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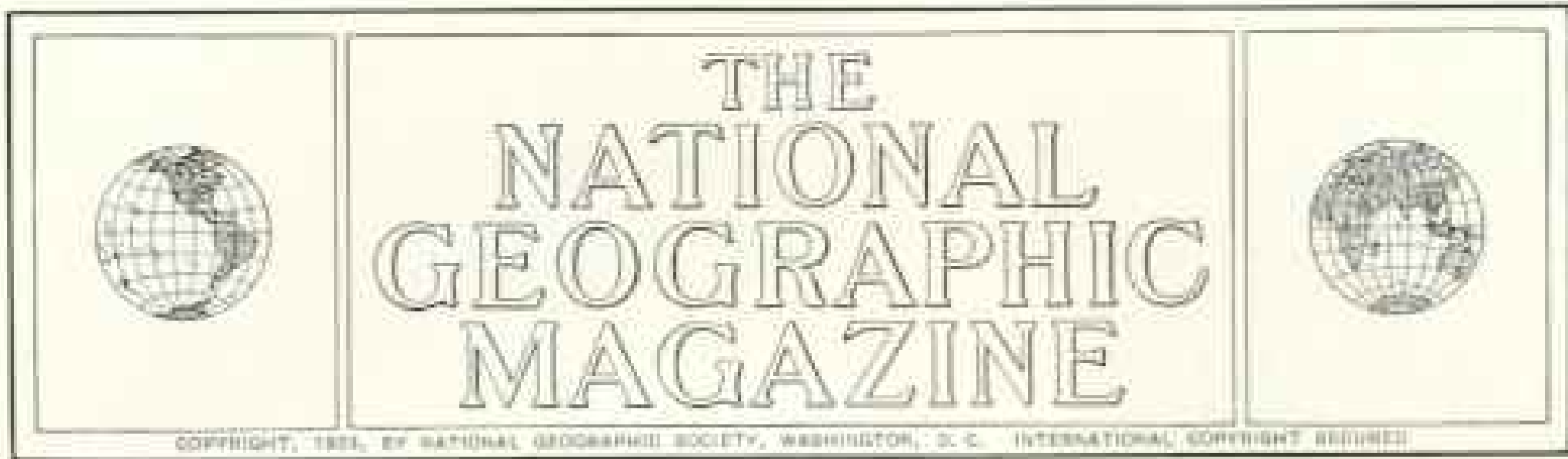
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LILIAN GROSVENOR COVILLE

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WASHINGTON, THE EVERGREEN STATE

The Amazing Commonwealth of the Pacific Northwest
Which Has Emerged from the Wilderness
in a Span of Fifty Years

BY LEO A. BORAH

ON A grim 13th of November, 1851, twenty-four white pioneers—12 adults and 12 children—disembarked from the schooner *Eract* at a lonely point on the shore of Elliott Bay, then a virtually unexplored arm of Puget Sound.

Cheerless the new land looked, and the women and children, disconsolate, huddled under trees near the water's edge, while the men scrambled to rescue their belongings from the fast incoming tide. As the schooner sailed away to carry a band of gold-seekers elsewhere, the little colony was alone in the unknown green land of mighty timber from which they were to hew their homes.

One of the women, clasping her two-months-old child, sat on a log and wept. To her the primeval evergreen forest, sweeping up from the gray waste of the Sound to misted heights of snow-capped mountains, suggested only nostalgic longing to go back to the Illinois prairies.

Had the young mother been able to envisage what the son she held in her arms was destined to look upon, her tears would have been forgotten in a dream of wonder and delight; for that son has lived to see the settlement of 24 grow to a city of nearly 400,000—Seattle.

He can say truthfully that from the very beginning he lived off the country. Because the colonists had brought no cattle

with them, there was no milk to give the baby that winter of 1851, and he was fed the broth of clams dug from the beach. The diet must have been nourishing; for to-day, a hale octogenarian, he still takes active part in the affairs of the city that he has watched spring from nothing to magnificence in the span of his years (see page 135).

The story of Seattle mirrors that of the whole Commonwealth of Washington. In less than a hundred years the Evergreen State has emerged from wilderness to modern civilization, crowding three centuries of history into one. Spokane, largest city of eastern Washington, with a population of more than 115,000, celebrated in September, 1931, its 50th anniversary. The United States census of 1860 found in Washington Territory fewer than 12,000 persons; that of 1930 recorded more than a million and a half in the State.

THE WINNING OF THE WEST STILL GOES ON

The Evergreen State is so close to its beginnings that in parts of it frontier life, far from being a half-forgotten memory, is a thing of the living present. Within 50 miles of Seattle skyscrapers, hardy pioneers are wresting their living from the wilds of the Olympic Peninsula, just as did their fathers of the Oregon Trail. Many of them must back-pack supplies to their



Photograph by Jules

MOUNT BAKER HIGHWAY CARVES AN AISLE THROUGH THE TALL CEDARS

These fine thoroughfares bring scenes of natural grandeur within reach of thousands who could never visit them by hiking. Any one not a trained woodsman would be utterly lost in a 10-minute walk from established trails, either here or in Mount Rainier National Park.

homes up mountain trails that wind through well-nigh impenetrable fastnesses of untouched forest. A State senator from Jefferson County, the son of one of the earliest peninsula settlers, bought an automobile only a few years ago and built for it as convenient a garage as possible—35 miles from his house!

To see Washington for the first time is to experience the thrill of discovering a new country. To live within its borders for eight years, as I did; then to go away from it and return after a few years' absence is to know that thrill again.

It was memory that directed my choice of a place at which to begin a recent survey of the State—the memory of a glorious summer day four years before and a boat excursion among emerald isles set in enchanted bays. Could the San Juan Islands really be as charming as recollection painted them? I resolved to go and see.

An hour before dawn of a gray day, Bill and I set out from Seattle in an automobile bound for Anacortes and the 6 o'clock ferry to San Juan Island, last stand of England in American territory and scene of the famous "Pig War" that very nearly set the United States and Great Britain at each other's throats (see page 134). Bill was an ideal companion on the trip, for he has grown up, to a height of six feet four, in the steamboat business on Puget Sound and knows every one of the 172 islands of the archipelago.

We drove across one of the four mighty bridges that span Lake Union, fresh-water haven of ocean-going ships in the heart of the city, passed through the sleeping university district, and sped away on a broad, paved highway to open country.

EVEN THE HENS USE "WHITE COAL"

Curiosity-exciting spots of light at frequent intervals not far from the road proved to be electrically lighted chicken houses. So plentiful and cheap is power in Washington that three-fourths of the farms in the coast country, more than half of those in the entire State, receive electric service. Hens enjoy artificially lengthened days for scratching and laying.

Our way led through Everett, on the Sound, lusty young lumber city that has grown from nothing in 1892 to more than 30,000 in 1930, and on into the seed, dairy, and poultry country of northern Snoho-

ish and southern Skagit counties. There was light enough now to reveal herds of sleek Holstein cows wading knee-deep in luxuriant lowland pastures. Reflecting that they browse thus in green meadows virtually every day of the year, one can readily understand why Washington is becoming world-renowned as a dairy country.

Vast tracts of oats, acres upon acres of seed and flower-bulb gardens, poultry ranches, and model dairy farms stocked with blooded cattle spread out on the diked land that stretches from the road to the base of timbered hills. The ground is abundantly watered and its fertility is remarkable. A Skagit County farm holds a record for yield of oats—187 bushels from a single acre. The county grows three-fourths of the cabbage seed produced commercially in the United States, as well as important crops of pea, turnip, and other vegetable seeds.

ROUGH WORDS BETOKEN ESTEEM

There was much exchange of friendly abuse between my companion and the men on the dock at the brisk port city of Anacortes while our car was being put aboard the ferryboat in a position from which it could be driven off without delay at Friday Harbor. Every steamboat man on the Sound knows Bill and jokes with him.

While the boat was moving out into its course, we breakfasted in the little lunch room next to the cook's galley and, hugely fed, mounted to the top deck. There the captain, though he objected with pretended violence that Bill was forever making him violate all the admiralty laws, permitted us to ride with him in the wheelhouse.

Comfortable on a padded seat, I listened while Bill and the captain exchanged stories of the islands. Tales were told of high adventure in fog "as thick as mush"; of Friday, the Kanaka deserter from a British sailing vessel, who built a hut on San Juan Island and gave his name to the capital town of San Juan County; of the establishment of Government lighthouses in 1857 on Tatoosh Island, Dungeness Spit, and Smith Island.

The story of the Smith Island beacon in the Strait of Juan de Fuca was particularly interesting. For several years after its construction, the lighthouse suffered frequent attacks by bands of Indians from



Photograph by Asahel Curtis

ENGLISH CAMP BLOCKHOUSE REMAINS UNALTERED

During the 12 years of British occupation after the "Pig War" (see text, page 143), Indian marauders were troublesome, and the British soldiers erected this defense against attacks by braves in canoes. Small openings in the walls below the roof, once loopholes for muskets, serve now as ventilators for an apple storage room. Descendants of the original homesteader still own the place.

the north, who battered unsuccessfully at the thick door with hatchets and heavy stones. The original door is still in use, a splintered panel showing how nearly the marauders once came to breaking in and killing the lightkeeper. Despite the sharp sand that hisses around the tower whenever strong winds blow, the walls show ineffaceable scars of bullets fired by thwarted braves.

RABBITS IMPERIL A LIGHTHOUSE

One of the early light keepers, thinking to provide a permanent supply of fresh

meat for his family, turned loose near the house a few rabbits of different species and colors; and soon the island was overrun with bunnies as variegated as Joseph's coat. By 1924 they were undermining the lighthouse!

Swinburne's line about "the golden, remote wild West, where the sea without shore is," certainly has no application to Puget Sound, for this sea-drowned valley has 1,900 miles of shore; and the San Juans, which geologists say are mountains standing shoulder-deep in water, furnish a large part of the total. They vary in area from nearly 58 square miles to patches of sand or mossy rock no larger than a blanket (see illustration, page 138).

Our boat threaded winding bays and tortuous inlets, often so close to the islands that pebbles might have been tossed from the deck to either shore. Once a fine-antlered buck broke out of the brush to a rocky beach not a

hundred yards away, plunged into the water, and swam smoothly across the course to another island. The scene was a fairyland of sea and sky, of forests, of vari-colored cliffs rising often hundreds of feet sheer from the water.

I marveled at the narrowness of our way, and at Bill's suggestion the captain took us around through Pole Pass, one of the narrowest navigable channels in the country. The pass seemed a snug fit for our small vessel, but the largest ferry of the fleet goes through it with a few feet of clearance. However narrow these water-

ways, they are safely deep, in many places from 50 to 150 fathoms.

ECHO SAILING CONQUERS FOG

"It must be difficult sailing among these islands in foggy weather," I remarked. "How do you keep off the rocks?"

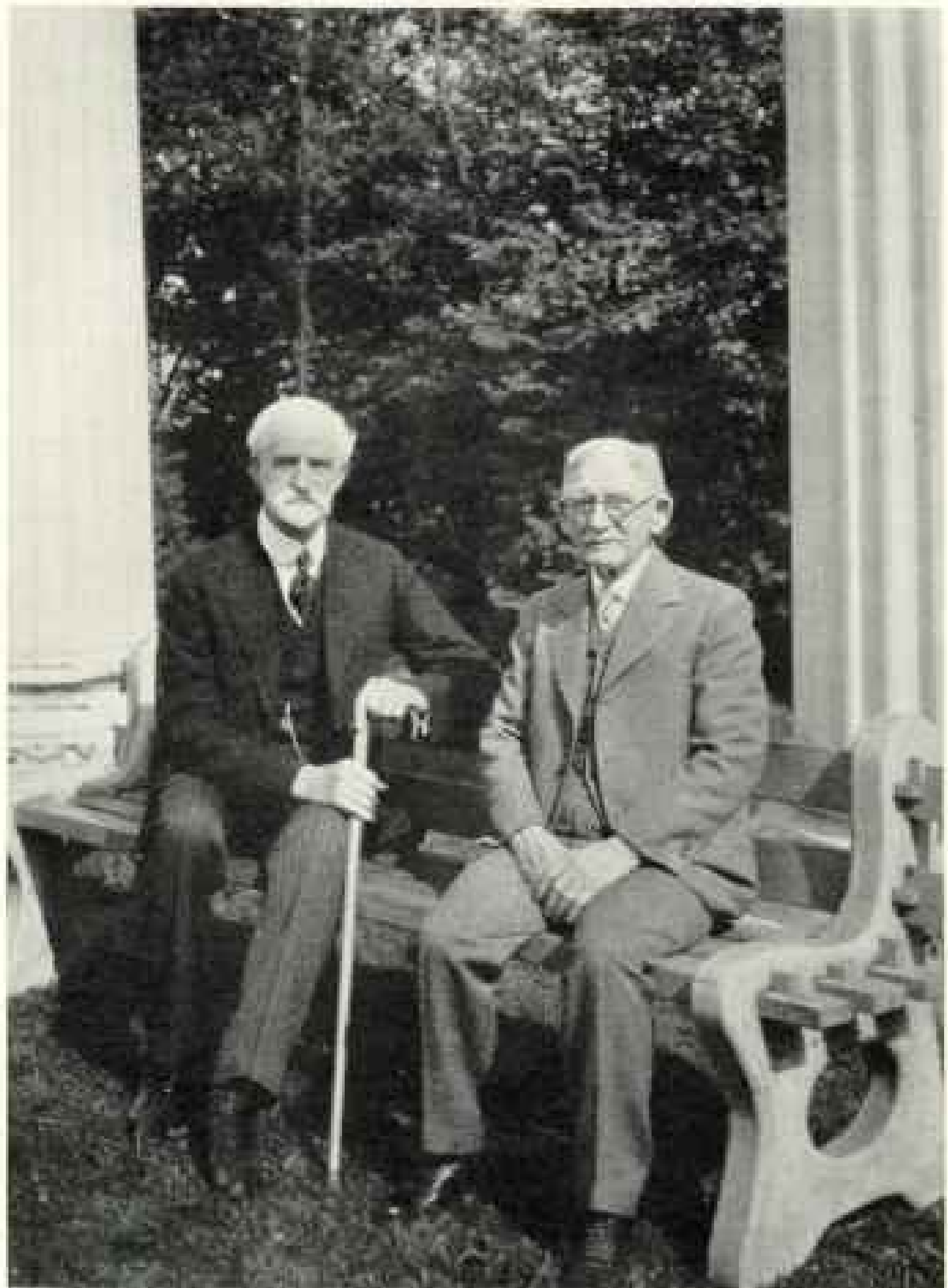
"We steer by echoes," the captain replied. "You see, when I blow the whistle like this, the sound comes back from several points. I can tell by the length of time it takes for the different echoes to come back just about where I am."

"But suppose you get too close for an echo?" I inquired innocently, trying to remember the shortest distance at which an echo can be heard.

The captain and Bill both laughed. "In that case," said Bill, "the skipper just yells for the engineer to hold everything and prays that the ship won't make too big a hole in some island. There aren't any brakes on a steamboat."

For a half hour the captain tooted the whistle at intervals in an effort to demonstrate to me the art of echo sailing. I hope the other passengers did not know who was the cause of the din. To my untutored ears the sounds were meaningless. San Juan sailormen must be born with special senses for echoes.

On some islands, which are too low to throw sounds back satisfactorily, the lighthouse service has erected echo boards. One such board is on Minor Island, a flat bit of sand just north of Smith Island, to



Photograph by Anabel Curtis

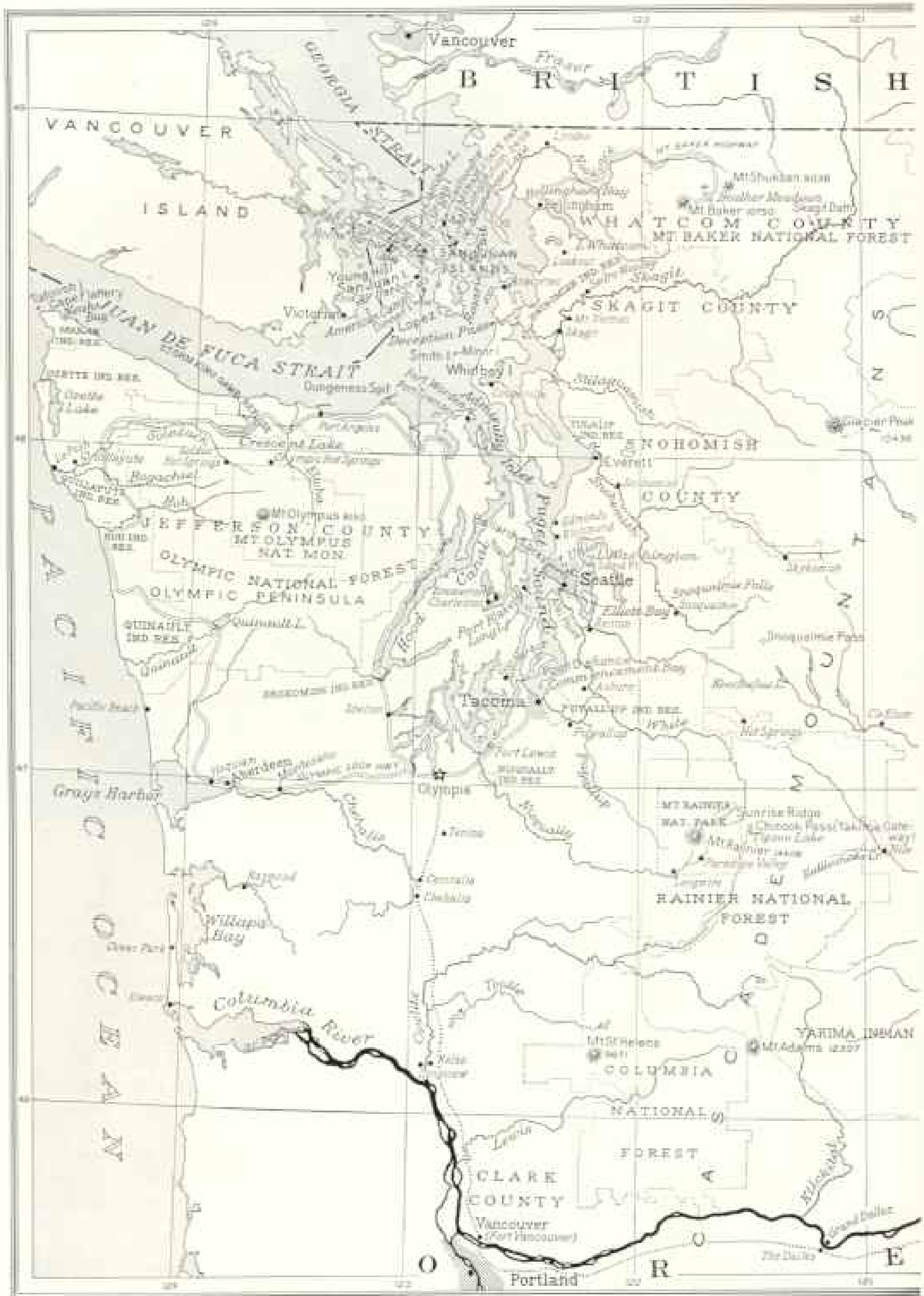
THE LAST SURVIVOR OF THE FOUNDERS OF SEATTLE

Prof. Edmond S. Meany (left), State Historian of Washington, enjoys frequent chats with Rolland H. Denny, sole remaining member of the original 24 settlers of Seattle (see text, page 131). The old friends are seen here in the sylvan theater at the University, before the "Columns," relics of the Territorial college established in 1872 in what is now the heart of the city and torn down when the school was moved to its present site (see Color Plate IV).

which it is connected at low tide by a rocky spit. Were it not for the board, the skippers would hear echoes from the higher island only and might go aground on Minor Island or the spit.

From time to time the boat put in at ferry slips, and near one of them, on Lopez Island, a modest signboard advertised a 32-acre island for sale.

At my expression of interest, Bill explained that some of the smaller bits of the archipelago have been bought for country homes and hunting and fishing preserves.

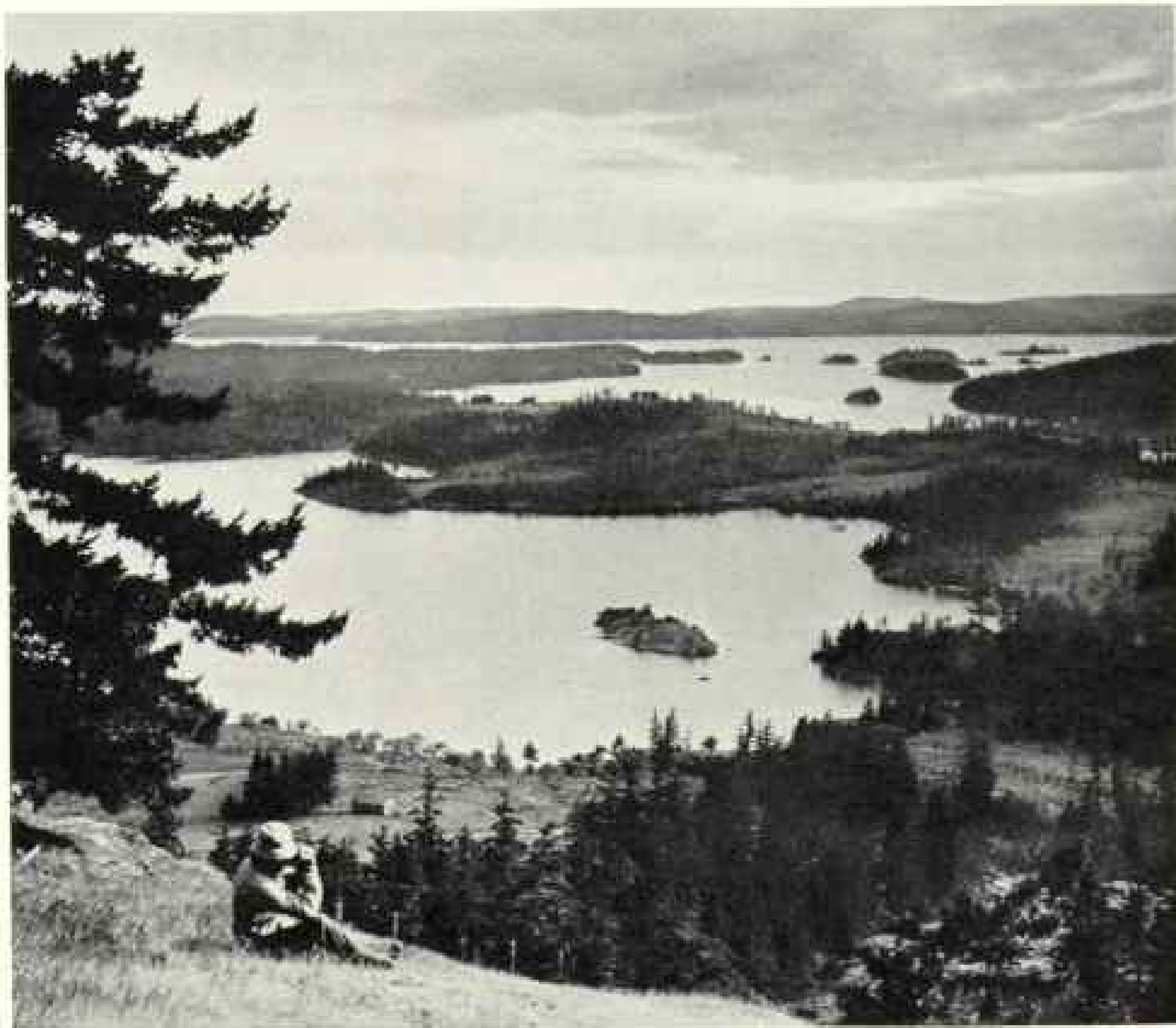


A MAP OF THE STATE OF WASHINGTON



Drawn by A. H. Bumstead

COMMONWEALTH OF INDUSTRY, FORESTS, FARMS, AND NATIONAL PARKS



Photograph by J. A. McCormick

TOPS OF MOUNTAINS SUNK IN THE SEA FORM THE SAN JUAN ISLANDS

Though all possess charm, some are valueless (see text below). In the early days a "tender-foot" bought one and spent all his funds trying to find it. Desperate, he traded it to a Friday Harbor restaurant keeper for a meal; and the new owner threatened to have him jailed for cheating when he, too, failed to locate it. To-day it is on the charts as Dinner Island.

"Not so many years ago," he said, "they were sold at auction in Seattle."

"Yes," the captain put in, "my father traded one for a canoe and a grubstake and paddled to Alaska for the Klondike rush. They weren't worth much in those days. They were sold 'sight unseen' and some of the buyers were stung."

We went ashore at Friday Harbor and passed the rest of the day driving to places of interest. One would never suppose that there could be so many miles of road on an island 55 square miles in area. Graveled highways wind through laden orchards and green meadows where cattle graze, past pretty farmhouses, through dense woodland, around shoulders of mountainous hills. Once the car bumped over a one-way trail that clung to the edge

of a bluff 500 feet above the sound. It was no road for careless driving.

The Oceanographic Laboratories of the University of Washington are near Friday Harbor. Here a teaching fellow explained bewilderingly varied specimens of marine life gathered along the two miles of ocean front owned by the school.

WHERE NATIONS QUARRELED OVER A PIG

At Roche Harbor, a poet's dream of white houses amid green lawns and flowers about a crescent beach, it was surprising to find one of the largest lime plants in Washington.

Two places of historic interest are the American and English camps, sites of the "joint occupation" that resulted from a dispute between England and the United



© Asabel Curtis

SURF BATHING ON PACIFIC BEACH PROVIDES GOOD SPORT

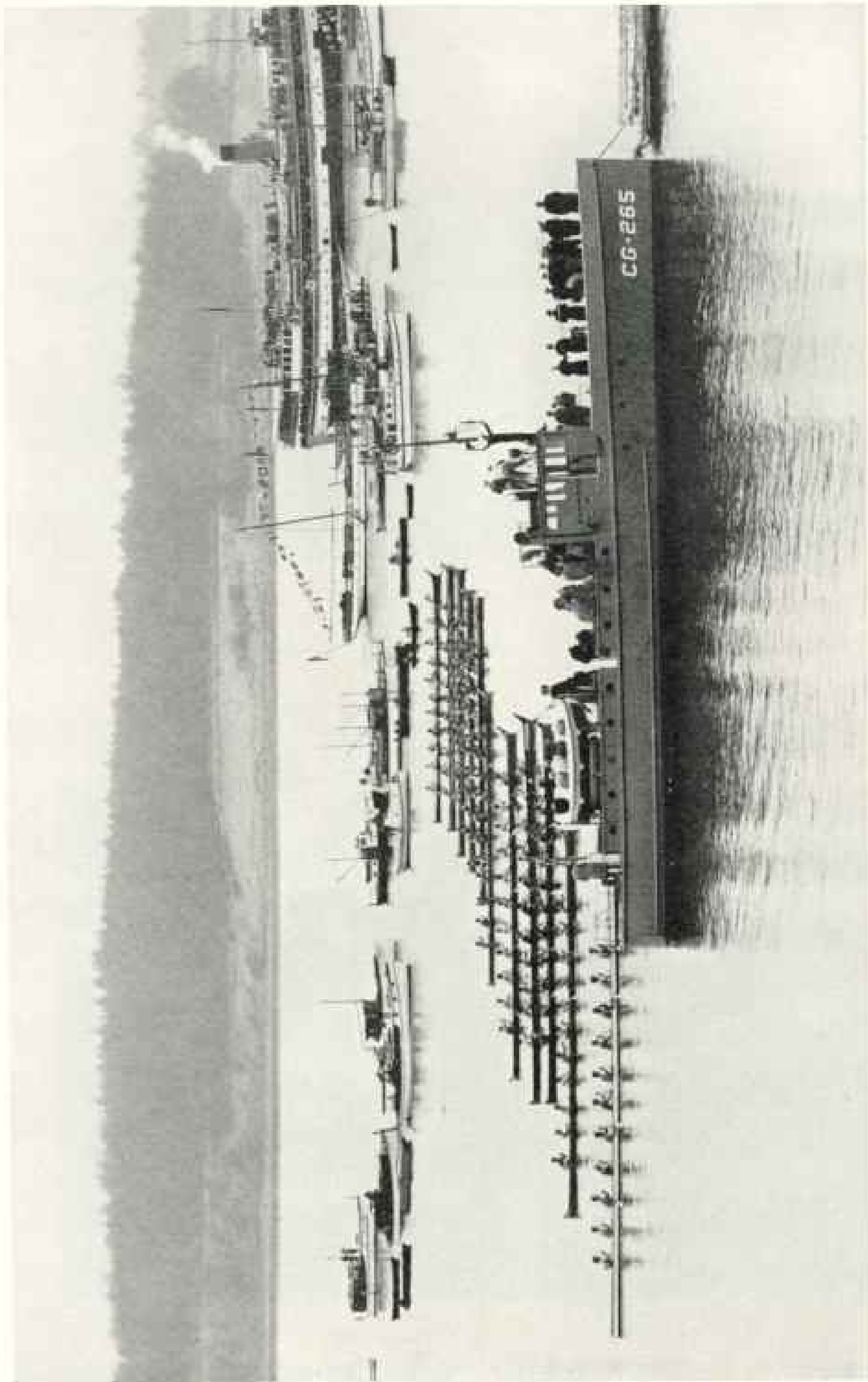
In summer the water driven by the Japan current, regulator of the Washington climate, is cool. There are clubs of enthusiasts at this resort, at Ocean Park, and elsewhere along the coast who enjoy open-air swimming in winter.



Photograph by C. O. Blanchard

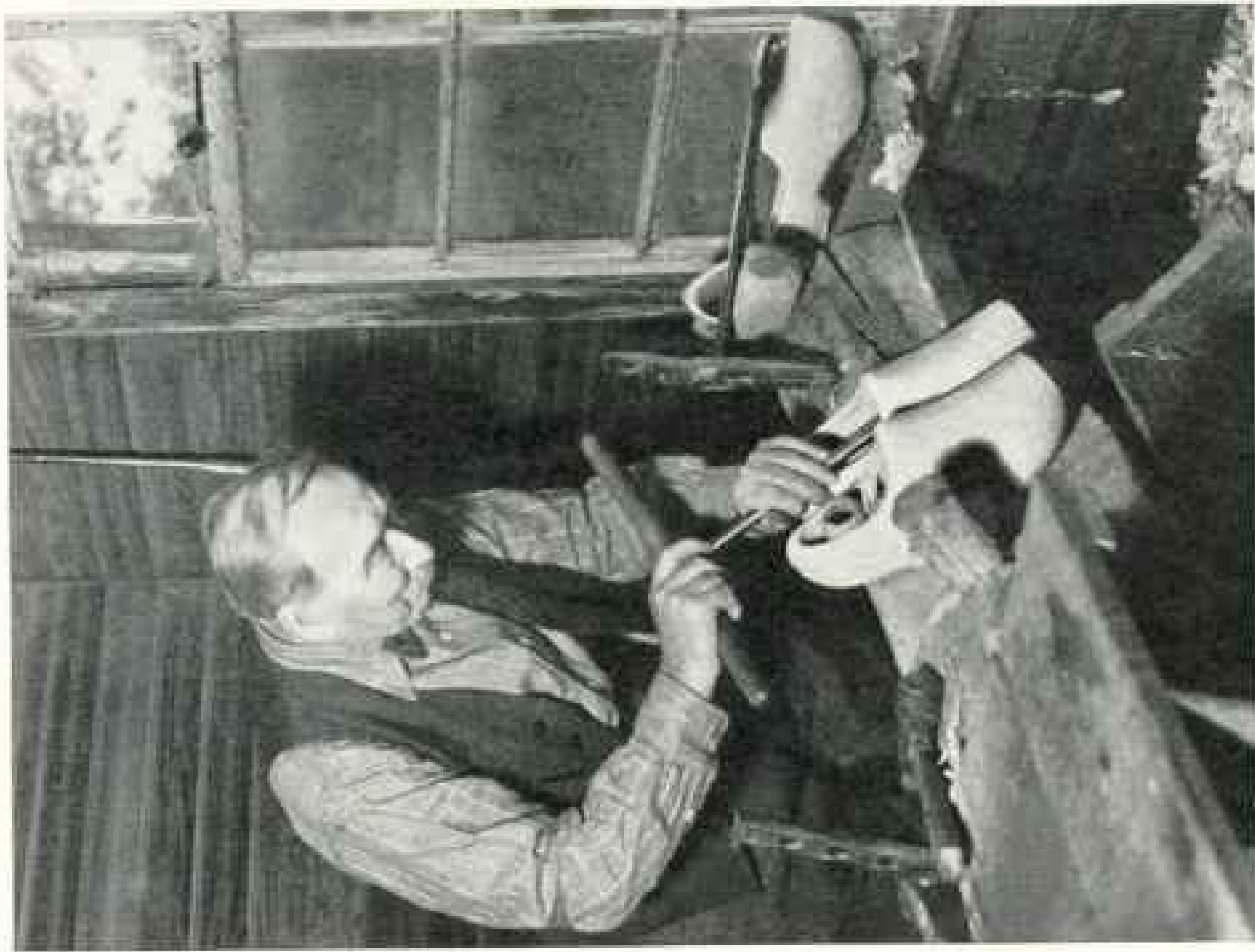
GEODUCK HUNTING IS LIVELY SPORT

Natives of Puget Sound, and seldom heard of elsewhere, these huge clams, weighing from three to six pounds, are rare and exceedingly hard to capture. They live $2\frac{1}{2}$ to $3\frac{1}{2}$ feet under beaches and burrow with amazing speed. They obtain food by thrusting their long necks to the surface and snaring sand crabs, which mistake the mouths for holes in which they may hide. If caught by these feeders, they will decapitate themselves and die from starvation. State law now limits the catch to three daily, and use of tubes in digging them is prohibited.



INDIANS IN DUGOUT CANOES, ONCE WAR CRAFT, RACE AT COUPEVILLE ON THE FOURTH OF JULY

Whidbey Island is still close enough to pioneer days to remember attacks by hostile savages in huge hollow-log boats, who drove the settlers to refuge in block houses (see text, page 143), but now the Red Men are welcomed to take part in celebrations. The ship in the right background is one of the Black Ball ferries, which link the mainland with the San Juans, the Olympic Peninsula, and other outlying territory.



Photograph by Clifton Adams

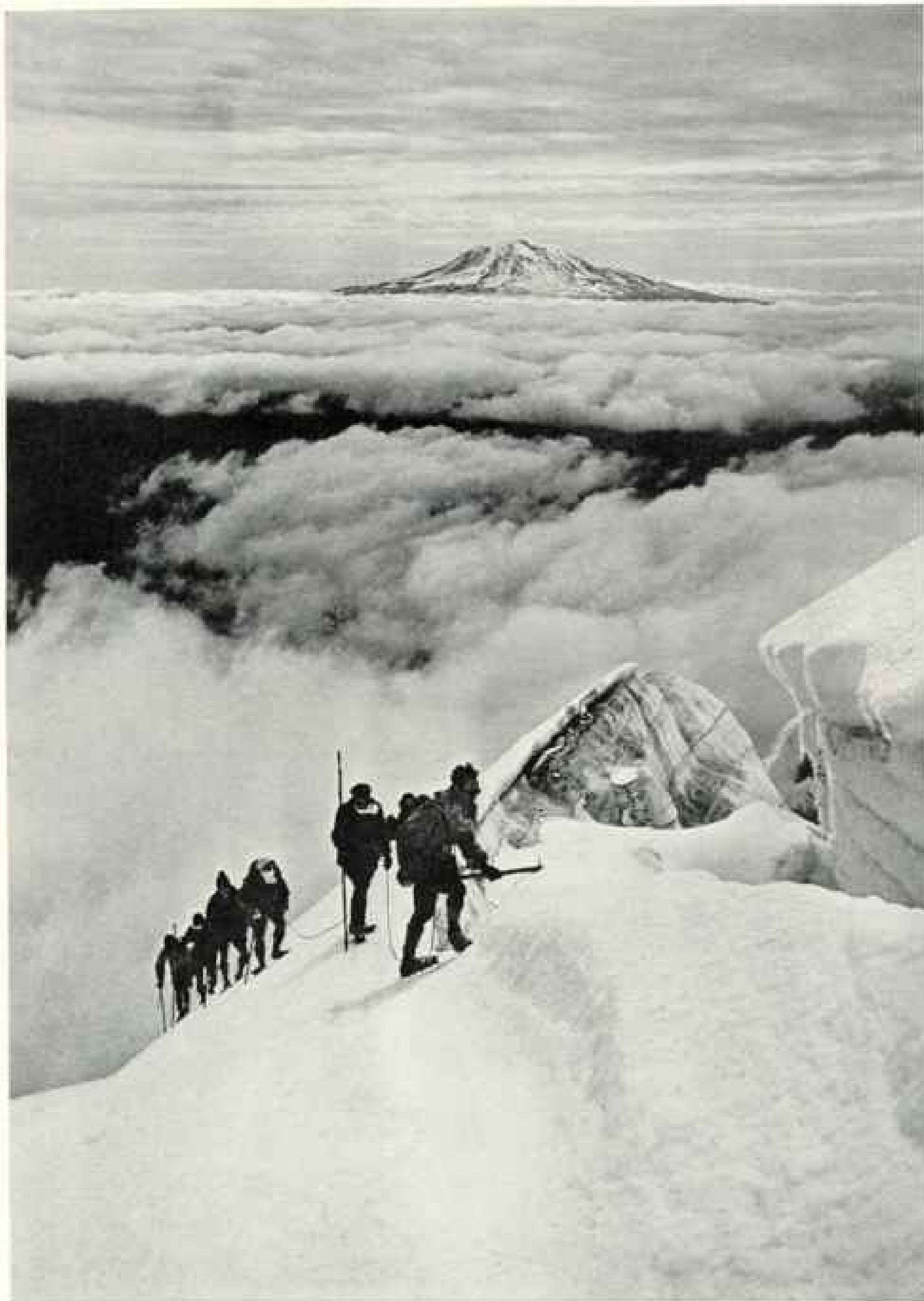
DUTCH SETTLERS AT LYNDEN DEMAND WOODEN SHOES

This craftsman from Gelderland, who fills their orders, is kept busy at his workbench (see text, page 146).



THIS WILATCOM COUNTY HEN LAID 350 EGGS IN 365 DAYS

The record, which establishes her as champion of the United States, has been exceeded only once in poultry history (see text, page 147).



Photograph by Ray Atkeson

FORSYTH GLACIER, ON MOUNT ST. HELENS, TESTS ALPINISTS

Climbing parties have conquered the heights, and the reward is glorious. Mount Adams, rearing its bulk above the clouds, 25 miles away, seems within easy walking distance. In every direction mighty peaks thrust skyward.

States over the strait meant by the treaty of 1846 as the dividing line between Canada and our own country. The trouble known as the "Pig War" began in 1859, when an American named Cutler shot a Hudson's Bay Company man's prize pig which had been rooting in the Cutler garden, and did not end until 1872, when Emperor William I of Germany sustained the United States claim to the San Juans.

The Hudson's Bay Company's demand that Cutler be taken to Victoria, British Columbia, for trial brought Capt. George Pickett, later leader of the famous charge at Gettysburg, to San Juan Island to establish a military post and guard American rights. Not to be outdone, the English set up a camp of their own. There was no bloodshed, though there was hard feeling at first. After a few months the men of the two camps began to fraternize and vied with each other in lavish entertainment.

To-day nothing remains of the American camp save the mounds that were earthworks; but the English camp, with its blockhouses, mess hall, officers' quarters, parade ground, and elaborate rose gardens, is well preserved. Above the English camp, on the slope of Young Hill, commanding a glorious view of many islands, is a tiny plot of ground that still belongs to Britain, the burial place of seven British soldiers who died in the course of the twelve years of joint occupation.

ON ORCAS ISLAND THE WORLD IS NEW

In the evening Bill and I took the ferry through sunset-reddened bays to Orcas, and the next day explored this, the largest island of the San Juan group. Here are the port of Eastsound on a deep bay, the enchanting nook Deer Harbor, the "ship-on-land" mansion of Robert Moran at Rosario, and the beautiful Moran State Park, gift of the retired Seattle ship-builder to the people of Washington.

In the Moran orchard 18 wild deer were so busy munching apples that they did not look up at our approach. "They are not mine," Mr. Moran chuckled. "They are just poachers on my property."

The State park is a delightful bit of wilderness, stretching from Cascade Lake, at an altitude of 345 feet, far above lovely Mountain Lake, at 916 feet, toward the summit of Mount Constitution, 2,400 feet, the highest point in the San Juans. Scores

of deer, bears, and other wild things find sanctuary here, unmolested as in the days before men came to the islands.

Before returning to Seattle, we crossed the famous Deception Pass, baffler of early explorers, and drove the length of Whidbey Island, second island in size in continental United States. Fertile farms now lie where in 1857 Indians went on the warpath and beheaded Col. Isaac N. Ebey out of revenge for fancied wrongs. At Coupeville the women of the island had just restored and dedicated as a monument one of the blockhouses that sheltered besieged settlers in the early days.

CONTRAST LENDS CHARM TO TRAVEL

From islands to mountain heights is only a step in Washington. The amazing contrasts of scenery are keynotes of the State's perpetual charm. The day after the return from the San Juans and Whidbey Island was taken up by an automobile trip through cathedral aisles of towering fir and cedar to the mile-high Heather Meadows, between Mount Baker and Mount Shuksan.

Shuksan, 9,038 feet high, geologically one of the oldest mountains in North America, thrust its ragged pinnacles against a sky of perfect blue, vertical ridges and rugged crags of bare rock showing black among tatters of ice gorges and foaming cataracts. From the serrated peaks banners of snow were waving in a high, clean wind, while mists rose like smoke from the forests below the ice line, now wrapping a bold promontory in downy whiteness, now breaking free to fly away in clouds.

A young brown bear was eating huckleberries in the valley not far from the road. When the little fellow saw the automobile, he ambled away in leisurely manner, pausing occasionally to investigate a particularly inviting berry patch. He must have been the redhead of his family, for the bears of Mount Baker National Forest are of the black species.

MOUNT BAKER SHOWS TEMPERAMENT

After a picnic luncheon in a rustic cabin of Mount Baker Lodge—the guest season had closed two weeks earlier—came a climb to the top of a steep ridge for a near view of Mount Baker, called by the Indians *Kulshan*, "the Great White Watcher." One of the last of five Washington volca-



BEARS WILL EAT SWEETS WHEREVER THEY FIND THEM

This wild fellow, rambling among buildings in Mount Rainier National Park in winter, has been lucky enough to discover a pitcher containing syrup. He may find after he has finished his treat that his nose is in a trap, but fear does not deter him when his appetite calls (see text, page 152).

noes to fling forth its fires, Mount Baker still occasionally breathes smokily from several craters near its summit; but its head, rising to an altitude of 10,750 feet, is turbaned with eternal snow, and vast fields of ice send 12 major glaciers coursing down its sides (see Color Plate XIV).

The mighty mountain was perverse that day and hid behind curtains of fog that streamed up constantly from forested slopes and deep gorges. Disappointed, my companion and I scrambled back down to our car.

Mount Baker National Forest, 75,000 square miles of virgin wilderness, is a nat-

ural setting for the magnificent peaks brooding above it. Down through it from Mount Baker Lodge leads a broad, smooth road that nowhere presents a grade steeper than 8 per cent, as it winds around mountain sides, skirts breathless gorges, or follows canyons of turbulent streams (see illustration, page 132).

Here is the boisterous Skagit, source of the power that supplies Seattle. White water is everywhere; and, sheltering it all, the majestic Douglas fir and red cedar trees, many of them measuring more than 10 feet thick at the base, tower to heights of 200 feet or more.

"THE HOLLAND OF AMERICA"

From the sublime heights the road flows down to pastoral lowlands and fertile fields. Whatcom County is known as "the Holland of America," for it is the home of Dutch bulb culture in the Northwest. For

more than 20 years commercial bulb-growing, which now is spreading throughout the entire Puget Sound area, has been an important industry there. The little town of Lynden shipped 14 carloads of bulbs in 1931. When the tulips, daffodils, hyacinths, and narcissi are in springtime bloom, it takes little imagination for a visitor to fancy himself in the Netherlands.

Dutch farmers and their wives and children, working in the gardens, were wearing—I could scarcely believe my eyes—wooden shoes.

Many quaint old customs of the Netherlands are followed in the countryside



IN WINTER, SKIING PARTIES GO OVER THE ROOFS OF CABINS

Snow chokes Paradise Valley for seven or eight months each year, but retreats before an army of flowers in June and July. The hotel at Longmire and the Paradise Lodge (see illustration, page 146) are now kept open for visitors who enjoy winter sports.



Photograph by Ranapar Studio

SUBGLACIAL CAVERNS ON MOUNT RAINIER LURE EXPLORERS

Former Secretary of the Navy, Curtis D. Wilbur, expressed a wish to tread unbeaten trails when he visited Paradise Valley several years ago. Guides led him through a labyrinth of passages that had been under the ice for untold ages. This cave was named for him.



IN WINTER, ENTRANCE TO PARADISE INN IS BY TUNNEL.

Snow piled high over log supports becomes rocklike. Buildings on higher levels in Mount Rainier Park are buried for months.

about Lynden, where hundreds of bulb-growers from the mother country make their homes. A jolly old Gelderlander fashions the shoes of alder wood, working with knives and chisels (see page 141). He can make six pairs a day to his customers' measures. The wooden shoes are worn only in the fields. At night they are set in orderly rows on the back porches—father's, mother's, and the children's in graduated sizes like Goldilocks's bears.

Bellingham, the Tulip City, fourth in size in Washington, and seat of the largest of the three State normal schools, presents a kaleidoscope (see page 153). Its Chuckanut Marine Drive, a splendid paved highway hewed from the high shoulder of

mountainous hills overlooking Bellingham Bay and the lovely San Juan Islands, is one of the wonder roads of the State. Everywhere throughout the city are green lawns and flowers. They even display their restful charm along the water front, among industrial plants, and about the entrance of the coal mine that supplies hundreds of industries up and down the Pacific coast.

FISH HAVE A CLAIM TO ROMANCE

Bellingham has one salmon cannery where, in the fishing season, more than a half million pound cans are prepared for the market each day.

The fish come in fresh from the waters of Puget Sound, pass through the "iron chink," which cleans them at the rate of 60 to the minute, and then start along a system of carriers through machines that cut them up, place

them in cans, cook them, and seal, label, and box the cans for shipment. In all the process human hands hardly touch the salmon (see Color Plate II).

The cannery is interesting, but what is more so is the story of the fish themselves, a story of which only the beginning and the end are known. Each summer, school after school of salmon come in from the sea, fighting on, never stopping to feed and seldom to rest, intent upon one thing: to reach the headwaters of the fresh streams where they were spawned from two to six years before.

Once in the streams, they struggle against swift currents, leap over the crests of waterfalls, fight through swirling rap-

ids, until at long last they reach the place of their birth. Here the females scoop hollows in the sand and deposit their eggs, to be fertilized by the males, and, having thus fulfilled their destiny, both males and females die.

It is while the hordes of silver beauties are running toward spawning grounds that they are caught by trollers' hooks, gill nets, purse seines, and traps. Fishermen go out into the Sound in small boats and catch them with hook and line. The hands of many of these men are scarred almost to the bone, where the heavy cords have cut them.

Fishing is an important source of income to many towns and cities about the Sound, but lumbering and agriculture hold the major positions. Near Bellingham is the Government experimental farm, where Dutch bulbs are cultivated and scientifically improved, and not far away is a large cooperative poultry hatchery devoted to building up superior chicken breeds.

The poultry station boasts the champion laying hen of the United States, whose record of 350 eggs in 365 days is surpassed only by that of a Canadian hen (see page 141). Ten years ago Whatcom County imported most of its supply of eggs. Today eggs are among its principal exports.

Dairying is no whit behind poultry-raising, and sugar-beet culture is growing by leaps and bounds. The striking thing is that such diversified resources have been developed in a country whose greatest wealth has been and still is in its forests.



Photograph by Ray Atkinson

KLICKITAT GLACIER ADORNS ITSELF WITH 15-FOOT ICICLES

The climber on Mount Adams finds many a formation that might have been transported magically from the Matterhorn.

About 8 o'clock one morning we left Seattle, only a few feet above the Sound; sped across the low Puyallup Valley, rich with broad gardens of head lettuce and other vegetables, berries of all sorts, and flowers and bulbs; and before noon were on the Sunrise Area in Mount Rainier National Park, 6,300 feet above the sea (see Color Plate VIII).

THE MOUNTAIN THAT WAS GOD

Our day was perfect. The "Mountain That Was God" to Nature-worshiping Indians stood out so clearly in the glory of sunlight that its ice-crowned summit seemed almost within arm's reach, though



Photograph by Asahel Curtis

IN EARLY DAYS SAILING VESSELS LOADED AT PORT BLAKELY

To-day the four-masters and clippers are gone, but the logs still come down to the harbor. Most of them are converted into lumber in Washington mills, but some are shipped abroad in steamers or towed in chains of booms to Pacific Coast cities as far away as San Francisco,



Photograph by Wilson-Pain

SHIPS OF MANY NATIONS TAKE ON LUMBER AT LONGVIEW

Until 1924 this water front was unimproved tide land (see text, page 153). Facilities are provided for loading five vessels at a time. The dock is equipped with up-to-date cranes and with motor-driven carriers which straddle piles of boards, grapple them, and trundle them away.



Photograph by Asahel Curtis

THE COLUMBIA FORMS PART OF THE BOUNDARY BETWEEN WASHINGTON AND OREGON

Formerly the river was the outlet for wheat from the entire Inland Empire and barge-loads of grain were transported on it. Near this point is Wallula, the town to which, from Walla Walla, Dr. D. S. Baker built his famous "Rawhide Railroad" (see text, page 196).

it was actually 11 miles away. To the north Mount Baker swam above the clouds. Mount Adams appeared in a fleeting glimpse, and Mount St. Helens towered white against the morning blue. Even Glacier Peak, in the distant Chelan country, revealed itself for a moment. The five extinct volcanoes of Washington were on display.

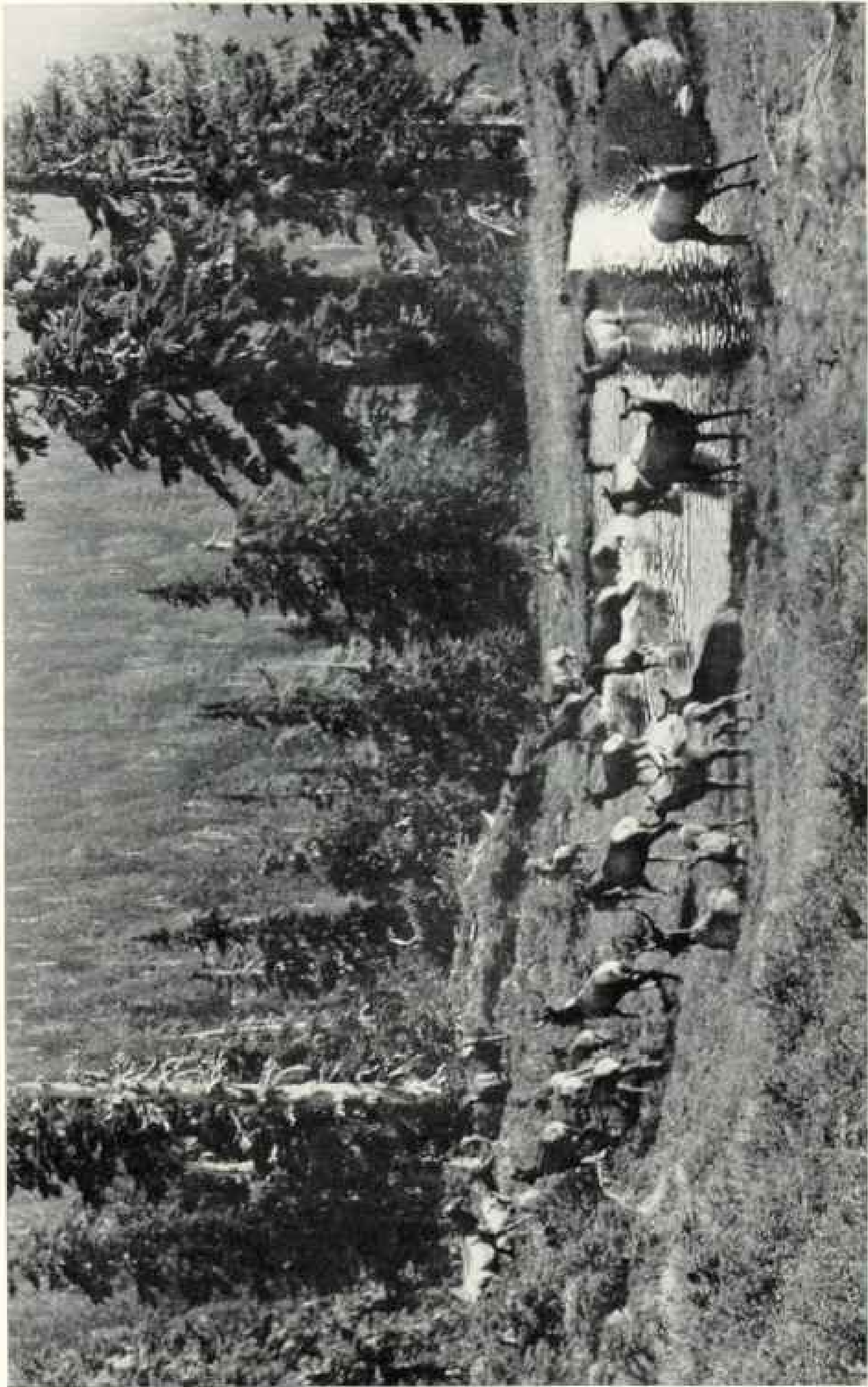
So easily had the car climbed the twisting highway to the Lookout that it was hard to realize the height that had been attained. Looking back over the way, I could not even see the road, save in one place where for a little it emerged from the forest.

To go down from Sunrise through the good green forest, circle halfway around the park, and mount by another highway to Paradise Valley necessitated a drive of

145 miles. The park superintendent at Longmire, halfway up the Paradise side, showed us specimens of the varied wild flowers that garland Mount Rainier in spring and summer with a two-mile-wide wreath between the timber line and the glaciers. There are 500 flowering plants, including the grasses, in Mount Rainier National Park.

Sunset at Paradise is glorious, touching the white summit of the mountain with magic colors. Long after black shadow has fallen in the valleys the snowy crest glows with splendor.

We stayed the night at the Winter Lodge, about which workmen were building scaffolding to protect it from heavy snows expected soon (see pages 145 and 146). The following morning snow was falling on the mountain where 28 glaciers



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MOUNT OLYMPUS NATIONAL MONUMENT IS SET ASIDE AS A REFUGE FOR WILD GAME

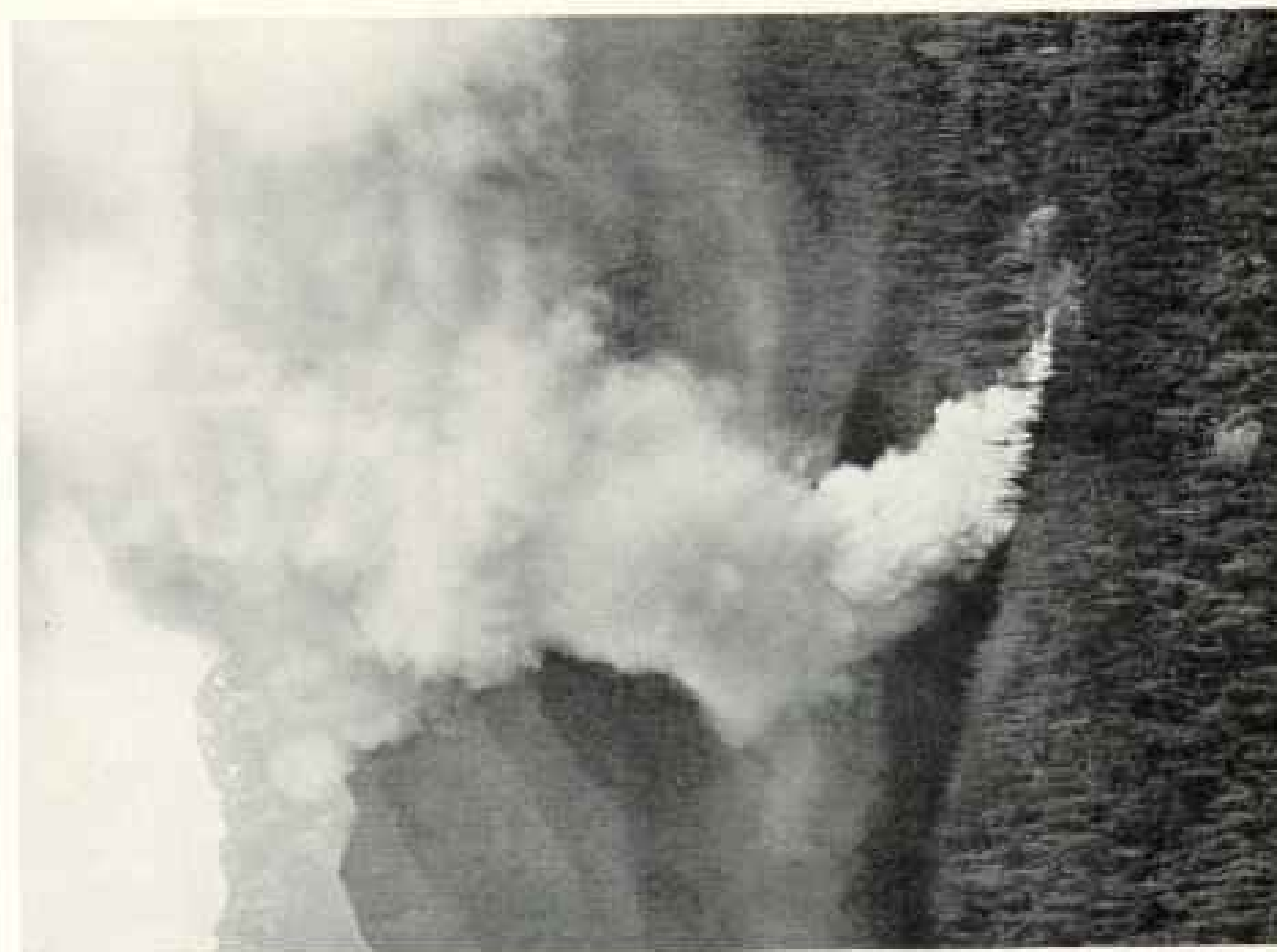
About 7,000 elk roam the Olympics in isolated bands. In summer they follow retreating snows to alpine meadows and in winter they feed in low-land valleys. With the natural increase of the herds, the problem of sufficient forage is becoming difficult, and it may soon be necessary to augment the supply by hauling hay to some of the watersheds where grass is scarce.



Photograph by Asahel Curtis

CABLES RIGGED ON SEAR TREES FACILITATE LOADING

In high-lead logging, flat cars usually carry the logs to the mills; but timber often goes from forests to waterways by means of flumes or chutes built down the mountain sides.



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CARELESSNESS OR LIGHTNING BOUSES A DEMON

Rangers stationed at high lookout points telephone reports the moment the smoke appears; but, despite every possible safeguard, heavy losses occur every year (see text, page 177).



Photograph by Asahel Curtis

TOPPING REQUIRES SKILL AND DARING

A straight Douglas fir makes an ideal spar tree for high-lead logging, and an expert woodsman climbs to the desired height and chops off the upper part of the trunk. To this tall pole, firmly rooted in the ground, cables and hoisting tackle are attached.

have their birth, in the ice-filled crater. A climb to a ridge afforded a view of one of the massive streams of ice, a slowly moving white river, relentless as fate, that plunges over cliffs like a frozen Niagara and rolls on till it is freed in rushing mountain torrents.

A NOVEL WAY TO GET RID OF BEARS

On the way out of the park I asked my companion what had become of the bears, for not one of the inquisitive fellows had showed himself.

"They got to be such a nuisance," was the reply, "that we had to catch the worst of them and put them out of the park. It was all right to have them around so long as they confined their thievery to refuse put out for them, but they became so bold as to break into parked cars and steal picnic lunches" (see page 144).

"We baited large iron drums with sweets, and when the black robbers crawled in for a feast we clamped lids over them and hauled them off to a wild-life sanctuary. That was several months ago, and they haven't found their way back yet. There are still a lot of bears in the park, but they don't come around the buildings often after the visitors go."

It is less than a two-hour drive from Paradise to Tacoma, "the lumber capital of America," a charming, Old-World-seeming city on Commencement Bay, the famous deep-water harbor surveyed in 1841 by Charles Wilkes, the discoverer of the Antarctic Continent. Ships from many distant ports come to the docks for cargoes, not only of lumber and all sorts of lumber and timber products, but of flour, refined ores, and the abundant produce of the Puyallup Valley.

Nowhere else in Washington is there more evidence of the bounties of the benign Puget Sound climate (see Color Plate VIII). Point Defiance Park is a 600-acre playground that holds, besides formal gardens, a tract of unspoiled Northwest wilderness in a metropolitan setting. The whole city is a place of flowers, despite its industrial activities. In 1930 the Garden Club of America selected a Tacoma resident's garden as the most beautiful in the country. There are even some thriftily growing palm trees, proof that the Japan Current, which sweeps along the coast, has brought to this



© Brubaker Aerial Surveys

HUGE BOOMS OF LOGS FEED THE WHATCOM FALLS LUMBER MILL AT BELLINGHAM

Scenes like this are common throughout the Puget Sound region, where virtually every city has one or more plants for manufacturing timber products. Waste is made into pulp paper or sold as "hogged fuel," sawdust to be burned in specially constructed furnaces.

northern land something of kinship with the Tropics.

THE MAGIC CITY THAT LUMBER BUILT

Though there are all manner of lumber mills in Tacoma, it seemed fitting to go to Longview, on the Columbia River, to see the lumber industry in all its phases, for lumber built Longview (see page 148). Buying 14,000 acres of farmland close to virgin timber, the Long-Bell Company cleared a townsite in 1922, engaged nationally known experts to draw plans, and created a model city. In 1923 the first piece of property was sold; in 1930 the population of Longview was 10,562.

At the lumber mills huge logs, 70 feet or more in length and perhaps 6 feet in diameter, pass in endless chain from ponds, to which they have been floated or hauled by train from the forest, to the whistling saws that convert them into boards.

The process is fascinating to watch. Moving claws seize the logs in the pond at the foot of the chute, carry them relentlessly up a long incline, and deposit them on a platform. Here iron hands catch them and place them on a moving table that bears them against the saws. In an incredibly short time they are sheared to square timbers, which now pass on to meet a hissing file of band saws that cut them

into rough planks. These rumble away through planers and other refining machines to emerge as boards. Their progress thus far has been head-on.

The boards go to a fast carrier which takes them sidewise under a battery of circular saws operated by a magician on a platform above them. Before him are levers with which he can raise or lower the saws and cut the boards into proper lengths. If a board shows knots near the ends, it is sawed short. The controller can drop a saw wherever he wishes.

The boards are put through further finishing processes and finally are gathered into trim bundles and wrapped in heavy paper ready for shipment. Packaging of lumber is one of the more recent developments in the industry. Handlers need no longer fear splinters in loading and unloading the sawmill's output.

Not far from the sawmills, pulp mills convert into paper the sawdust, chips, and other waste of the industry. The wood is first soaked in huge vats of chemicals; then, as pulp, is spread on wide belts of cloth which carry it through the first rollers until it forms a sheet firm enough to go on without support. On and on it goes through the files of spinning cylinders, to emerge finally in heavy rolls of glazed perfection, wrapped, sealed, and labeled, ready for transport to the thousands of users of pulp paper.

REFORESTATION SAVES THE TIMBER

Not far from the plants are nurseries, where seedling trees are grown to replenish the forests cut down by the timber operators. Reforestation has become a fine art in Washington, and the lumbermen are employing every means at their command to insure a permanent supply of timber. No longer do cut-over lands present dangerous fire hazards. Areas from which the virgin forests have been removed are soon clothed with the fresh green of young trees, which, in this subtropical climate, will grow to merchantable size in from 30 to 40 years. Generations to come will find Washington still the Evergreen State.

One mill was breaking out seed of the fine trees for planting in the nurseries and for shipment to all parts of the world (see page 167). What an advance lumbering has made in the last 50 years! Without

these modern methods of conservation, the forests would disappear in a few generations.

Along the valleys from Longview to Vancouver are acres upon acres of seed potatoes, mint patches, berry tracts, bulb and vegetable gardens, filbert and English walnut groves, and, finally, laden orchards of prune trees stretching from the highway to the edge of the virgin timber on the hills.

Only a few miles away fishermen garner the riches of the Columbia River salmon; and, to make the kaleidoscope more varied, Mount St. Helens, southwest Washington's own snow-capped extinct volcano, lifts its proud head against the horizon.

VANCOUVER IS THE SITE OF THE FIRST PERMANENT WHITE SETTLEMENT

Vancouver, just across the Columbia from Portland, Oregon metropolis, is the center of one of the richest farming areas in Washington. Besides handling the fruit from 7,000 acres of Clark County prunes, the rich produce of general agriculture, and the spoils of salmon fisheries, it manufactures linen and woolen goods in two of the largest mills of the Northwest. On the Lewis River, not far from the city, a power dam that eventually will exceed in capacity the Hoover Dam, on the Nevada-Arizona border, is utilizing the "white coal" that works wonders in industry.

Old Fort Vancouver, established by British forces in 1825, when it was an important station of the Hudson's Bay Company, claims attention because it is the oldest continuous settlement of the white race in the territory that is now the State of Washington. About it cling the fine traditions of pioneer days.

A train ride of a few hours takes one from Washington's oldest settlement to Seattle, the city that has sprung up within the lifetime of one of its original settlers. It was christened New York by its first colonists, but the pretentious name did not endure long. Some jester added to the title the Indian word *Alki*, meaning Bye and Bye. The spot where the settlers came ashore is still known as Alki Point, in proof that the pioneers could take a joke.

When the town was incorporated, in 1869, it was given the name of a friendly Indian chief, Seattle, who had taken the side of the white men in the Indian revolt



© National Geographic Society

Natural Color Photograph by Aubet Curtis

WILD RHODODENDRON, THE STATE FLOWER, LUXURIATES IN WASHINGTON FORESTS

What temptation to ramblers among the tall spruce and cedar trees is a single plant that raises its crown of bloom more than 20 feet above a lush woodland carpet of ferns, salal, and Oregon grape! But every twig in public places lifting chalice blossoms to the early summer sun is protected by the law of the Commonwealth.



VIKINGS' DESCENDANTS HANDLE SPOIL OF THE SEA AT ABERDEEN

Fresh from horse-drawn nets that snare them in the lower Columbia River, big silverside salmon are brought to a busy cannery to be put through the "iron chink," or cutter, and the cleansing, cooking, and sealing machines by a Scandinavian crew.



© National Geographic Society

Finlay Direct Color Photographs by Clifton Adams

YAKIMA PLANTS PEACH TREES AMONG THE APPLES AND PEARS

Thousands of boxes of huge peaches and of apricots, plums, and the hybrid fruit, Yakimines, go from irrigated-desert orchards to cold-storage plants before autumn crops ripen; and earlier in the season trainloads of berries leave the city nightly for distant markets.

SUNSET HUES IN THE PACIFIC NORTHWEST



Finlay Direct Color Photograph by Clifton Adams

HOQUIAM GIRLS WITH WOODEN DRESSES MIGHT POSE AS TREE NYMPHS

From Sitka spruce veneer an eightieth of an inch thick the high school domestic-science department fashions fancy costumes and bathing suits. Transparent sheets of fir are used as stationery; and at Tenino a bank has printed currency on wood.

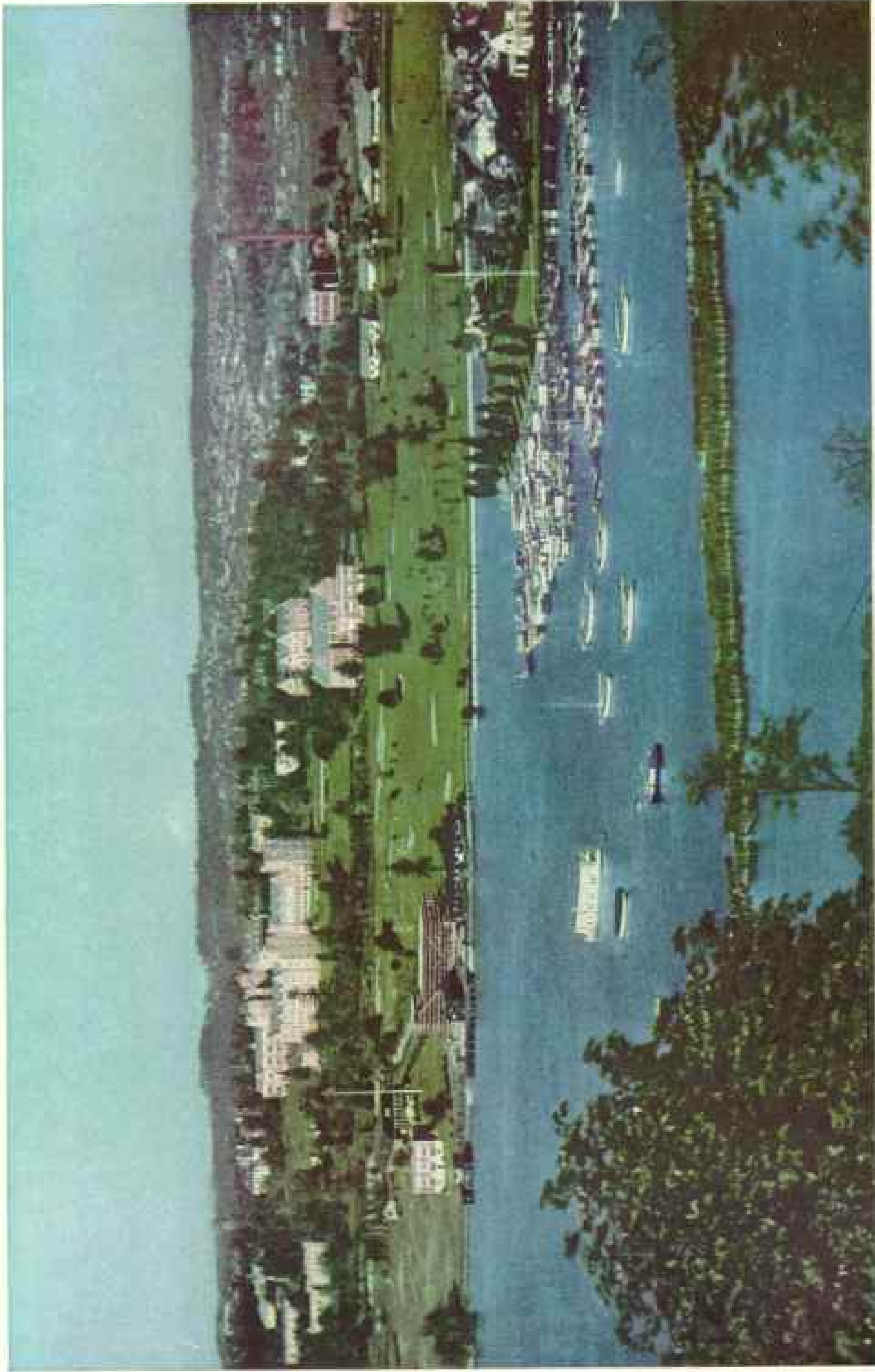


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Natural Color Photograph by Clifton Adams

LAKE UNION PROVIDES A HAVEN FOR OCEAN-GOING SHIPS

Connected with Puget Sound by the Ballard Locks, Seattle's deep, fresh-water harbor, now becoming somewhat salty, has saved much labor, since fresh water causes barnacles to die and drop off hulls of vessels.

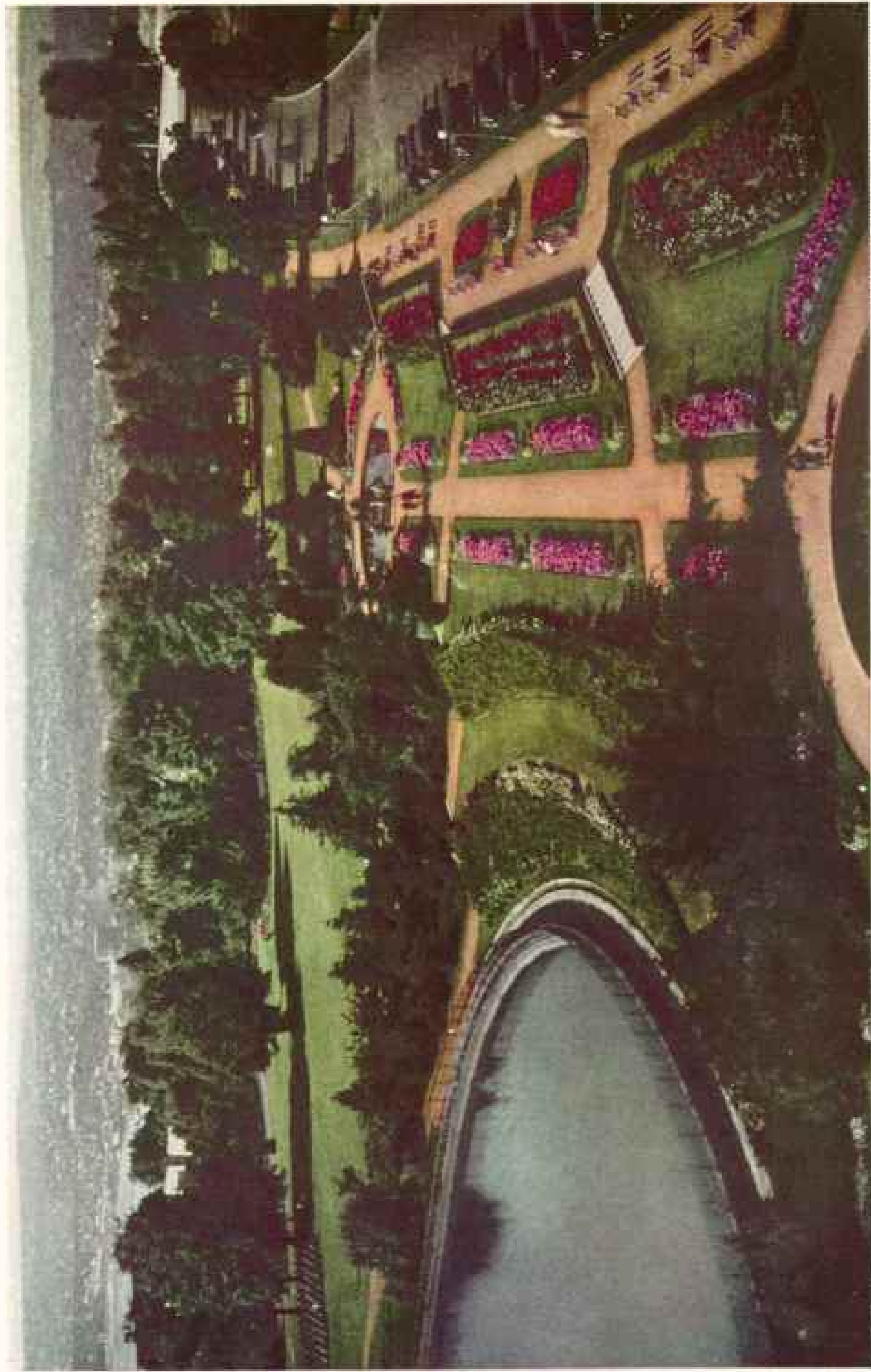


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THE UNIVERSITY OF WASHINGTON REARS TUDOR-GOTHIC CHANDEUR WHERE 50 YEARS AGO WAS VIRGIN FOREST

Natural Color Photograph by Anabel Curtis

Seattle offers no finer view than that northward from Capitol Hill. In the foreground is the upper end of Lake Union, with the Seattle Yacht Club on a spit of land at the right. The Lake Washington ship canal passes between the peninsula and the campus. Beyond the college buildings remains inviolate a strip of the timber that once clothed the whole eminence; and on the skyline, 90 miles away, Mount Baker lifts its snowy summit (see Color Plate XIV).



© National Geographic Society

VOLUNTEER PARK CROWNED CAPITOL HILLS, IN THE CENTER OF SEATTLE

Natural Color Photograph by Rachel Curtis

By climbing a circular staircase to the top of a vine-clad tower that stands in this recreation area, one may obtain a bird's-eye view of the whole city on its seven hills between forest-rimmed Lake Washington and the busy waterfront of Elliott Bay. Here are extensive greenhouses and an outdoor theater, popular for band concerts. A bit of Lake Union, with one of its four drawbridges, is glimpsed in the background at the left (see Color Plate III).



© National Geographic Society

TWIN PAMOOSSES OBJECT TO TRIBAL SWADDLING

WU-wil-muh (Dress of Silver), daughter-in-law of Chief Ignace Garry of the Spokans (or Spokanes), attires herself and her 8-months-old babies, to the evident disapproval of one of them, in tribal costume to recall the days before the white man.



Finlay Direct Color Photographs by Clinton Adams

SPOKANE WAS NAMED FOR THIS CHIEF'S GRANDFATHER

Ignace Garry, well educated and an accomplished orator, is the leader of the tribe of 1,200 Spokan Indians at Telson, near the great city of the Inland Empire. His regal costume and scepter of eagle feathers are tribal treasures.



© National Geographic Society

ACT FROM THE TLEPERS FILLS CURIO STORES

Grass and porcupine-quill baskets and beadwork wrought by Washington Indians, and blankets and totem poles made by members of Alaskan tribes attract shoppers everywhere in the Evergreen State. At remote trading posts these articles are accepted in payment for supplies.



Friday Direct Color Photographs by Clifton Adams
ANCIENT PICTOGRAPHS AT SPOKANE REMAIN UNPAID

Colville ancestors of Packie Scutell (White Fawn) found these rock paintings on canyon walls of the Little Spokane more than a century ago. Mystery shrouds both the origin of the pictures and the nature of the pigments. Near by is a historic battlefield of the Nez Percés and Blackfeet.



A RECENTLY COMPLETED HIGHWAY APPROACHES THE "SUNRISE" SIDE OF MOUNT RAINIER.

Seen from the eyrie where Chinook Pass crosses the crest of the Cascades at an altitude of 5,480 feet, the "Mountain That Was God" presents a new face of its jewel-like and ever-changing splendor. The lake in the foreground is Tipsco.



© National Geographic Society

Natural Color Photographs by Asahel Curtis

GREEN LAWNS AND A PROFUSION OF FLOWERS MAKE TACOMA CHARMING

Groups of students enjoy many of their recreation hours in favorite nooks overlooking Commencement Bay. Besides a famous old school for girls, the city has the coeducational College of Puget Sound.

of 1856. That revolt might have proved disastrous had a United States warship not been present in Elliott Bay to drive off the attacking savages.

The most important event in the commercial history of the city was the arrival of the first gold ship from Alaska in 1897. From that moment Seattle became the outfitting point for the throngs that rushed to the Klondike. Its future as the portal of Alaska was assured.

But now it has well-nigh forgotten its day as the gateway of gold. It is too big and confident and bustling to remember its beginnings. It even forgets the fire that virtually wiped out its business section in 1889. It builds and tears down and rebuilds, with careless disregard of landmarks. When a hill is in the road of its progress, it ruthlessly razes the eminence and dumps the earth and rock into Puget Sound. Its vigor is resistless.

At Seattle is the magnificent State University of Washington, on a campus of 582 acres, its 70 buildings set in shady, flower-adorned lawns sloping to the shores of Lake Union and Lake Washington (see Color Plate IV). Only a few years ago that campus was wild woodland, and out of sentiment a part of it has been left to natural timber that may remind some of the 7,000 students of the forests to which in large part they owe their opportunity of education.

Seattle is built on hills so high and steep that cable cars are required to carry passengers up some of the streets in the heart of the business district. There is no monotony, but a scene ever changing and arresting. To stand on the summit of one of the hills at night and look down over the glittering sea of lights is a delightful experience. A lavish use of inexpensive power from the great Skagit Dam makes the metropolitan area one of the best lighted in the world.

FIRST ROUND-THE-WORLD FLIGHT BEGAN AND ENDED AT SEATTLE

The city has 193 miles of frontage on salt and fresh water, and from the port go out 109 steamship lines to all parts of the world. In Elliott Bay 72 United States warships have been moored at one time, some of them within gangplank distance of the docks. The depth of the bay varies from 25 to 150 fathoms. By way of the

Ballard Locks, ocean-going ships are brought into fresh-water Lake Union and taken on through a canal into Lake Washington, where the fresh water causes barnacles to die and drop from their hulls. Seattle began as a city of the forests, but it has become as truly a city of the sea (see Color Plate III and page 165).

A short distance from the water front is the Boeing Airplane Company, with the largest exclusive airplane manufacturing plant in the United States. There nearly a thousand workmen are busy building passenger planes, pursuit and bombing planes for the Army and Navy, and sport models for amateur flyers. Spruce from the prodigal forests of the Northwest has been found the best material for making certain parts of the wings; hence the rapid growth of an industry that did not come to Seattle until 1916.

One can fly almost anywhere from Seattle, as indeed from virtually every other city in Washington (see page 164). Mail and passenger planes maintain regular schedules from the municipal airport at Boeing Field not only to all important points on the Pacific coast in both the United States and Canada, but to the East as well. At Sand Point, on Lake Washington, adjoining the city limits, is the Seattle Naval Air Base, from which the first round-the-world flight began and to which the successful aviators returned.

EVERYBODY LIKES THE PUBLIC MARKET

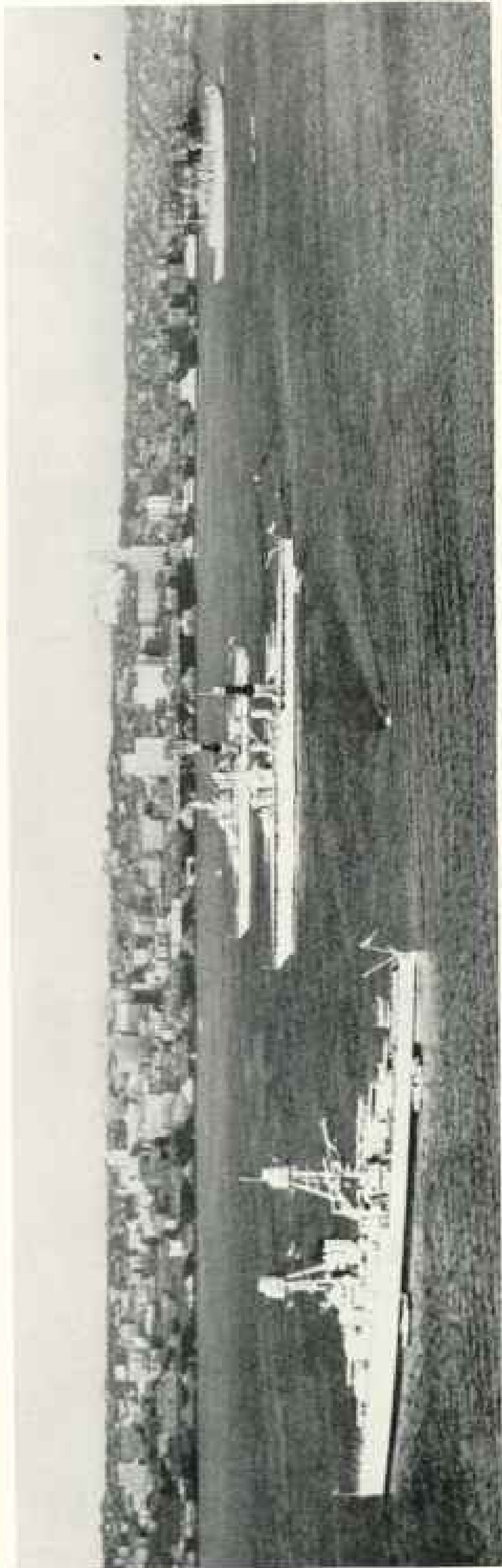
The Pike Place public market, one of the largest in the country, blazes with color from its handsome entrance, hung with baskets of greenery and flowers, to the end stalls, several blocks beyond, where live Belgian hares and flapping poultry are on display in slatted crates (see Color Plate XIII).

One can buy almost anything in the market. Japanese girls in gay kimonos vend goldfish in glass bowls. A jolly German stands beside a vat of hot lard cooking doughnuts. Not far away is a chap with tearful eyes, selling horse-radish, which he grinds while his customers wait. Fish merchants display smelt, trout, and other small fry swimming in tanks, and sell them alive in paper buckets holding water. Indians are scarce in Seattle streets, but a few squaws may be found squatting under market arcades beside



BOEING'S LARGEST TRIMOTORED TRANSIT SHIP CARRIES PASSENGERS AROUND MOUNT RAINIER

When clouds obscure the valleys and lower peaks, the majestic dome is an island of snow and ice above a sea of fleeces. In ages past the summit was much higher. Geologists have discovered that eruption blew off 4,000 feet of the peak and scattered the soil over the Puget Sound country. The airplane, supreme triumph of the machine age and conqueror of the heights, is 90 per cent a product of hand labor.



ELLIOTT BAY PUTS ON GALA APPEARANCE WHEN THE FLEET COMES IN

Every summer Seattle entertains the guardians of the Pacific, often more than 70 vessels, including battleships, cruisers, and destroyers. Because of the tremendous depth of the harbor, anchorage presents a problem except close to the docks.



HORSES DRAW FROM THE COLUMBIA RIVER AT ILWACO HUGE NETS BULGING WITH SALMON

Photograph by Charles H. Fitzpatrick



"BIRLING" ON LAKE SACAJAWEA THRILLS CROWDS AT LONGVIEW

Stripped of bark and turned to treacherous smoothness, a floating log affords precarious footing; yet the expert woodsman not only rides it standing, but keeps it spinning under his feet. Contests in this sport are a part of the "Rolleo" celebration held annually on July 3 and 4 in "The City Lumber Built" (see text, page 153).



Photographs by Wilson-Pain

MIGHTY WOODSMEN MEASURE BRAWN AND SKILL AT THE "ROLLEO"

From the lumber camps throughout the Northwest come sawyers, axmen, "tree-toppers" (see illustration, page 152), and "birlers" (see above) for the annual games at Longview.



Photograph by Asabel Curtis

EACH CAN HOLDS 1,000 ACRES, 600,000 TREES, OF POTENTIAL FOREST

Douglas fir seeds, approximately 800,000 to the 20-pound tin, are shipped to all parts of the world from Longview. They are taken from properly matured cones, and loss of more than 25 per cent in planting is unusual.

woven-grass baskets and bits of bead-work.

Steps lead down to the wharves, where fishing boats come in with salmon caught by trolling in the Sound. There is usually only one price for the choice of any fish in a lot. One day a large woman in black taffeta was leaning over the side of a skiff to reach a particularly large beauty in the wriggling heap between the thwart. Alas, she leaned too far!

INTO THE "LAST BEST WEST"

From the ultra-modernism of the great city on the Sound to continental America's last frontier is only a few hours' travel.

The trip begins with a ferry ride to Bremerton and the United States Navy Yard, where giants of the Pacific fleet are overhauled each year and where several battleships have been built. Beyond Bremerton graveled roads lead to the wilderness of the Olympic Peninsula.

This vast area of mountains, lakes, rivers, cataracts, virgin forests, and mystery

primordial is almost as large as Massachusetts. It has lain in unsullied quiet for countless centuries, impenetrable to all save the hardiest pioneers, until the coming of the Olympic Loop Highway, which is now opening some of its fastnesses and making available a portion of its tremendous resources.

A smooth highway goes from Bremerton southward around Hood Canal, slender arm of the sea, bordered by evergreen forests sweeping away to high hills. Pretty villages and farms and laden orchards lie along the road. Summer resorts and camp grounds nestle here and there along the beaches. Far to the north the Olympics reach their crown of glory in Mount Olympus of the eternal snows. The road passes around the bend of the canal and turns toward the distant peaks.

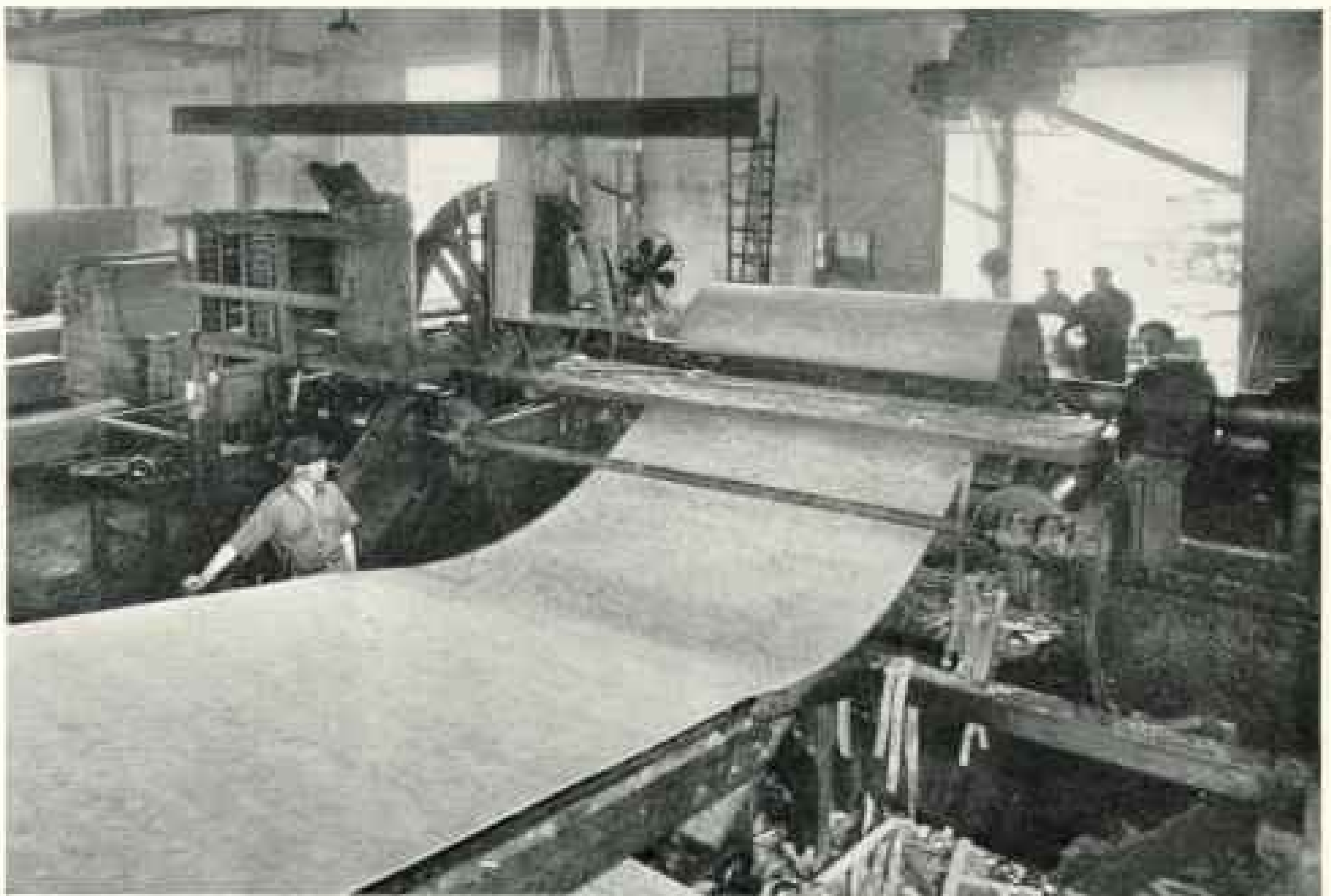
At Port Townsend, on Admiralty Inlet, is Fort Worden, the old coast-defense fort which mounts the only cannon in the United States that can hurl shells into Canadian territory. The town is a place



Photograph by Asabel Curtis

ONE OF THE MANY CONCRETE-PAVED STATE HIGHWAYS FOLLOWS THE YAKIMA

There are 40,000 miles of good roads in Washington, a system of 37,000 miles of laterals built by counties and 3,821 miles constructed by the State on the pay-as-you-go plan, without bonded indebtedness. A tax on gasoline supplies \$1,000,000 a month for extension and upkeep.



Photograph by Jones Photo Co.

EACH TURN OF THE LATHE "UNWINDS" A YEAR'S GROWTH FROM THE HUGE LOG

Usually the sheets of wood range in thickness from one-sixteenth to three-sixteenths of an inch (see text, page 178), but the machines are sometimes set to cut them to paper thinness (see Color Plate III). There are 16 veneer plants in Washington.



Photograph by Jones Photo Co.

PEAS ARE A POPULAR CROP IN MANY PARTS OF THE STATE

Near Montesano, in the Grays Harbor country, they are picked for the fresh vegetable markets and for canning. Tracts of them have been developed in the San Juan Islands, where the salt air is said to give them a special flavor. In eastern Washington they are grown on areas vast as wheat fields. Hundreds of acres, left to ripen, are harvested and threshed by machinery. A valuable ground meal is manufactured from them.

of romance, once an important port of call for ships from Alaska and the far seas, but now content to go its way as a lumber and pulp-paper center. There is a brave tale of the contest between Port Townsend and Port Angeles for preference in the location of Government customs offices. Each had the patronage for a time, and Port Townsend finally won.

PRESIDENT LINCOLN PLANNED PORT ANGELES

The site of Port Angeles was set aside in 1863 under the personal direction of President Lincoln. The town manufactures lumber, shingles, paper, both glazed and newsprint, and paper-box board.

Two unusual industries are a cedar-shake factory and a bow-and-arrow plant. The cedar shakes, hand-hewn from stump wood by means of a crude implement known as a frow, are becoming popular as roofing and siding material for bungalows of the rustic type. The bows and arrows are made of yew, which grows

abundantly in the forests near by. In Port Angeles thrilling tournaments attract some of the famous archers of the country.

Beyond Port Angeles to the west the country is more sparsely settled, and highways are cool and dim in the shade of forest giants that have grown straight and tall for centuries. The motorist is often startled by quail and pheasants flying up before his car. On the hills occasional herds of elks may be seen (see page 150).

WHERE WILD LIFE FEARS NO GUNS

Past the Storm King Game Preserve leads the way where bears, elks, deer, and snarling cougars live in sylvan isolation. It follows for miles the Elwha River, a crystal mountain stream now turbulent over scattered rocks, now deep and still in quiet glades, now harnessed for power.

From the heights little brooks tumble to join the Elwha, some of them leaping over precipices far above the tall forest in cascades of flashing color. Cold springs bubble invitingly from roadside rocks.



Photograph by Ray Atkeson

WEST WINDS MOLD THE SANDS ALONG THE COLUMBIA WITH WEIRD ARTISTRY

Though in the midst of the barren desert of central Washington, the dunes have their own beauty, mysterious with light and shadow at midday and aglow with pastel colors at sunset.

Fortunately Bill, who had deserted his busy office to go with me on the peninsula trip, is a skillful driver; else the climb of a side road to Olympic Hot Springs might have been too much of a thrill. The excellent but narrow trail often makes sharp turns so high above the trees in steep-walled canyons that in passing them one hardly dares look over the side of the car.

At an altitude of 2,100 feet 21 hot springs gush out of the mountains. Here a log hotel and a group of cabins surround a large concrete swimming pool, the only sign of civilization within a radius of many miles. The proprietor of the resort displayed skins of cougars killed by his wife's father, a famous huntsman who had bagged 98 of these cats, and despite his years was intent upon a record of 100.

Near the pool is a drinking fountain said to be a veritable fountain of youth. I took a mouthful of the water and spat it out; it brought back memories of the chemistry laboratory at college when the hydrogen sulphide kip was leaking.

Solduc Hot Springs, only a few miles to the west, are similar to the Olympic

springs. Both places attract hundreds of health-seekers in the summer and both are in the midst of mountains that lure the feet of climbing enthusiasts.

FADELESS BLUE IS DROWNED IN LAKE
CRESCENT

At nightfall it was pleasant to come to a rustic inn on the shore of Crescent Lake. This lake, the largest on the peninsula, is so blue from the cobalt of the overhanging hills that no cloud, however gray, can dim its sapphire clarity. The home of the gamy Beardsley trout, it is a mecca for anglers. During the World War the United States Government mined manganese near the lake and constructed a railway along its shore, but the development has ceased and the wilderness has obliterated the iron trail.

Our hostess, a white-haired peninsula pioneer, entertained a fireside group after dinner with stories of the early days that recalled for me the boyhood thrill of reading F. W. Calkins' "Tales of the West."

Though the time was early September, there was a bite in the air, and the warmth from the huge fireplace was welcome.



Photograph by Ray Atherton

CLIMBERS FIND THE CABIN ATOP ST. HELENS ICE-SHEATHED IN MAY

Southwest Washington makes a playground of the extinct volcano that towers above its forests and fruitlands. Not far away the Columbia rolls among its dunes (see illustration, opposite page).

After all, a wood fire is the truly romantic source of heat. Wood is the only fuel in the forest retreats of Washington, and the smoke from the clearings is really blue, like the well-remembered smoke of cottages in fairy tales.

We had breakfast at an unearthly hour next morning and drove away westward along the shore of the lake. A busload of children bound for school passed us, reminding us that education has penetrated to the farthest frontier. Washington is rich in school funds, for much of its school land is in valuable timber areas. First-class consolidated schools have been constructed at convenient locations in all rural districts, and pupils are transported to classrooms from distant houses without charge.

CURIOUS INDIANS INSPECT ALL VISITORS

Only 1 per cent of the population 10 years of age or older is unable to read, and but three-tenths of 1 per cent of native-born whites are illiterate. Without extra recompense, the teachers of the State have prepared an elementary course of study that has worked wonders in education.

On and on the restless roads wind through rich farmlands, past tiny hamlets with quaint Indian names, and off to the northwest to Neah Bay, near the ocean end of the Strait of Juan de Fuca. At the trading post gay baskets of grass and porcupine quills, beadwork, and miniature totem poles made by squaws from the Makah Indian Reservation are a medium of exchange like the wampum of early history. The trader accepts Indian handwork as cash (see Color Plates VI and VII).

From Neah Bay it is a short boat trip to Tatoosh Island and Cape Flattery, the northwest corner of continental United States.

At the Quillayute Indian Reservation, adjoining La Push on the Pacific south of Neah Bay, an army of Indian children, calico-clad squaws, and swarthy men come out to inspect all visitors. There are 13 Indian reservations in Washington, with excellent schools and dwellings provided by the Government. It is amusing to find many of the "white man's homes" vacant and the Indians for whom they were built living in shacks, tents, or wigwams.



Photograph by Webster & Stevens

WOODLAND GHOSTS BORDER A STRETCH OF THE PARADISE ROAD

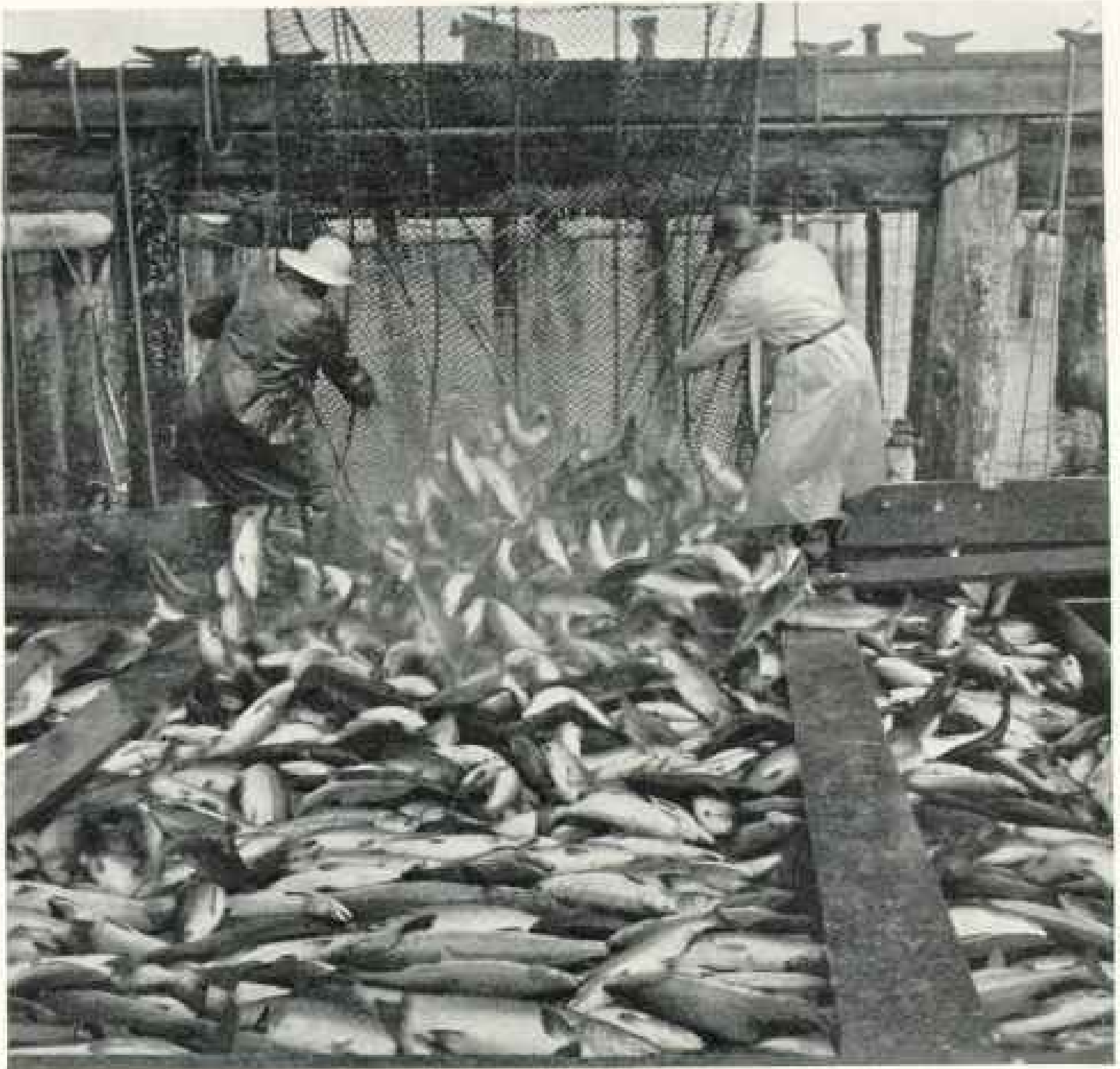
In 1894 fire swept through a part of Mount Rainier National Park, killing many forests and leaving in this one only the charred trunks of Alaska cedars, sturdiest of evergreens. Weathered to silver-gray, they stand as an impressive warning against carelessness.



Photograph by Asahel Curtis

THE OKANOGAN COUNTRY IS A HUGE GARDEN

Squash of prodigious size, other vegetables, apples, cherries, and berries grow in soil known to be 40 feet deep in many places. The district is in eastern Washington near the glaciers of the Chelan region.



Photograph by Asbel Curtis

FROM TRAPS SALMON ARE BRAILED INTO SCOWS

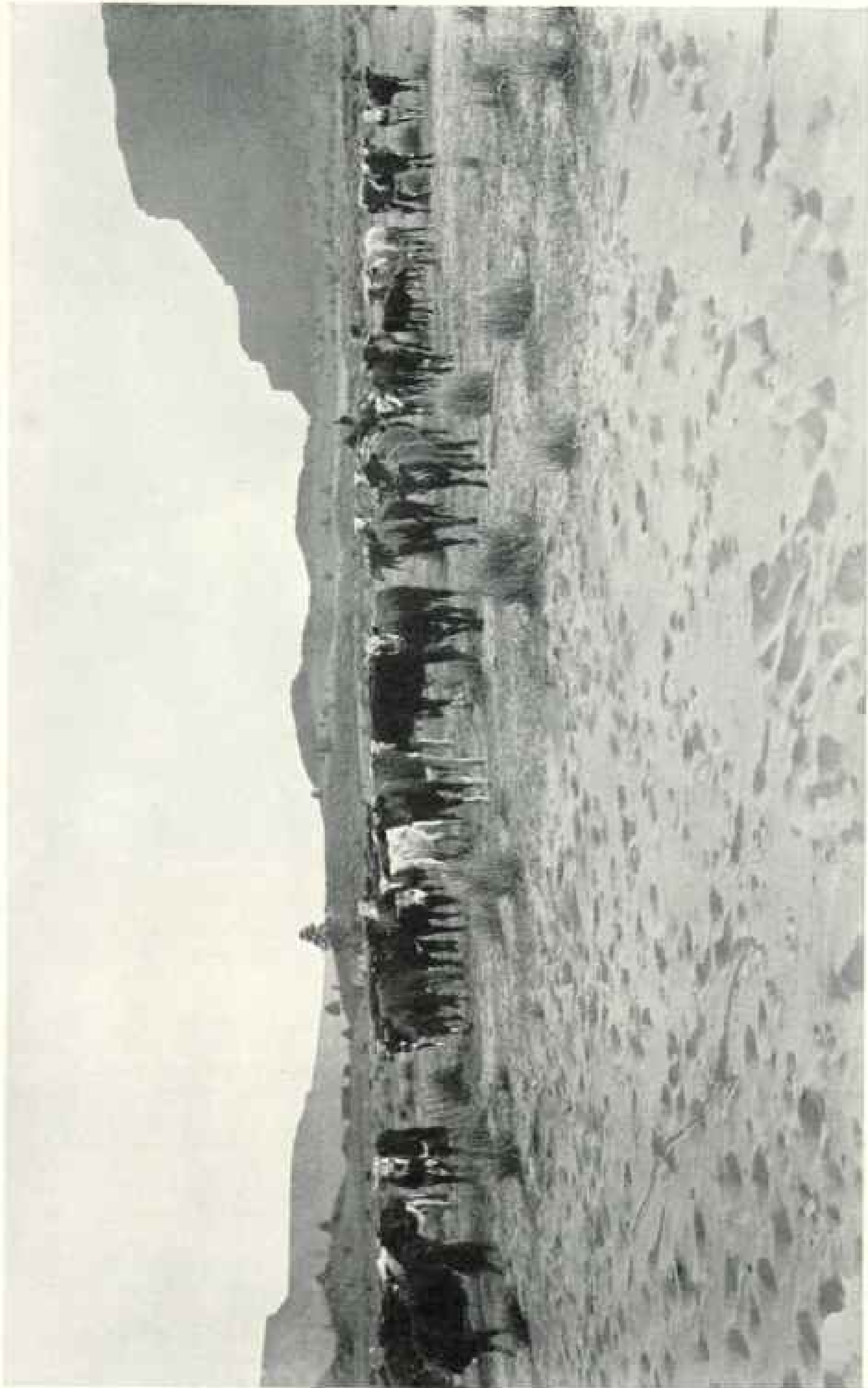
Operation of these devices is carefully regulated under both Federal and State law. Hatcheries are maintained throughout the Puget Sound country to aid in restocking streams, eggs being taken from fine fish in the summer runs (see text, page 146).

The supreme thrill of the trip was the recently opened section of road that completes the Olympic Loop from the Bogachiel River to Quinault Lake. That road deserves a volume of description. It was wrested from mud so deep that materials for it had to be taken in from the coast by boats on the rivers and transported to the construction camps on railroads laid on log floats. The cost of the loop was \$11,000,000—a considerable sum compared to the \$10,000 appropriated for it at first.

The Olympic Peninsula is the most heavily watered area in the United States, with annual rainfall ranging from 60

inches along the Pacific to 180 to 250 inches at the top of Mount Olympus. At some points along the new highway a reasonably strong man can plunge a crowbar eight feet into the soil with a single stroke.

The road had to be stripped of surface soil and the material raked up in ridges to drain before it could be used. Thousands of tons of gravel were brought to the camps by boat and dropped futilely into the mire. Many fills where the road skirts the coast slid into the ocean as fast as they could be built up. One young engineer, when asked why he could not hold the material in the fills, replied, "You couldn't hold that stuff in a bucket."



Photograph by Asahel Curtis

RANGE CATTLE THRIVE ON THE DESERT VEGETATION IN GRAND COULER

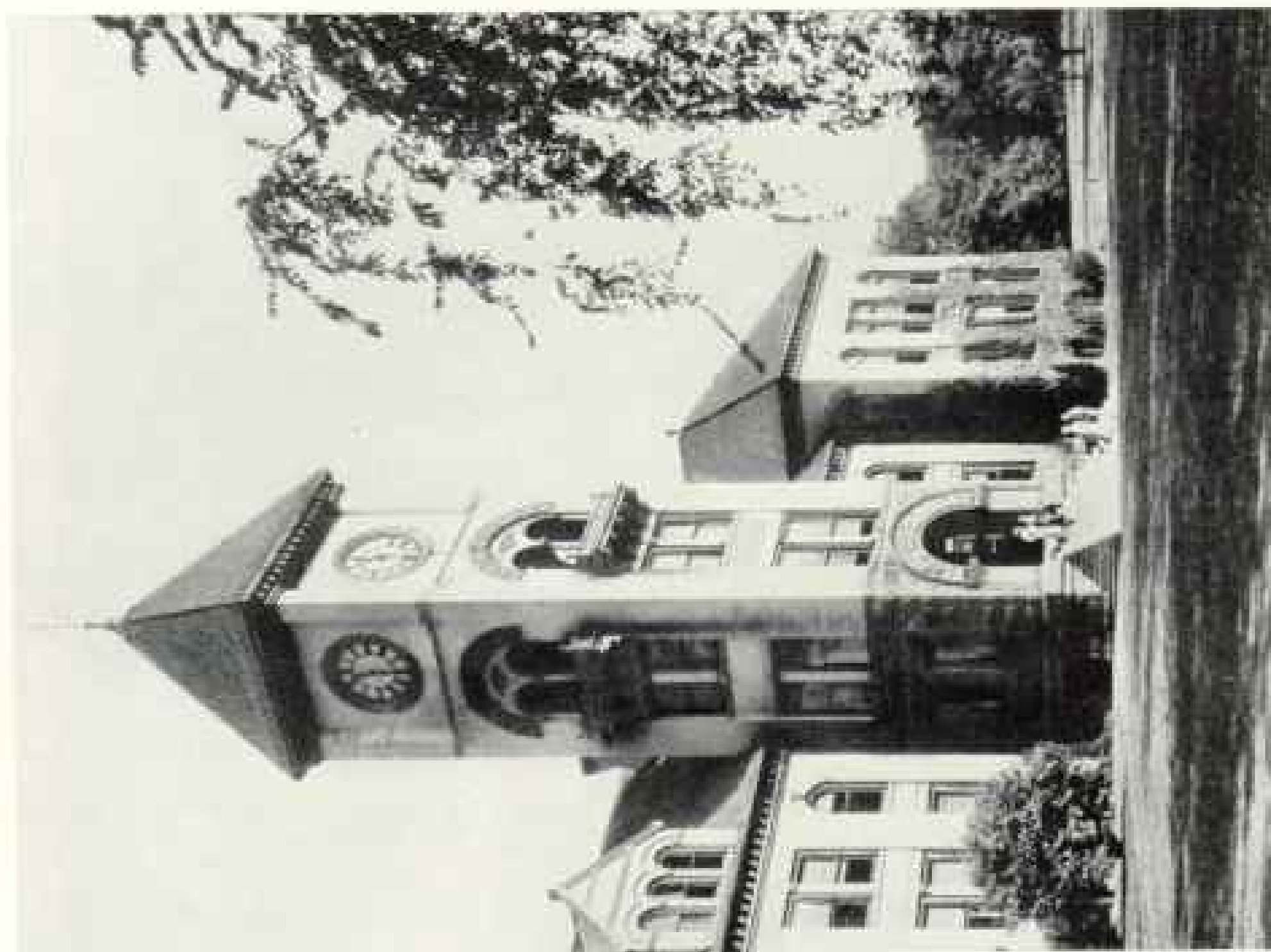
One-time bed of the mighty Columbia or some larger stream from the melting ice of the Spokane glaciation, the 50-mile canyon, nearly 1,000 feet deep, is arid, save for a few weeks in the spring, when rains cause it to be carpeted with grass and wild flowers. Government engineers have surveyed the region and propose to use this natural basin as a storage reservoir for irrigation water (see text, page 191).



Photograph by Asahel Curtis

CORN GROWS 20 FEET TALL, IN YAKIMA VALLEY

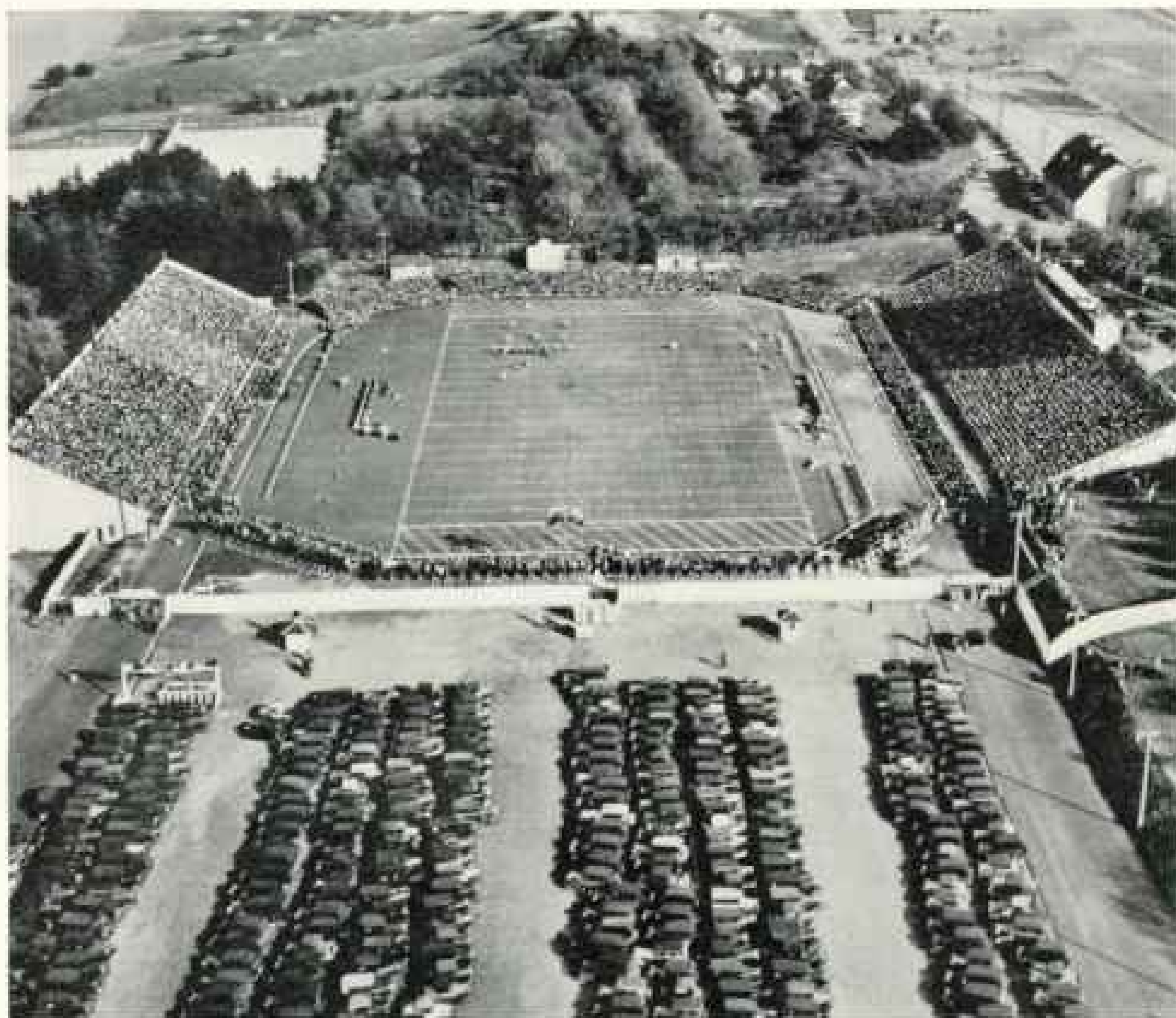
It is raised for silage, the seasons not being suitable for maturing hard varieties.



Photograph by Clifton Adams

WHITMAN COLLEGE COMMEMORATES HEROISM

Cushing Eells, famous missionary to the Indians, founded this institution (see text, page 195).



FOOTBALL AT WASHINGTON STATE COLLEGE ATTRACTS THRONGS

Always a respected contender in the Pacific Coast Conference, the school won the championship in 1930 and the right to represent the Far West in the New Year's game at Pasadena, California. The outstanding contest of the regular season was played in the stadium hewed from a hill on the Pullman Campus (see text, page 195).

But the job was done, and a broad highway surfaced with crushed rock made firm with heavy oil affords the means of communication with the outside world that peninsula settlers have been awaiting for 50 years. When it was opened, there was a celebration in which hundreds of Indians joined with their white neighbors.

As the highway nears Quinault Lake, it passes through an area that was logged before the days of forest conservation. One look at the scene of wanton waste is enough to explain why the State is seeking to pass a law prohibiting the cutting of timber along highways.

From Quinault Lake trails lead to the high Olympics and trout streams and hunting areas that thrill the sportsman's heart. Only a few miles by mountain paths from the lake is the Mount Olympus Game

Refuge, surrounding the highest of the Olympic peaks. There are vast regions hereabout that have never been explored, and the forests constitute a magnificent stand of virgin timber.

Beside a hotel fireplace at Quinault I listened to stories of the pioneers: the saga of John Huelsdonk, who carried unbelievable packs of supplies 30 miles or more up the mountains to his pioneer home; the history of F. N. Streeter, who fought his way into the high Olympics with a mattock and a bag of potatoes, prepared a field and planted the potatoes, and then welcomed to his new home his wife, who had walked 60 miles along the coast and up the mountain trails, carrying their baby.

It is little more than an hour's drive from the wilderness Quinault Lake to the twin cities of Aberdeen and Hoquiam,



Photograph by Asahel Curtis

RIVERSIDE AVENUE, IN SPOKANE, MAKES A GRACEFUL TURN PAST THE CIVIC CENTER

The low structure, partly screened by trees, beyond the Spokane Club, at the right, is the Chamber of Commerce. On the farther side is the Masonic Temple. Across the street is Our Lady of Lourdes Cathedral. The monument at the left commemorates a pioneer who helped bring law and order to the country in the early days.

thriving lumbering and fishing centers separated by a street. Together they form the port outlet for the Grays Harbor country. Farther down the coast, in Willapa Bay, besides all sorts of lumber and lumber products mills, are the newly developed beds of Japanese oysters. Deep-sea crabs and razor clams are sources of profit also, and salmon and cod fishing is an important industry.

PAST A FOREST FIRE TO THE
STATE CAPITAL

On the peat land which rims the coast south of Aberdeen, Finnish people have developed hundreds of acres of remarkably productive cranberry bogs. They haul sand from the beach to cover the peat land to a depth of 18 inches and plant the

cranberry bushes in the sand (see Color Plate IX).

Bill and I left Aberdeen in midafternoon to drive to Olympia, the State capital. Soon after open country was reached, I exclaimed at a beautiful glow of red in the sky above timbered hills. Bill, however, did not seem pleased. "It may be the sunset and it may be a fire," he said.

A half hour later, when the sun had gone down, Bill's suspicion was confirmed that the patch of red was the reflection of flames, and that the "cloud" was smoke from burning timber. Our road passed so close to the burning area that it was fitfully lighted by the wild flames leaping from tree to tree. The spectacle was weird and awful. Magnificent firs and cedars that had grown half a thousand years

leaped from the darkness as wildly flaming torches.

At Olympia is the new State Capitol group of buildings, with the 300-foot dome of the Legislative Hall rising at the center. Washington may be proud of its State buildings, constructed mainly of materials from within its own borders.

Home of large woolen mills and a huge Douglas fir plywood plant, Olympia affords the visitor opportunity to see the process of plywood manufacture. Twenty-foot sections of logs, some of them six feet or more in diameter, are steamed in sealed rooms for periods of 48 to 72 hours. From these rooms they are taken to the mills, placed horizontally, like rollers in giant lathes, and unwound just as paper is unwound from a roll, about a year's growth of wood being removed with each revolution (see page 168).

The sheets of wood are often 200 feet long by 20 feet wide and only an eighth or a sixteenth of an inch thick. Cut into desired sizes, the pieces, some laid lengthwise, some crosswise of the grain, are glued together with water-resistant glue and passed between heavy rollers that make them into solid boards. These boards undergo further finishing and are ready for use in the building trades.

THE END OF THE OREGON TRAIL

The old Oregon Trail ends just one mile south of Olympia, where in 1845 Col. Michael Simmons and his little band of followers blazed the last section of this historic route to the head of navigation on Puget Sound.

In the Sound near the capital the Olympia oyster has its natural habitat. A story is told of a traveler from the Chesapeake Bay country who ordered fried oysters in an Olympia hotel. He was reading his paper when the dish was set before him and did not notice for a moment what the waitress had brought. When he put the paper aside, he called, "Young woman, I ordered fried oysters, not baked beans!"

Olympia oysters, cherished by epicures for their delicate flavor, are the smallest on the market. They have another peculiarity, in that each oyster becomes both male and female in the course of its growth, being self-fertilizing. The industry is thriving and bids fair to assume

increasingly important proportions within the next decade.

One hears a great deal in Washington about "the great Cascade barrier that shuts off the Puget Sound country from the eastern half of the State," but the barrier exists largely in fancy. A motorist can drive from Seattle to Yakima over the 3,000-foot Snoqualmie Pass in six hours without the necessity of shifting to low gear, and any one not wishing to climb over this ridge may go around the south end of the range by way of the Columbia River gorge. Besides Snoqualmie, there are five or six other passes that present no great difficulty for automobile travel.

THE CASCADE BARRIER PROVES A MYTH

The Chicago, Milwaukee and St. Paul Railway and the Northern Pacific both cross the mountains through Snoqualmie, and the Great Northern has driven a 734-mile tunnel through them farther north. Over the Cascades the Milwaukee is completely electrified for 220 miles, trolley wires carrying power for the huge electric engines. The Great Northern between Wenatchee and Skykomish employs electric motors to draw transcontinental trains for 75 miles. The mountains that constitute the barrier furnish the power streams to make easy their own conquest.

On the Snoqualmie route from Seattle to Yakima one passes the beautiful Snoqualmie Falls in their sylvan setting, and the great artificial Keechelus Lake, which holds the water for the orchards of the Yakima valleys.

It is something of a shock to come out of the green forests of the mountains into a brown and gray country of bare hills pierced by a smooth highway that sweeps downward for miles through desert. Along the road are concrete-walled streams carrying water to the valley.

WATER MAGIC TRANSFORMS THE DESERT

The Kittitas irrigation project, with its orchards and green fields spreading out as far as the eye can reach, bursts upon the vision like a garden conjured out of a Sahara. On grassy hills near the verdant valley thousands of sheep are grazing. Entering that scene is like coming from the Wilderness into the Promised Land.

WHERE THE LAST OF THE WEST WAS WON



FINNS HAVE DEVELOPED THE GRAVE HARBOR CRANBERRY INDUSTRY

Exchanging labor at harvest, these colonists pick the huge MacFarlands from the matted bushes. White lines divide the bogs into lanes to insure that no space will be missed. Though loyal Americans, the people enjoy games and dances of Finland in their community hall.



© National Geographic Society

Natural Color Photographs by Asahel Curtis

IN TULIP TIME THE BELLINGHAM COUNTRY GLOWS WITH COLOR

Many Dutch bulb companies have branch farms here, and the little town of Lynden, near which this field is located, seems a transplanted bit of the Netherlands.



© National Geographic Society.

EVE MAY WELLS SMILES AMID WASHINGTON APPLES

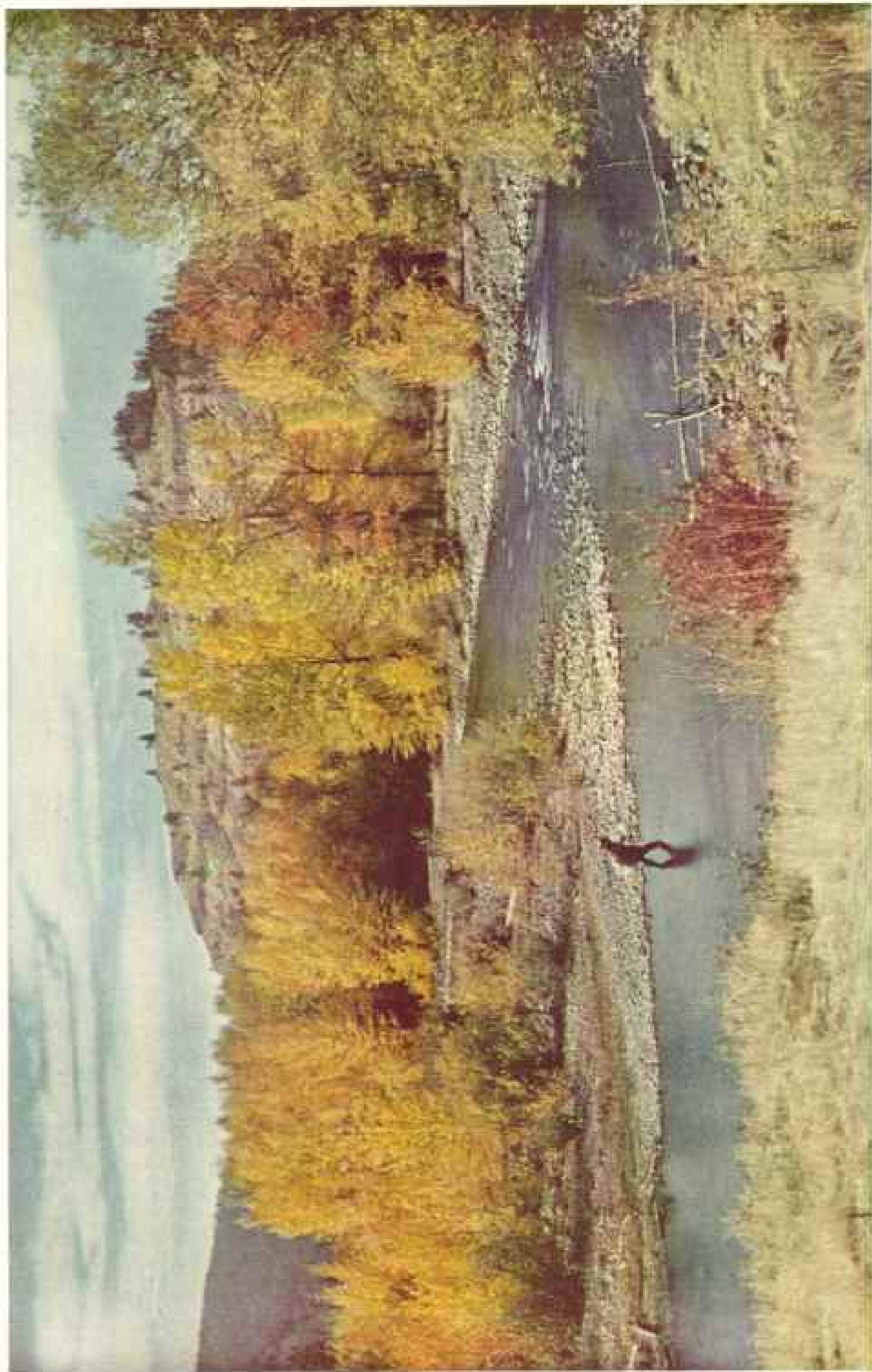
From countless heavily laden trees of Rome beauties the pickers fill their bags quickly. Autumn touches with the glory of ripe fruit the whole of the Wenatchee and Yakima districts, which little more than a quarter of a century ago were sagebrush desert.



Natural Color Photographs by Assheton Curtis

SEATTLE'S TOTEM NEEDS OCCASIONAL RETOUCHING

Set in a downtown square, the 75-foot pole attracts much attention. It was purchased from the Indians, who carved it and gave it its original coat of paint. Several other cities about Puget Sound have similar monuments.



© National Geographic Society

Natural Color Photograph by Clifford Adams

RAINBOW AND CUTTHROAT TROUT MAKE WASHINGTON SREAMS A FISHERMAN'S PARADISE

In this bend of the Naches River near its junction with the Rattlesnake the angler is generally assured a full creel. The region, which lies along the Yakima Gateway road to Mount Rainier National Park and Forest, is protected by game laws. It was stocked with elk in 1913, and in the last six years hunting has been permitted for a short season each autumn. Throughout the Evergreen State Nature has been lavish with gifts to lovers of the outdoors. Hardly a citizen lives beyond walking distance of some delightful recreation area.



© National Geographic Society

Finlay Direct Color Photograph by Clifton Adams

HOLLY GROWING HAS BECOME AN IMPORTANT INDUSTRY NEAR TACOMA

From a unique nursery at Gig Harbor cuttings are harvested for the Christmas trade throughout the United States. Several varieties are grown, but that most prized, because it is self-fertilizing and produces large berries, is a French strain of the old English variety.



© National Geographic Society

Natural Color Photograph by Anabel Curtis

FLYING HANDS PACK THE TREASURES OF THE ORCHARDS

While the harvest is on, whether at Wenatchee, "apple capital" of the State, or in the famous Yakima valleys, the cleansing, sorting, and waxing machines roll ceaselessly. This white-gloved worker in a large plant at Cowiche is wrapping Jonathans (see Color Plate X).

WHERE THE LAST OF THE WEST WAS WON



VEGETABLES TEMPTINGLY DISPLAYED ATTRACT SHOPPERS

The bouquet behind the lettuce tray consists of "flowers" fashioned by the mustached Belgian proprietor from turnips, beets, and other roots and mounted in garden greens. His Japanese neighbors specialize in building neat structures of produce.



© National Geographic Society

Natural Color Photographs by Anabel Curtis

SEATTLE'S PUBLIC MARKET HAS MANY FLOWER NOOKS

Yearlong the corner presided over by these little Japanese women flashes with beauty, especially when bursting with autumn bloom. Chrysanthemums, dahlias, asters, cosmos, and scores of other varieties grow to remarkable size in Washington.



© National Geographic Society

MOUNT BAKER HIDES ITS CRAGGY HEAD BENEATH 40 SQUARE MILES OF GLACIAL ICE

Natural Color Photograph by J. A. McCortuck

To the Indians the great "Sentinel of the Border" was known as Kulshan, and many are the legends woven about it and its nonvolcanic sister, Shuksan. The two giants stand in isolated grandeur in the midst of Mount Baker National Forest, through which a broad highway twists up the steep to a green valley within hiking distance of the summits. From vantage points on the heights, it is possible to see on clear days the cluster of the San Juan Islands in Puget Sound and the snow peaks of the Rockies in British Columbia.



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MOUNTAIN ASH BRIGHTENS SPOKANE LANDSCAPES

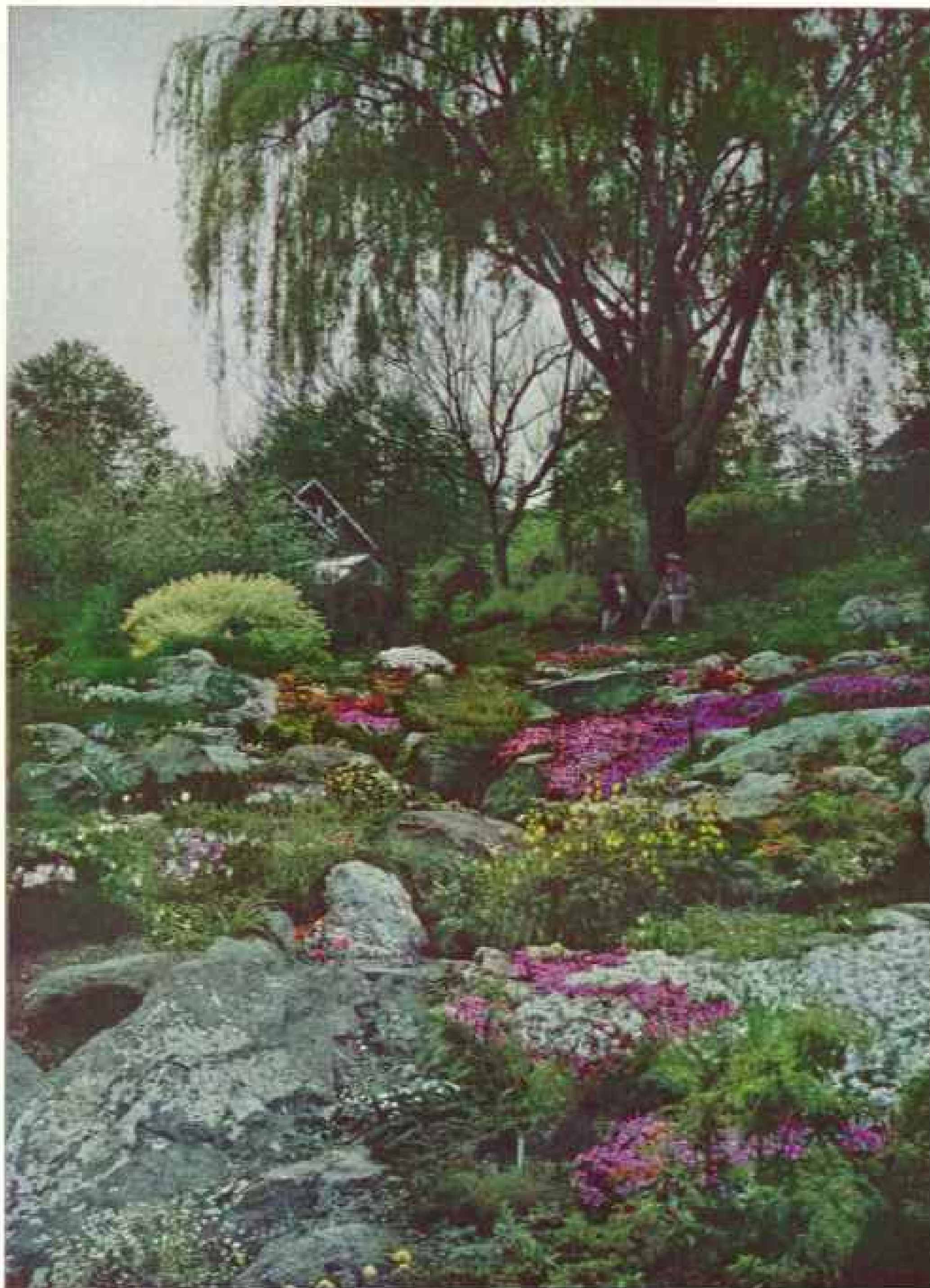
Indigenous to virtually all parts of the State, this graceful tree thrives amazingly in eastern Washington, where it flashes ruddy autumn flame against the green of city lawns and among the dark foliage of conifer forests.



Finlay Project Color Photographs by Clifton Adams

SPOKANE OFFERS LOVELY SETTINGS FOR HOMES

One of the many suburban estates among the tall pines along the Little Spokane River is that of a pioneer hotel man, who, when fire destroyed most of the city in 1889, served meals from a pushcart.



© National Geographic Society

Natural Color Photograph by Asahel Curtis

LANDSCAPE ARTISTRY FINDS BEAUTY IN STONES

In the benign Washington climate flowers grow readily; and many of the hardier varieties take root in crannies where only a bit of wind-blown soil is lodged. This rock garden is at Richmond Beach in the Puget Sound country.

At prosperous Ellensburg, principal town in the Kittitas district and seat of a State normal school built among fine old trees on a spacious campus, it is hard to believe that only a few miles away is desert, and that the rich farming district here-about was arid waste little more than a quarter of a century ago.

The highway follows the Yakima River south of Ellensburg through an Eden of fruit trees and green meadows to Yakima. When I made the trip, the month was September, and the apple trees were aglow with red. Peaches, apricots, and other soft fruit had been gathered, but what was left was enough to tempt a world of Mother Eves.

In 1930, 52,000 carloads of fruit were shipped from Yakima, the amazing city that began with a single log-cabin in 1864, remained for years a tiny cattle town, and leaped overnight to prosperity when water came to the land. The Oblate Fathers established the first settlement in the valley in 1847 and ten years later planted the first fruit trees.

In a 153-acre orchard I saw trees so heavy with apples that their branches were supported by scaffolding. There was a single 15-year-old tree that yielded 40 bushels of perfect Starking Delicious.

HOW WASHINGTON APPLES ARE PACKED

The great packing plants where the apples are sorted, wrapped, and boxed were humming. Ranks of machines were carrying the fruit on endless belts through alkali baths to remove the arsenate of lead with which apples are sprayed to discourage moths; through waxing chambers; past a corps of women sorters, who quickly placed the different grades on their proper carriers and the culls on return belts; over trap scales that dropped all of each weight into their appointed bins (see Color Plates X and XII).

Women packers' hands were flying, as they wrapped the red beauties in oiled paper and placed them in boxes. Carriers were moving the heaping boxes to machines that clamped on the lids, to be nailed tight by workmen. Ready for labeling and transport to the storage plants, the boxes were rolling along on an automatic carrier.

In another building, 1,200 white-gloved workers, mostly women, were sorting slices of apples poured out in fragrant streams

from coring, peeling, and cutting machines. The selected fruit was cooked and canned within a short time after it entered the room. At the end of each four-hour shift the entire canning room was cleansed, first with steam, then with hot and cold water. Culled fruit was loaded upon trucks and hauled to the vinegar factories.

THE APPLE CAPITAL OF THE WORLD

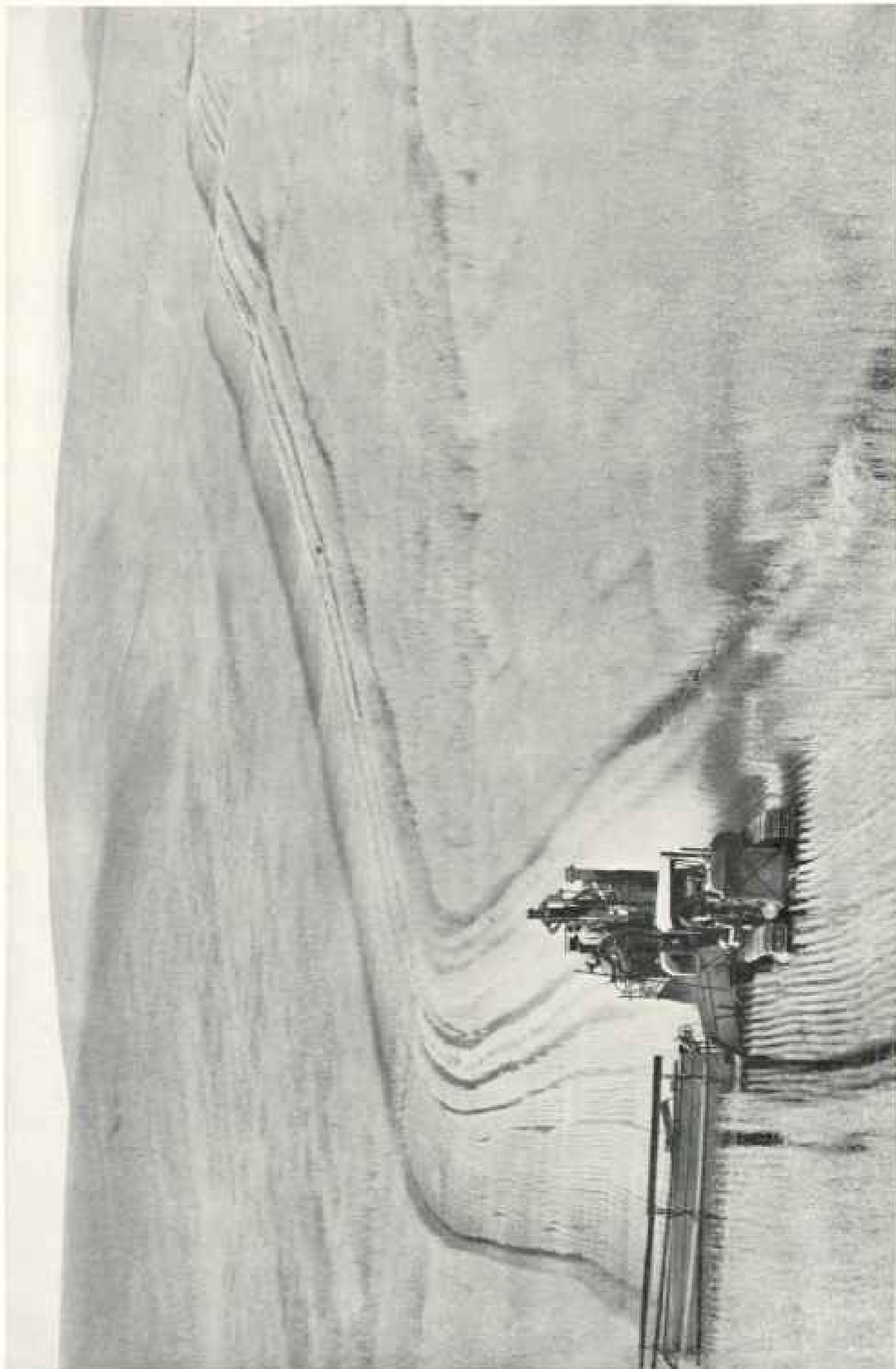
Yakima is famous for its apples; but to visit the "Apple Capital of the World" one goes north, "over the hump," to Wenatchee, the town of 12,000 population that has shipped 24,386 carloads of apples in a single year. Together, Wenatchee and Yakima shipped 45,221 carloads of apples in 1930, more than 40 per cent of the country's commercial apple crop, and, despite the lowest prices in history, realized a profit. Shipments in 1931 were: Wenatchee, 19,900 carloads; Yakima, 12,500. For 1932 the estimates were 17,000 carloads from Wenatchee and 10,000 from Yakima. Markets, not crops, declined.

Irrigation at Wenatchee is not from Federal projects. The growers have constructed their own gravity system, drawing water from the Columbia River and from smaller streams and lakes tributary to it. The Puget Sound Power and Light Company recently completed near the city the Rock Island Dam, first power development of the Columbia (see page 194).

In 1902 Wenatchee shipped its first two carloads of fruit. At the close of the 19th century the area that now glows with pink blossoms in springtime and with the red of laden branches in autumn (see page 192) was a sagebrush waste.

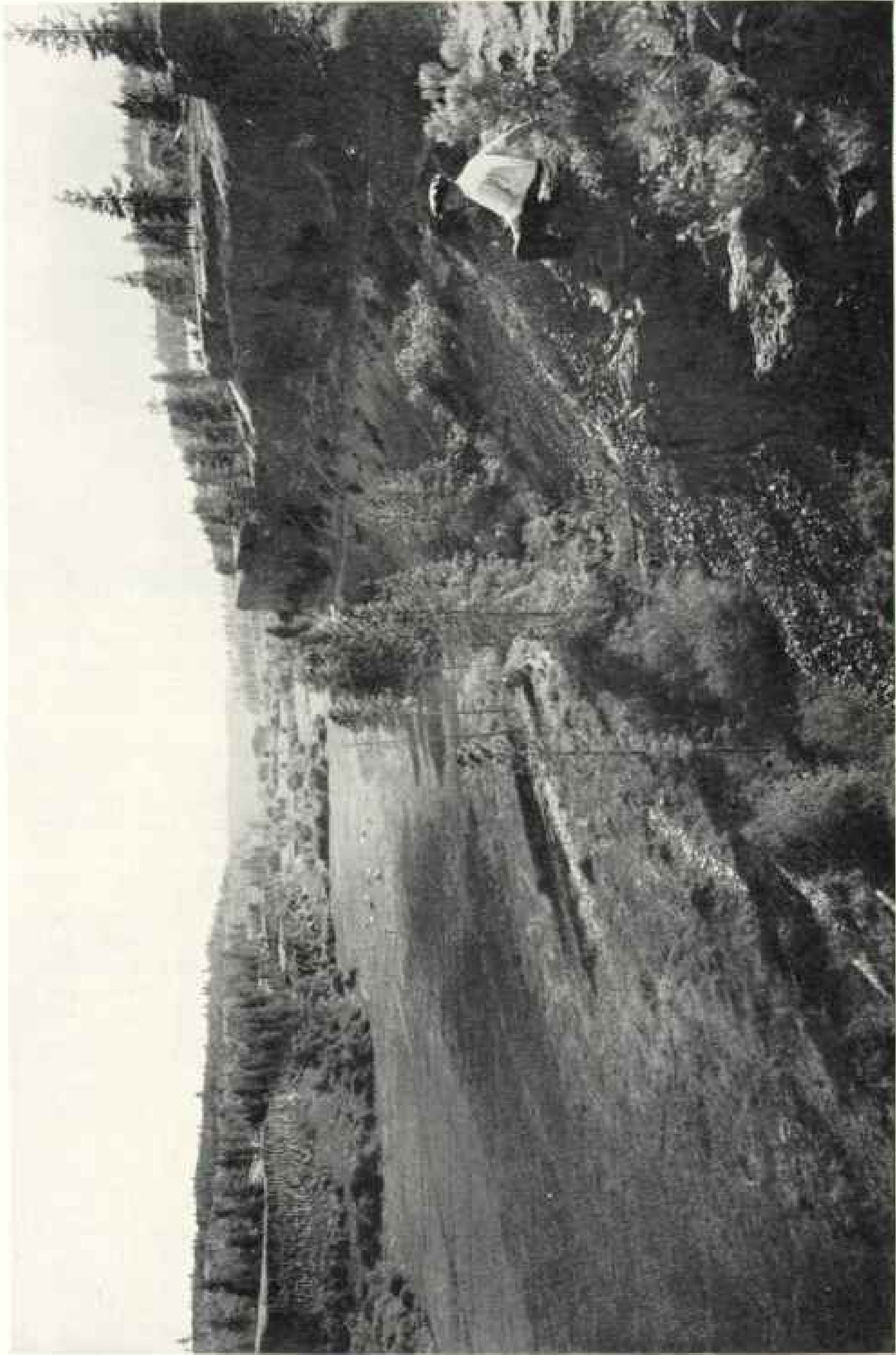
Ranches about Wenatchee average only seven acres in area, for intensified cultivation makes larger orchards unnecessary. Pipes laid between the rows of trees carry the chemicals for spraying, and power pumps operated by electricity from the hills force the spray through nozzles, so that a whole orchard can be treated in a few hours. It is not the number of acres but the yield of each tree that is of concern to the growers.

Paved roads wind among the charming bungalows in all the orchard country, and farm women telephone to Wenatchee merchants for delivery of supplies. Stores make two deliveries a day, often to homes 15 to 20 miles from town.



HUGE "COMBINES" SAIL THE SEAS OF WHEAT IN THE PALOUSE.

Formerly these machines that reap, thresh, and bag the grain as they move onward were drawn by horses, 20 or more teams working together; but now the tractor is superseding draft animals. Ranches in the Spokane country are thousands of acres in extent, and in harvest time the fields billow in unbroken gold to every horizon.



Photograph by Asahel Curtis

THE "HOLE IN THE GROUND" NEAR SPOKANE IS A GREEN OASIS-SUNK IN A DESERT

Geologists find winders everywhere in the Inland Empire, scene of seven prehistoric lava flows and probably two glacial periods. A vast ranch occupies the floor of this mysterious depression. The soil is remarkably fertile and is subirrigated by springs in the surrounding hills.



© Asabel Curtis

OVER THE CLIFF OF DRY FALLS ONCE PLUNGED A TORRENT LIKE MANY NIAGARAS

The ice sheet of the Spokane glaciation poured the floods of its melting through the basaltic strata to carve the Grand Coulee. To-day five lakes are reminders of those mighty streams, and the Columbia has cut itself a new channel.

When Herndon and Pangborn completed their nonstop flight from Tokyo to the United States, in 1931, fog prevented their landing at Seattle, and they grounded their airplane at the Wenatchee Airport. They brought with them little from Japan, but among the things they brought were, fittingly, a few apples!

Near Wenatchee, amid glaciers and snowy peaks in splendid array, is Lake Chelan, Washington's largest lake, 60 miles long and from one-half mile to three miles wide (see page 193). Although its lower end is but three miles from its outlet, the Columbia River, the lake maintains a level of 1,079 feet above the sea into the very heart of the mountain range which encompasses it.

SPokane, CAPITAL OF THE INLAND EMPIRE

It is so deep that at some points its bottom goes down 400 feet below sea level. Beginning as low, undulating hills, the inclosing heights gradually narrow and rise until the beaches disappear and the shoreline becomes only a mark on precipitous

cliffs, some of which tower to nearly 8,000 feet above the water.

It is a half day's train ride from Wenatchee to the easternmost, and in many respects the most interesting, part of Washington, the Spokane country—land of crystal lakes and foaming rivers, pine forests and cattle-clipped plains, rugged hills and rolling wheat fields, gray and mysterious desert, and dreaming valleys of sunshine, fruits, and flowers. Here are the ruins of old Spokane House, fur trading post established in 1811 by the famous geographer of the Northwest Company, David Thompson; here, also, the pioneer missions that brought the "Black Robes" to the Spokane tribes.

When my father-in-law, who recently passed his 70th year, came to Spokane as a young man, there were 40 settlers at Spokane Falls. Wolves and bears preyed on livestock, and the men of the village took turns standing guard at night to warn their neighbors if hostile Indians approached.

To-day the sparkingly bright city of Spokane, the Power City of Washington, sees Indians only when the tribes from the

reservations come to town to take part in a fair. The hills that once were the haunts of wild animals are crowned with parks and dignified homes surrounded by shady lawns and flower gardens. In 1889 fire destroyed 32 blocks in the business district, and the energetic citizens replaced ramshackle frame buildings with handsome structures of brick and stone. No trace remains of the frontier town in this metropolitan capital of the Inland Empire (see page 177).

Spokane is in the center of a great playground. Within 50 miles of it are 56 lakes. The citizen who emulates Izaak Walton can fish in a different lake every week-end of the year and have some likely angler's Edens left for holidays; or, if he prefers fishing in running water, he can flick a fly in any one of a hundred trout streams.

NATURE'S SPLENDOR IN THE HEART OF A CITY

The turbulent Spokane River flows through the heart of the city, in time of flood flinging the spray of its lovely falls high over the rail of the Monroe Street Bridge, 135 feet above its rapids. In the very atmosphere there is something alive and vital.

Power of the mountain torrents has made the city a manufacturing center, but with all its industry it is a home town, the very prototype of solid America and the warm-handed West. Its hominess and friendliness are evident to the visitor the moment he steps into the hotel about which social life centers.

In the irrigated Spokane Valley, fruit, vegetables, and flowers run riot in teeming fields. Near the city limits are many lumber and paper mills, a large match factory, and Felts Aviation Field, from which the *Spokane Sun God* made its record nonstop refueling flight to the Atlantic seaboard and back in August, 1929.

Spokane has within its corporate limits one of the most attractive park systems in the country; but, not satisfied with that, it has acquired a mountain, a rugged giant which towers above pine-clad hills, a few hours' drive to the north (see page 196). "Baldy," as the peak is called by the old-timers, was presented to the city by some of its leaders and promptly rechristened Mount Spokane, no rival town demurring. The mountain is one of the finest show

places in Washington, affording a view on a clear day of 14 forest lakes and rivers.

From Mount Spokane it is an interesting drive to Long Lake Dam, source of the power that turns the wheels of the city's industry, one of the highest spillway dams in the world. A few miles below is the smaller Little Falls Dam. Either project in the East would create a manufacturing giant.

WASHINGTON HAS POWER TO WASTE

There were 71 hydroelectric power projects in operation in Washington in 1931, and by January 1, 1932, all the plants together had a capacity of more than 1,000,000 horsepower. The State has more than a sixth of the total potential water power in the United States.

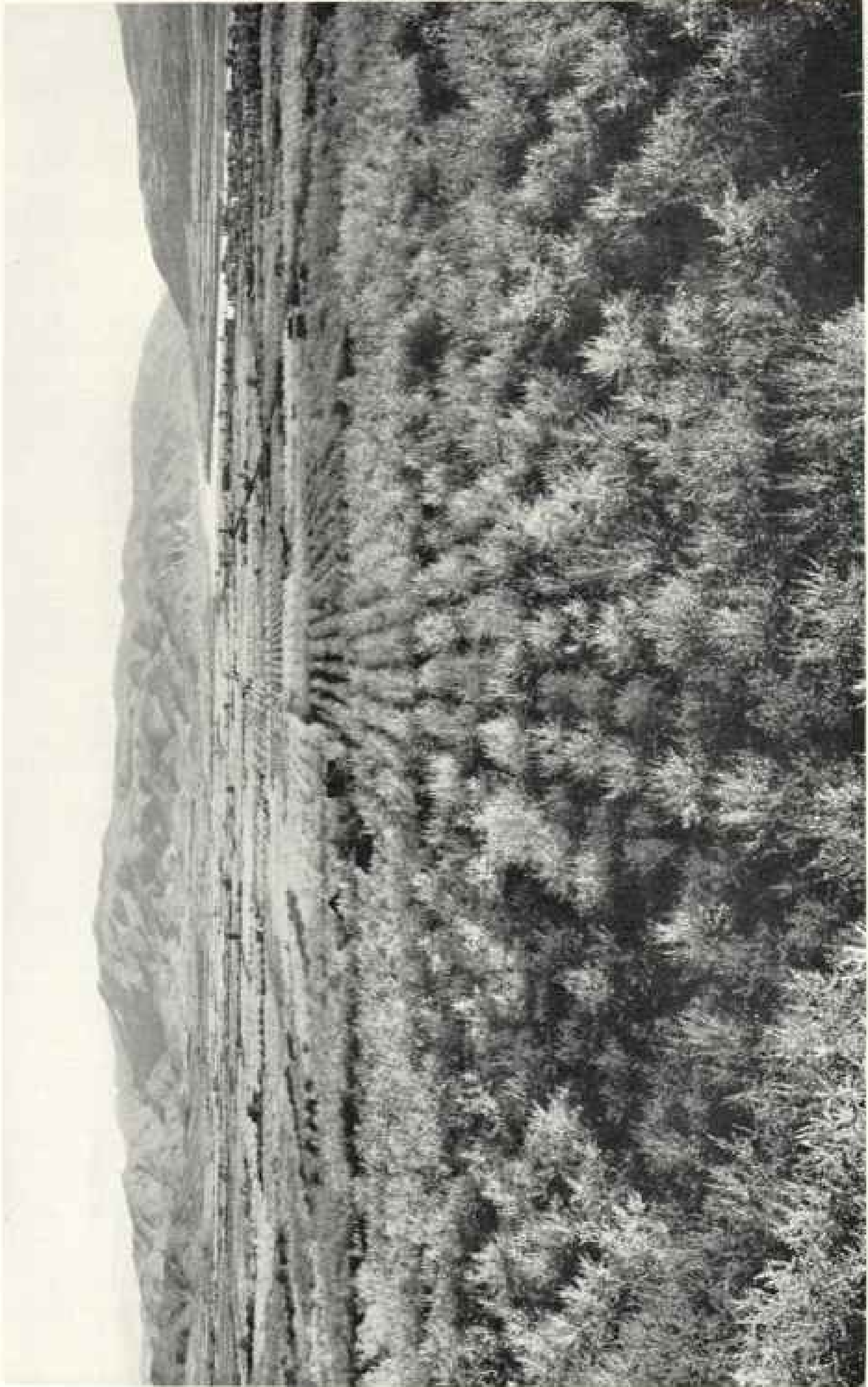
At Metaline Falls, a district tributary to Spokane, rich zinc and lead mines have been opened recently. In developing one mine the engineers have sunk a 325-foot shaft into a mountain side and have taken out a block of zinc ore 99 feet thick over a surface area of more than an acre, without reaching either the bottom or the top of the deposit or yet its limit in any direction.

The mines are located in wild and rugged country, on the Pend Oreille River, a region that compares in beauty with that around Lake Chelan.

Cheney, 26 miles southwest of Spokane, gave Spokane Falls a great battle in the early days for the honor of being capital town of Spokane County. In the spirited contest there was gun play, and court records were taken from Spokane Falls by armed men and carried off to Cheney. It was not until 1887 that Spokane won undisputed right to the county seat. Cheney had to be content with a State Normal School, which to-day has an enrollment greater than the total population of the two towns in the days of the county-seat fight.

A 50-MILE CHASM 1,000 FEET DEEP

Of particular interest to Spokane and the Inland Empire, as indeed to the whole Northwest, is the Columbia Basin, in the channeled scablands southwest of Spokane. It is the proposed site of an irrigation project that will reclaim 1,883,000 acres of rich desert land for agriculture. The area centers about the Grand Coulee, a 50-mile chasm, 1,000 feet deep, cut



Photograph by Asahel Curtis

APPLE TREES FILL THE WENATCHEE VALLEY AND CLIMB THE HILLS AS HIGH AS WATER CAN BE CARRIED

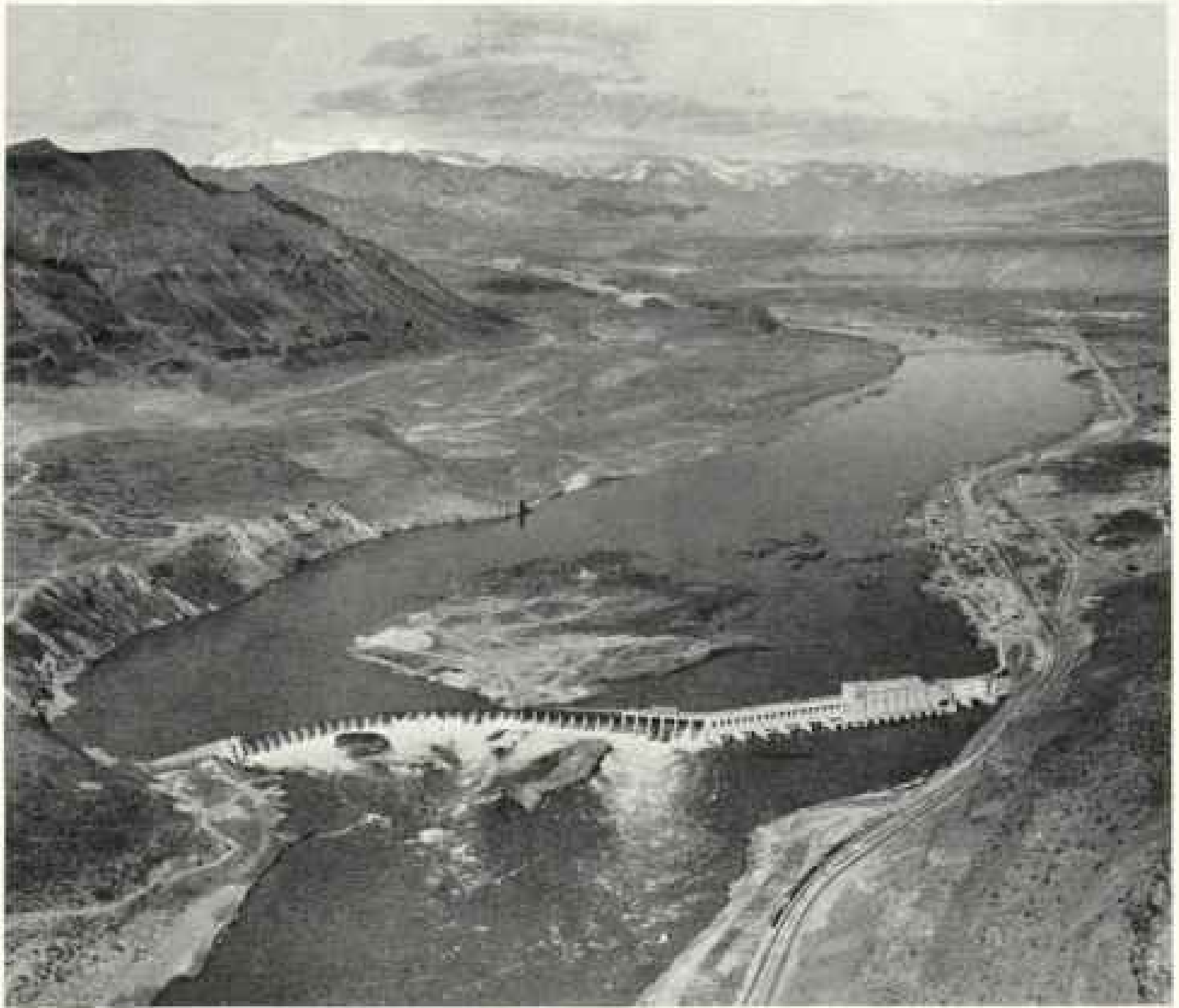
The land that 35 years ago was sage-brush desert is now a paradise of bloom in spring and a glowing tapestry of red fruit in autumn (see text, page 187). Homes are pretty bungalows, their roofs peeping above the orchards. The town is on a rocky site overlooking the Columbia River. It was moved there after the fruit industry began, in order that it might not occupy any considerable acreage of the highly productive soil.



© L. D. Lindley

WHEN HIGH WINDS SWEEP THE CANYON, LAKE CHILAN ROARS ANGRILY

In times of calm, pleasure craft cruise everywhere upon its 60-mile length; but in stormy weather it is navigable only by large boats. The water, which comes from glaciers, is exceedingly cold and clear and of remarkable depth (see text, page 199).



ROCK ISLAND DAM HARNESSSES THE COLUMBIA FOR THE FIRST TIME

Built near Wenatchee by the Puget Sound Power and Light Company, this hydroelectric plant is almost at the geographical center of the State. It makes possible development of the arid region in which it is located by furnishing cheap power to pump irrigation water from the river.

through solid basalt by a glacial stream of prehistoric time (see pages 174 and 190).

United States Army engineers have surveyed the district and have recommended construction of a dam across the mighty Columbia at the head of the Grand Coulee to impound in the gorge water for irrigating the largest area ever reclaimed and to furnish power for industries that will follow the settlement of the land.

The Grand Coulee has its southern extremity in Dry Falls, one of the geologic wonders of the world. Over this 400-foot precipice, some three miles wide, the prehistoric glacial stream once thundered with the roar of many Niagaras. Strata clearly visible on the coulee walls show seven distinct lava flows through which the stream bed was cut. In some of these layers standing petrified forests have been

found, and at a level perhaps 300 feet above the floor of the chasm is a deposit of clam and other shells. Below the Dry Falls a chain of wilderness lakes remains as a memento of the floods that once poured over the precipice (see page 190).

GHOST TOWNS REMIND OF BLIGHTED HOPES

On the return drive to Spokane from Dry Falls one passes through the ghost towns of the Big Bend, towns deserted by the settlers who flocked to the opening of the well-watered Palouse area, and, failing to obtain land there, took up homesteads in the desert. To-day the farms established in high hope are wind-swept wastes of sagebrush and thistle, awaiting the life-giving water that will make them quick with green. The discouraged farm-



Photograph by Asahel Curtis.

WASHINGTON HAS NEARLY COMPLETED A NEW CAPITOL AT OLYMPIA.

Dominated by the 300-foot dome of the legislative building, the group is set in a large tract of land upon which some natural timber is still growing. Separate structures, of which some are yet to be erected, are designed to accommodate the several departments of the State Government.

ers have gone, leaving their villages groups of vacant houses, even leaving their dead in thistle-overgrown cemeteries.

The Palouse is a different sort of place. Winter wheat was greening on the hills as I drove from Spokane to Pullman, and the whole countryside was the scene of promise. In this district wheat yields average from 25 to 45 bushels to the acre. The great "combines," harvesting and threshing machines in one, ride the golden seas of grain in summer sunshine to fill a ninth of the Nation's wheat granary (see page 188).

At Pullman the State College of Washington, its handsome buildings on a campus of hills, concentrates on the needs of the State (see page 176). Its engineering graduates have had a hand in most of the construction enterprises of the Northwest,

and its agricultural departments have developed experiments that have meant prosperity to the farmers. At one station soil erosion by wind and rain is studied, at others new and better kinds of grain are being produced. Washington farmers have learned to accept the advice of the State College men.

About Walla Walla, southwest of Pullman, the country is rife with pioneer history, monuments along the way marking points on the route of Lewis and Clark. It was at the Waiilatpu Mission, near Walla Walla, that Indians massacred Dr. Marcus Whitman and 13 of his people in 1847. The murdered missionary's friend, the Rev. Cushing Kells, founded Whitman College at Walla Walla in memory of Whitman's heroism (see page 175).



© Anabel Curtis

SPOKANE BOUGHT "OLD BALDY" AND RECHRISTENED IT MOUNT SPOKANE

A favorite place for picnics is this novel city park (see text, page 191). An excellent highway climbs by turns and switchbacks through natural timber to the top of the towering dome, from which, on clear days, one can see parts of Washington, Idaho, and Oregon. The tufted flowers in the foreground are Indian bear grass.

The Walla Walla Valley, where artesian wells furnish water for irrigation, is a rich fruit and garden area; but its main source of wealth is wheat grown without irrigation. It was wheat that gave southeast Washington its prosperity. In early days Dr. D. S. Baker built between Walla Walla and Wallula the first railroad in the interior of Washington, its purpose being principally to transport wheat to the navigable Columbia River. Report says that the surveyors, lacking a level, used a bottle half full of water to sight the grades.

The road was 32 miles long. Its rails were of wood, with strap iron nailed on the upper sides to provide traction for the engine wheels; but jesters declared that the strap iron was secured to the poles by rawhide thongs, which were eaten by hungry wolves every winter, so that the iron strips came off and put the road out of commission.

Libel though it was, the story gave the "strap-iron" contraption the fun-poking name "Rawhide Railroad." A 7½-ton engine pulled open flat cars along the track.

The passenger coach was known as "the hearse" because patrons sat around the outside walls like pallbearers in a funeral carryall. On the cowcatcher a collie was stationed to drive trespassing cattle off the track. Frequent delays were occasioned when the straps of iron came loose and rolled up under the engine. But the queer railway was a money-maker and brought a good price when its owner sold it to the Oregon Steam Navigation Company.

The Rawhide Railroad was built in 1868, when most of Washington was wilderness. What strides the Evergreen State has made since that time!

Progress does not come gradually in Washington. It bursts full panoplied upon the sight of a citizenry so accustomed to remarkable achievement that very miracles are accepted as matters of course. The people have accomplished prodigies of development in the last few decades, but even now they realize only in small measure the resources that lie ready to their hands. Theirs is a young land, a good land, a land still for pioneers.

BETWEEN THE HEATHER AND THE NORTH SEA

Bold English Headlands Once Sheltered Sea Robbers, Later
Were Ports of Wooden Ships, Centers of the Jet
and Alum Trades, To-day Are Havens
of Adventurous Fishing Fleets.

BY LEO WALMSLEY

With Illustrations from Photographs by the Author

MY TITLE is not original. It was suggested by a novel of Mary Linskill, a celebrated Whitby writer, published in 1884. The district I shall describe is that same narrow strip of northeast Yorkshire which the writer of Victorian romance found so inspiring.

This district includes and runs north and south of the ancient port of Whitby, between the wild, heather-clad moors and the North Sea's edge. It extends northward to Skinningrove, where grim blast furnaces and gigantic steel mills mark the outposts of the Tees industrial area. It reaches southward to the massive promontory of Ravenscar, one-time haunt of the Danish sea robbers, where the moor edge starts to sweep inland, and there is that subtle change of geographical feature which denotes a different neighborhood.

Nowhere in England is there a district of greater beauty, of greater geographical and geological interest, or one more teeming with romance than this. At Whitby lived the saintly Lady Hilda. There the humble cowherd, Cædmon, was inspired to compose the first English sacred song. On the summit of the cliff that overlooks the harbor from which Capt. James Cook sailed on his hazardous voyages of discovery the gaunt ruins of what undoubtedly was one of the loveliest of English abbeys still offers a sure landmark to the seaman.

SECRET CELLARS BETOKEN ERA OF SMUGGLING

Five miles southeast of Whitby is the little fishing town of Robin Hood's Bay. There, if legend is to be trusted, that audacious outlaw, Robert of Huntingdon, lived in the Abbot of Whitby's deer forest, whose stone-wall boundaries stand to

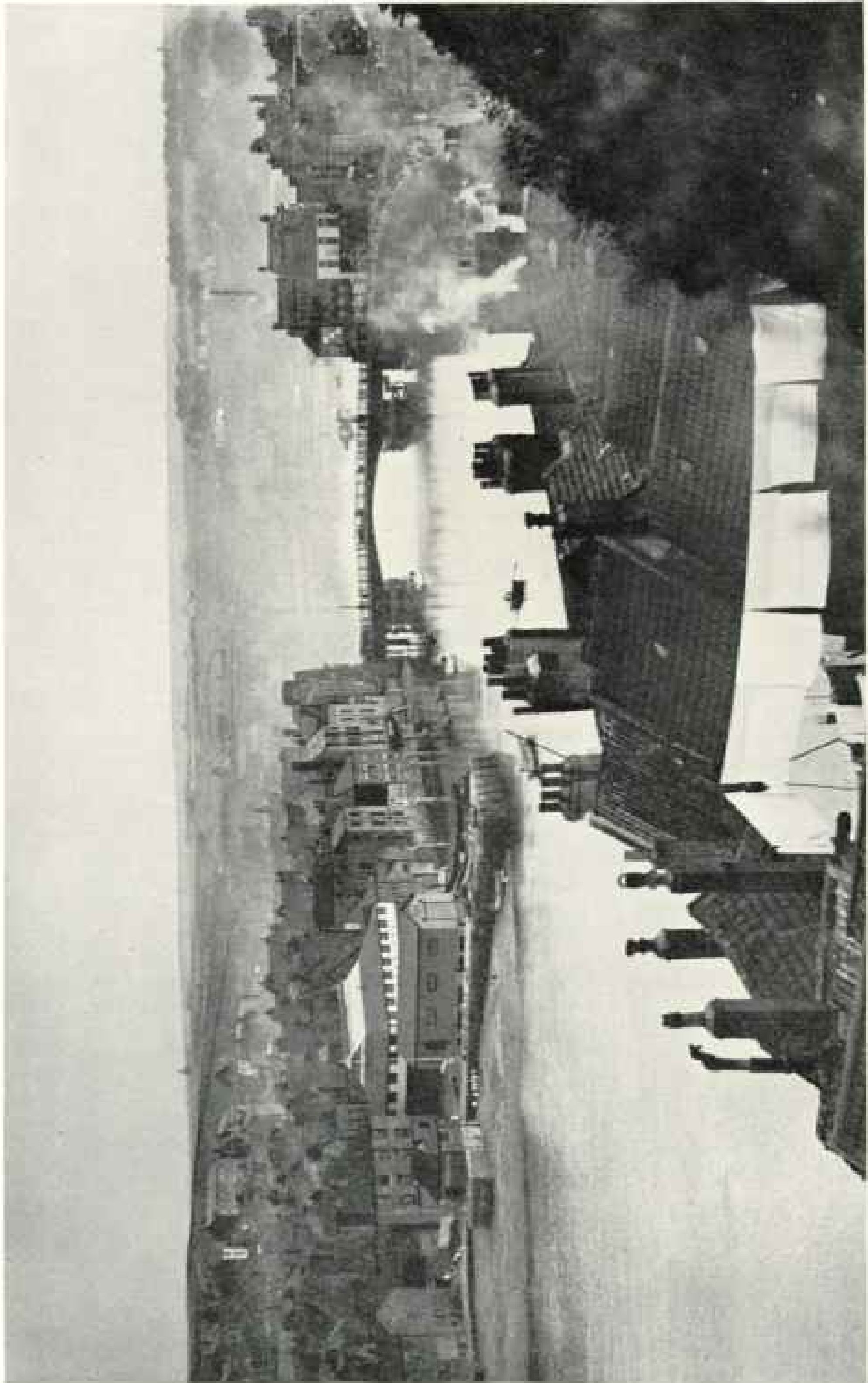
this day. It was he who waylaid and plundered the rich ecclesiastical convoys traveling the rude pack road between the old seaport and the holy city of York.

Robin Hood's Bay town, an amazing mass of red-roofed cottages clustered on each side of a steep ravine at the leeward corner of a superb bay, was renowned as a smuggler's stronghold in the 17th and 18th centuries. Staithes and Runswick, to the north of Whitby, enjoyed a reputation no less honorable. There is scarcely a cottage in each of these villages—or along the entire coast, for that matter—which has not its secret closet or cellar where once the bales of silk or kegs of schnapps were hidden from the prying excisemen.

To-day the people of the coast are for the most part tall, fair-haired, and blue-eyed. They are the pure descendants of those Danish and other Scandinavian sea warriors who, first as marauders and finally as colonists, in the dawn of England's history, crossed the wild wastes of the North Sea in their open boats (see illustration, page 205). They speak a dialect which, in its vocabulary and idiom, has much in common with that of certain districts of modern Scandinavia, especially of Denmark. Their folklore, superstitions, and customs also are largely Scandinavian. The sea is in their blood. To the majority of them it is still a profession.

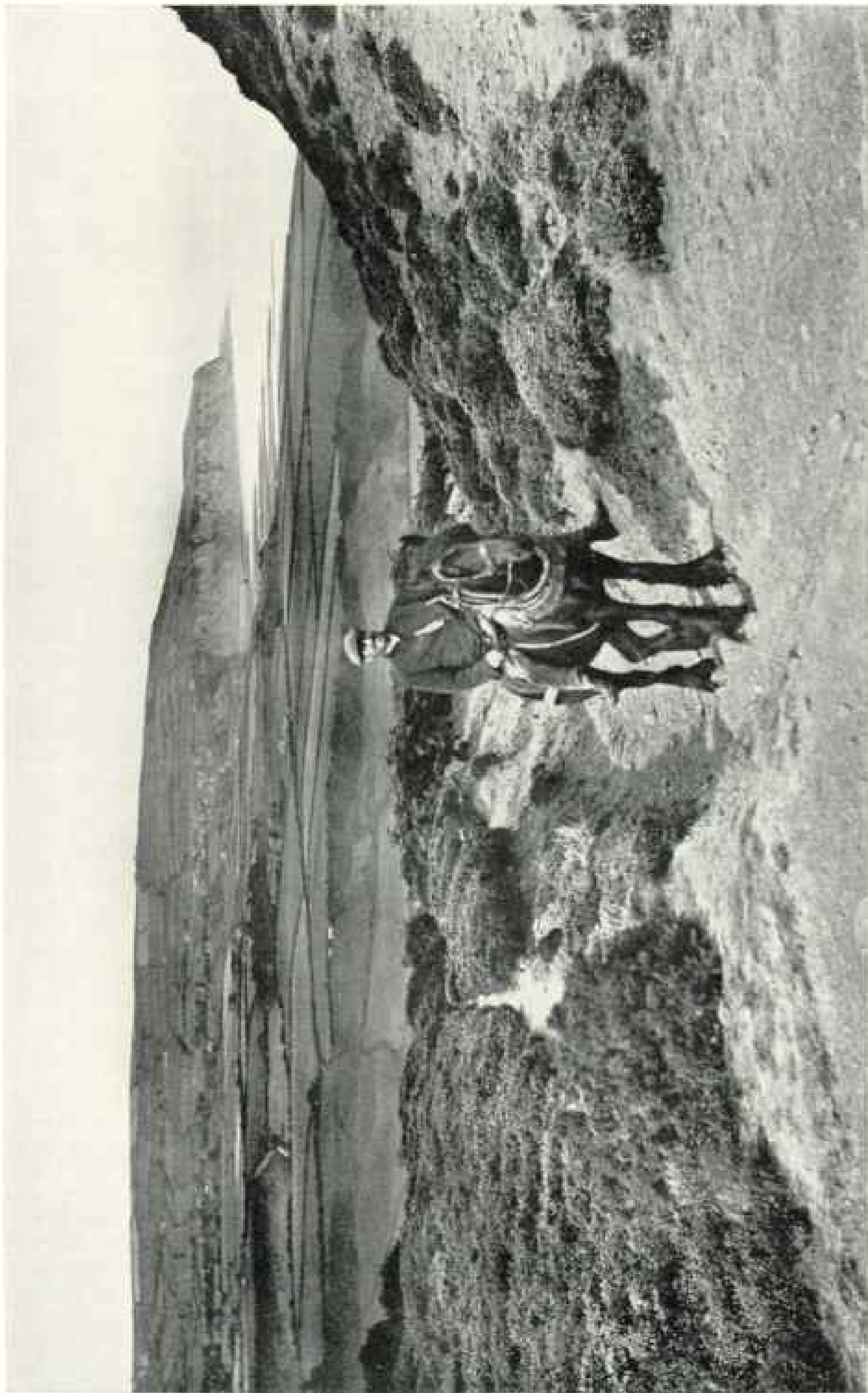
The geological formation of this region consists chiefly of soft blue shales, very rich in iron, that were originally deposited at the bottom of a tropical or subtropical sea, where animal life was extraordinarily diversified and abundant.

In this sea lived ferocious, crocodile-like reptiles whose fossilized remains are frequently found intact in the cliffs and



MISTS FROM THE SEA DRIFT ACROSS WHITBY TOWARD THE DISTANT HILLS.

Once an important east coast port, this harbor now knows only fishing craft. The view is from the West Cliff and shows both the main and upper harbors, as well as the East Cliff, and the hills which give birth to the River Esk.



THE MOORS OF YORKSHIRE ARE AS BLEAK AS THE ADJOINING SEA

Formerly sheep trails formed the highways of the moors; to-day motor roads cut across the undulations of heather and protruding rock.



THE WASSAIL SINGER OF WHITBY

Singing festive carols at the Christmas season, along with drinking the wassail cup, is a custom dating back to early Saxon times. The box contains a doll representing the Infant Christ, an apple, and an orange, the symbolism of which is obscure. The melody and words constitute simple folk songs.

quarries of the neighborhood. Here, too, lived weird fishes with armor-plated skins; and the lovely ammonite, in an almost incredible profusion and diversity of form, so much so that in places along the coast there are "beds" several inches thick which are composed entirely of their fossilized remains. The official crest of Whitby is three ammonites on a shield!

BAYS AND COVES SHELTER TOWNS

Because these shales were soft, they have yielded in the course of immeasurable time to slow but tremendous upheavals. Thus there is no level country on our coast, but a

succession of denuded hills and valleys, the former terminating at the sea's edge in abrupt cliffs, the latter in bays and coves. The hills, being exposed to the withering sea winds, support no vegetation but heath. The sheltered, well-watered valleys are intensely cultivated. The bays and coves are the sites of villages or towns.

ERA OF WOODEN SHIPS AND EXPLORATIONS

Whitby lies at the mouth of the deepest and longest of these valleys, through which, tumultuously at first, then indolently, flows the moorland-born, romantic River Esk. Shortly before it reaches the sea this valley widens out, forming a broad natural, but shallow upper harbor. Then, quickly, its green flanks narrow and steepen into two cliffs, making a deeper waterway and the main harbor. Here is the town itself.

Most of the old part of the town remains substantially as it was centuries ago, piled up along the harbor sides, above the masts of the fishing craft, and nestling immediately under the steep East Cliff, which is surmounted by the parish church, St. Mary's, dating to 1100, and the lovely ruins of Whitby Abbey.

The view across the harbor is beloved of painters. Late on a quiet summer's afternoon, when the red roofs of the cottages glow through a pale haze of smoke rising from innumerable household chimneys, and the weather-beaten stones of the ancient church and Abbey are softly gilded by the rays of the lowering sun, it is incomparably lovely.

To-day a fishing port only, the real splendors of Whitby belong to the past: to the days of the old Saxon monastery of St. Hilda and Caedmon; to the days of the Great Synod in 664, when Saxon kings and the leading ecclesiastic lights of the land met with pomp and circumstance to settle the vexed question of the date of Easter. To the days of wooden ships and wooden ship-building, when Whitby was fifth port in England and her sturdy, oak-built ships were famed across the seven seas; to the days when Whitby was one of the chief bases of the Greenland whaling industry, and Cook and Scoresby sailed from the port on their exciting enterprises (see text, page 232). To the days when 1,500 men were regularly employed mining and carving jet and twice this number were engaged in the alum industry along the coast.

There is no shipping now. At the dawn of the Great Iron Age some of the "yards" turned to iron, and many fine screw steamers were built on the stocks which then lined the upper harbor. But the shallowness of that harbor and the distance from foundries and rolling mills were fatal handicaps, and Whitby found annihilating rivals in the ports of the Tees and the Tyne.

The alum industry died with the discovery of a cheaper method of production.

A trade which depends on the fickleness of feminine fashion is built on sand, and from a peak of prosperity reached in that glum period of court mourning that followed the death of Queen Victoria's Consort, Prince Albert, the jet trade declined, until to-day it supports scarcely more than a dozen craftsmen.

WHEN THERE WAS NO TRAFFIC PROBLEM

The old town's streets are tortuous and narrow. The names of the chief ones, Baxtergate and Flowergate, suggest that they were built when there were no traffic problems. There is documentary evidence of their existence in the 14th century. Flowergate climbs down the slope of the West Cliff. Baxtergate runs parallel to the docks. A steel bridge, originally a wooden drawbridge, conducts its bewildered traffic to the east side of the harbor, and here we have the equally ancient and even narrower Church Street again running parallel to the harbor and leading to the foot of the famous 199 steps which the

faithful must climb to attend worship in the parish church, St. Mary's.

Whitby is the shopping center for a wide rural area. Its shops are chiefly in the two main streets and its market backs off Church Street. The market day is Saturday.

Early in the morning the farmers arrive in their neat little traps, with baskets of butter, eggs, chickens, curds (filling for the famous Yorkshire cheesecakes), trussed geese, rabbits, and the like. Their wives attend the market stalls until midday. The entire families dine at the White Horse, or the Plough, or Blacksmith's Arms.

In the afternoon they do their own shopping. For two hours at night they will see life through the eyes of Hollywood at the "movies." Then they return to the inn stables, where impatient Jess or Daisy is harnessed; and so, after a drive that may take them to the moorland's edge, to bed.

MINING JET WAS LIKE "WILD-CATTING" IN OIL

Chiefly in Church Street are the shops of the jet and fossil dealers. Jet is fossilized wood converted into carbon. It is found in beds known as jet rock, which crop out in several places along the coast. It does not occur in seams, like coal, but in isolated pockets, which made its mining a speculative business. A man might dig for months and not find a handful. A good pocket, however, when the trade was in its heyday, might have been worth anything up to \$250.

There is no mining now. What craftsmen are left depend for their supplies on the longshoremen, who collect the bits washed out of the cliff, or from submarine exposures.

While there is diverse opinion regarding the merits of jet as a medium for the true artist, it has inspired some very fine and original carving (see illustration, page 209). It is easy to work and takes on a lovely polish, as different from the glaze of glass and imitation jet as the polish of cheap furniture is from the patina of a genuine piece of Queen Anne. Moreover, while jet is found elsewhere, notably in Spain, Whitby jet is distinctive.

Most of the famous craftsmen are dead, and there has been a tendency for their successors to keep to standardized designs. But here and there one of them will show



LEGENDS CALL THESE ROCKS MERMAIDS' DINING TABLES

The curious formations at Ravenscar are found among the jet shale, sources of Whitby's famous jet. Many of them contain fine specimens of fossil fish with scales of pure jet.

a flash of originality, and hope endures that the pendulum of fashion may swing back and give new impetus to this interesting craft.

The fossils which form the second bow of the Whitby jet dealers have a more strictly scientific interest. The commonest is the ammonite. It is found in immense profusion along the entire coast, but from the geologist's point of view its most interesting aspect is its extraordinary variety. The ammonite, of course, was a marine animal belonging to the family of squids and octopuses. Its nearest existing relative is the nautilus. Its variations are distinguished by size, by number and shape of the corrugations of its shell, by the presence or absence of spines or tubercles.

The ammonite, which is particularly abundant on the rocks at the foot of the Abbey cliff, has given rise to an interest-

ing legend which still finds credence among Whitby fisher folk. They believe it to be the petrified remains of a snake. Rarely, however, is a specimen found with its "head" intact. The story goes that in the days of St. Hilda the district suffered from a plague of adders. The holy lady was prevailed upon to use her influence against them, with the result that first their heads were prayed off, and then their bodies were turned into stone.

From the main streets of Whitby—Baxtergate, Flowergate, Church Street—and from Skinner Street, Sandgate, Haggergate, and St. Am's Staith, narrow lanes twist among the old cottages or lead to watery dead ends.

The cottages are built in amazing confusion. One has the impression that they must have pushed themselves up, mushroom fashion, from the ground wherever



A FAMOUS LIGHT ON A TREACHEROUS COAST

High Lighthouse, at Whitby, has a beacon with a clear-weather visibility of 22 miles. The "Whitby mad bull," as the siren is called, gives forth blasts during frequent fogs.

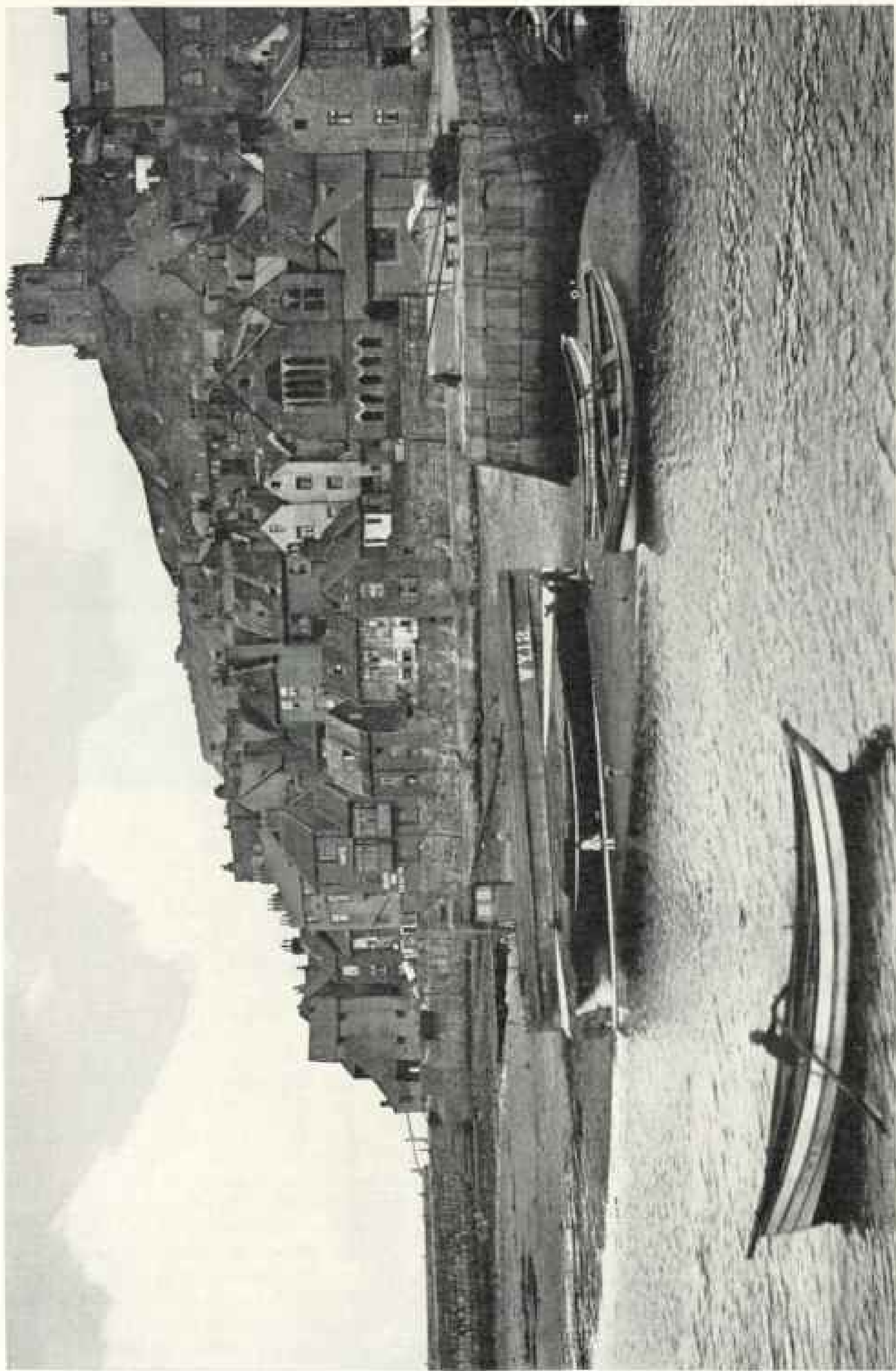
there was space. They have no gardens. They have, with few exceptions, no view save into their neighbor's parlor or down his chimney stack. They are, however, all built on one general plan, which gives a kitchen, parlor, a best room, two bedrooms, and an attic. Their architects and builders were all men of the sea. To-day it is chiefly the fishermen who live in them.

HERRING FISHING YIELDS TO THE CRAB AND LOBSTER TRADE

Even the fishing trade of Whitby has suffered more than an ordinary share of economic vicissitude. The writer can remember the time when, in summer, during the height of the North Sea herring season, the harbor was a forest of masts. And he has since seen the time when the unloading of a solitary herring drifter created a sensation. The herring trade has

vanished. But that spirit without which no industry can thrive has remained alive in the breasts of the sturdy Whitby men, and the port has of late years experienced a revival in the crab and lobster trade.

That view to the east across the harbor, so beloved of painters and photographers, would not be complete without the fishing craft, moored hard up to the very thresholds of the cottages; without the lobster pots stacked upon the quays, the salmon nets spread out on poles to dry in the sun; without the groups of blue-jerseyed, salt-tanned men, busy with their gear or gossiping. Some of these men are old, white-bearded, and loquacious; but most of them are in their prime, tall, square-shouldered; soft, catlike in the way they move about, restrained in their speech, watchful. These are the men who are leading back their sons to the business of the sea.



WHITBY'S REAL SPLENDORS BELONG TO THE PAST

To-day it is but a fishing town and haven for lovers of the antique. Red-tiled houses cling to the slope of the East Cliff, crowned by the parish church, St. Mary's, and the bleaching ruins of the Abbey, farther to the right (the latter not shown on this photograph). The small boats in the foreground are cobbles (see text, page 207). The larger characteristic craft of this coast is a keel boat.

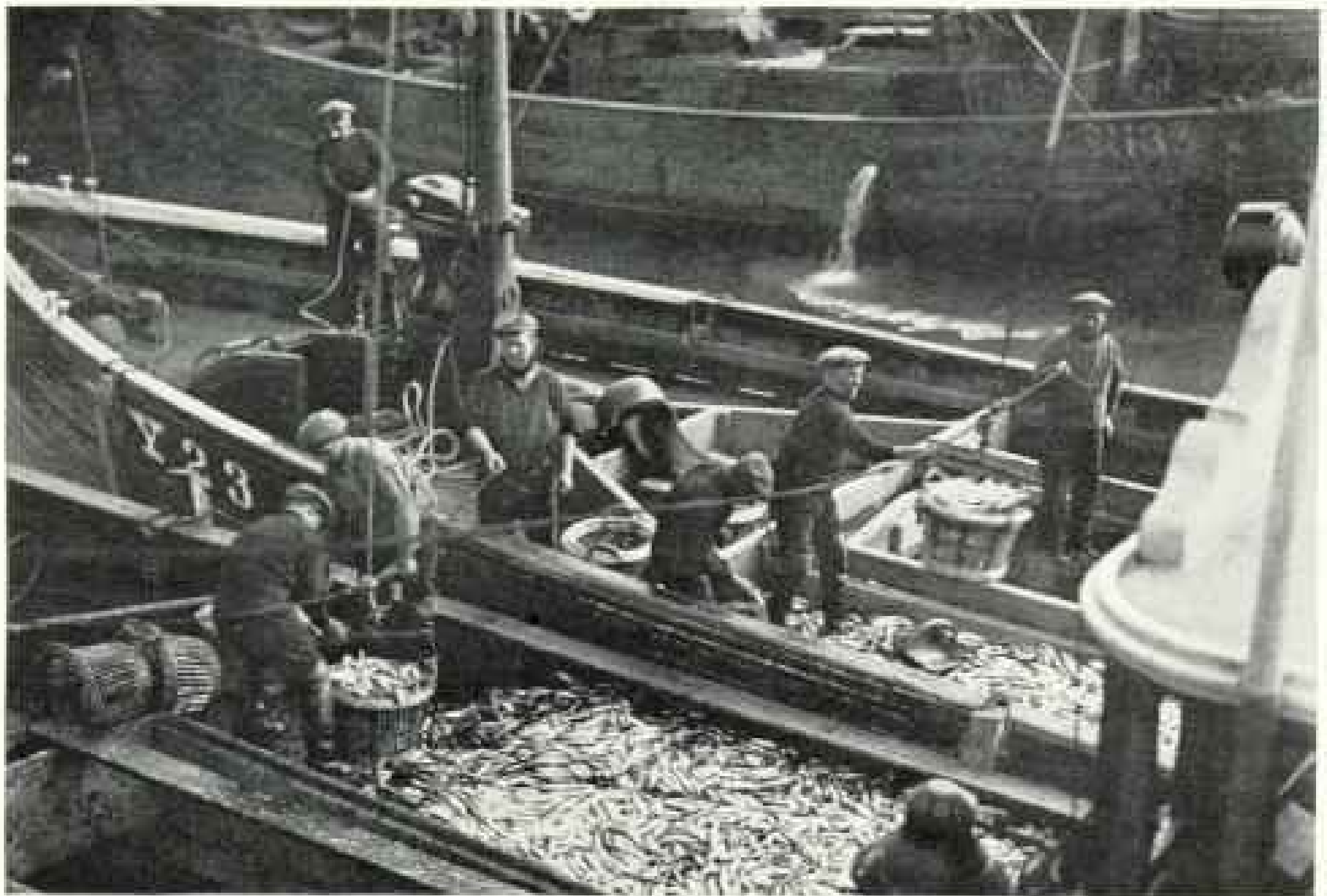


SNODDING HOOKS FOR THE WINTER COD FISHING AT WHITBY

Many natives of the Yorkshire coast are descended from the Scandinavian sea rovers who crossed the stormy North Sea, first to invade and later to colonize the Yorkshire coast (see text, page 197). Visitors have trouble understanding their speech because of the idiom from the Danish and other Scandinavian tongues, flavored with salty dialect of the sea.



WHITBY ABBEY STANDS IN FORLORN GRANDEUR BESIDE THE OLD MONKS' POND
 Doubtless well stocked with carp in the old days, this pond was, perhaps, the scene of exciting fishing contests for the honor of supplying Friday's repast.



LANDING A HERRING CATCH AT WHITBY

The sight of drifters, as the boats which use drift nets are called, is becoming rarer in this port, as more and more deep-sea fishing craft are putting in at Scarborough and Yarmouth.



"THE WESTMINSTER OF NORTHUMBRIA" IS A GLORIOUS RUIN

Whitby Abbey, restored after the Conquest, flourished for three centuries, and finally its treasures were removed by Henry VIII in 1540. It soon fell into ruin, assisted by townspeople, who helped themselves to its stones for building material. The two decorated windows on the left were badly damaged by German gunfire during the raid on the east coast in 1914.

The type of craft characteristic of the coast is the coble. The illustrations (see pages 204, 218) show its lines and its extraordinary beauty, but no photograph can show its superb sailing qualities. Its design is the evolutionary outcome of conditions. It is preëminently a surf boat.

The coble's greatest draft is forward, and on an open shore it is landed stern first, its slender bows offering no resistance to the surf. It sails fast and very close to the wind, because its long rudder acts as a keel. But the rudder is also a source of danger, for it may foul a mass of seaweed or become entangled in anchored fishing gear when the boat is in a heavy breeze. The coble, like a spirited horse, demands expert handling.

How long the coble has been in use at Whitby, and at the rest of the fishing villages of the coast, it is impossible to say. It remains the most popular craft for strictly inshore fishing.

It was this branch that suffered most of any in the World War and postwar depression. Whitby men saw that their main handicap was in the size of their craft.

Owing to intensive operations of steam trawlers fishing close to and often within the three-mile limit, and also to the incessant use of anti-U-boat depth charges by the mercantile convoy patrol, old fishing grounds had become depleted. Whitby fishing men invested in larger craft, motor-driven, with sleeping accommodations and a proportionately increased cruising range, giving access to hitherto unfishable grounds.

However, the coble has not altogether been displaced. Like the farmer, the fisherman follows a definite round of activities. Starting in summer, it is the salmon and salmon-trout fishing that claim his attention, and for these uses the small coble still holds undisputed sway.



A NORTHEASTER THREATENS!

All hands pull the coble up to the dock at Robin Hood's Bay, a center of this characteristic Yorkshire coast craft, especially adapted to inshore fishing (see text, page 207).

The salmon and salmon trout descend the Esk and a few of the smaller streams along the coast in late spring. In summer they feed close into shore, and they are particularly fond of the lagoons formed when the tide ebbs from the reefs or "scours" so typical of the coast. The nets—they are gill nets—are set with one end practically at high-water mark and the length of them across the mouths of these lagoons. At half tide the fisherman rows down each lagoon in turn, beating the water with an immense stick known as a "blasher." The terrified salmon rush at full speed into the nets and are enmeshed.

SUDDEN STORMS OFTEN CAPSIZE CRAFT

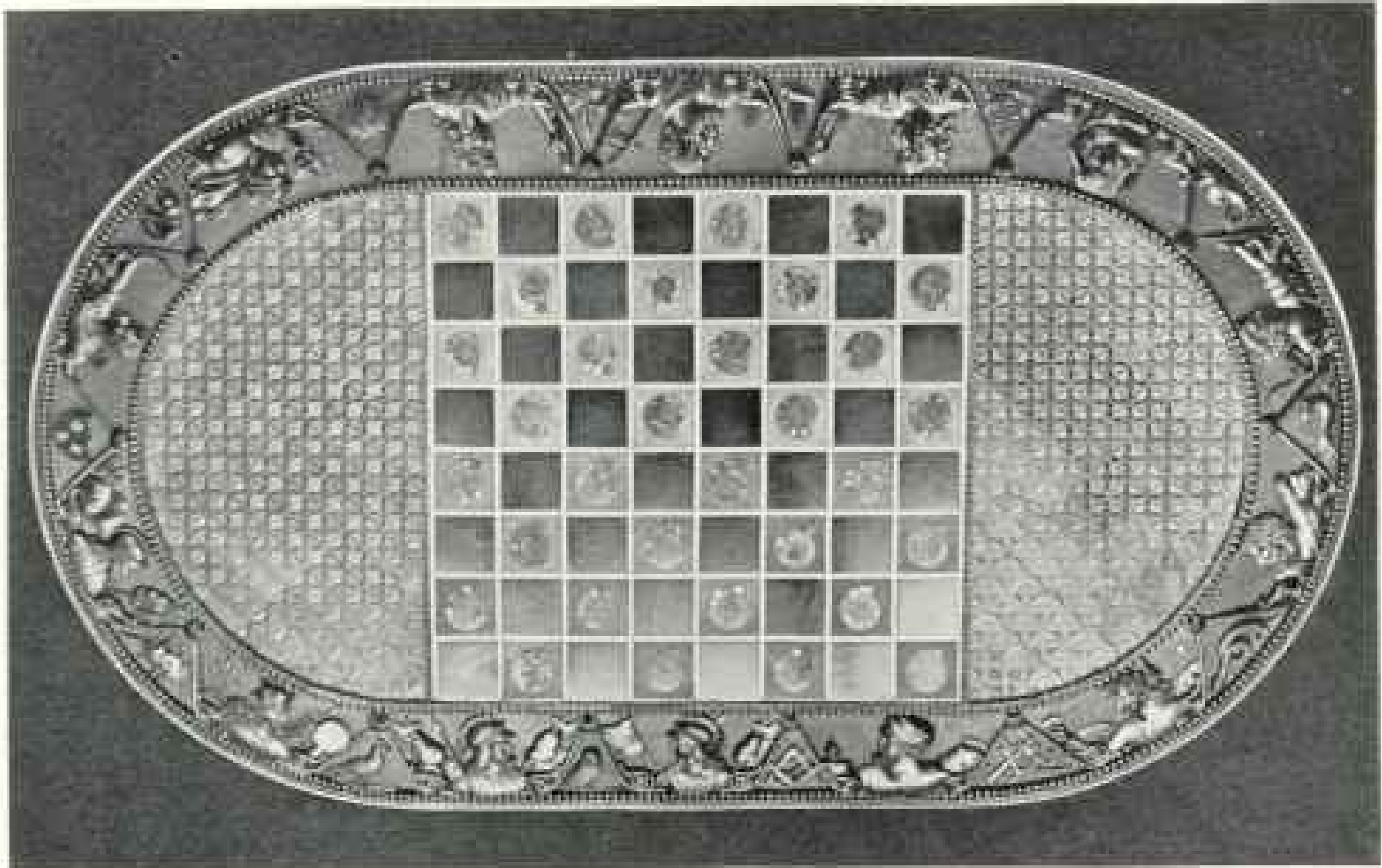
Salmon fishing is a tremendous gamble. The gear is costly. It is useless to fish anywhere but in shallow water.

Even in summer there is not in the British Isles a more treacherous coast than this. The boats put out to sea at dusk. The barometer is high and steady. The land wind has dropped. The oars drip with liquid phosphorescent fire, as complete darkness moves over the surface of the sleeping sea.

The boats creep stealthily into the lagoons. The nets are shot. For an hour or so the fishermen rest. Then the "blashing" begins and continues until the tranquil eastern sky begins to pale. The nets are hauled, and it may be that fifty fine salmon and salmon trout fill the cribs as though with molten silver when the coble turns homeward. The average market price is normally around 66 cents in American money. The average weight per fish is four pounds. A good catch, then, may bring up to \$150.

Before the nets are hauled a sullen bank of cloud may have crept up that peaceful eastern sky. Before its ragged edges are limned by the dawn a fierce cold wind has ruffled the smooth sea, cutting white gashes in it, stirring its depths into heavy rollers, which suddenly start to thunder on the reefs. Before day has broken the fishing ground is a welter of smashing seas.

Only a coble dare venture in on that perilous lee shore. The fisherman, with consummate skill and a stolid contempt for danger which he has inherited from his audacious forbears, may save all his gear, beat out off the lee shore, and with close-



AN INTRICATE SPECIMEN OF THE JET-MAKER'S ART

The chessboard was made by one of the most famous of Whitby's craftsmen. The white squares are ammonites, cut and polished, cunningly inlaid into the jet.

reefed sail make harbor and a good market. But time after time it happens that all the gear is lost and with it the entire profits of the season. Time after time a coble, taking an extra risk, is capsized and all its occupants drowned. It is amazing that not five per cent of the coast fishermen can swim.

COD FISHING BEGINS IN MONTH OF GALES

The salmon season ends in August.

There follows a brief dead season, occupied chiefly in preparing for the cod fishing. The long hemp lines are tarred and cutched, new hooks are bent on, the big boats are overhauled. And in October, month of equinoctial gales, the cod fishing begins. It is an arduous, perilous business, increasingly so as winter draws on, and even with the bigger boats there is little profit in it.

The catch has a value slightly higher than trawler fish, for it is "live." But markets are irregular, overhead expenses—bait, kerosene, wear and tear, and loss of gear—are heavy. It is at best a winter makeshift. Every spare hour ashore the fisherman is making his lobster pots for the season that starts soon after Christmas.

There are two types of pot in common use along the coast. Both are "creeves," which is to say that they consist of a wooden grid base measuring 24 inches by 18 inches, with three or four half loops or bows of hazel, forming a cage which is finally closed with netting.

The methods of putting on this net vary, but the plan of the complete pot is standardized according to whether it has three hoops or four. With three, the spouts or funnels through which the lobsters enter are placed on the sides, diagonally opposite each other. With four, they occupy the space between the two middle hoops and their inner ends are laced together, leaving only one way in. The four-hooped pot is supposed to be better for crabs, but not so good for lobsters. The pots must be ballasted. They are baited with fish.

The fishermen are superstitious about their gear. If while a pot is being made some one steps over it, that pot will never fish well. Even to throw one's shadow across an unfinished pot is to ask for trouble. If a cat, however, on its own accord, ventures inside a pot, then its success is assured. It is unlucky to touch any gear on a Sunday.



HAULING IN LOBSTER POTS OFF ROBIN HOOD'S BAY

Boats are individually owned, and a father is working with his two sons. Both young men have served as sailors and have seen far parts of the world, but they returned, as did others, with the boom of this form of inshore fishing, following the World War (see text, page 209).



GALES AND COLD ARE FORGOTTEN WHEN THE CATCH IS LANDED

The fish are cleaned and packed for the market, boats are beached beyond reach of the sea, lines are carried home for rebaiting, after the weary fisherman has finished breakfast beside a roaring, blazing driftwood fire.



"ARE YOU THERE?"

In summer the lobsters, which have given rise to a lucrative modern industry (see page 209), come close to the Yorkshire shores and frequently are stranded in holes of the coastal rocks. Amateur fishermen operate with a long, hooked rod.



GATHERING "WINKLERS" FOR "PIN MONEY"

Whitby women walk for miles to garner, between tides, basketfuls of tiny marine mollusks known as periwinkles, and sell them to the working folk of the inland towns, who esteem them as a favorite delicacy.



A LOBSTER AUCTION AT STAITHES

All the catch brought ashore is sold to the highest bidder. The individual buyers sell to inland markets, and the lobsters usually change hands many times before reaching the consumer.

Employing the new technique of fishing, a boat will carry a total equipment of 300 pots, and each member of the crew is responsible for making and maintaining his share. They are secured to manila ropes, known as "tows," at intervals of ten fathoms and in "fleets" each of 30 pots. At the start of the season they are shot in deep water on a rocky bottom. The ends of each fleet are buoyed. Hauling is strenuous business, and even with power winches it is impracticable to do this more than once a day in deep-water fishing.

NEW TESTING METHODS CONSERVE BREEDING STOCK

In the old method of fishing, the pots would remain pretty well on the same ground for months—that is, each pot would be shot over the other side of the boat as soon as it was emptied and re-baited. With the new method, an entire fleet is taken aboard when hauled, and shot again on fresh ground, possibly miles

away. This means larger catches and prevents the depletion of breeding stock.

Lobsters are the most valuable catch. Their market price runs from the equivalent of 20 to 75 cents each. But crabs, when the market is good, are not to be ignored, and usually one or two fleets are shot on the sandy ground, which crabs favor in winter time. On such grounds lobsters are practically unknown.

Later in the season the lobsters and crabs migrate into shallow water. Then, as in salmon fishing, the fisherman's most serious problem is the northeaster. If a boat is fishing close in when a storm comes on, the fisherman will be lucky if he saves half his gear from total destruction (see illustration, page 216).

In one such storm in the writer's memory, every boat along the coast lost its complete equipment of pots, and ironically enough, the storm was followed by two months of fine weather, when lobsters were in demand at more than 80 cents



BAY FISHERMEN BAITING THEIR COD HOOKS

Mussels are usually used for bait (see illustration, page 205). The cod is as much of an emblem of Yorkshire coast towns as it is of Massachusetts.

each, and the fishermen had to spend their time ashore making new pots!

But the coast fisherman takes his fortune, good or bad, without emotion. With this new intensive method of fishing, a boat may earn more than \$500 in a week. Of this a certain proportion goes to the boat, and the rest is divided among the skipper and crew according to the gear each has contributed.

To feel the real glamour of Whitby's romantic past, one must climb the stone stairway at the end of Church Street and sit, on a quiet summer's evening for choice, among the weather-beaten gravestones at the cliff's edge. The old gray church is to the rear. Behind it rise in solitary splendor the ruins of the Abbey.

The town and harbor below are half veiled in smoke, but to the west is a clear panorama of the fertile valley of the Esk, and of the moorland hills which give the river birth.

Northward and east the hills sweep down to form an uneven series of cliffs, culminating in the bold headland of Kettlewell, notorious for shipwrecks. Southward they rise into the bleaker moorland which is called High Normanby, which hides from present view the broad valley of Fylingdales and Robin Hood's Bay.

LIFE OF YORKSHIRE ABORIGINES SUGGESTS AN AFRICAN VILLAGE

The earliest inhabitants of the fair country that lies before our eyes belonged to a primitive race contemporary with the Stone and Early Bronze Age.

The moors literally abound with traces of the occupation. Almost every prominent hill has its tumulus or barrow. In the adjacent vales are village sites consisting of the remains of huts, some with their walls standing several feet above the ground and indicating that when complete they had a roof of skins.



THIS IRON CODFISH COLLECTS PENNIES TO MAINTAIN A LIFEBOAT

The novel receptacle has yielded the equivalent of \$1,500 to support the Royal Lifeboat Institution of Robin Hood's Bay. The Bay's lifeboat has saved nearly 400 lives.

Digging in such a site on Normanby Moor last year, the writer found some exquisitely worked flint arrowheads and a lump of soft red chalk uncommonly like rouge, seeming to suggest that even in those far-off days vanity was not unknown.

Protracted archeological research has proved at least that the original northeast Yorkshireman was a man of peaceful pursuits; that he kept domestic animals, tilled the ground, and fished the river and sea.

One can see a collection of rudely built huts, possibly on piles, Dayak fashion, in a clearing of what was then a reedy swamp,

close under this sheltering cliff. One can see at dawn the men starting off on their hunting or fishing expeditions, carrying nets or weapons of the chase, to their dug-outs or coracles drawn up on the muddy shore; embarking, moving silently, stealthily through the dank river mist upstream to shallow salmon reaches and to forests.

One can see the women preparing food over fires of driftwood, sewing skins, or making beads of jet or fish-bones, while their children play with toy bows and arrows and spears at mimic chase or warfare. Then, toward close of day, the triumphant return of the hunters. Night. Feasting, drums, dancing, heathen worship in the gleaming fire-light.

It is probable that the same drums would give warning of the approach from the sea of the dread Northmen, stronger-natured, well versed in the arts

of war, who, even before the coming of the Romans, most likely harried the British coasts.

Long after the southern aboriginals were subjugated by the Romans, the northern tribes preserved their independence.

The Romans left no trace at Whitby. But the sheltered estuary undoubtedly attracted the Northmen, and what could be more likely than that they should build one of their first settlements hard by the muddy shores on which were now drawn up their great seagoing galleys? From the coming of these invaders and colonists the recorded history of Whitby, as pre-

served in the writings of the famous Saxon chronicler Bede, begins. After much intertribal fighting, the land north of the River Humber became united in the Kingdom of Northumbria.

It was Oswio (Oswy), King of Northumbria, who, in fulfillment of a vow made to his Christian God before a battle with the pagan King of Mercia, founded, about 658, the monastery of which Lady Hilda, the grandniece of Edwin, a former King of Northumbria, became first abbess.

THE WELLSPRING OF ENGLISH POETRY

Of this monastery little remains to-day save the stone foundations. It is doubtful whether it was ever anything more than a very humble edifice, with wood and adobe walls and a thatched roof. But such was the piety and genius of its first abbess that it quickly rose to the first rank among the religious and educational establishments of its day, and to the fame of Hilda was finally added that of Cædmon.

According to Bede, it was the custom then to hold regular feasts in the guesthall of the monastery, to which the laity was invited. During the feasting and after, the company would be entertained by professional bards, whose program would be supplemented by spontaneous contributions from the guests, recitations of war achievements and adventure. Cædmon, with the soul of a poet bursting within him, invariably found himself tongue-tied when asked to take a part in the entertainment. Then one night, after he had retired dis-



Photograph by T. K. Smith

HE SAVES LIVES AND CATCHES COD

For many years this veteran of Robin Hood's Bay was coxswain of the town's lifeboat. His smile is eloquent of a good morning's work among the cod, as he carries his lines home.

consolately to his humble lodgings in the farm buildings of the monastery, he received a divine inspiration to set the biblical story of the Creation into verse.

This poem has been handed down in Bede's original manuscript, and parts of other poems may also be the work of Cædmon. They are written with the wild, passionate beauty of the Icelandic saga, to which they are obviously akin, and constitute the earliest English sacred poetry extant.

Hilda died and was buried in the monastery, along with her royal relatives of Northumbria. She was succeeded by Ælfleda, daughter of Oswio. Then came the



AFTER THE STORM

Twenty-four hours of a northeaster will reduce a "fleet" of lobster pots, which represent painstaking work of many months, to debris and matchwood.

savage, pagan Danes, who razed the monastery, sacked the town, and spread death and ruin along the entire coast. Some historians believe they built a new settlement at Whitby. It is clear that they established themselves more strongly in this part of England than in any other, for a large proportion of the place names have a Danish origin.

Whitby itself (previously known as Streanaeshalch) is derived from the Danish Hvit, synonymous with our modern surname White, and the name thus means the "by," or place, of a man named White, according to some authorities.

The Abbey was not restored until after the Conquest, when an officer of William the Conqueror's army, named Reinfrid, was inspired by the sight of the sad ruins of Hilda's monastery to urge that the holy ground be marked with a new and worthy edifice. It was Reinfrid and his successors, up to the year 1175, who were chiefly responsible for the building whose glorious choir, transepts, and nave survived the dissolution of the monasteries, the ravages of countless gales, the bombardment of German cruisers in that famous naval raid

upon the Yorkshire coast in 1914, and thrill us to-day with the beauty and soundness of their workmanship (see pages 206, 207).

Until the middle of the last century, even the tower was standing. It fell on a particularly calm day, and it is said that on the previous evening a man was seen tearing away some of the lead that still remained on the roof—a case of the last straw breaking the camel's back!

A GRIM RECORD OF SHIPWRECKS

Through the old churchyard, southward past the Abbey walls, a path leads to the seaward cliff edge and continues along it to the extraordinary headland of Saltwick Nab. This headland owes its peculiar configuration to the fact that it consists entirely of alum shale. It was one of the chief quarries when the alum industry was thriving (see text, page 201).

Seaward from Saltwick runs a long, half-sunken reef which has a grim record of shipwrecks. The most terrible of these was that of the hospital ship *Rohilla*, which went aground during a terrific northeasterly gale in December, 1914. Despite the



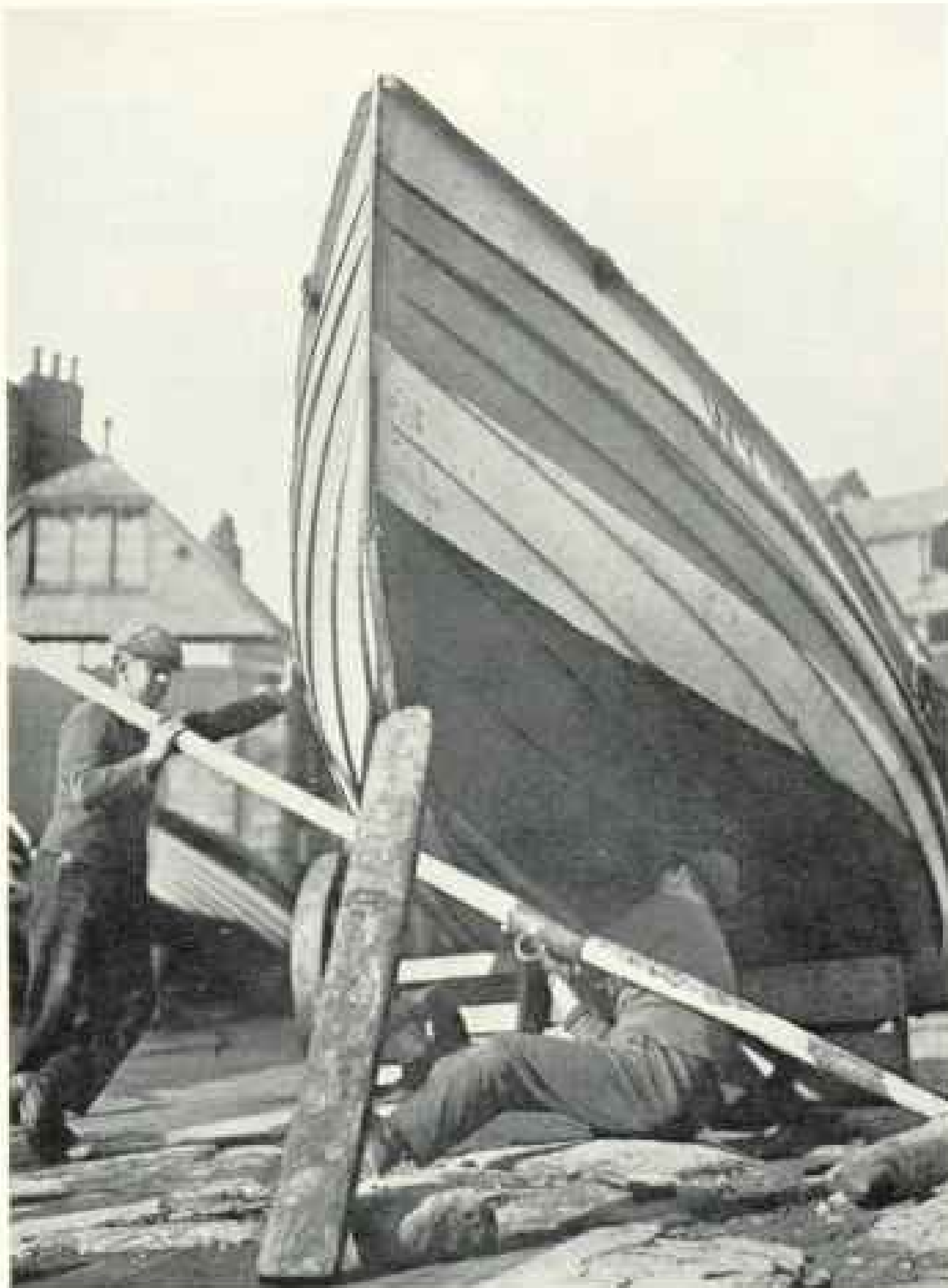
SCOTCH LASSIES WORK AT WHITBY DURING THE HERRING SEASON

Formerly these girls from the northeast coast of Scotland came by hundreds to the Yorkshire coast. They are not so numerous now, as the herring trade has waned.



SHIP IN DISTRESS, LAUNCH THE LIFEBOAT!

No storm has ever prevented the Robin Hood's Bay men from launching their lifeboat when they saw or heard a ship's call for help. Once, when attempting to aid the crew of a distressed brig, the Bay lifeboat was swamped and all its crew but one were drowned.



THE COBLE IS A CRAFT OF GRACEFUL BUILD

The slender bows, which in drydock suggest a modernistic design, are fashioned to offer a minimum resistance to the surf (see text, page 207).

magnificent efforts of the local life-savers, who at great risk rescued a certain number of the crew and passengers, 84 lives were lost within sight of the crowds of helpless onlookers lining the cliff.

A short distance along the cliff path from Saltwick Nab is the Whitby High Lighthouse and fog-signal station. The lighthouse gives a white flash within a certain angle of visibility, but in line with the sunken Whitby Rock, a dangerous reef a mile seaward from the harbor mouth, it shows red.

The fog siren sounds only in thick weather, giving a terrible blast, horribly reminiscent of a sick cow. When

first erected it proved so irritating to a local farm laborer that in a fit of exasperation he threw some turnips down one of its two gaping horns, seriously damaging the mechanism. Its existence has been justified, for of late years the number of vessels going ashore on this notorious coast has been appreciably reduced.

WHEN ROBIN HOOD
FLED FROM SHER-
WOOD FOREST

From the lighthouse, it is six miles along one of the wildest and grandest stretches of cliff scenery in the British Isles to Robin Hood's Bay. And in dealing with Robin Hood's Bay the writer is in honor bound to admit more than a traveler's interest, for it is his native place. Yet who will challenge his claim that there is not in these islands a more lovely or romantic spot than this little township rising from the North Sea's edge

at the sheltered corner of a bay that has Ravenscar for its southern boundary, and a range of wild moorland hills cutting it off from the western world?

Actually, the district is known as Fylingdales. It consists of a vast basin which the sea has cut in half. Fyling is a derivation of a Saxon word meaning "foul marsh," and in the days when it was so named it is likely that it was little else than swamp, fringed with impenetrable forest (see text, page 214).

The early Britons had their villages on the highlands. Doubtlessly they hunted deer and wild pig in the forests, which, according to legend, made such a fine hid-

ing place for Robin Hood and the remnants of his merry men when, hard pressed by the King's soldiers, they abandoned their Sherwood Forest sanctuary and came north.

The story goes that when Robin reached the high moorland above Fylingdales he was doubtful about which route to take, and he decided by shooting an arrow into the air blind-folded. It fell pointing to the bay. Hence the bay's name. It is more likely that "Robin Hood" is a modification either of "Roman's Hold" or "Raven's Hold," seeing that both Romans and Danes, the latter with their Raven Flag, were connected with the place long before Robin was heard of.

However, there is documentary record of Robin Hood's Bay in 1538, when it is referred to as a "fischer towne of twenty bootes, with a docke or bosome a mile yn length."

Like Whitby, Baytown consists of two parts, a new and an old; but here the old part is more completely separated from the new. There is not, in the old town, a single space where even a small additional cottage might be built. Even the little stream which in countless centuries has carved out the ravine on whose steep sides the cottages literally cling has been built over, and the cavern thus formed was a favorite hiding place for Bay's old smuggling fraternity. Two of the oldest inns, the Laurel and the Fisherman's Arms, had secret passages to this tunnel.

There is an authentic story that a party of excisemen surprised a smuggler's gang



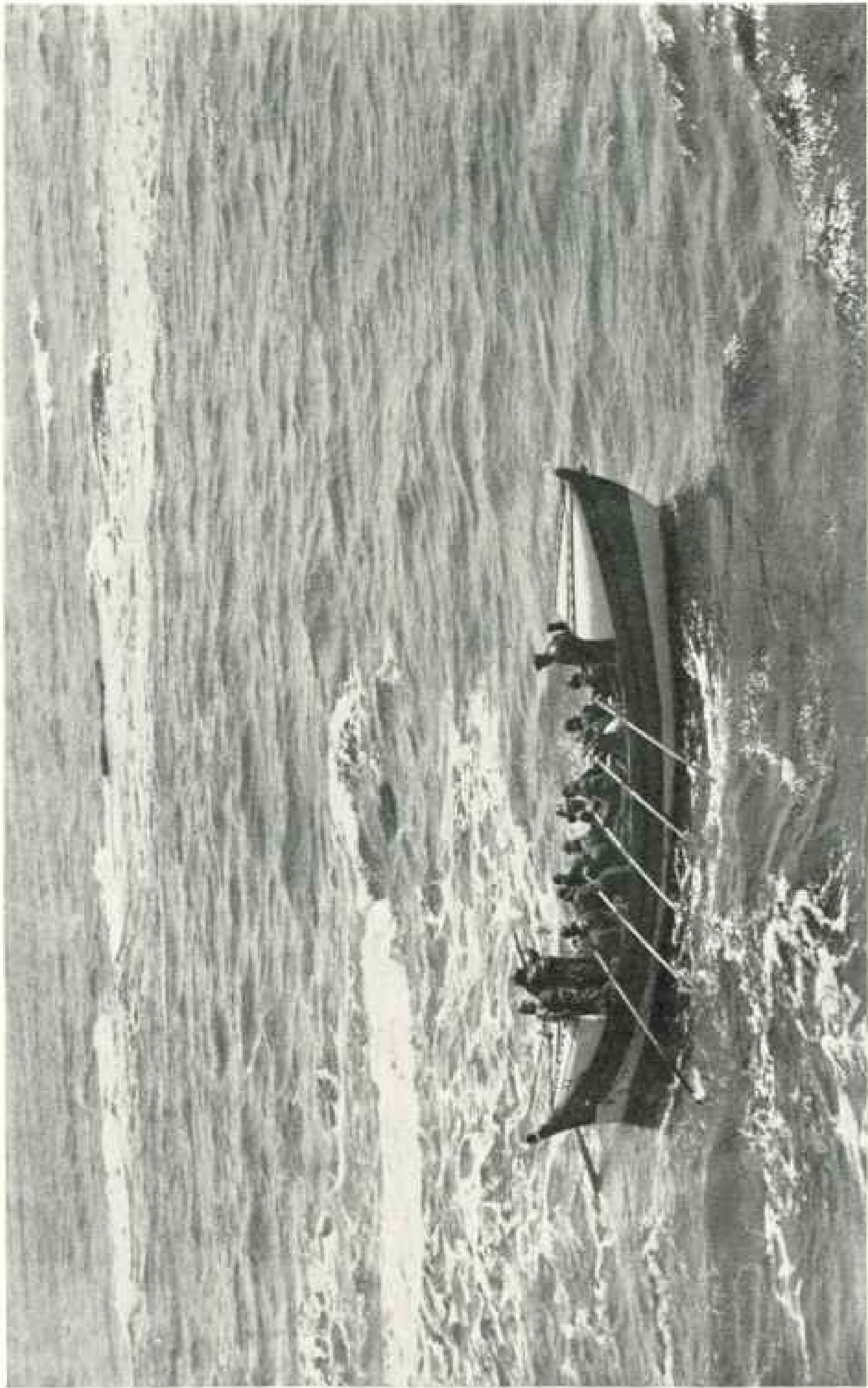
THE FIRESIDE OF A COAST COTTAGE IN YORKSHIRE

The sailor's wife puts a poker in the fire at the hour that her husband is sitting for his captain's "ticket" examination at Shields. It is supposed to bring him luck if it does not grow cold.

in the very act of delivering a cargo of spirits into the cellar of the Fisherman's Arms. A sanguinary conflict took place. The excisemen were victorious. During this fight one of the kegs of spirits had sprung a leak, and the officers of the law began to celebrate their triumph, with the result that they were all found in the cellar next morning completely dazed, while the smugglers, with their cargo, were by that time miles away.

HORSE-RACING ON THE BEACH

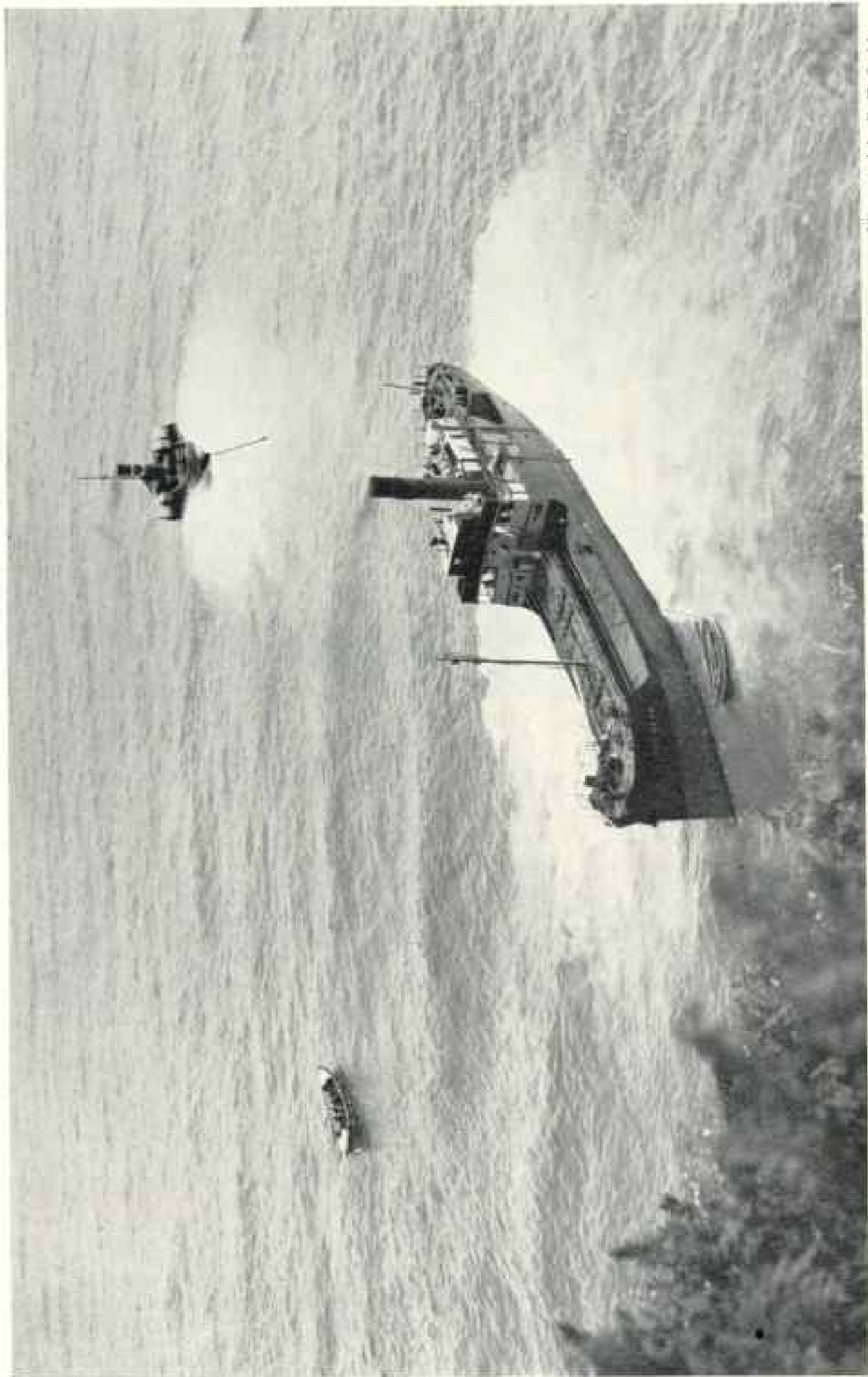
Although Baytown, in a compass of not more than one-third of a square mile, possesses something like 500 houses, it has



Photograph by T. K. Smith.

THE RETURN OF THE LIFEBOAT

Landing is impossible at Robin Hood's Bay, even for the lifeboat, until the tide is down. After a rescue the boat sometimes has had to keep at sea for six hours.



Photograph by R. E. Smith.

TOWING OFF A WRECK WHILE THE LIFEBOATS STAND BY

This vessel was fortunate, for the side-wheel tug got her off before the wind veered to the northeast. To the left is the famous Robin Hood's Bay lifeboat, which has a record of saving nearly 400 lives (see page 224), while the ship's own lifeboat has been lowered. Three men are visible on the upper deck of the wrecked vessel, aft of the funnel, and another is seen in the eyes of the grounded ship.



THE POST OFFICE ALSO IS THE VILLAGE DEPARTMENT STORE

This Robin Hood's Bay emporium serves as a community center for social meeting and political discussion, much as do the country stores of rural America. In it one may purchase a variety of products, ranging from fishhooks to the home-cured York hams.

only one street that a horse and cart can traverse. It leads from the modern town, built on the North Cliff, in a short, terrific descent known as the Bank, and follows the valley of the ravine until it reaches a comparatively open space called the Dock, whence it leads by the Way Foot on to the beach. In the Dock is the lifeboat house, and there, too, the cobbles are drawn up at night in all but exceptionally fine weather.

The Dock is the town's only public square. There John Wesley once preached and caused much resentment in a stout old smuggler by stating that "no man is delivered from the fear of death but he who fears God," which the smuggler took as a slight on his personal courage.

For years beyond memory the annual Bay Fair has been held at Whitsuntide, with singing and clog-dancing contests after the horse races have been held on the beach when the tide is down. The local foxhound pack meets in the Dock. It is also the scene of political meetings at elec-

tion times, the platform usually being the thwart of a coble.

When the writer was a boy the Dock would contain as many as twenty cobbles. In 1816 Bay possessed 35, and at least 130 men were regularly employed in the fishing industry. To-day only two families are exclusively so engaged, and it is likely that these will have to give up soon, for Bay possesses no harbor, and it is not possible to use the big craft with which the Whitby men are doing so well. In winter the cobbles have to be launched down and up from the sea every day—a grueling business in spite of the homemade capstan (see illustration, page 218).

Yet nine-tenths of the inhabitants of Bay derive their livelihood from the sea. What strikes the casual visitor is the extraordinary absence of young men. Almost every boy, as soon as he leaves school, goes to sea in the mercantile marine, and the able-bodied male population is scattered far and wide across the world in tramp



EVEN A FISHING VILLAGE HAS ITS HOUNDS

Robin Hood's Bay and other coast towns have organizations called Friendly Societies, which have an annual "walk," or dinner, at which hare pie and Yorkshire pudding are traditional features. On the same day is held a meeting of the local pack of foxhounds.

steamers, most of them locally owned. It is a saying that you will find at least one Bay sailor in every port of the world. The writer, standing at the corner of 42d Street and Broadway, New York, not long ago, was startled to hear behind him a familiar accent.

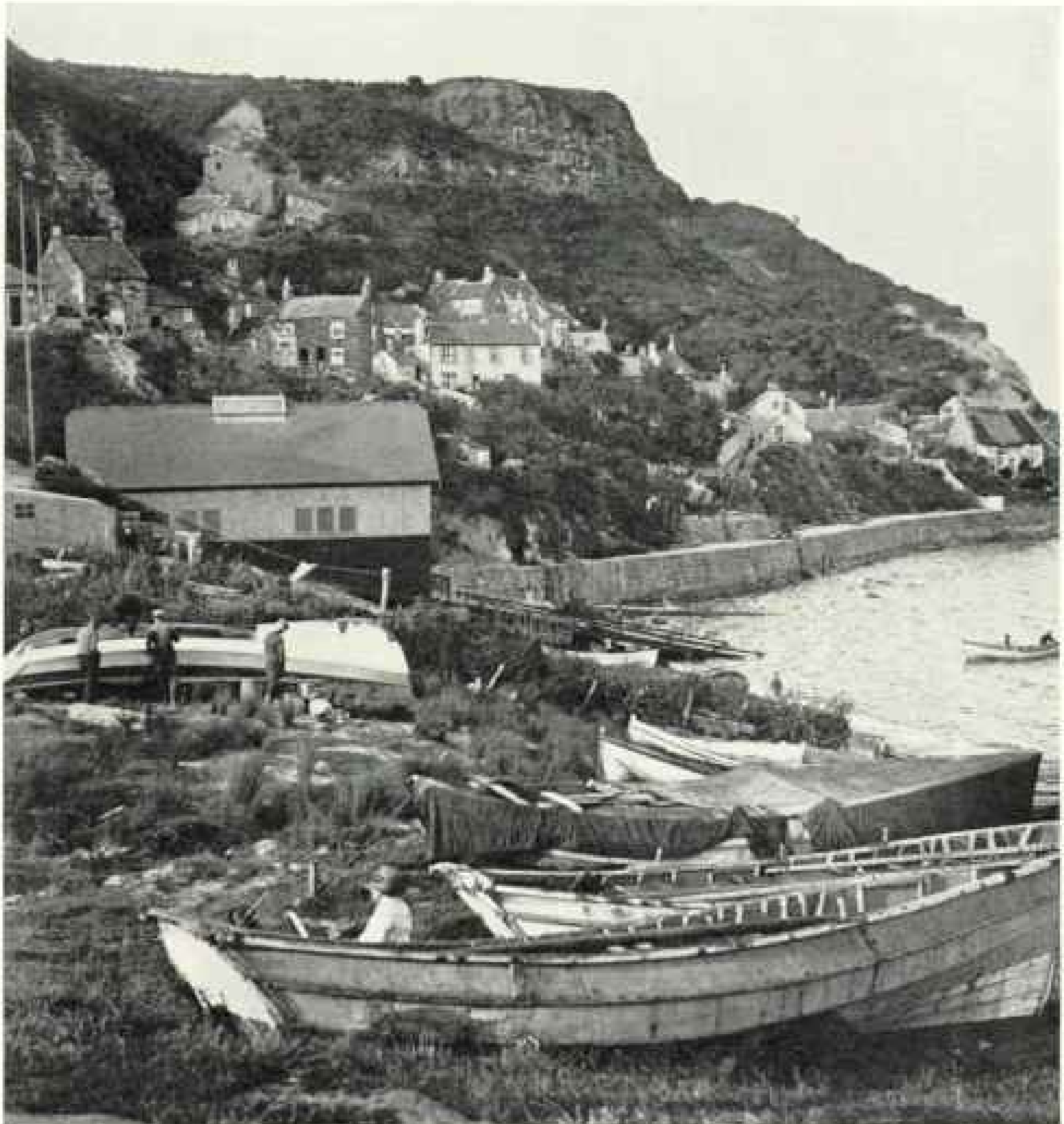
"By Goom, if that isn't a Bay chap standing there!"

OLD AGE BRINGS DIGNITY AND WEALTH TO MANY WHITBY SEAMEN

And the next moment he was hearing the latest Bay gossip from two of his boyhood playmates whose ship was lying in East River. The average Bay wife sees little of her husband until he retires from the sea, which he rarely does before 60. Frequently he may be away for two years at a time. The cynic may see in this why the average Bay wife is such a happy and contented woman. It is perhaps significant that the place has not a single record of divorce.

Bay is a town of women and old men. You will see the latter on the bowling green in summer, in the Institute in winter, playing billiards or studying the *Shipping Gazette*. All are retired master mariners. All of them could find their way about New York, San Francisco, Cape-town, or Shanghai as well as they could about their native place. Practically all of them are relatively wealthy men. Yet all started at the absolute foot of the ladder.

They are, of course, seamen by instinct; and while many left school before they could scarcely read or write, they passed the stiff Board of Trade officer's examination with ease. They saved, and all their savings went in shipping shares, bought sparingly but judiciously. They came to buy quarters, and thirds, and halves of ships. Then whole ships. They came to promote and direct companies of big tramp steamers. And now, when their active connection with the sea is over, they still save, and invest, and reinvest, while some



RUNSWICK, ISOLATED AND BELOVED OF ARTISTS

The present village is relatively modern, for about 250 years ago the entire town, except one house, slipped down the slopes of the cliff into the sea (see text, page 231).

of the wealthiest continue to live in the humble cottages their seafaring forefathers built hundreds of years ago.

Despite this scarcity of young men, Bay never lacks an able-bodied lifeboat crew when a signal of distress is seen or heard, no matter the weather. Burnt into the writer's mind is many a boyhood memory of sudden alarms: the booming of a vessel's horn—that long, continuous blast which no seaman hears without a shiver creeping up his spine; the flash and the double report of the lifeboat mortar, signifying that the distress signal has been

observed, and that the boat is preparing to launch at once.

LAUNCHING A LIFEBOAT ON A STORMY WINTER NIGHT

Most dramatic of all is a launch at night in winter time, with thick weather, possibly snow, a wind howling from the northeast, seas thundering on the invisible reefs of the Bay. Within ten minutes of the firing of the mortar, three-quarters of the population are in the Dock. The lifeboat house doors are wide open. Men, some in their shirt sleeves, are buckling on their life-belts.



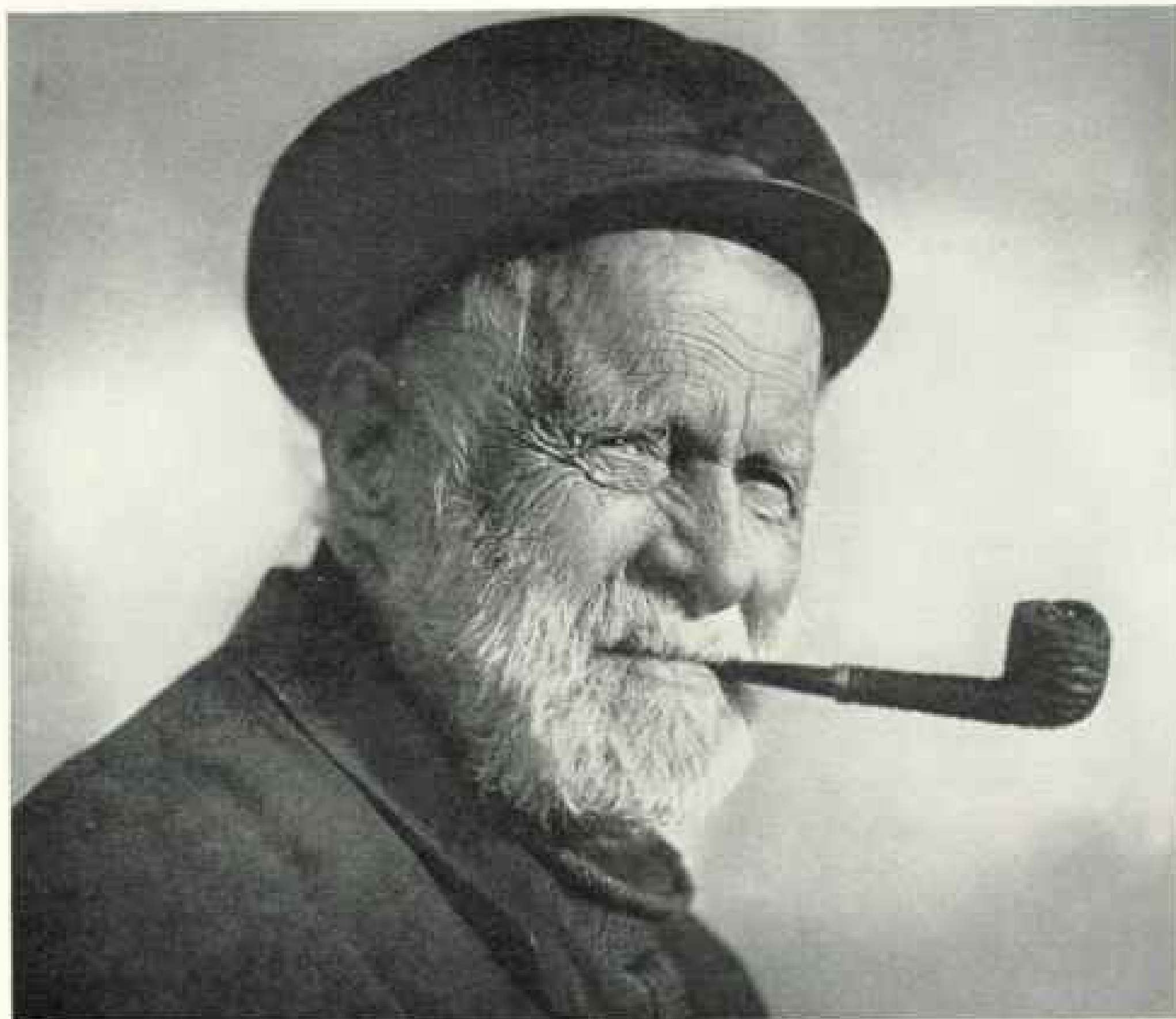
THE BELLMAN RINGS, INSTEAD OF SHOUTING, HIS PAPERS

This "town crier" of Robin Hood's Bay, who serves also as a vocal bulletin-board in case of shipping news, has a bell which came from a wrecked vessel.



THE "CITY FATHERS" OF ROBIN HOOD'S BAY

The "youngster" of this group, sitting skittishly on the boat, is 83 years old. On his left is a veteran of 97 years. Stalwart sons of Whitby's ships ask no old-age pension or sailors' home. They have seen the world, saved and invested in ships, and, if they have escaped shipwreck, the salt air and security tend to exceptional longevity (see text, page 223).



WITH A TWINKLE IN HIS EYE AND MANY A YARN TO SPIN

This veteran of Robin Hood's Bay joined his first ship, a Whitby brig, at the age of eleven. He now is more than 80 years old, and he can tell thrilling tales of sailing-ship days.

The two families of fishermen, the Storms and the Dukes, supply the coxswain, the second cox, and half the crew. Among the rest is the landlord of the Bay Hotel, the foreman of the gas works, the fishmonger, two retired skippers, and the local joiner. But even the joiner has spent some part of his life at sea.

WOMEN AWAIT FATE OF MENFOLK

The coxswain quietly gives his orders to the volunteer launching party, already paying out the hauling gear. The Dock is illuminated by immense flares, making more dark and portentous the way down to the sea. And the women stand together in a crowd, silently watching. They, too, have the sea in their blood. They are only too familiar with its eternal tragedy.

The boat is out of the house. For a moment it rests like some monstrous, brightly

painted tropical insect in the light of the flares. Then, with a terrific rumble of its steel carriage, it runs to the top of the slipway. More slowly it begins the difficult descent to the beach. The flares precede it. They are carried out along the two reefs, which at half tide offer a comparatively smooth stretch of water inside the bar. With all hands now to the hawsers, the boat is dragged until at last its carriage is half submerged. The crew climbs in. There is a rattling of oars. Then the shout comes from the coxswain, "Let go!"

The boat slides off the carriage into the sea. The night and the sound of wind and of the great seas breaking across the bar engulf it. The launchers, all of them wet to the skin, go back to the Dock and join the crowd of silent women who are now gazing out to sea, from which occasionally comes the red gleam of the vessel's distress



STAITHE'S KNOWS AND CARES LITTLE FOR THE OUTSIDE WORLD

Until the railroad came, the people of this remote fishing village were satisfied to live and die in their narrow inlet, and even to-day they live a life apart (see page 228).



SHINNOCK (SHINNY) IS A POPULAR GAME AMONG YORKSHIRE BOYS

This crude form of hockey is a lusty sport, for if an opponent gets on the wrong side of the ball a player is entitled to whack his shins with a stick. The sticks are cut from the tough stems of a marine plant, the carweed, and the ball is fashioned from the roots of the same plant.



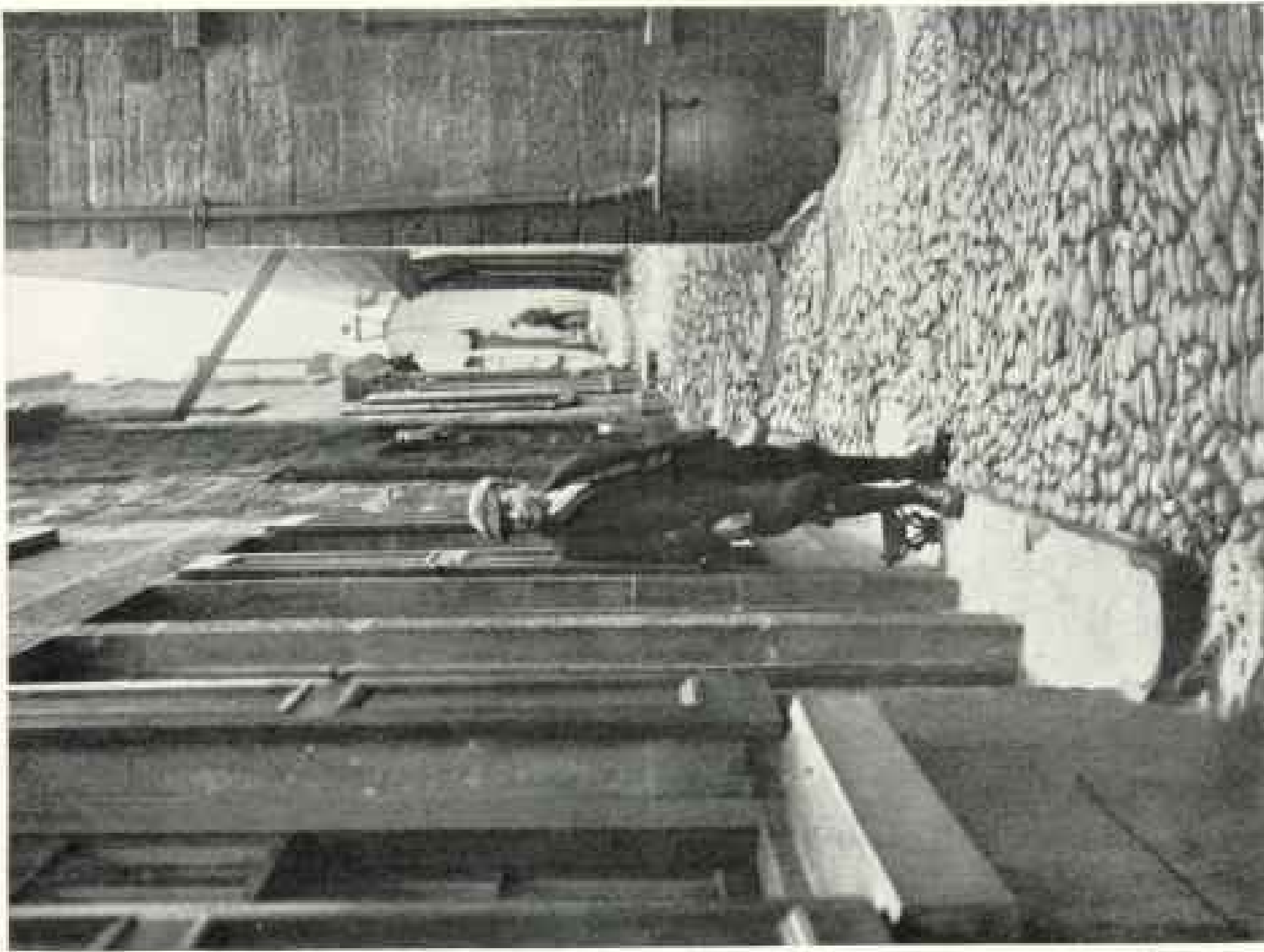
AMONG BEETLING CLIFFS NESTLES QUAIN'T STAITHES

The very name of the town, derived from "Staith," or staying wall, betokens its strife with the ravages of North Sea storms. Its modern, costly sea wall has proved useless, at times, in keeping heavy seas at bay. At Staithes Capt. James Cook forsook a draper's shop to seek a berth on a Whitby ship (see text, page 434).



NEWS FROM A SAILOR IS A DISTANT PORT

A stamp collector would welcome appointment as postmaster at Robin Hood's Bay, or any of the Yorkshire coast towns, for fully half the adult male population spends years at sea and writes home from strange ports. During a recent visit to New York the author encountered five men of his native Robin Hood's Bay, all from different ships.



A TOUCH OF EDINBURGH IN YORKSHIRE

Cliff Lane, in Robin Hood's Bay, is typical of the narrow ways found also in Whitby and Staithes, that resemble the "closes" and "wynds" of the Scottish capital. The cobblestones often are worn as smooth as mosaic paving. Flights of steps in many would bar the progress of vehicles, even if the ways were wide enough to admit traffic.



OLD NAB, AT STAITHES, IS A GRAVEYARD OF SHIPS

The base of the grim headland is ironstone, along the seam which originated the iron works at Yorkshire's Cleveland, while the menacing cliff face is jet rock and alum shale, which are reminiscent of two of this region's distinctive industries in years past (see text, page 201). The beach in this vicinity is a popular geological hunting ground because it is strewn with the fossil shells known as ammonite, three of which form the crest of Whitby.

flares. And like that they will wait until daybreak—for even a Bay crew could not return across the landing bar at night—in fear, and hope, and faith in their menfolk to carry out the perilous task.

NORLE CLIFF IS PERIL TO SHIPS

At least half of the distressed vessels for which the Bay lifeboat has rendered service have been at Ravenscar. This noble cliff, which forms the southern boundary of the area, rises more than 600 feet sheer from the sea, and from its foot a reef runs out half a mile seaward. Actually this reef is composed of the very seams of ironstone which, farther north, supply the Tees furnaces; and this fact has often been put forward, at Board of Trade inquiries into the loss of a ship, as an explanation of the vessel being off its course. The ironstone, it is alleged, affects the compass needle.

The summit of Ravenscar reveals a magnificent panorama over Robin Hood's Bay and the farms and wooded vales of Fylingdales. There, as recorded by a tablet unearthed, the Romans maintained a small fortress. The selfsame site during the World War was an emplacement for a long-range naval gun which on several occasions came into action against U-boats waiting for the convoys that passed each day on their way to France. And to-day there is a coast guard lookout hut, where watch is maintained day and night in bad weather for vessels of all nations that may be in distress.

Whitby, Bay, Runswick, Staithes—the visitor, new to the coast and unbiased with associations, would find it hard to choose which is the most fascinating. Runswick, six miles northwest of Whitby, is smaller than Bay. In its situation, perched on the sides of a steep cliff, it resembles Clovelly,



EVEN THE TOY CARTS SAVOR OF THE SEA

A soap box, a sack, and wheels of a baby carriage supply these boys with a land-going substitute for their fathers' ships.

but its beauty, like the beauty of the whole coast, is subtle. Runswick still possesses a fairly large fishing community. It has the advantage of one of the safest natural landing places on the coast, sheltered on the north by the cliff called Lingra Knowle and from the southeast by Kettleiness.

Despite its atmosphere of antiquity, only one cottage at Runswick dates earlier than 1682; for in the spring of that year the whole village, as it was then, sank down in the night toward the sea. There were no casualties, for the inhabitants happened to be "waking a corpse" when the first rumbling of the landslide began. A precisely similar occurrence accounted for the entire village of Kettleiness in 1829. Again there were no casualties. The inhabitants were taken on board an alum ship that happened to be lying off the coast and transhipped to Whitby.

The Runswick lifeboat has a magnificent record of rescues. Among the most noteworthy, however, happened some years

ago when the fishing fleet, which included the normal lifeboat crew, was caught in a particularly sudden northeaster. Only a few old men were left ashore; but there were women in plenty, and the boat was launched by women, and manned by women, and through their gallantry all the fishing boats safely reached the shore.

Bay and Runswick attract many artists, and so does Staithes, which lies in a little cove four miles distant. The chief difference with Staithes is that while the other places like artists, Staithes most emphatically does not. The people are almost exclusively engaged in fishing. They are a fine, sturdy type, very conservative and independent, and dour toward strangers.

The houses, too, seem to have taken on some of the stern characteristics of the people. Staithes has suffered more than any village from the fishing trade depression, and many of the younger sons have been forced to work in the iron mines along the coast.



A LIFEBOAT RESCUE AT ROBIN HOOD'S BAY

The steamer came ashore in a dense fog. The writer was a member of the lifeboat crew and helped take out a kedge for the ship, which floated itself off at high water. Salvage to the equivalent of about \$35 for each man was awarded the lifeboat crew.

It was Staithes which gave the youthful Cook his first zest for the sea. Born in a moorland village some miles inland, he was apprenticed to a Staithes draper. But the close contact with the sea was too much for him. He went to Whitby, served his time on a coasting vessel, left this for the Navy and served at Louisburg and Quebec before his reputation as a navigator and nautical surveyor gave him the chance for making his famous voy-

ages to the Southern Sea. Practically all these voyages started originally at Whitby, and they were made in Whitby-built ships.*

Northward of Staithes the cliffs rise abruptly into the beetling precipice of Boulby, and from here, looking south, we have our last panorama of the coast.

* See "The Columbus of the Pacific," by J. R. Hildebrand, in the NATIONAL GEOGRAPHIC MAGAZINE for January, 1927.

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 April number, The Society should be notified of your new address not later than March first.

HERE IN MANCHURIA

Many Thousand Lives Were Lost and More Than Half the Crops Destroyed by the Floods of 1932

BY LILIAN GROSVENOR COVILLE

I LIVE in Harbin. We have resided in the Far East several years now, and we moved to this North Manchurian city in May, 1932. Nowhere has the drama moved so swiftly as in the few months we have been here. Each day's news is so unpredictable that surprises have almost ceased to surprise.*

These are the chief events of one twenty-four hours: Yesterday bandits tried to kidnap two English friends of ours, the manager and assistant manager of a British bank, while they were playing golf. Both were clubbed with their golf sticks and one was shot in the arm.

Earlier in the day the small daughter of a former representative of an American automobile manufacturer was kidnapped on the street a block from our house. She is now being held by bandits for a sum of money the family does not possess.

Late last night the main southbound and northbound passenger trains were wrecked by bandits a short distance from Harbin. Among the passengers was an American youth who had been a guest at our house the previous evening. He was robbed of everything but his life and a shirt.

Is it any wonder that we feel insecure, that we feel the chaos of China is closing in about us?

We arrived in Harbin at the time of the visit of the League of Nations Commission, which had come to Manchuria, or "Manchoukuo," † to investigate the dispute between China and Japan.

The "Moderne," a hotel which even on its letterhead writes its name in quotations, emerged from its old-fashioned lethargy to receive the distinguished visitors with complimentary bustle and pomp (see illustration, page 242). Its high-ceilinged, multi-colored drawing rooms were thronged with

Japanese and Chinese officials and with the large entourage of the Commission itself.

The old Russian-style hotel was surrounded by a strong cordon of soldiers and police, and all who approached the gray stone portal had to present credentials to the Japanese plain-clothes man in charge. Inside, the members of the Commission and their advisers, even at table, discussed and argued and listened to everything there was to be heard about the Manchurian question (see page 235).

PEACE DISCUSSIONS—AND A RUSSIAN MENU

Stout, bewhiskered Russian waiters roused themselves and brought steaming tureens of Russian *borzich*, a soup which is a meal in itself. An individual portion contains half a pound of meat floating in a sea of cabbage and sour cream. And the guests must also have Russian *shashlik*, pieces of mutton roasted on a skewer, and many other Russian dishes, all with so much meat that it is a wonder they could think of peace instead of war.

There is good reason for the Commission having visited Harbin. It is a scene of international rivalry because it is the key position in the transportation system of an important region.

Harbin is located at the juncture of a great T formed by the lines of the Chinese Eastern Railway. The western arm runs from Harbin to connect with the Trans-Siberian line for Moscow and Berlin. The eastern arm runs between Harbin and Vladivostok, Russia's only Pacific port. The perpendicular of the T goes south to Changchun, the proposed new capital of Manchuria; and there it joins the Japanese-owned South Manchuria Railway, which runs south through Mukden to Dairen, Manchuria's one modern ice-free harbor.

Completed by Russia in the first years of the century, the Chinese Eastern Railway was operated by Russians practically as a colonial empire until the revolution; since then the Chinese and Soviets have struggled for it over the heads of the non-

* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Manchuria, Promised Land of Asia," by Frederick Simpich, October, 1929, and "Byroads and Backwoods of Manchuria," by Owen Lattimore, January, 1932.

† See "The Map of the World," received by members of The Society with their NATIONAL GEOGRAPHIC MAGAZINE of December, 1932.



Photograph by Knud Sorensen

RICKSHA COOLIES WAITING FOR PASSENGERS AT THE HARBIN RAILWAY STATION

Served by an Asiatic railway net from west, east, and south, as well as by river steamers, Harbin normally is a crossroad of world travel (see text, page 233). It has been called "the Minneapolis of Manchuria" because of its many flour mills, which grind wheat grown in the fertile agricultural district which surrounds the city.

Soviet Russians, who had grown up with the railway, whose life and livelihood it was. And now the Japanese are pushing in.

A "MAIN STREET" OF CARRIAGES,
RICKSHAS, AND JITNEYS

Looking down Kitaiskaya, the main street of Harbin, from one of the many balconies of the "Moderne" Hotel, Harbin appears a rather shabby continental town. The buildings are strongly built of stone or concrete, with tall double windows and doors ready for the below-zero weather, when the ground is frozen solid four feet deep for months, and Siberian winds blow. The signs above the stores are in Russian and the letters look as if they were turned backward, until one has spent an evening learning the fairly simple Russian alphabet (see illustration, page 245).

Dilapidated carriages are passing along the main street, and an occasional ricksha or rattly jitney loiters by, looking for fares.

The jitneys are open automobiles which carry passengers the two miles to New Town, the administrative and residential

part of the city, for three and a half cents gold. There is a loud noise which sounds like a fire siren, but comes from a street sprinkler. Then a clattering along the cobbled street, and there comes a black, prancing horse, harnessed in Russian style to a carriage. On the box, holding high the reins, is a Russian coachman, with flaxen mustaches and a black tunic gathered and belted at the waist. But the attractive parts of his attire are the balloon sleeves of orange, blue, yellow, or white.

A troop of soldiers comes swinging down the street, or an armored car makes its rounds. Occasionally there is a glimpse of the dainty kimono of a Japanese lady. Probably she has come to Harbin recently, for the Japanese population has nearly doubled the past year; and, like most other Japanese women, she undoubtedly loathes the place.

This street is most interesting in the evening, when all the beaux and belles of town are parading, some casting sidelong glances at each other and some walking arm and arm, their heads close together.



Photograph from Wide World

A LEAGUE OF NATIONS COMMISSION VISITS THE PRESIDENT OF "MANCHOUKUO"

Mr. Pu-Yi is perhaps better known as the "Boy Emperor of China" and the last emperor to sit on the Dragon Throne. He speaks fluent English, having had an American tutor for several years. The Commission was composed of members from the United States, Great Britain, France, Germany, and Italy (see text, page 233).

There are, too, the beautiful Russian girls of Harbin, against whom wives are so repeatedly warned.

When we first came here some one told me that all the girls in Harbin can be divided into two classes—attractive ones, who are cabaret girls, and unattractive ones, who are dentists! There are many women dentists and uncountable numbers of girls who work in cabarets, either as hostesses or entertainers. Among them are excellent ballet dancers, many trained in Moscow and smuggled out of Russia to Harbin. Here they will give a delightful performance for a dollar or two in American money and provide their own costumes. Each one has her own exciting and pitiful tale.

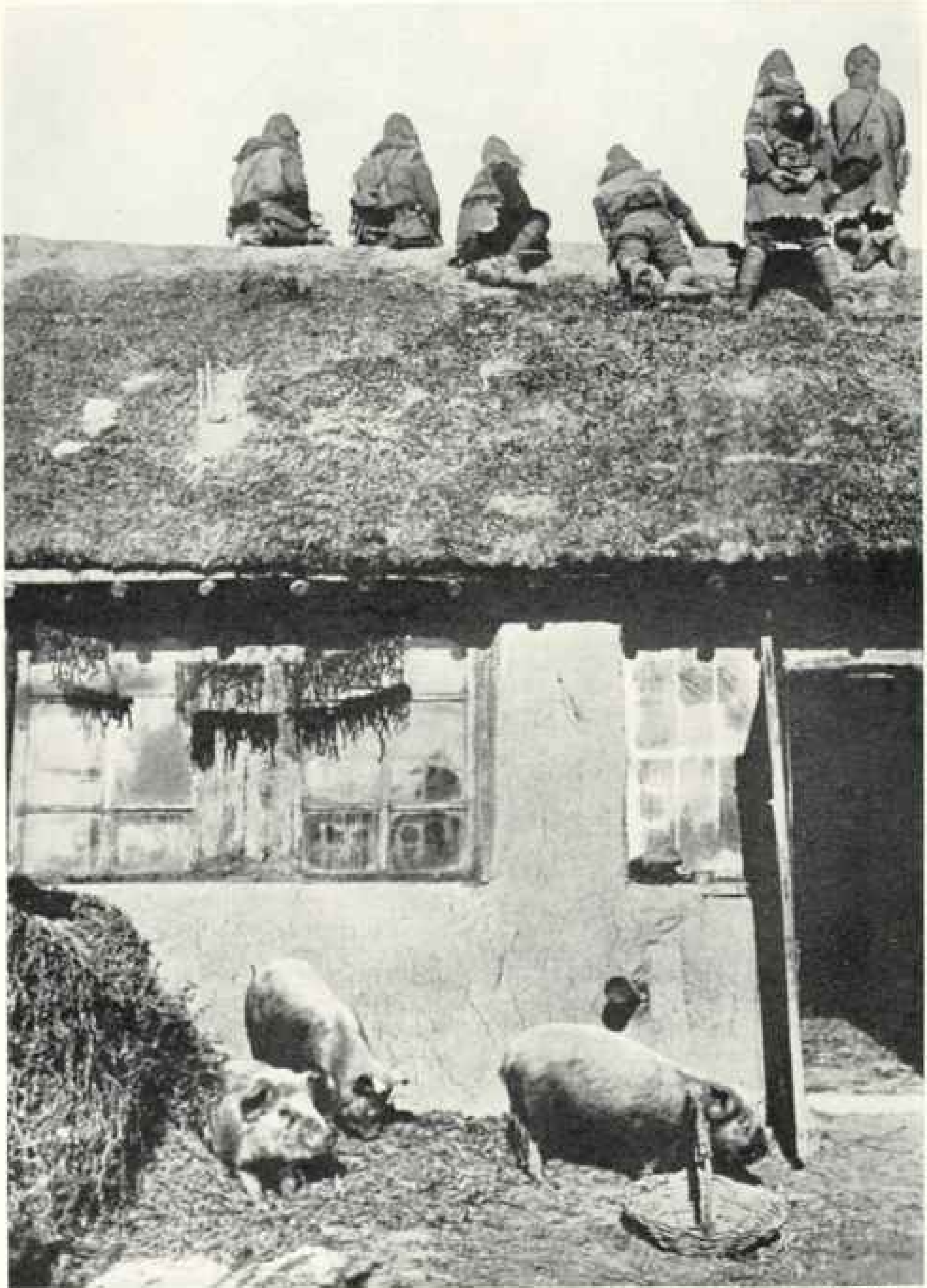
There is another class of Russian girls, daughters of fine old families, well educated, speaking fluent English and French. All Russians are good conversationalists, amusing to talk with, and nearly all the girls are pretty. Many of this class marry foreign business men and live happily ever after.

What of the men that correspond to all these girls? I don't know—I have never been able to find out. I think that they are not a very provident lot. Any way, there is not much for them to do in Harbin, now that the railway is open only to Soviets. Many enterprising ones drift away. Some stay and are supported by their dentist wives, or they just exist. It is amazing how they can exist and enjoy themselves on nothing at all.

MANICURES, SHAMPOOS, AND TENNIS DRESSES

The cost of living in Harbin is delightfully small. My Chinese boy receives about seven American dollars monthly, the cook eight, the coolie four—all three without food.

A manicure at the house puts one out of pocket 17 cents (American money); a facial treatment and massage by the latest Parisian methods, 50 cents; a shampoo and finger wave, 40 cents; a man's haircut, 20 cents. Any tailor will make a simple tennis dress for a dollar if you



Photograph from Wide World

THESE LITTLE PIGS STAYED AT HOME

And they were not alarmed by the Japanese troopers who are making observations from the rooftop during the attack on Harbin. This is a typical Chinese farmhouse of Manchuria, and the animals are free to enter whenever they like.



Photograph from Wide World

CONFUSION ENSUES WHEN STREETS BECOME CANALS

Japanese and Chinese soldiers are shown wading through the flooded streets of the Chinese quarter, maintaining order, as the residents clutter the streets with their belongings in their haste to escape the rising waters.

bring the material. Many American-made things are cheaper than at home: tennis shoes, for instance, are 25 cents a pair. On the other hand, powdered milk, molasses, vanilla, cream of wheat, and Graham flour are among the staples I cannot find in Harbin.

One morning we made a memorable trip to the Chinese furniture market. There is a whole street of stores selling newly made furniture at such cheap prices that I am unable to understand how they can even buy the wood. Our chauffeur was in a seventh heaven bargaining and talking for us. He negotiated the sale of a simply varnished typewriting desk with drawers on each side for \$2.50; half a dozen straight chairs, 20 cents apiece; a high chair, 36 cents; and so forth.

Six coolies, exuding an overpowering smell of garlic and sweat, carried the furniture on their backs the three miles to the house. Then a foreman stepped forward to receive the money. It came to 67 rubles (equivalent to 11 American dollars) and had been brought straight from our American branch bank. The man

counted out, three times, thirteen 5-ruble bills and two 1-ruble bills, and each one was ragged and limp with filth, like all the money I have seen in Harbin. It is worse than the paper money of Europe; you can almost see the germs marching over it.

SOY-BEAN FACTORIES AND WHEAT MILLS

Then he examined each bill carefully to see whether it was counterfeit and discovered to his horror that all the money was issued by the Bank of Heilungkiang, the northernmost province of Manchuria. He knew that bills of certain serial numbers of that bank are valueless, for so much paper currency has been circulated in Manchuria that the changing régimes have not been able to honor it all. In doubt and excitement he called for a list of the numbers which were tabu, and then minutely compared each bill. At length he decided that they were all in order, but for his complete satisfaction we wrote down the numbers of all the bills he had taken and promised that should any be refused he could bring them back and ask us to redeem them. We never saw him again.

Once my sister and I went to Fuchia-tien, which is contiguous to Harbin, to buy silk for curtains, and we had a good look at the swarming Chinese town. We saw the huge warehouses which store the produce sent in from the surrounding plain, the richest and most fertile in all Manchuria. We saw the chimneys of the sixty factories which manufacture soy-bean products (see page 239) and the thirty mills which use a share of another large Manchurian crop, wheat.

As we drove from store to store, the looks that met us made us uneasy, and we were glad we had a brawny Russian chauffeur, a Chinese boy, and a ferocious-looking dog for protection. Still we ventured down to the wharves which receive nearly all of the river traffic of the Sungari River Valley. Timber to be taken away on the railroad was being unloaded from barges. Nearly all of them were flying the Manchoukuo flag, a gay thing of black, blue, white, and red on a yellow field.

It is a custom here for everyone to fly the flag of the country to which he belongs. We have the American flag fluttering from our radiator cap. It used to give me a feeling of security, but now I begin to think it singles one out as good provender for bandits. Many Chinese hang the American or British flag on their rickety old carts, pretending that they are in the employ of a firm, and by so doing they have often escaped being commandeered by Chinese soldiers, who are ruthless in their demands.

BEGGING IS A SIDEWALK INDUSTRY IN THE RUSSIAN QUARTERS

Not a single beggar annoyed us in Chinese town, and yet in the Russian quarters beggars are a pest. Harbin is famous for beggars. Unfortunately, it has the unsavory reputation of having more beggars than any other city of China, and most of them are Russians. There are all kinds of beggars, among them gypsies with dirty red kerchiefs, and rosy-checked little boys who play about happily until visitors appear, and then they dog your steps with hands outstretched, crying, "Give monnie, please give monnie, missie; very sorrie; ten cent, please." We see sturdy young men, sometimes a very expectant woman, standing at the club entrance until the baby's arrival. An emaciated dope fiend

thrust a clawlike hand through the car window one day, making my sister shriek in the approved manner of mystery plays.

There are lepers, Chinese and Russian, creeping, crawling, hobbling, or just sitting on the sidewalk, according to the stage of their deformity. Sometimes there is a nice-looking old man with a beard, who must have been at least a general, or a woman carrying a baby. I have become so hardened that I half believe the tale that the baby is rented for the purpose.

TWO RUSSIANS—AND A BOOKCASE

The line is hairbreadth between beggary and a job. During what seemed to us the Herculean task of installing ourselves in an apartment, we came upon a striking example. We employed an ancient Russian carpenter, picturesque because of his beautiful beard and pious mien. He and his assistant put us off with promises that the bookcases would surely be ready next Tuesday, or Friday, or Monday, as the case might be; and always there was the request for just a little more money in advance. Eventually I learned to my chagrin that he spent all the money on horse-racing, and the assistant on vodka.

When the cases finally arrived, all the shelves were 18 inches apart and had to be carted away to be remade. Two weeks later I returned one day to find the bookcases installed, the study reeking of vodka, and the assistant half-heartedly engaged in putting on the wrong color paint, most of which was on the wall. My indignation attracted the boss, who flew into a rage and called his helper the most insulting epithet in their language—drunken fool. So, with their departure, I considered the episode closed.

The bookcases, which tilt to this day, and the damaged wall are ever-present reminders of the care-free bent of those workmen.

But the episode was not closed. Two weeks later a whining beggar tapped on the car window while standing at the curb. It was the assistant and he was still drunk.

Harbin has been called the grave of the white man's prestige by one of the newspaper correspondents. This is not entirely because of the astounding number of white beggars, but because Caucasians are governed and bullied by Chinese officials and Chinese soldiers and policemen.



Photograph by Carl Schuster

RIVER AND RAIL TRAFFIC COMBINE TO MAKE HARBIN THE BOOM TOWN OF THE
NORTHERN PRAIRIES

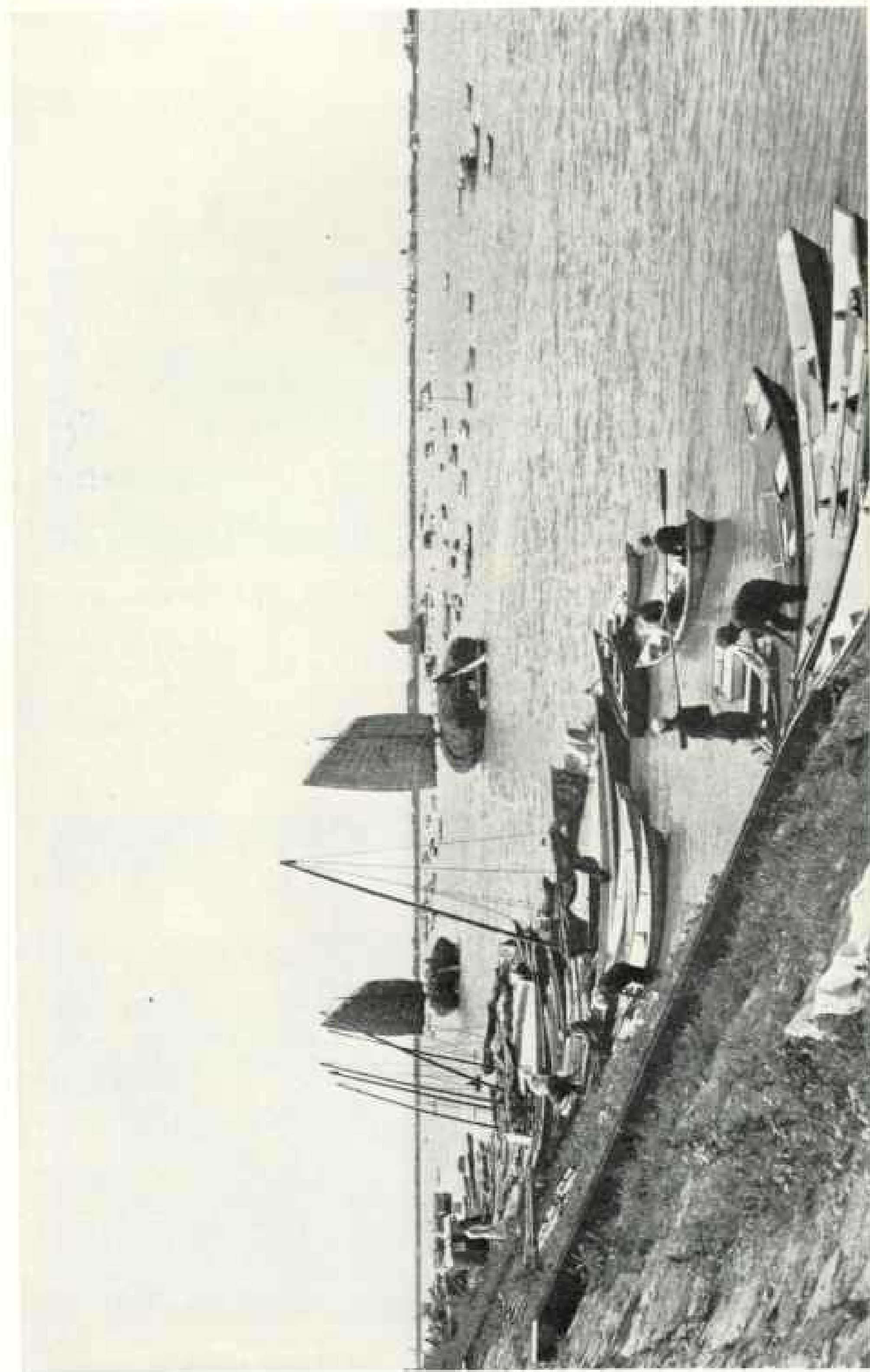
Steamers of shallow draft normally ply the Sungari, transporting soy beans and oil, hides and furs, wool and lumber for manufacture or transshipment. The bridge in the background carries the tracks of the Chinese Eastern Railway across the river.



Photograph courtesy U. S. Department of Agriculture

UNLOADING A BARGE OF SOY BEANS ON THE WATER FRONT

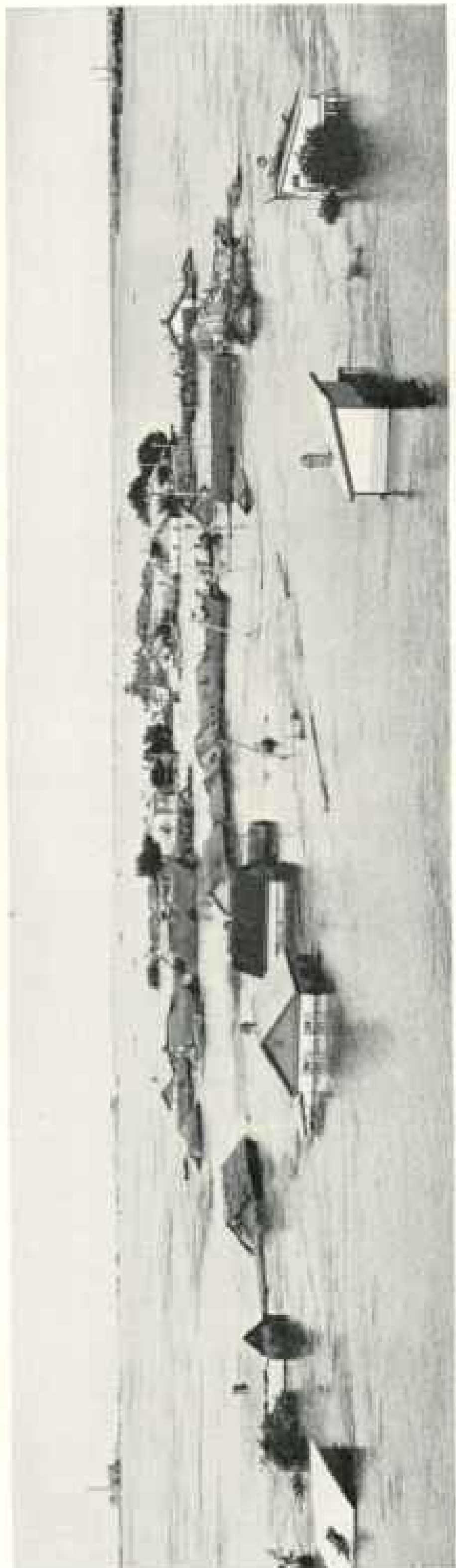
The soy bean is Manchuria's largest crop. Bean oil is used in the manufacture of soaps, paints, and toilet powders, for lighting and lubricating, and as a sauce for food. The bean cake left after the oil is extracted makes an excellent cattle food.



Photograph by Carl Schuster

THE SUNGARI IS THE MISSISSIPPI OF HARBIN

Following the midsummer rains, the river rose to the top of the embankment, also inundating the summer shacks and the "flats" on the far side (see page 245). Both the Chinese and the Russians do a brisk business in ferrying people across (see text, page 254).



Photograph by Cabot Coville

THE SUNGARI RIVER IN FLOOD

Many of the Russians to whom these houses belonged continued to live on their roofs, having no other place to go. Food was brought to them daily under the auspices of an international committee composed of the foreign business men of Harbin. This committee handled the funds for relief work, donated chiefly by foreign firms and associations. The normal channel of the river was to the right of the submerged houses.



THE OUTSERTS OF THE REFUGEE ENCAMPMENT

When their homes were inundated in August, 1932, more than 100,000 people evacuated the Chinese district of Harbin and took up quarters such as these.



Photograph by Cabot Coullie

THE "MODERNE" HOTEL IN FLOOD TIME

The League of Nations Commission lodged here when it came to Manchuria to investigate the dispute between Japan and China (see text, page 233). Among the distinguished guests were Lord Lytton, chairman of the Commission; Major Gen. Frank R. McCoy, the American member; and Dr. Wellington Koo, official advocate of the cause of China. In 1896 Harbin was an unimportant village. To-day, after less than four decades, its population has passed 250,000, and it is a city of world importance, with a large import and export trade, and it has fine streets and buildings (see illustration, page 241).

In 1901 Harbin was a Chinese town, but with the building of the Chinese Eastern Railway Russians began to congregate. When the Russian Revolution occurred, White Russians controlled the government of North Manchuria through control of the railway. Having no army, they feared the Soviets, and in the crisis one group invited Chang Tso Lin to come in with his army from Mukden. Delighted, the Chinese general came, and once in was

not to be ousted. But the Soviets managed to force themselves into the situation. They had a powerful coercive, the connecting Trans-Siberian Railway.

Then, in 1924, Mukden and Moscow agreed to commence the policy of squeezing out the non-Soviet Russians, and five years later, in 1929, the Chinese attempted to eject the Soviets and assume entire control themselves. Their success was trivial, however, and the project nearly ended in war. Meanwhile the position of the non-Soviet former employees becomes more and more hopeless.

There are about a quarter million Japanese in all Manchuria, as against 28,000,000 Chinese. The principal industry of the Japanese is the South Manchuria Railway and its subsidiaries. Others are engaged in exporting and importing, banking, shop-keeping, and farming. Japan claims to have invested the equivalent of between \$1,000,000,000 and \$1,500,000,000 (in American

money) in Manchuria, and, feeling this in jeopardy, she recently organized the new administration under her patronage and included Harbin and its Japanese in its jurisdiction.

It was a thrilling time last February when the Japanese soldiers marched in through New Town and the Chinese scuttled out. The occupation was orderly and well controlled, and the poor Russians who ran the jitneys and street cars were



Photograph by Cabot Coville

WHEN HARBIN WAS VENICE FOR A FEW WEEKS

A view of the principal shopping street in flood time. Many Russian and Chinese boatmen ferried across the river every morning to make a little pocket money rowing people around town. In the background of the photograph is the bluff to which many refugees fled when their homes in the Chinese quarter were flooded (see illustration, page 241).



Photograph by Cabot Coville

MAYBE A SMOKE WILL QUIET HER NERVES

Having abandoned her home to the river at daybreak, this matron had to make the most of the few rags she saved. Her first thought was for her precious sack of flour. The Chinese take pride in the long, slender stems of their pipes, with tiny bowls holding only a pinch of tobacco.

astonished when uniformed Japanese soldiers paid their fares like every one else.

Despite their good conduct, however, the newcomers have much to overcome in the attitude of both Russians and Chinese. Instead of putting an immediate end to banditry, as they had hoped, the condition was only aggravated. The supplanting of the previous government has meant many soldiers thrown out of work, and in Manchuria, as in any other part of China, brigandage is the primary unemployment relief measure. We are repeatedly treated to the sound of firing across the river and the incessant buzzing of planes practicing overhead. At times they are on their way to bomb some unfortunate town that happens to be harboring brigands.

DAILY EXCITEMENT AND SUSPENSE

Consequently, life in Harbin is full of excitement and suspense. One always feels that something is going to happen, and it generally does. The miniature forts of sandbags—there is one on our street corner—left over from the February occupation by the Japanese, the ever-present

soldiers, the camouflaged tank filled with Japanese soldiers, which makes its silent rounds at night, and the fact that our apartment house is protected by three private guards, on duty day and night, add to the interest of life.

The discussion of the latest bandit raid is a daily subject of conversation. When we picnic across the river a mile from Harbin, guns are always carried and stacked on near-by chairs, and two privately employed sentries stand watch. Formerly, foreigners' private motorboats could run for miles up and down the river with almost perfect safety. In 1931 a certain American in Harbin was on friendly terms with the famous pock-marked chief of the bandits who controlled the Harbin district. The chief kindly issued licenses at a dollar apiece to the friends of the American, who, thus equipped, were able to hunt in the territory unmolested. In 1932 things became too hot for that particular chief and he moved on, bringing the idyllic arrangement to a close.

In July the customs offices of all Manchuria were seized in the name of Man-



Photograph by Cabot Coeille

MARINE TRAFFIC JAMS WERE FREQUENT ON HARBIN'S "MAIN STREET"

Photograph shops reaped a harvest by selling all their old films to enthusiastic photographers. Railroads were washed out, so no new supplies could reach the city. The stores barricaded their doors with sandbags and cement trenches.

choukuo. This was expected, for there was a shortage of money to defray the enormous expenses of running the new régime until dividends should start coming in. Japanese directors or advisers were generally installed. The customs offices had previously been administered by the international staff of the Chinese Maritime Customs.

A few mornings later I read in the local paper that Manchoukuo had taken over the post office, and that no mail would be delivered until the new service was organized. Being born and brought up in America, I could not believe that anything could affect the delivery of mail; rain or shine, war or no war, I felt that the postman would be on the job. But, as the days went by and the letters and newspapers and magazines we were expecting from home failed to appear, I began to realize that Manchuria is a land apart. Then, too, we feared the letters we mailed would never reach their destination, for various countries might refuse to accept mail bearing Manchoukuo postage stamps. I had been counting the days until some socks

which a friend in Tientsin had sent me should arrive. They never did appear.

My friends always write me, "Well, don't get killed in a war over there," or, "Don't get carried off by bandits," but no one has ever thought to warn me, "Don't get drowned in a flood." I never thought much about a flood overtaking Harbin, primarily, I suppose, because Harbin has never had a serious inundation before, and because the Sungari has always seemed a small and placid river.

THE COMING OF THE FLOOD

The spring had been unusually rainy and reports reached us of the rising of the river above Harbin. Soon we noticed it gradually coming higher on the banks, creeping up to the tiny houses of the poor Russians and Chinese across the river. A wharf crowded with people gave way one Sunday and a number were drowned. The water covered the garden of the bungalow where we were going to picnic, with the guns and the guards. The chickens were drowned, but the ducks were happy. Islands began to disappear and other islands



PICNICKERS MUST BE PREPARED FOR BANDITS

Contrasting with winter temperatures that reach 40 below zero, Harbin's climate is warm in summer, and many residents spend all the time they can on the river. At a bungalow across the river, a mile from the city, it is considered wise to have guns handy and sentries on guard.



Photographs by Cabot Coville

FLOODS SUBMERGE A PICNIC GROUND

This is the same spot shown in the illustration above. The cottage is that of U. S. Consul General Hanson, with the roof anchored in the hope of preventing it from floating away.



Photograph by Cabot Coville

A CHINESE MILITARY POLICE STATION

When water from the swollen Sungari River invades the streets, police are forced to take to row-boats to patrol the city. The central sign proclaims the purpose of this building.

were formed where previously there was only land. People moved up to their roofs if they had no other place to go, and some started to take off their cows and pigs in old Chinese barges; but still the water came higher, and it was said there was a foot of water in Chinese town.

Conversation veered from bandits to the flood, and how much damage it had done. Soon it became apparent that the rains and floods had done more harm than all the military operations and banditry in Manchuria the past year. Half of all the crops of North Manchuria were destroyed.

On the morning of Sunday, August 7, we looked out of our dining-room windows and saw two camps of Chinese huddled on the sidewalk. This was the first information we had that the wall protecting Chinese town, Fuchiatien, had broken and the water was pouring in.

New Town, where we live, has always seemed like any little European town, with its cobbled streets and rows of shade trees along the sidewalks, and its substantial foreign buildings. Even its population is white. Had we not been in a place where incredible things are always happening,

I suppose we would have been as startled as any one in a similar town of Europe.

Before the day was out we were surrounded by thousands of homeless Chinese (see page 237). They squatted in our streets with their few miserable bundles and their half-naked children; with their sick women and their old men and their pigs. They came up in hordes from the Chinese quarter.

There was a continual stream of wagons, carriages, rickshas, street cars, and people toiling up the hill. A usual carriage load drawn by one staggering horse consisted of all the clothes and bedding a family could pile into it, and on top the women with their bound feet, the children, and a few men hanging to the steps. Overflowing street cars bearing the Chinese Red Cross emblem, the red swastika, ran back and forth, collecting no fares.

As the refugees arrived they were herded by the police to the bluff which stretches for several miles, overlooking Chinese town. And there they swarmed and watched the water rising about their homes 10, 15, and in some places 20 feet, until the river flowed in freely. What



SALVAGING PART OF MANCHURIA'S LARGEST CROP, THE SOY BEAN

Foreign companies heeded the repeated flood warnings from upriver and removed their beans in time, but the fatalistic Chinese preferred to wait until the waters were actually upon them; then they had to pay many times the normal price to have their beans transferred to higher, drier ground.



Photographs by Cabot Coville

THREE AMERICAN RESIDENTS SEE THE FLOOD SIGHTS

Boats were as hard to obtain as an American city taxi on a stormy day, and their owners did a thriving business. Seated in the stern is the author of the accompanying article.



Photograph by Cabot Coville

HIGH WATERS SWIRL AROUND THE AMERICAN BANK

For several weeks in August, 1932, the Harbin branch of the National City Bank of New York was compelled to do business by boat, and its tellers had all they could manage to keep their feet dry.

little they had was lost, and because of this the position of foreigners was considered precarious.

The private guard of our house was tripled and groups of soldiers were everywhere among the refugees.

That first night most of them had no covering at all, at best a few rags slung over a pole or an old straw mat against a garden fence; but many unfortunates lay exhausted by the side of the road, wherever they happened to fall.

All night long, and for many nights to come, the donkeys brayed like foghorns, and when they stopped the roosters and geese took up the chorus.

SACKS OF BEANS SAVED FROM DÉBRIS

The next day everyone was working to improvise better shelters. Old patched bean sacks, tattered quilts, and straw mats were utilized, and some of them had even found a few boards for flooring; but the

hogs and sheep still wallowed in the mire close to the sick.

Several acres of high ground were devoted to giant, ever-growing piles of sacked beans which had been saved from the flooded city. They were guarded by Japanese and Chinese soldiers with ever-ready rifles, and the newest straw mats protected the beans from the elements. If I had any doubt that Manchuria produces six million tons of soy beans a year, it was removed by that exhibition.

Food stalls had been opened by enterprising Chinese and the smell of garlic was strong in the air. Everything was out to dry between the intermittent thunder showers; slippers salvaged from a shoe store, hundreds of furs, grain, woolen material; there were even a few bedraggled birds from a pet store. Still the most cherished possession of each family was a sack of flour—a precaution against the famine sure to come. That flour repre-



Photograph by Cabot Coville

HANDLING OF THE SICK TAXED THE CITY'S MEDICAL FACILITIES

This cholera patient is being taken to the infectious hospital by representatives of the Chinese Red Swastika Association, which corresponds to the American Red Cross. Dozens of these stretchers were carried through the refugee camps daily.

sented blood money, for many of the destitute bought it with the two or three dollars gold they received when they sold their small daughters (see page 244).

On this, the second day of the inundation, the Japanese military authorities took command of the situation, which was now serious, for the danger of a devastating cholera epidemic had been added to the other complications (see page 254). The disease had gradually worked its way up to North Manchuria, and by the first of August a death or two had been reported in Harbin. Not by the Chinese authorities, however; for even when the death rate mounted from 25 to 50 daily, they maintained officially that there was not a single case of cholera in Harbin.

We went many times through the refugee camps those first days, before the stench became unendurable, and we saw no sign of disorder. They were for the most part quiet, and many of the women sat impassively smoking long pipes. But one day our chauffeur stopped the car and pointed out a head hanging on a tree (see page 253). A group of Chinese was look-

ing at it and then reading the sign, which said that the man had been a robber of refugees, and that he had been executed by order of the Chinese chief of police as a warning to all who would take advantage of the refugee encampment. It was an incongruous and ghastly sight, seeing that head, with its black hair, dangling from a limb of the tree, in full view of automobiles and street cars passing back and forth.

The most tragic part of the calamity was that the disaster could have been averted. The water rose slowly and warnings were sent down the river for more than a month in advance. Previously there had been a number of excellent flood engineers in the railway, but their places were taken by men who were ignorant of flood-prevention work. If a similar situation had arisen at any time up to 1929, there probably would not have been such fearful consequences.

Had the matter been in the hands of the efficient Japanese, their flood-prevention methods might have been as effective as their relief work. But it rested entirely with the Chinese and Soviet authorities; for,



Photograph by Cahot Coville

AN AMBULANCE WAITING FOR A CHOLERA VICTIM

The Japanese instituted a wholesale and effective inoculation system (see text, page 254). The cholera serum does not prevent a person from contracting the disease, but it makes an attack less likely and generally assures a mild case.

although a strong Japanese garrison had been stationed at Harbin since February, it was used for expeditions into the country.

BOATING THROUGH DESERTED STREETS

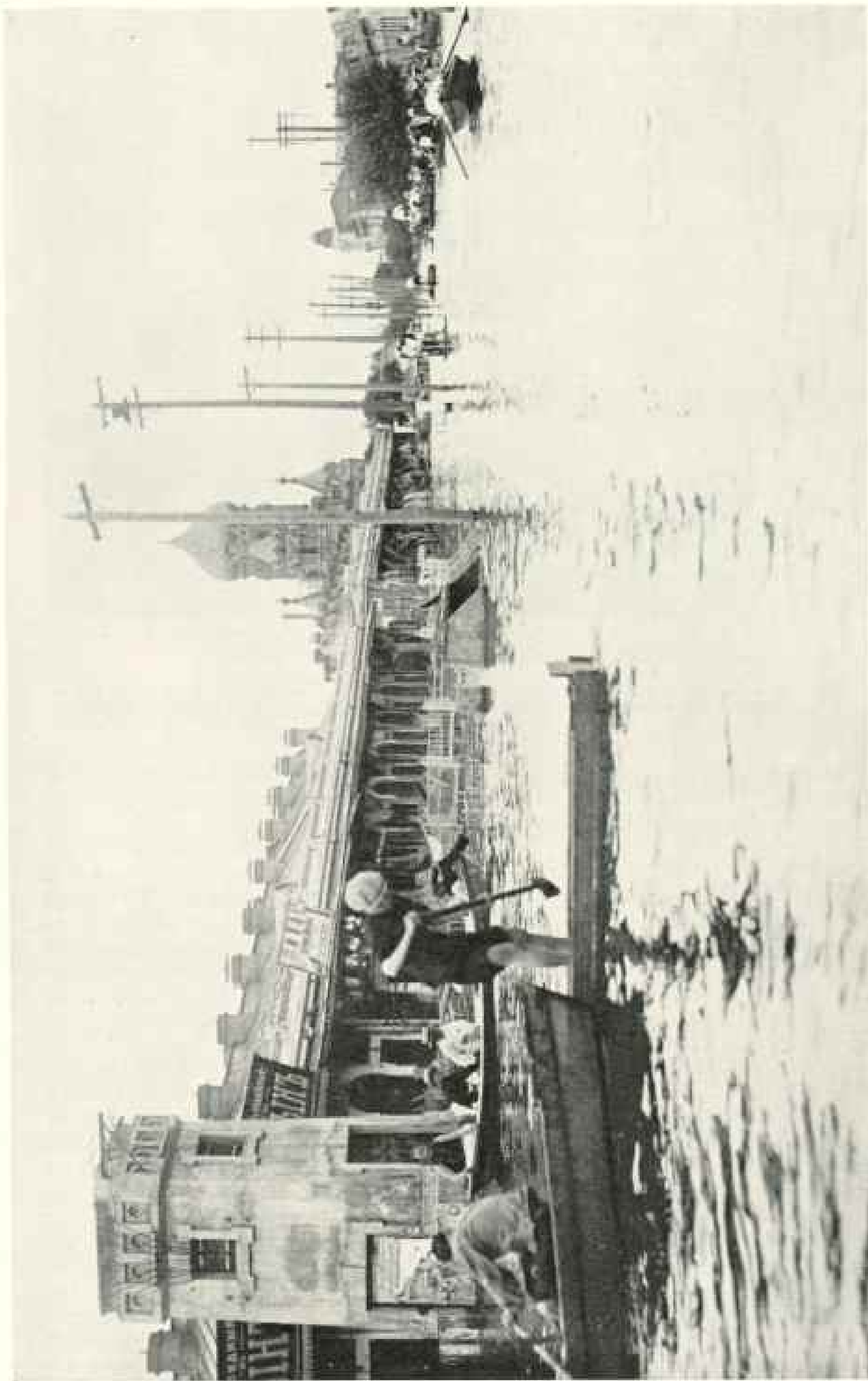
We ventured to Fuchiatien two days after the water came in. There was not a sign of the wall. First we went by ricksha. The coolies waded in water over their waists, and people grinned at us from windows. Then we bargained for a boat and were rowed for two hours through the deserted streets. An occasional dog or cat chased the vermin off a thatched roof and a stray family lived on a raft. Rounding a corner, we came upon a 300-ton barge loading from a third-floor window. A drowned city, and yet we carried a revolver for protection.

After Fuchiatien the poor-Russian settlement on the other side of Pristan succumbed, and the destitute Russians also fled, weeping and wailing, to our district. Volunteers were called and all the young men were eager to help stem the tide. We saw them feverishly tossing sandbags into the water in an attempt to defend the rail-

road, but no one had sat down with a map to find the strategic points, and their efforts were futile.

Then Pristan itself was threatened. Everyone talked at once and no one knew exactly what to do about it. The shopkeepers rushed to barricade their doors with sandbags and hastily made masonry work. The sewers burst with the pressure of water backed up from the river. Sewage was thrown into the streets.

Flooding Pristan was a comedy following on the heels of so much tragedy. Everyone seemed to enjoy it in Pristan, except those who lived on the ground floor and had to scurry to their relatives and friends in New Town. The water never became deeper than three or four feet, so no one lost very much and the inconvenience was equaled by the novelty of the predicament. All who were left in Pristan spent their days on their tiny iron balconies and amusedly watched the river life or went boating down the main street, where the traffic became so dense that after a day or two traffic rules were recognized to avoid so many collisions.



Photograph by Cabot Corville

A STREET WHERE BARGAIN-HUNTING WAS SUSPENDED BY THE FLOOD

One of Harbin's Russian churches towers above the flooded Chinese furniture market. In normal times a determined and thrifty bargainer can purchase a new wooden bedstead and spring for the equivalent of \$3, and a chair for 20 cents, but he must be fluent and vociferous in Chinese or Russian (see text, page 235).



CHINESE STILL SEE BEAUTY IN BOUND FEET

It will be many months before these flood refugees can return to their homes. Their houses will not be free of water when the river freezes toward the end of October; and in the spring, when the ice breaks up, the weakened foundations are likely to crumble and be swept away.



Photographs by Cabot Corville

THE FATE OF A PILFERER IS A ROADSIDE OBJECT LESSON

The placard near by stated that this man had been caught in the act of robbing a refugee in the camp, and that the Chinese chief of police had ordered his execution as an example. The head was then hung at the edge of the encampment (see text, page 250).



Photograph by Cabot Curville

TATTERED STRAW MATS AND ANCIENT QUILTS FORM WELCOME SHELTERS FOR THE HOMELESS

Similar lean-tos were thrown up for several miles along a bluff overlooking the Chinese quarter of Harbin, where the water was 10, 15, and in some places 20 feet deep. There the refugees lived with their sick, and their pigs and sheep, always under the vigilant eyes of soldiers.

Hundreds of boats appeared from nowhere and the destitute Russians and Chinese who were living on their roofs across the river rowed over every morning and made a nice little bit of pocket money before evening ferrying people around town (see pages 240-243).

There were the oddest boats on our river. Anything, as long as it would float, would do. Two old doors nailed together and a couple of poles, or a few boards slung together with empty Standard Oil tins tied underneath, were equal to almost any emergency. Children were in a seventh heaven, bobbing about in the family wash-tub. One man had equipped his raft with a stool about ten inches high and was paddling along quite comfortably. New, unpainted rowboats appeared every day, their cracks stopped with lead.

One foreigner had his two private rowboats tethered to his front door, and they floated over the heads of the drowned asters and zinnias.

There were established boat landings, where the shouts of competing boatmen

resembled the cries of the gondoliers on the Grand Canal. Every boatman called, "Lodka! Lodka!" every three seconds, and I think I shall never be able to forget that *lodka* is the Russian word for boat.

Still there was a serious aspect. Everyone knew that cholera spreads chiefly because of impure water, and those who live in Pristan rely for water on their individual wells, which of course were flooded (see page 241). Chinese drinking-water venders waded through the streets with two overflowing buckets of water slung from a pole across their shoulders, the lower half of the pails swinging in the muddy water.

DRASTIC MEASURES TO AVERT CHOLERA

Coupled with the plight of Pristan was the frightfully unsanitary condition of the refugees living on the New Town bluff. We used to rush to close our windows every time a breeze blew from that direction. It seems a modern miracle that the Japanese were able to prevent a devastating epidemic of cholera. They instructed



Photograph by Cabot Coville

JAPANESE DISTRIBUTING STERILIZED WATER TO REFUGEES

During their successful campaign to control what threatened to be a devastating cholera epidemic, the Japanese established stations where the refugees could obtain free boiled water. The principal difficulty was in getting the native population to take proper precautions.

us to place disinfectant mats at our doors, to drink only boiled water, and to eat no raw food. We even cooked our California oranges. In the refugee quarter they distributed sterilized water from enormous tin boilers. At busy crossings Boy Scouts sprayed the wheels of all passing vehicles, to the anger of my chauffeur, who said it spoiled the paint.

The Japanese declared that all inhabitants must be inoculated, a thing which terrified every Chinese to his very soul and caused all Russian doctors to be swamped by people clamoring for inoculation. The Japanese sent police or soldiers with doctors from house to house and from room to room, and when the inmates could not produce a signed certificate of inoculation they were immunized on the spot. On important street corners every passer-by was stopped. If he did not have the desired certificate with him he was requested to roll up his sleeve and have the two "shots" in his arm at once! No argument at the point of a rifle.

One day my aged, one-eyed Chinese cook came to me. He said in pidgin Eng-

lish that he wished I would have a doctor put medicine in his arm. We were astonished at such a request from a Chinese, as we had been wondering how he would receive the news that the doctor was coming next day. In the afternoon he told me that his wife had been inoculated the day before by the Japanese with Japanese serum and therefore he believed that she would probably die. He would not know for a hundred days whether she would survive.

The Chinese had no notion, as they flocked to the Russian doctors, that the serum could protect them from dying of cholera. They were simply convinced that if the deed were performed by the Japanese they were cursed.

When the doctor arrived I went first as an example; then followed the mother of my sons' Russian nurse, who does our fine laundry. The poor woman was pale to the lips and trembling with fright. Next came the nurse and then the Russian chauffeur. The cook introduced me to his wife, a young-looking woman wearing horn-tipped spectacles and a dark-blue Chinese

coat. Despite everything, she still showed no signs of wasting away. She was shepherding her daughter-in-law, a recent bride in a pink brocade coat slit to the knee on one side, in the present fashion, so as to expose one white-stockinged leg and a tiny pump.

Afterwards the cook, the boy, and the coolie submitted to the operation. The latter delayed matters by disappearing, to the great indignation of the cook and the boy, who went tearing all over the compound shouting for him. He turned up in a minute, having in a fit of cleanliness gone to change his clothes.

At the end of this little party the cook thanked me with many bows and smiles and curtly signaled to his wife and daughter-in-law to follow suit. Then he proudly announced, "Doctor no can do son's wife; maybe gottee baby."

TWO NIGHTS OF DARKNESS

The power house was inundated and for two nights the whole of Pristan was plunged into complete darkness. That was the most nerve-racking time of all for who could tell what 150,000 homeless, wretched people would do under cover of darkness? Then, too, we learned that an important bandit stronghold upriver had been flooded and that thousands of lawless men were congregating outside of Harbin. Japanese soldiers were everywhere helping the Chinese soldier guard.

For several nights there was street shooting a few doors from our house. The first two times I naively thought it was a series of punctures, but I can tell the difference now.

New Town lights wavered night after night, and although they stayed dim for so long that our electric refrigerator was ruined—a minor calamity, for all the ice had been left to melt in Fuchiatien and the fortunate few who had any were charging a dollar a pood (36 pounds)—still they never went out again. It was too dark to read; so we would sit and talk and imagine what *might* happen if they *did* go out.

Harbin was cut off from the rest of the world by rail. It was all in vain to be a great railway junction and the metropolis of North Manchuria. The eastern line to Vladivostok had been closed for months

because of truculent bandits; the flood paralyzed the southern and western lines.

After two weeks travelers began to struggle in over the southern route, bringing tales of walking across tottering bridges in the dead of night. Then a train got off for Siberia and Europe, and we all sent letters by the Senator's son, who had been cooling his heels in Harbin for half a month.

Reacting from the strain of the past weeks, we light-heartedly resumed our plans for a Labor Day vacation, to be celebrated by attending a Mongolian fair. Normally it is a 12-hour trip along the main line connecting with the Trans-Siberian, and then a day's jaunt inland by automobile. However, considering the rivers to be ferried and bridges to be walked over, we were to allow 36 hours for the train journey each way.

Three days before we were to leave, the evening train departed as usual, but soon returned. Several thousand bandits had captured and looted the town of Antachan, through which the line passes. They had torn up rails and were having a vigorous battle with the Chinese troops. Japanese soldiers were rushed to the scene, but no train ran for weeks. The returning League Commission members were flown by the Japanese across Manchuria, but, except for Japanese military officers, no one else has been able to secure a seat in the daily airplane.

WHEN WINTER COMES

What will happen this winter no one can tell. Water has been pumped out of Pristan and the streets are white with the disinfectant the Japanese have spread to forestall a typhus epidemic; but the Chinese town is still uninhabitable. The river freezes at the end of October.

The Japanese and the Chinese Eastern Railway have built barracks for forty thousand, but there are tens of thousands more who will have nothing but a few rags to shield them from the 40-below-zero weather. They may become bandits. Already it is not safe to be on the streets, for bandits consider even the most wretched white worth at least one hundred dollars in potential ransom money.

Nearly every man carries a gun these days—and a permit to use it.

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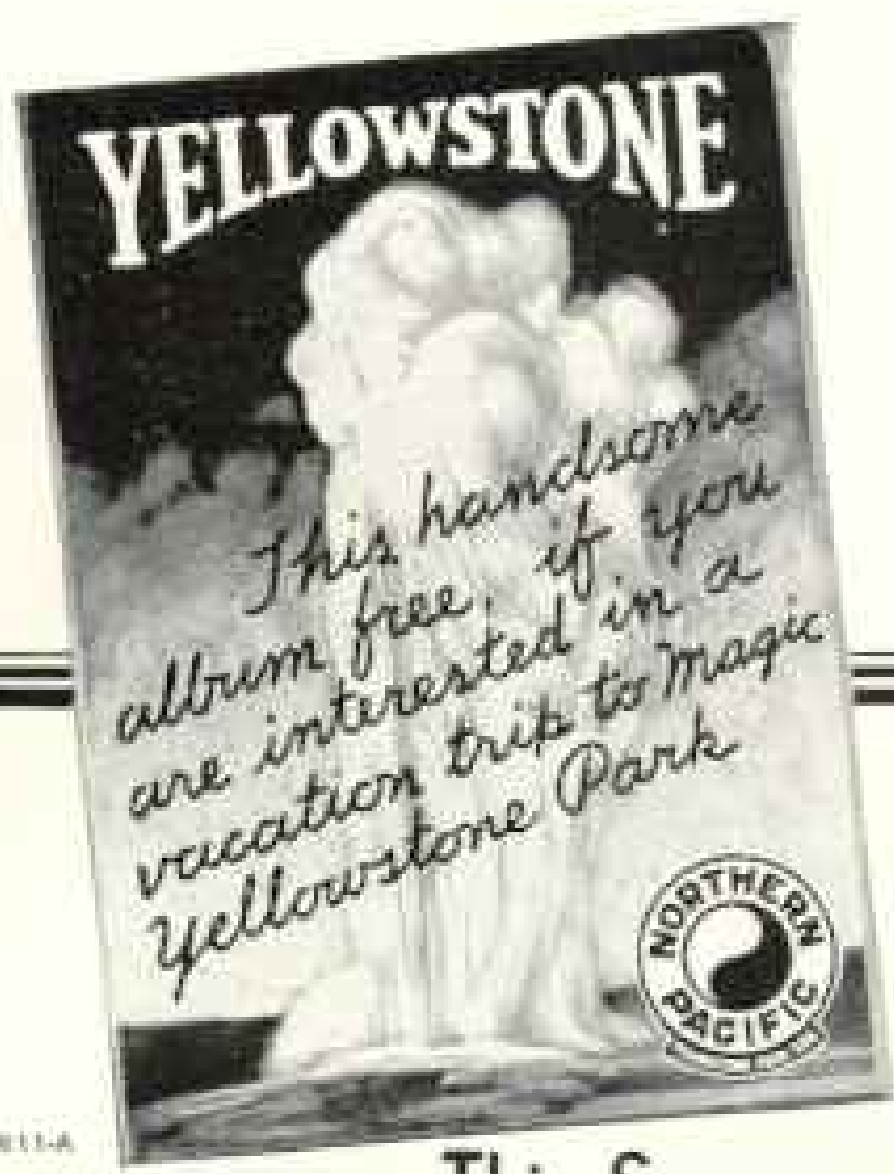
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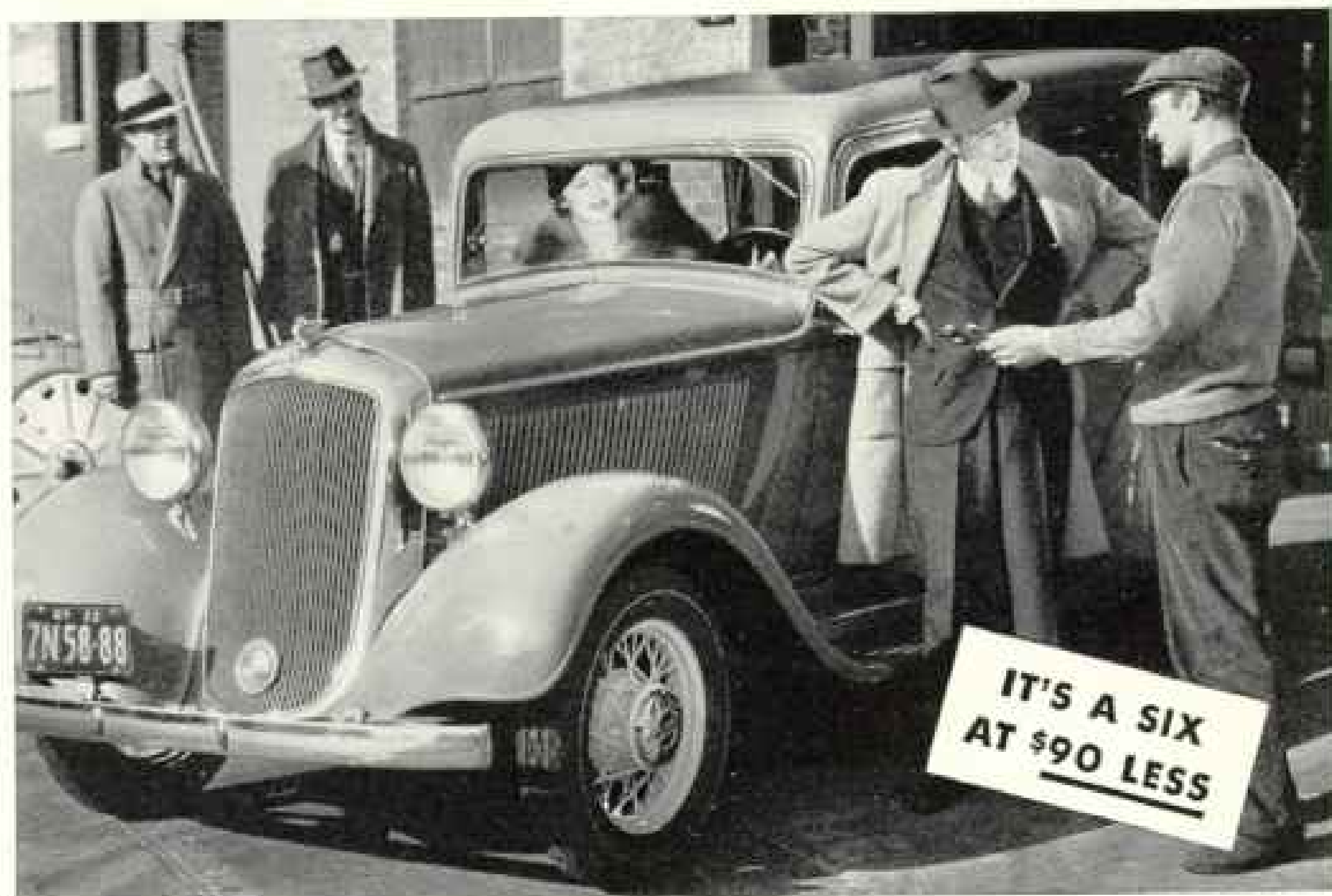
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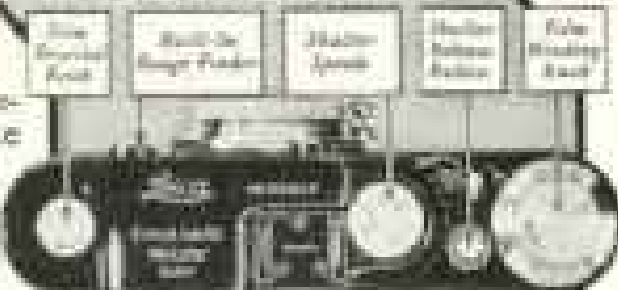
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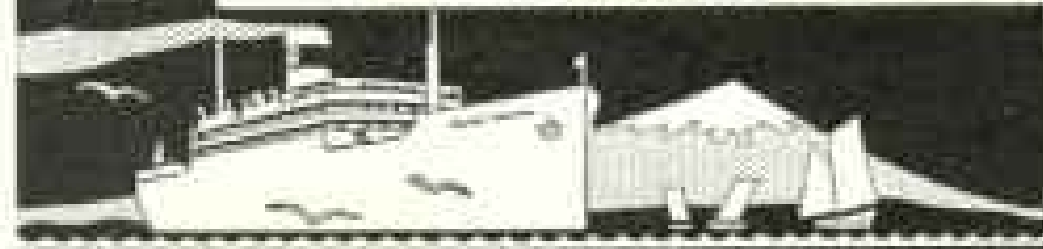
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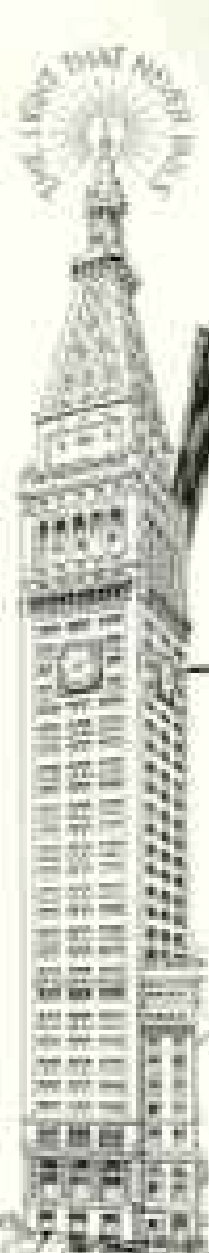
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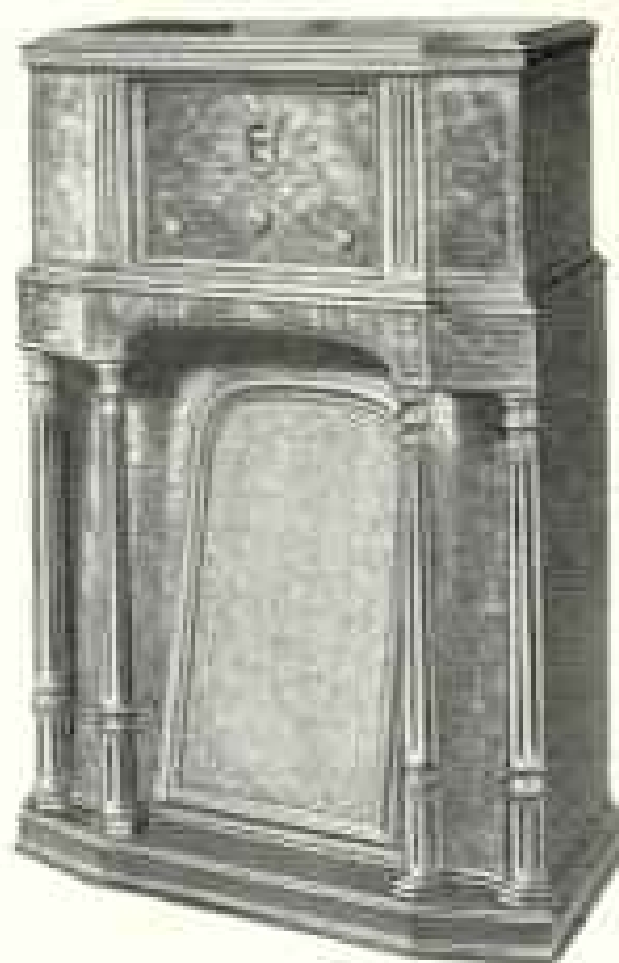
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PHILCO MODEL 15X, shown at left, \$150 Federal Tax Paid — PATENTED — Contains every worthwhile radio improvement—many exclusively PHILCO. Musicians, especially appreciate the following scientific points of superiority: — 1. The PHILCO Inclined Sounding Board throws all sound up into field of listener, making all high notes heard for the first time. 2. Large area of sounding board insures full reproduction of low notes. 3. Echo Absorbing Screen at the back prevents echo and blur, the first radio to deliver sound only from front of speaker. 4. Open sounding board instead of sound chamber affords clear unboxed tone.

Other PHILCO "X" Models (with inclined sounding board) \$80 to \$250 Federal Tax Paid.

Philco-Transitron Radio (super-heterodyne) for motor cars and boats, average price complete, installed and tax paid on cars equipped with aerial, \$69.50. ALL ELECTRIC (no dry batteries) \$79.50.



(Photo by Elai Photo)

PHILCO
A musical instrument of quality

Campbell's latest triumph is this new Chicken Soup!



*With double the amount of chicken
it's a triumph of skillful blending!*

A new and more delicious Campbell's Chicken Soup awaits you at your grocer's today. An entirely new blend with a richness and perfection of flavor that instantly delight you. The world's most popular chicken soup even more tempting still.



Not just a broth, but the real Chicken Soup with rice and tender pieces of the chicken meat. The can—the label—the price are the same as before. But the soup is more delicious—just your idea of what a Chicken Soup should be!

LOOK FOR THE RED AND WHITE LABEL

MEAL-PLANNING IS EASIER WITH DAILY CHOICES FROM CAMPBELL'S 21 SOUPS



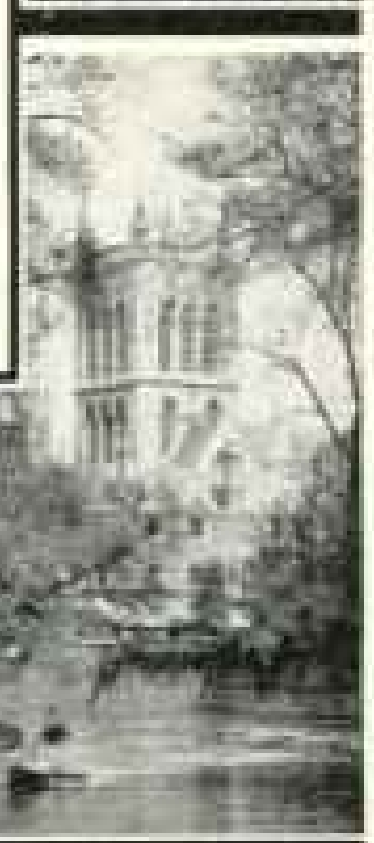
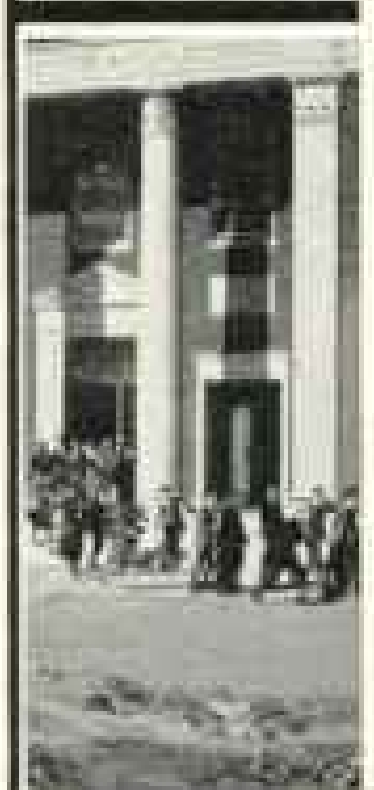
COLLEGE, SCHOOL, CAMP DIRECTORY IN THE APRIL GEOGRAPHIC

To serve the interests of its member-families more completely, THE NATIONAL GEOGRAPHIC MAGAZINE will include a College, School and Camp Directory in its advertising pages beginning with the April, 1933 issue.

The whole trend of modern education emphasizes the wisdom of a careful choice of selected schools to fit the requirements of the individual student.

Parents and young people will find the carefully considered Geographic School Directory of particular value in helping them determine the school best suited for the individual boy or girl.

All announcements admitted to this directory will conform to the uncompromising ethical standards in force over all advertising appearing in the business pages of THE GEOGRAPHIC.



Miracle Worker, AGE 8



His little hands hold the instrument tightly; his small, confident voice speaks eagerly into the mouthpiece. And as simply as that, he talks to his friend who lives around the corner, or to his Granny in a distant city . . . achievements which, not so many years ago, would have seemed miraculous.

These miracles he takes as a matter of course, in the stride of his carefree days. You yourself probably accept the telephone just as casually. Seldom do you realize what extraordinary powers it gives you. You use it daily for a dozen different purposes. For friendly chats. For

business calls. To save steps, time and trouble.

At this very moment, somewhere, your voice would be the most welcome music in the world. Some one would find happiness in knowing where you are and how you are. Some one would say gratefully, sincerely—"I was wishing you'd call."

From among more than seventeen million telephones in this country, the very one you want will be connected quickly and efficiently with the telephone in your home or office.

Your telephone is the modern miracle which permits you to range where you will—talk with whom you will—at any hour of the day or night.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY





Sail west into Hawaii's lazy Springtime..

Step off the boat in Honolulu. Laden with necklaces of fresh flowers, hear the welcoming *Alohas*, the melodies of the native band—the excited *Mahalos* of diving boys who have found your coins.

You're in a new world, a joyous world of color and sunshine. Your car moves down a street that seems tunneled thru blossoms. Into your hotel and into summer clothes. What will you do this afternoon? Swimming... surf-boating... lazy watching at Waikiki—when you're ready.

No hurry here... always time for living... for chuckling with sheer relief at being so far from ordinary worlds.

\$220 Roundtrip

From the Pacific Coast ports of Los Angeles, San Francisco and Vancouver to Hawaii and back—\$220, **FIRST CLASS**. Spacious Cabin Class accommodations, \$150 roundtrip. See your local travel agent.

The Hawaii Tourist Bureau will, on request, mail you FREE, authoritative information about the Islands. For a special booklet on Hawaii, with picture maps, send 10¢.



HAWAII

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

1523 RUSS BUILDING
SAN FRANCISCO



SCOTLAND

Be sure you include Scotland in your European trip. The journey is great, the destination wonderful. Every week-day the world's two most famous trains—the Flying Scotsman from King's Cross and the Royal Scot from Euston—make their epic runs between London and Scotland. Record-breakers both, doing the 400 miles in well under 8 hours!

There's so much to see. Edinburgh and Holyrood—scene of the Mary-Darnley-Rizzio drama—the Scott Country, the Isle of Skye with its memories of Bonnie Prince Charlie, the famous golf resorts on the East Coast, the grandeur of the Highlands.

With a return ticket to Scotland you now have the choice of travelling back by the East Coast, West Coast or Midland Routes.

Illustrated Pamphlets from T. R. Dester—Vice-President, Passenger Traffic, (Dept. A. 34.) L.M.S. Corporation, 200 Fifth Avenue, New York City; H. J. Ketcham, General Agent, L & N E Railway, 11 West 42nd Street, New York City, or from your own ticket agent.

L M S
LONDON MIDLAND &
SCOTTISH RAILWAY
OF GREAT BRITAIN

LONDON & NORTH
EASTERN RAILWAY
OF GREAT BRITAIN

L·N·E·R



SHE: THIS IS THE LOVELIEST CAR I'VE EVER KNOWN DAD!

HE: YES YOU COULDN'T HAVE BOUGHT A CAR LIKE IT FOR \$3000 THREE YEARS AGO!

It's the car of cars... in a year of values... the new **DODGE 8**

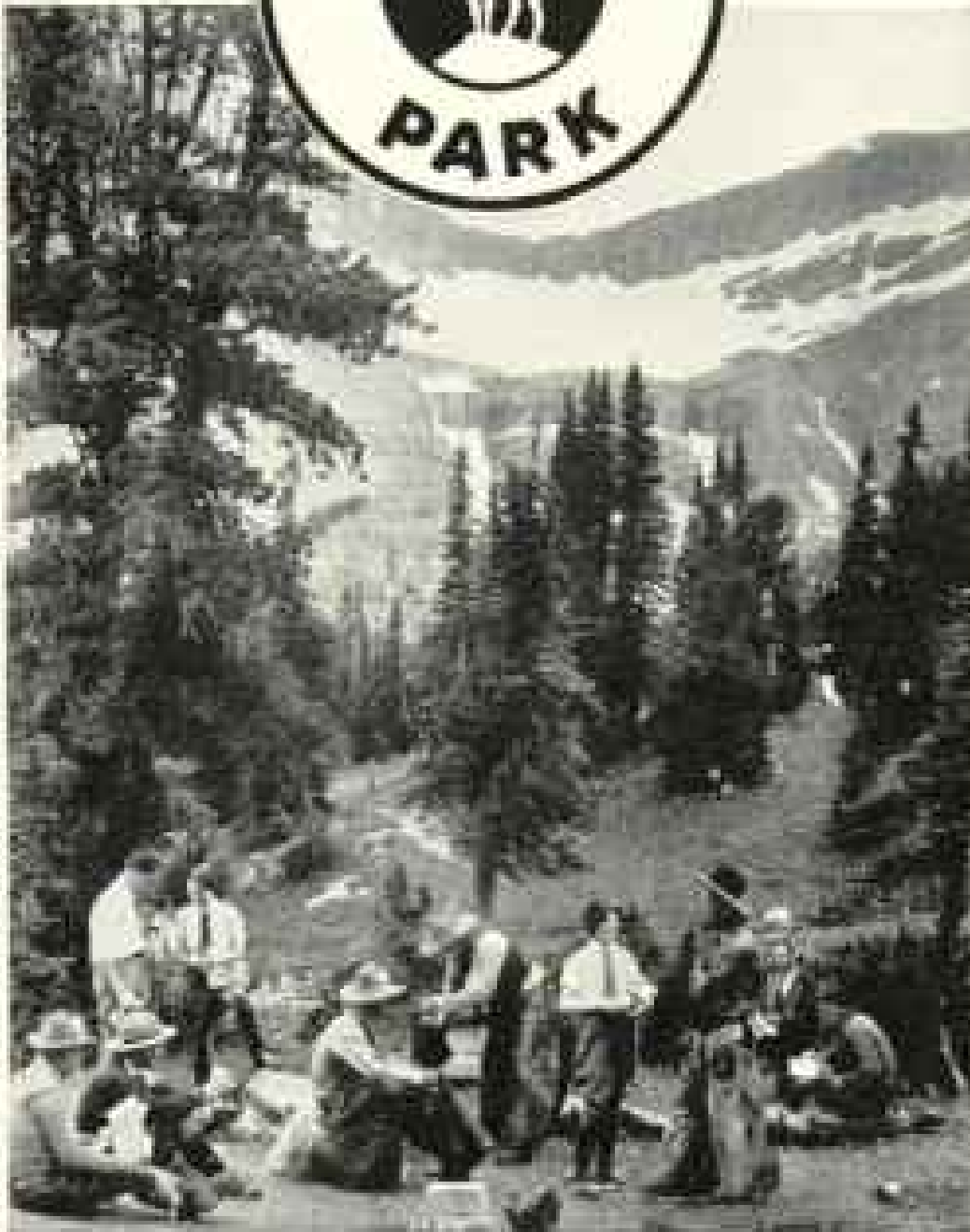
You'll say, too, that it's the most car for the money you've ever seen. No matter what kind of car you've been used to driving, this sensational new Dodge "8" will be a revelation to you. People who have owned as many as 5 Dodges in a row are hailing this new Dodge "8" as the finest car Dodge ever built. . . . Smartness? It's the last word in appearance, with its trim body and its luxurious handbox interior. It's big . . . it's powerful . . . it's fast. It has everything you'd expect from the finest cars ever made—plus. And yet it is an economical car—to buy, to run—a car for 1933. . . . Every factor of time-tried Dodge dependability is present in this great new Dodge "8" . . . and to it has

been added a brilliant array of new features for comfort, safety, and smooth effortless driving. . . . Floating Power engine mountings . . . silent shifting . . . automatic clutch . . . Mono-piece steel body . . . double-drop bridge type frame and low center of gravity . . . hydraulic brakes and other safety features . . . these are only a few of the details that make the new Dodge "8" a real quality car, an aristocrat from bumper to bumper. . . . The new Dodge "8" is waiting to show you how times have progressed. Go to a nearby Dodge dealer and see this great Dodge "8"—a car you couldn't have bought three years ago for less than \$3000—but now offered to you at an amazingly low price.



W I T H F L O A T I N G P O W E R

Piegan
Pass
Trail



Glorious Interlude

In Glacier Park find sanctuary from routine, gain new zest in living. Relax at charming mountain hotels or cozy Alpine chalets—rates reduced this summer. Thrill at Great Scenes from aboard modern buses, boats or sure-footed horses. (Many of our best people hike.) Write Great Northern Vacations, St. Paul, for details. Then come straight to Glacier on the Empire Builder—magnificent train at no extra cost.



Many
Glacier
Hotel



Hotel
Rates
Reduced



"The Oldest Living Thing"

Is the General Sherman Tree in the Sequoia National Park. This giant among giants was already 2,000 years old when Christ was born.

The picture has been reproduced in rich green photogravure, 9 x 23 inches, ready for framing. Price: \$1.00, postpaid. Framed: \$6.50, express collect.

Illustrated list in full color on request from

NATIONAL GEOGRAPHIC SOCIETY
Washington, D. C.

Bound for the Seven Seas



Army of Geographers—This old-time "Square Rigger," bowing down in mid-Gulf Stream, from a photograph by John Oliver La Goro, preserves the full beauty, mystery, and power of the sea. Blue photogravure, 27 x 20 inches, on beveled Sumatran Bristol—packed for convenient mailing to your friends.

\$1.50; Framed, \$8.00. Postpaid in U. S.

Other outdoor subjects:
DOE AND TWIN FAWNS
PRAYER IN THE DESERT
BABES IN THE WOODS

Illustrated List of 12 Other Panoramas Ranging from 10x to 11 mailed on Request. Obtainable only from the National Geographic Society, Washington, D. C.

M

ANTARCTIC

Follow the trails of famous Far South explorers with the new 4-color map of Antarctica. Here are shown, over a 90-year span, the routes and discoveries from Wilkes to Byrd. Wall size, 18 1/2 x 26 1/2 inches; paper, 50 cents; map linen, \$1.00.

A

MAPS OF DISCOVERY

Giving the effect of age-worn, time-colored, fanciful Fifteenth Century charts, these expertly colored maps trace the course of great discoveries. Print of either hemisphere, 18 1/2 x 19 inches, \$1.00; hand-somely framed, \$2.00.

P

for home, office, school

FULL LIST OF MAPS ON REQUEST

Postpaid in U. S.; Abroad, 25 cents extra

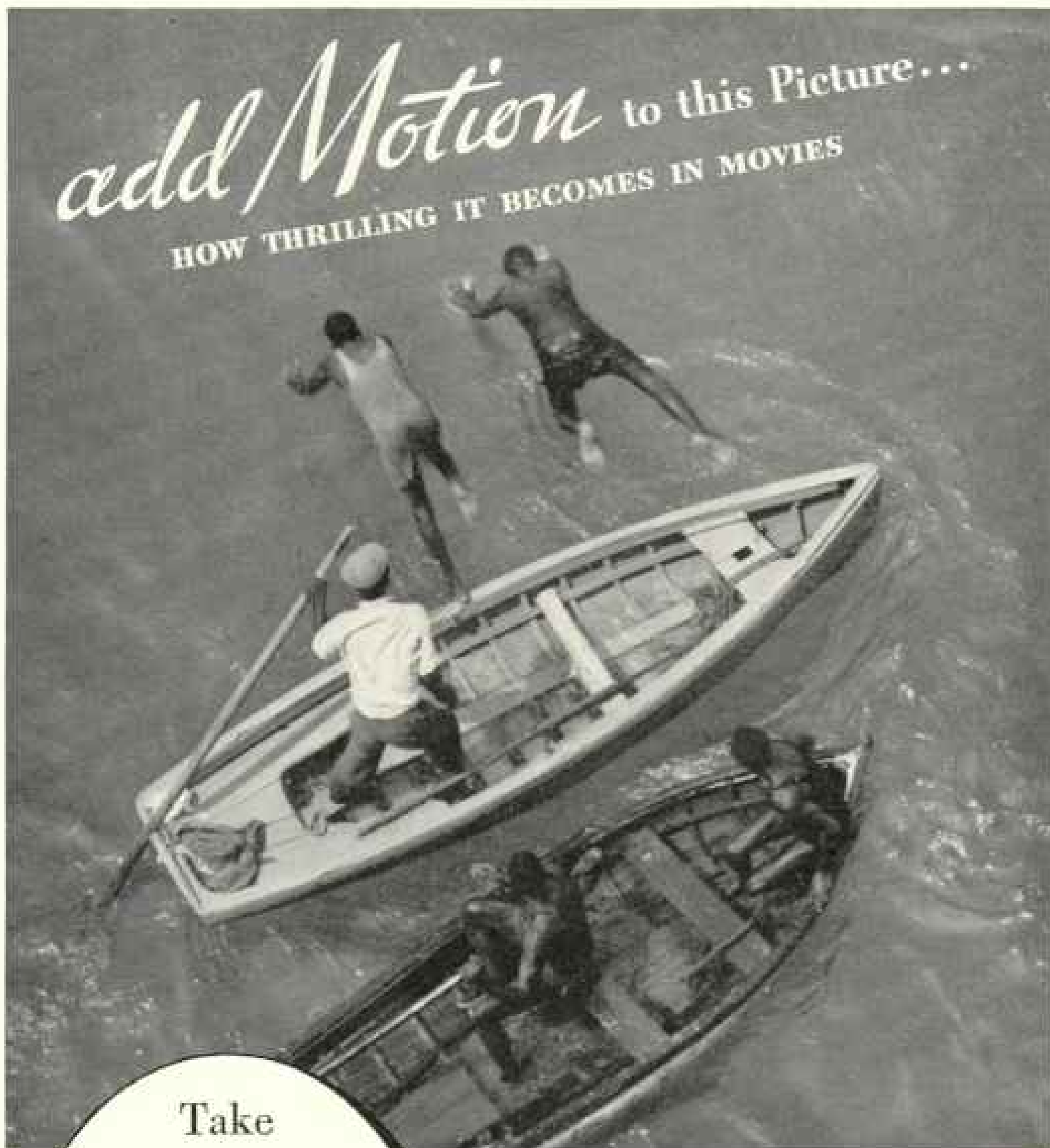
S

NATIONAL GEOGRAPHIC SOCIETY
Washington, D. C.

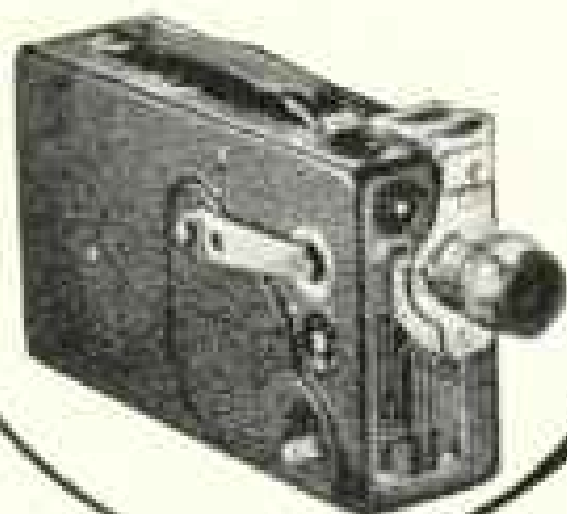
"Mention the Geographic—It identifies you."

add Motion to this Picture...

HOW THRILLING IT BECOMES IN MOVIES



Take
Eastman's finest
Movie Camera
on your trip



BRING back the *action* as well as the scene. Let the coin divers repeat their tricks in your living room—in movies on your own home screen. Capture the tempo and color of foreign life in movies.

Ciné-Kodak "K" is compact, convenient. And surprisingly simple. Almost as easy to use as your eyes. Yet it makes clear movies even on gray days, and in the half light near sundown. Makes movies in either black-and-white or color. Brings distant action "close up," by telephoto.

Loads with full 100 feet of 16 mm. film. Price (case included), from \$110. Ask your dealer to show you both black-and-white and Kodacolor movies made with the "K." Or write Eastman Kodak Co., Rochester, N. Y.

CINÉ-KODAK "K"

**★ FOR THOSE WHO CANNOT
OR SHOULD NOT CLIMB STAIRS**

SEDGWICK Elevators bring cheer and contentment into the lives of those besieged by ailments that preclude stair-climbing. Instead of isolation—freedom of travel between floors, more hours in the family circle! Moderate in cost and readily installed in the residence, these Elevators may be operated with entire safety by any one. Endorsed by physicians. Praised by users. Complete information in illustrated booklet. For free copy address Sedgwick Machine Works, 127 West 45th St., New York. Established 1892.



RESIDENCE ELEVATORS

FOLLOW THE SUMMER

**to PHOENIX
ARIZONA**

Enjoy the delights of a semi-tropical paradise this winter. Snow, sleet, slush, and raw cold air are elements unknown in this exceptionally dry climate. Here you can ride, golf, fish, or hike every day—because every day is a warm outdoor day in Phoenix—the heart of the sunny Southwest.

WRITE DEPT. 4 FOR A BEAUTIFUL BOOKLET

**PHOENIX CHAMBER
OF COMMERCE**

PHOENIX, ARIZONA



CHAMPION-INTERNATIONAL COMPANY

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and other high-grade coated paper

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WASHINGTON, D. C.

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Annual membership in U. S., \$3.00; annual membership abroad, \$4.00; Canada, \$3.50; life membership, \$100. Please make remittances payable to the National Geographic Society, and if at a distance remit by New York draft, postal or express order.

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PLEASE DETACH AND FILL IN BLANK BELOW AND MAIL TO THE SECRETARY

193

*To the Secretary, National Geographic Society,
Sixteenth and M Streets Northwest, Washington, D. C.:*

I nominate

Occupation

(This information is important for the records.)

Address

for membership in the Society.

Hudson's Bay Company.

INCORPORATED 27th MAY 1870

SUMMER HOLIDAYS

OFF THE BEATEN TRACK IN CANADA

The Company's fur trading posts scattered throughout length and breadth of Canada are at your service. Enquiries.

HUDSON'S BAY HOUSE

WINNIPEG

FREE FLEX-NEK with this

Amazing New Reel!

The water runs through the reeled-up-line. Un-reel only hose needed—reel with handy crank. All steel. Holds 100 feet or more of line.

FLEX-NEK (lower right) is most practical mouse holder built. Flexible steel tubing on steel base. Eliminates springs—holds mouse rigidly—changed instantly.

Sold by leading hardware and department stores—or send \$5.50 to factory before May 1 and we will send Reel postage paid (anywhere in U.S.A. and U.S.C. Flex-Nek FREE.

If Your Dealer Can't Supply Order Direct from Factory

This Free Offer Expires May 1, 1933

ANKER-HOLTH MFG. CO. Dept. 101
Port Huron, Mich.



Free THIS NEW STYLE BOOK for STOUT WOMEN

IMAGINE the thrill of having *over eighty* perfect dresses to choose from. Every one provided in your exact size. Every one pictured in our new Spring Style Book, and every one ready and waiting to make you your slimmer self.

And there's a wide variety of coats, hats, underwear, hose and shoes, all at equally low prices... and remember, we pay *ALL* postage.

All of this Style Satisfaction awaits you in this magic book. Sent *FREE*; mail the coupon today.

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Lane Bryant: Please mail your free Style Book (112).

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By MOTOR thru EUROPE

ALL EXPENSES — \$365

See Canada, England, Holland, Belgium, Germany, France. Go this summer—with a gay collegiate group or a congenial House Party by motor. Tour prices from \$207 to \$365 include round trip ocean passage, hotels, meals, guide service, motor trips, admission to galleries and museums—even your tips! Itineraries to every country in Europe. Write for free Book-let "E-33".

THE TRAVEL GUILD, INC.
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Sow Burpee's Guaranteed Seeds



These special offers of some of the most popular flowers are remarkable bargains. Burpee's famous guaranteed seeds. Each collection contains the best separate colors.

Royal Astors	4 packets (value 10¢) for 35¢
Annual Larkspur	2 packets (value 50¢) for 35¢
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Get four collections for only \$1.00 postpaid—a wonderful bargain. Write today.

Burpee's Garden Book Free.

W. ATLEE BURPEE CO.
113 Burpee Bldg., Philadelphia





THE BOOK OF DOGS

Here are 102 portraits in color, with a biography giving the "character" of the dog subjects accompanying them. This non-technically written information about breeds and points is valuable to every dog lover or owner.

102 pages (10 x 7 in.), Mollay-made binding, \$3 postpaid in U. S. and Canada, from

National Geographic Society Dept. I, Washington, D. C.



The Wallflower and the Old Maid!

Of course, it is really only a whimsical coincidence that they're found together on Page 107 of Dreer's 1933 Garden Book!

There are 210 pages of authoritative facts in this "Book of the Year" for amateur gardeners. And flower lovers who can read between the lines will find many delightful fancies, too.

Free on request to those interested in vegetable and flower seeds, roses, perennial plants, etc.

HENRY A. DREER
Dept. Y 1306 Spring Garden St., PHILA., PA.

DREER'S

GREAT WHITE FLEET



Guest Cruises to the WEST INDIES and CARIBBEAN

Intimate cruises, informal, free-handed cruises where every passenger is treated with the deference and cordiality due a guest! And what a pleasant, personal thing it is to be aboard one of these spotless liners built for the tropics—a famous fleet led by six magnificent new ships! You're comfortable—cool—amused and entertained . . . with deck sports, dancing, swimming in a big outdoor pool and the most delicious meals.

From New York and New Orleans — Cruises of 9 to 18 days or more — variously to HAVANA, JAMAICA, PANAMA, COLOMBIA, COSTA RICA, GUATEMALA, HONDURAS. Rates from New York from \$125 up, from New Orleans from \$97.50 up.

To and From CALIFORNIA — New York or New Orleans to California, \$200 up. Rates include maintenance of lathes between ship connections. Similar rates Eastbound.

ALL OUTSIDE ROOMS, latest type mechanical ventilation for tropical comfort.

No passports required,
Optional shore excursions at all Ports.

UNITED FRUIT COMPANY

Fier 3, North River, or 332 Fifth Ave., New York
or any Authorized Tourist Agency.



Choose the
Aristocrat of
Cruise Ships

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GRANDE



for WEST INDIES CRUISES

Sail on the ship chosen by initiated travelers for its rare luxury, distinguished cuisine, 22-knot speed, and Italian Line courtesy and service. "Proven" ports, long calls, abnormally low rates. Send for illustrated literature.

16 Days, 3 Cruises—Feb. 11, Mar. 4, Apr. 8, \$190 up
Port de France, St. Pierre, Trinidad, La Guayra, Curaçao,
Colon, Kingston, Havana.

14 Days, March 23 \$167.50 up
Port-au-Prince, Jamaica, Colon, Havana, Nassau.

9 Days, April 26, \$110 up
10 Days, May 6, . . . \$110 up

Also Regular Sailings to ALL EUROPE via the De Luce Southern Route. Fleet of seven new vessels led by the REX and Comte di SAVOIA.

Apply local agent or 1 State St., New York; 1601 Walnut St., Philadelphia; 55 Arlington St., Boston; 944 Arcade, Union Trust Bldg., Cleveland; 133 N. Michigan Ave., Chicago; 285 Post St., San Francisco; 1806 American Bank Building, New Orleans; Architects Building, 1133 Beaver Hall Hill, Montreal



ITALIAN LINE

\$1,000 couldn't have bought it—

FILM GOT IT FREE!

Remove film—the most important step in saving teeth

YEAR AFTER YEAR film endangered this poor tooth. Year after year the neglected molar helplessly resisted. Film formed constantly—and each new coat contained millions of decay germs. One day the acids these germs produced ate through nature's defense-wall of enamel and molar's fight was lost. A masterpiece nature had taken years to build—a precious tooth—was doomed to come out!

What is this film?

What is this film that robs us of our teeth? A slippery, sticky coating formed by the *mucin* in saliva. It stains teeth yellow. It catches bits of food which soon decay. Yes, but that's not all! Film contains millions of tiny germs.

Some are rod-shaped, grouped in clusters. These are *decay germs*. As they live they give off *enzymes* that produce lactic acid. This lactic

acid dissolves tooth enamel just as other acids eat holes in wool or cloth.

Other germs are linked with "trench mouth"—still others with *pyorrhea*.

"What must I do to fight film?"

To fight film use Pepsodent instead of ordinary tooth pastes. Why? Because a tooth paste is only as good as its polishing material—not one bit better. The new polishing material in Pepsodent is one of the great discoveries of the day. Its power to remove every trace of film stain is revolutionary! Its notable distinction of being twice as soft as polishing materials in common use has gained wide recognition. Remember the one safe way to fight film is to use the special film-removing tooth paste—Pepsodent. Use it without fail twice a day and see your dentist at least twice a year.

See how rapidly film forms on teeth



These teeth were absolutely free of film at 8 a. m. **At noon**—the film detector* solution was applied and this is how they looked.



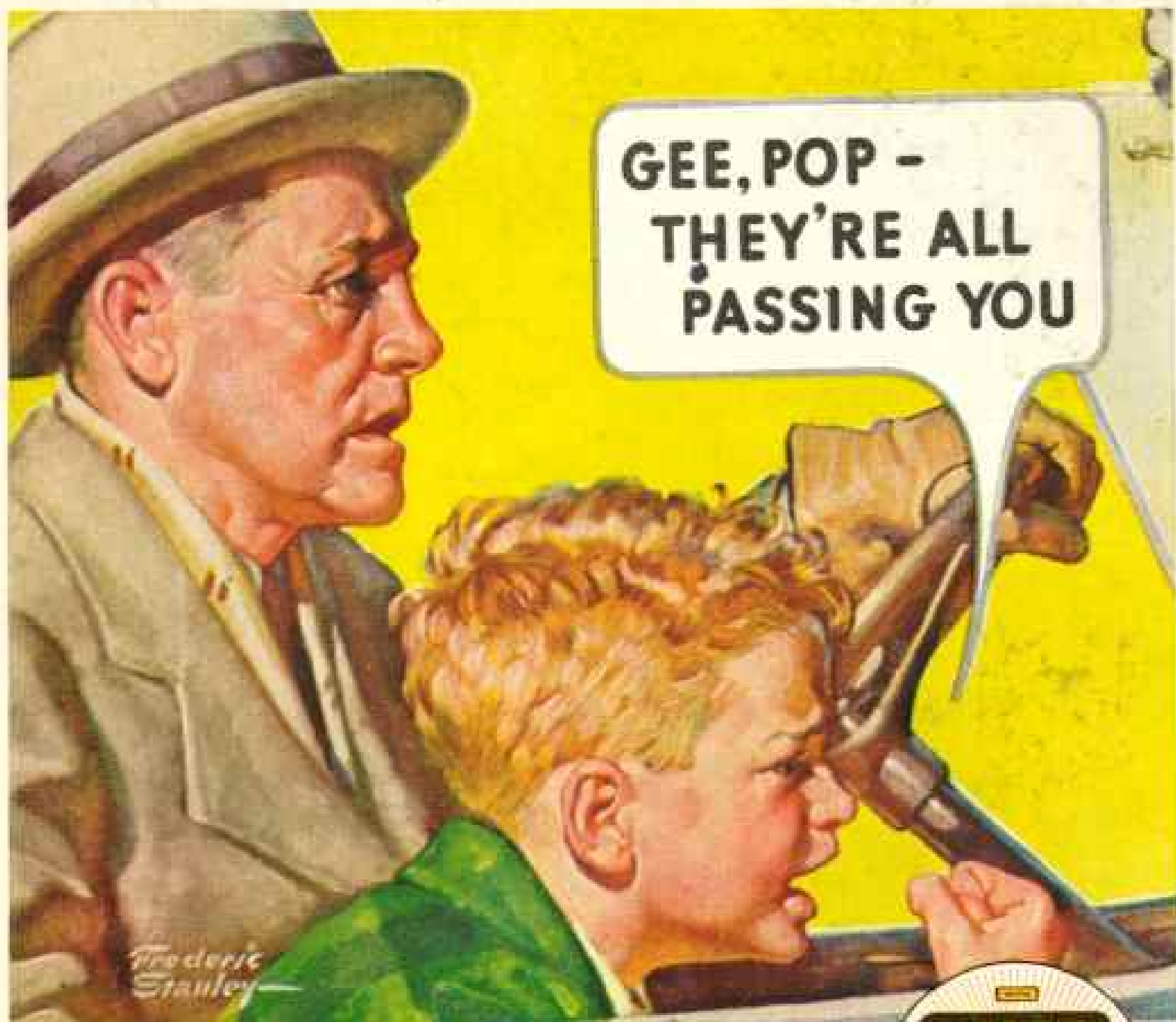
At 8 p. m.—the film detector* shows still heavier deposits of film. Two-thirds of the tooth's surface is covered.



At 10 p. m.—these same teeth were brushed with Pepsodent. Note how thoroughly film has been removed.

* A harmless dye, used by dentists, which stains film so that the naked eye can see it.

Pepsodent—is the special film-removing tooth paste



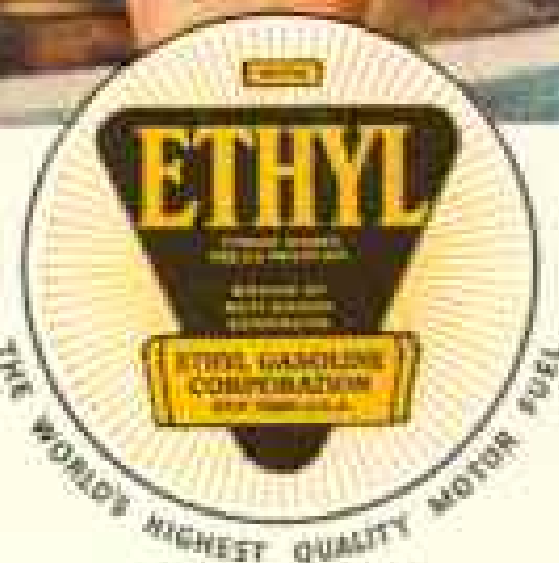
THEY didn't pass you when your car was bright and new—and you still don't like to be left behind. So just remember this: *The next best thing to a brand new car is your present car with Ethyl.*

If you buy a new high-compression car, you'll of course use Ethyl. But if you must make your old car do, give it Ethyl and feel lost youth and power come back as harmful knock and sluggishness disappear.

These days, when we have to do without so many things, we can at least make the most of our cars. And even if you don't measure the fun of driving in dollars and cents, you'll find that Ethyl makes real money savings in lessened repair bills. Ethyl Gasoline Corporation, New York.



Ethyl fluid contains lead. © E. G. C. 1933



BEWARE OF IMITATIONS

All Ethyl Gasoline is red, but not all red gasolines contain Ethyl fluid. The color is for identification only and adds nothing to performance. Look for this Ethyl emblem on the pump (or its globe).

The all-round quality of Ethyl is doubly tested: at the time of its mixing, and through inspection of samples taken from pumps. Ethyl's margin of anti-knock quality over regular gasoline is greater today than ever before.

NEXT TIME STOP AT THE **ETHYL** PUMP