARE
BEST QUALIFIED TO AD-
VISE ON EDUCATIONAL
PROBLEMS.

Boys' Schools

COOK ACADEMY

Colleges preparatory, commercial courses. High standards. Average boys learn to study easily and play well, thus developing initiative and leadership. High ideals inspired by friendly faculty. Sports, music, dramatics. Catalog. Headmaster, Box 711, Montour Falls, N. Y.

GEORGETOWN PREP SCHOOL

20 acres near Washington. Four-year course. Every facility for physical and intellectual development. Ten new tennis courts. Nine-hole golf course. Established 1788. Tuition \$1,500. Rev. Robert S. Lloyd, S. J., Headmaster, Garrett Park, Md.

Vocational

AMERICAN ACADEMY OF DRAMATIC ARTS

Founded 1884 by Franklin D. Barrett. The foremost institution for dramatic training. Mid-Winter Term Opens January 15th. Address: Secretary, Room 271-K, Carnegie Hall, N. Y.

THE RAY SCHOOLS

William F. Ray, Ruth Wade, Prop. Specialists in Art for Business Use. Courses: Advertising Art, Photography, Interior Decoration, Dress Design, Styling, Fashion Illustration, Advertising. Discontinued equipment. 20 years in same location. 116 So. Michigan Blvd., Chicago, Dept. G.

Framed Geographic Pictures—at Greatly Reduced Prices



N. C. Wyeth's Painting, *The Discoverer*, in exact colors

A Choice Selection of Wyeth Reproductions and Wall-size Panoramic Photographs in Striking Geographic Style

The Discoverer	\$5.00
Eastern Hemisphere	4.00
Western Hemisphere	4.00
Lhasa	2.50
Matterhorn	4.00
Palms	3.00
Dee and Twin Fawns	2.50
Machu Picchu	2.00
Peasant Girl	3.00
Mt. Robson	4.00
Hark	3.00
Torii	3.00



Eastern Hemisphere
N. C. Wyeth's Map of Discoverer, in beautiful 37th Century style.

Schora	\$3.00
Big Tree	4.00
Argory	5.00
Peasant Home, Corsica	3.00
Sir Walter Raleigh	3.00
Byrd at North Pole	3.00
Vasco da Gama	3.00
Columbus Le Rabida	3.00
Caravels of Columbus	3.00
Valley of Smokes	3.00
Babies in Wood	3.00

NATIONAL GEOGRAPHIC SOCIETY, Dept. D, Washington, D. C.

Enclosed find \$_____ for _____ copies of _____

Please mail prepaid to name and address below. (Mailing abroad: 25 cents extra)

NAME _____ ADDRESS _____

Illustrated circular on request.



Sail south to Summer

ON THE BLUE CARIBBEAN

A glorious, 19-day cruise aboard the palatial M. S. LAFAYETTE, 8 ports of call, for the cost of a midwinter holiday at home!

If you are like a lot of people we know, about midwinter you feel a familiar desire to sail south . . . to trade coughs and sneezes (plus a modest fare) for summer on the Spanish Main.

You'll see the royal palms of Martinique preen in the golden sunshine. At Trinidad, you can pick up many little treasures in the Hindu shops . . . Barbados, for all its British pose, blooms with tropic gardens . . . La Guayra, whence you may journey to Caracas (that seed of old Spain in the Andes), and Curaçao (Dutch as the dikes) are rich in the lore of buccaneers. At Colon: the Canal, gay night clubs, the sport of bargaining for a panama hat. . . Finally, Havana, with its Jockey Club, its rumbas, its brilliant Casino.

And through it all, the thrill and luxury of France-Afloat . . . the spacious comfort of

the *Lafayette*, her salons, her English-speaking stewards, her superb and memorable cuisine.

The *Lafayette* will make several trips to the West Indies this winter. See your travel agent. He will gladly arrange one of these cruises, and his services cost you nothing. . . French Line, 19 State Street, New York City.

St. Pierre (Martinique)	Port-de-France (Martinique)
Bridgetown (Barbados)	Port of Spain (Trinidad)
La Guayra-Caracas (Venezuela)	Willemstad (Curaçao)
Colon (Panama Canal Zone)	Havana (Cuba)

WEST INDIES CRUISES
Jan. 26 and Feb. 16 . . . 19 days
\$235 up . . . M. S. LAFAYETTE

Also a Special Christmas Cruise to Nassau, Kingston and Havana. Leave December 21. Arrive back in New York, January 2. . . 12 days. \$155 up. M. S. LAFAYETTE

French Line

NORTH ATLANTIC SAILINGS: ILE DE FRANCE, Nov. 4, 25, Dec. 16 (Special Christmas Sailing) • PARIS, Nov. 17, Jan. 12 • CHAMPLAIN, Nov. 11, Dec. 2 • DE GRASSE, Dec. 13

NINE LIVES!

WEEKS, even months, after hard usage has knocked the daylight out of an ordinary flashlight battery, Evereadys keep right on delivering a powerful beam of light. They have as many lives as a cat!

Each Eveready is *fresh*, when you buy it. A date on the side of the battery shows you are getting *all* the power that was put in at the factory! And it's *sealed-in*. No old-fashioned wax-compound top to crack and let the power leak out. Eveready tops are *metal*!

You can't tell when you'll need your flashlight. Have it "ever ready"—loaded with light that is ready to spring through the darkness, at a touch of your finger-tip. All good stores carry a complete line of Eveready Flashlights and *fresh* Eveready Flashlight Batteries. Only 10c each.



Eveready Batteries are made by National Carbon Co., Inc., the world's largest manufacturers of dry batteries for every purpose. When you need a battery ask for EVEREADY, and be certain of the best that science can build or money can buy.

NATIONAL CARBON CO., INC.

General Offices: New York, N. Y.
Unit of  and Carbon Corporation

EVEREADY BATTERIES

FLASHLIGHT • RADIO • DRY CELL



This picture for framing. Mail coupon below



A copy of this Frances Tipton Hunter painting — reproduced in full colors—10" by 14"—free of advertising matter, will be sent to you for 10 cents! *Mail the coupon or write us today!*

NATIONAL CARBON CO., Inc.
Dept. NGM-11-33
30 East 42nd Street, New York City

Gentlemen: Please send me a full-color reproduction of the picture: "Nine Lives." I enclose 10 cents (stamps or coin).

Name _____

Address _____