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MRS. ROBINSON CRUSOE IN ECUADOR

By Mrs. Richard C. Gill

WITH a premonitory whisper of destruction, then a rending, tearing crash, the huge cinnamon wood tree fell, crushing slender bamboos and tangling orchids and lianas in its path. It left a wide swath of wreckage in the surrounding bush and seemed somehow to symbolize the clearing we were about to make in the jungle.

A flock of startled little green and gray parrots flying near by veered screaming from their course and dived into the protecting foliage beyond, like so many flashes of green flame. At the same time a series of hiccuping barks from the wooded depths of the hill behind told us that a wandering band of large red spider monkeys were indignant at this terrifying disturbance of their peace.

But our chief sawyer, a bearded, ragged, jungle gnome of the peon class, turned triumphantly and said, with a lordly gesture of his gnarled hand: "See, *patrones*, there has fallen before you the first wood for your home."

Smiling at the head sawyer, Dick and I seated ourselves on huge bowlders and watched our woods gang commence preparations for making the first boards and sleepers for our jungle home. We were to see the same thing repeated many times in the near future, and always we wondered how, by such primitive means and with such primitive equipment, we were to achieve our goal (see page 140).

After the tree had been felled it was handsawed into sections which corresponded to the desired lengths of the planks. Then a barefooted peon, with utter disregard for the safety of his toes, would mount the rounded side of one of the sections and, with terrifying swings of his huge broadax, reduce the cylindrical log to a perfectly squared timber.

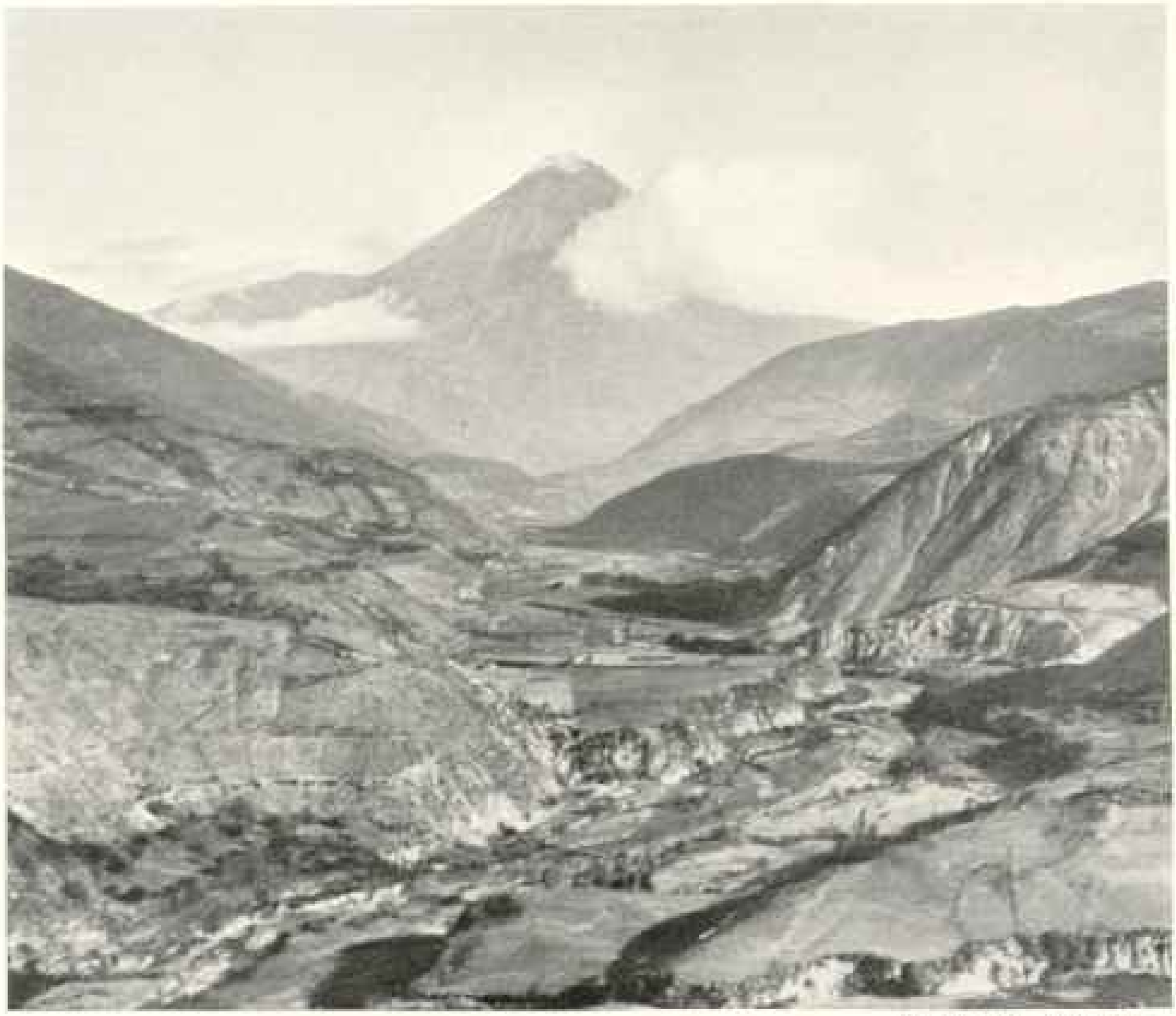
This timber, once squared, was hoisted by sheer manpower—and it sometimes weighed as much as half a ton—to a crudely constructed platform about eight feet high. Once there, it was marked top and bottom by an inked string into plank widths, after which the actual sawing commenced.

The only instrument used was a long, evil-looking ripsaw inserted between the crevices of the rather openwork platform and pulled back and forth by two men, one standing on top of the timber, guiding the saw from above, and the other, eyes and mouth perpetually filled with sawdust, guiding it from below, on the ground.

TWENTY PLANKS A DAY

By this means a skillful pair of sawyers could whip out about twenty planks a day. When we remembered that our wants ran into thousands of planks, as well as foundation pieces, sleepers, crossties, and what-not, the house seemed very far away. With such primitive equipment we had to construct this home, for which we were our own architects and contractors. There were uncounted moments when the task before us seemed hopeless, despite the dynamic enthusiasm with which we had started, and often we searched each other's eyes for a glance of assurance.

Somehow this seemed like real pioneering, which it really was, this business of



Photograph by Jacob Gayer

TUNGURAHUA VOLCANO DOMINATES THE PATATE RIVER VALLEY

The symmetrical cone, visible from the Gills' ranch, usually wears a plume of vapor. At its foot the Patate is joined by the Chambo, and the two, forming the Pastaza, wind around the volcano and eventually empty into the Amazon (see map, page 136). Thus the region drains to the distant Atlantic instead of to the Pacific, comparatively near.

evolving a home for ourselves on the eastern slopes of the Ecuadorian Andes. With the crash of the first falling tree we wondered whether it was all sheer folly, or whether we should ever realize the baronial wilderness life of which we had always dreamed.

After all, was it the early, and doubtless furtive, reading on Dick's part of too many paper-bound dime novels? Or was it in reality a sincere desire to create a permanent expeditionary base on the edge of the Amazon Valley, from which point he could do that ethnologic work among the Indians which had been his ambition for so long? I suspected a good measure of both influences.

Truly the place had been hard enough to find and the task hard to commence. It seemed like more years ago than it really was since we had first been overawed by the exotic loveliness of the mountains and jungles of Ecuador, and had left the country vowing to come back there to live. Now we were back—I know of no better expression—and *how!*

We were still imbued with the feeling of having known Ecuador all of our lives. Nevertheless, it seemed a matter of a few days rather than eight months since we had again landed in the tropical quaintness of Guayaquil, and had taken the little train up from the coast to the centrally located town of Riobamba, which now seemed to belong to us.

There we had established our headquarters among Ecuadorian friends, whose graciousness and hospitality added much to our feeling of being at home, and had

Photograph by Richard C. Gill

GUAYAQUIL IS A MODERN CITY ON A BROAD RIVER

Ecuador's chief port has a beautiful water-front avenue and promenade, called the Malecón. The city is situated on the Guayas River about 40 miles from the coast. In the right center may be seen a fountain, which is electrically illuminated at night, donated by the American colony resident in Ecuador.

spent the past months in exploring the central Andean region of Ecuador to find a strategic place to establish our combination *hacienda* and expeditionary base for Dick's ethnologic studies.

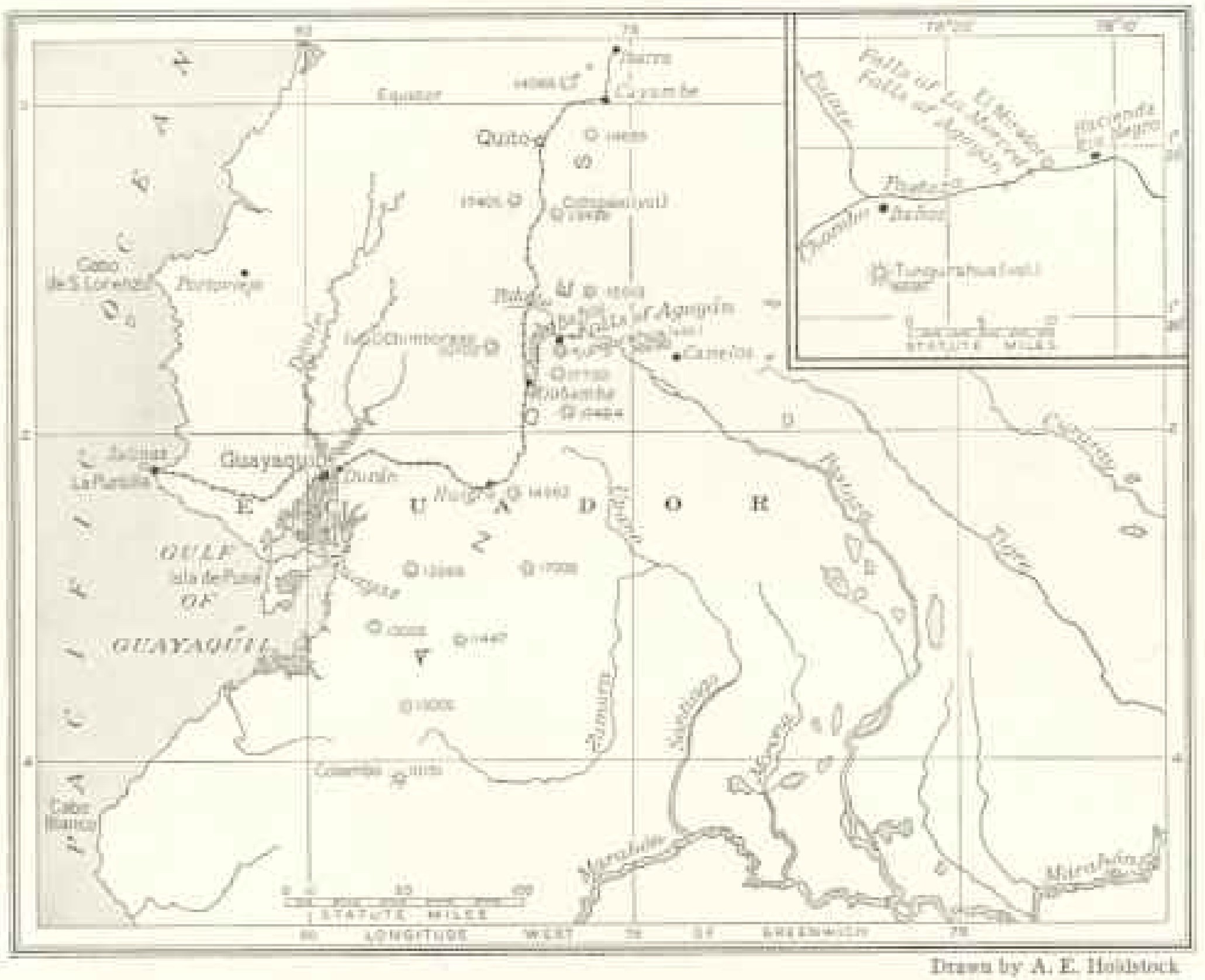
SEARCHING FOR A JUNGLE HOME SITE

In our search we covered many rough, exciting miles, leading our little pack train over the byways and through the back country of the Eastern Cordillera. But always we returned to our present site, although our quest had led us through the region which stretches from Riobamba north to Ibarra, and we had seen many beautiful, quaint, and entirely lovely settings for our ranch. The vision of the Pastaza Valley, into which we had made two exploratory trips, kept calling to us.

Our ranch is located on the eastern slopes of the Andes, about two degrees south of the Equator, at an altitude of some 5,000 feet, on the north side of the Pastaza Valley (see map, page 136).

The site itself is a tropical paradise. A broad, beautifully wooded valley rises in range after range of hills on each side of the falling Pastaza in a series of table-lands. At each level we notice minor climatic and vegetation changes. For example, while bananas, papayas, and even cacao, one of the most tropical of all major products, grow well on the floor of the valley, at which level the house was built, after a half hour's climb one runs into white potatoes growing.

The most delightful feature of this equatorial Eden is the fact that there are



Drawn by A. E. Holdstock

IN THE WILDERNESS OF THE ECUADORIAN ANDES AN AMERICAN COUPLE BUILT A "HANDMADE HOME"

no mosquitoes, and all noxious insects seem to be reduced to a minimum. Indeed, the more poisonous aspects of the jungle seem to be lacking here.

Our nearest town, which is our post office and general supply depot, is Baños, whose white-walled, red-roofed houses cling with a stoical, and several times misplaced, trust to the base of the Black Giant, Tungurahua, a beautifully shaped volcano (pp. 134, 154).

The mighty Andes give way to rolling foothills which at this point begin to be covered with the ever-encroaching Amazon jungles. Indeed, the whole trip from Baños, on the edge of the mountains, to our hacienda is a revelation in the usual West Coast climatic surprises.

Leaving the lava-swept base of Tungurahua at Baños and the semi-aridness of the Andean cradle, one progresses down the valley of the Pastaza, past the Falls of Agoyán, higher than Niagara, and finds oneself getting gradually deeper and deeper into the fringe of the jungle, with a concomitant weather change.

At last, descending from El Mirador, where one sees a large section of the Pastaza River valley spread out, partly occupied by our hacienda, one emerges from the gorgeously orchid-lined trails into the open spaces of our own pastures.

The crash of that first cinnamon tree symbolized the change which had taken place almost as abruptly in our own lives. With as clean a gesture as our sawyer had used to fell that first wood, we had severed ourselves from the placid routine of life in a university town in the States. As I looked around me, the contrast between this new life and the old seemed very marked and in many ways amusing.

A COZY HOME—FOR MANY INSECTS

We left the sawyers and started back for the little tumble-down house which was our temporary shelter. Years before, an Ecuadorian had partially cleared some of the land for pasturage and had built a four-roomed house in what he proudly called the "American style." The heavy tile roof

Photograph by Richard C. Gill

A YOUNG INDIAN COUPLE FROM THE CANELOS REGION

The parrot perched on the chonta-wood pole is now in the Gills' menagerie. The mother is probably not more than 13 years old, but she takes her maternal duties very seriously. The cigarette was the price of the photograph, but the photographer also gave them a copy of the picture, which is now one of their treasured possessions.

Photograph by Richard C. Gill

A BIT OF THE UNITED STATES IN REMOTE ECUADOR

At the entrance to the hacienda is a metal sign bearing a native's version of the American flag. He failed to follow specifications exactly, so it lacks a few stars. The hoisting of the lignum-vitæ lintel which bears the name "Hacienda Rio Negro" required a whole afternoon. Mrs. Gill is perched on the gate.

had fallen in; the rotten timbers which supported it, sagging with fatigue, had finally given up the struggle. A bamboo shack attached to one end of the house was alive with cockroaches. A feeble attempt by the former owner to patch the interstices with mud plaster merely served to make a cozy home for more of the objectionable insects.

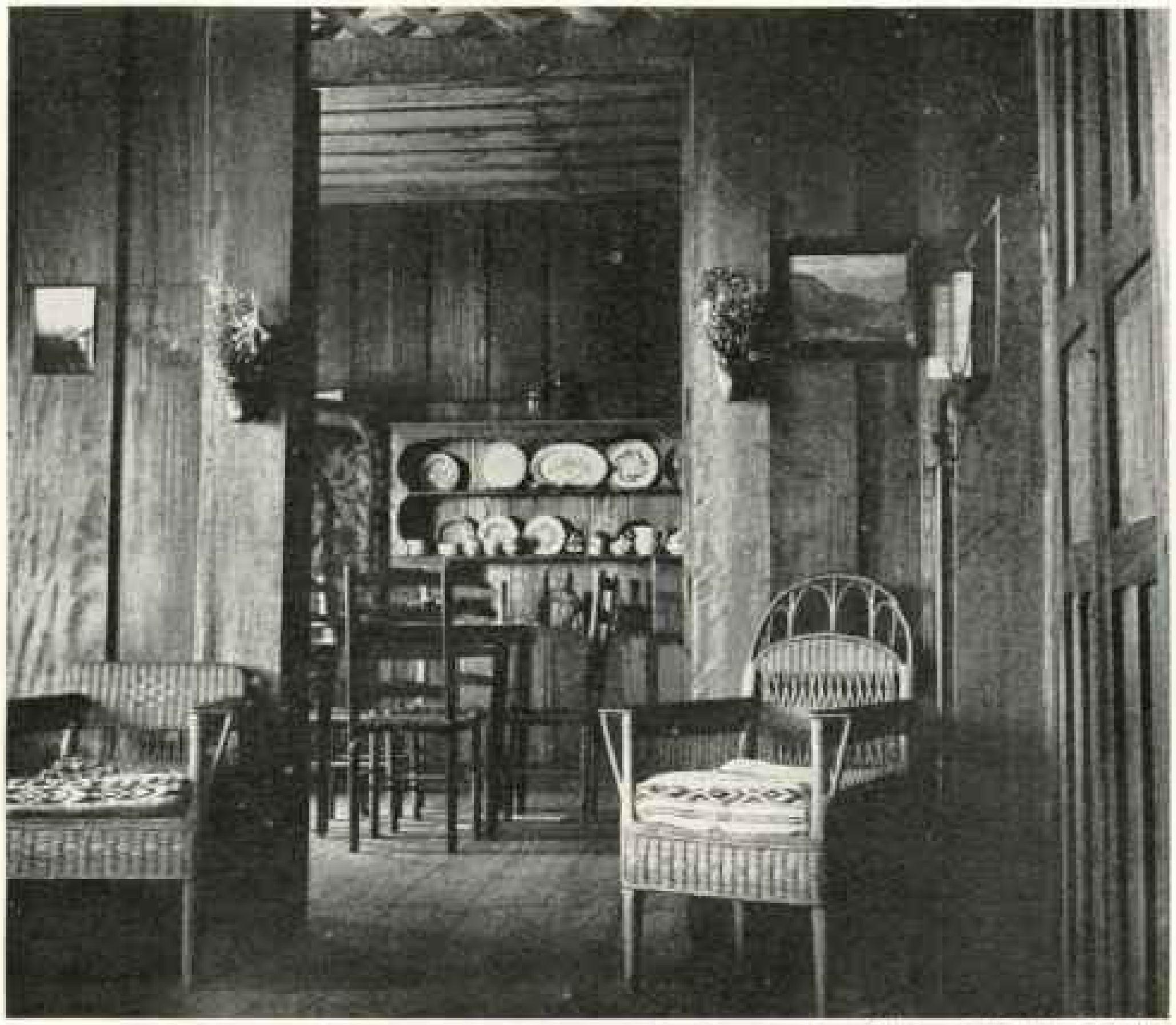
In one corner of this shack a rude stove had been built of mud, into which iron bars were set to form a sort of grill. The means of carrying off smoke had not been taken into account at all; the contraption was like an indoor campfire.

Empty 5-gallon kerosene cans solved many of our first utensil problems. We used them not only for heating water, but also as dishpans, water buckets, and dustpans.

The problem of persuading our native cook to prepare food that was decently clean, to say nothing of being palatable, was exasperating. Once, when I asked Zoila if the potatoes were done, she said, "Just a second, señora," and stuck a long, dirty thumbnail into the soft vegetable. It was almost impossible to give these half-breed servants a lasting conception of household cleanliness. Training them required patience, tact, and not a little firmness.

Strangely enough, one of the most difficult aspects of the servant problem here is to lift them out of their baseless dread of their own jungle, for the mestizo class, almost without exception, hates and fears whatever lies outside its own villages.

These servants were not obtained from the neighboring jungle tribes, but had been



Photograph by Richard C. Gill

NEARLY EVERYTHING IS HANDMADE AT THE FOREST HOME

This view looks from the living room into the dining room. Only a short time before, the very walls were living trees, as was everything else made of wood. The wicker furniture in the foreground was made from reedy vines. Indian women wove the covers for the chair cushions and stuffed them with kapok from the jungle.

brought in from the sierra towns. They were usually of mixed Spanish and Indian blood, with sometimes a trace of one or two other races.

During these first days of the new adventure, we lived as well as we could in the tumble-down structure, choosing the driest corner of the four rooms for our camp beds. The place looked like a bad dream of a warehouse. Packing boxes, camp duffel, and tool kits, piled high throughout the house, made me wonder whether I should ever be able to create a homelike atmosphere in such a place.

A BULL INVADES THE KITCHEN

Even the animals seemed to conspire against us. I remember that we were awakened one night by a series of dull thuds made by a young bull bent on demolishing our makeshift kitchen for the bag of salt hanging there. He knocked down the flimsy door and, tragedy of the first order, also ate the skirt and most of the blouse of Zoila's favorite red dress!

Adding to the general chaos were packing cases containing canned supplies, the piping for our future bathroom, crates of tiles, bathroom fixtures, trunks and suitcases, pictures and books in their boxes. Axes, saws, machetes, carpenter tools, and farming implements were scattered around. Our first chairs and tables were, in the main, improvised from gasoline boxes. Incongruously enough, in one corner was a box of golf clubs and balls waiting for the construction of a small putting course. It seemed incredible that, out of all this

THIS WAS MORE THAN JUST A TREE

To the Gills it was the beginning of a home to be hewed and sawed out of the jungle; for this was the giant cinnamon tree which was the first to fall when the modern Crusoes began the difficult task (see text, page 133).

Photographs by Richard C. Gill

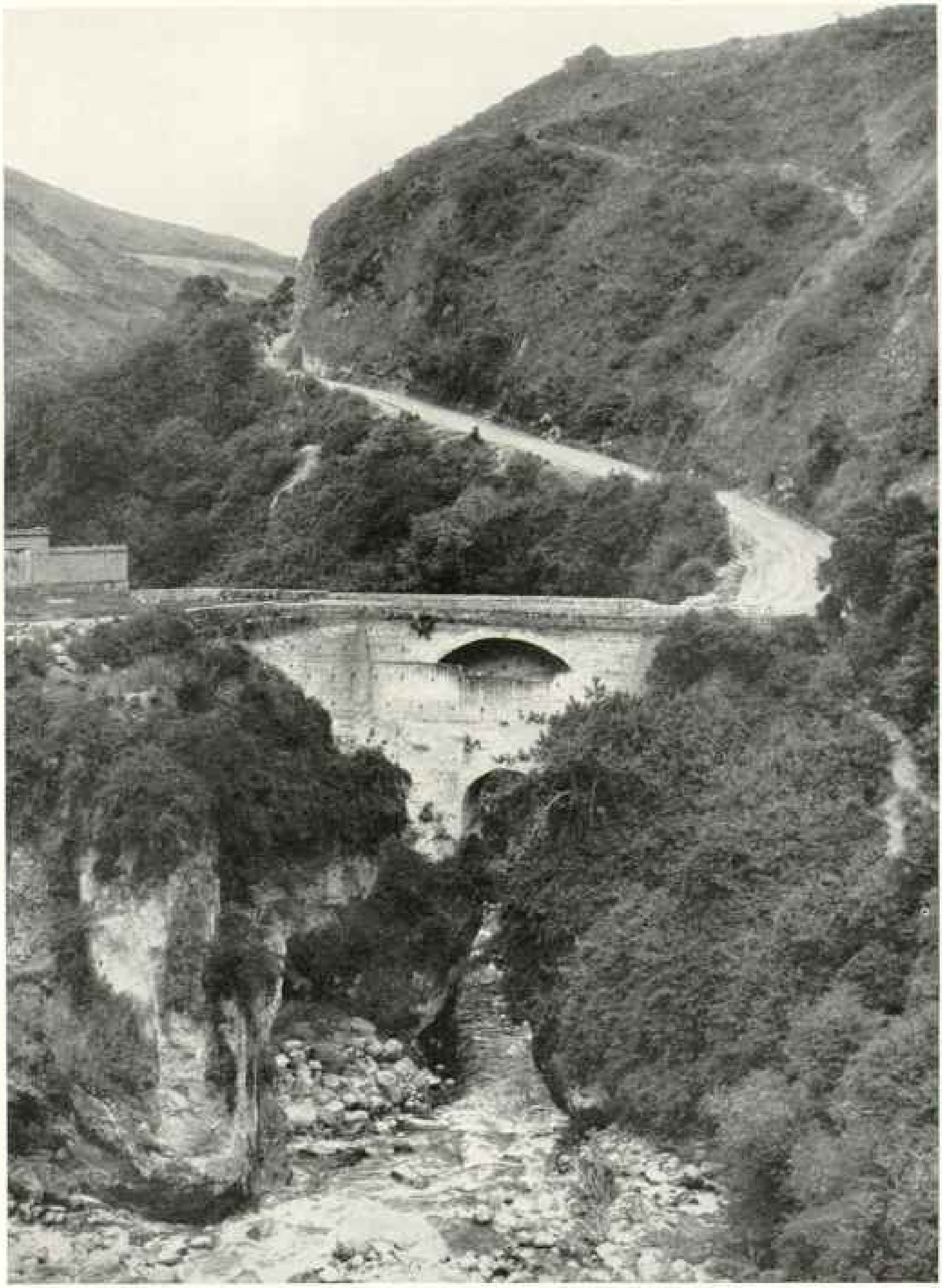
CLEARING A LANDSLIDE ON THE ROAD

Avalanches frequently occur during the rainy season. At this point the road skirts a high cliff, and, as there was no other way around, the travelers had to wait until the tons of dirt and debris had been cleared away.

Photograph by Richard C. Gill

WHERE A MODERN HOME WAS CARVED FROM THE JUNGLE

The main house at the Hacienda Rio Negro is shown at the left. In the foreground a new blacksmith shop is under construction, while a homemade forge and blower are being improvised. The picture was taken during the earlier stages of development of the hacienda. In the background flows the Pastaza River.



Photograph by Ewing Galloway

THE OLD SPANISH ROAD BETWEEN QUITO AND CAYAMBE

The bridge, built before Ecuador became a free nation, is still in good repair. The highway winds through the Andean foothills. In recent years many miles of new roads have been constructed in Ecuador and old roads have been conditioned for motor traffic.

disorder, we could establish a small area of civilization for ourselves by the primitive means available.

Everything had to be done with what resources we had at hand. Immediate purchases were impossible, for there were no convenient shops. If we lacked a certain article, we had to improvise a substitute or, failing that, go without until the next order could be sent out. Consequently we learned to improvise, even when it was a question of creating such things as a forge, a blower, an efficient water heater and pressure tank, a water wheel to run the dynamo to charge the radio battery, a power-transmission belt, dressing for the belt, or kitchen drainboards out of roofing zinc. The whole hacienda, with its house and furnishings, may be put down as one large improvisation.

Photograph from Richard C. Gill

AT HOME IN THE WILDERNESS

Mrs. Gill and her husband enjoy the view from their front porch. The beautiful grain of the cinnamon wood can be seen in the squared posts of the steps. Jerry, the pup, is being welcomed back after a zealous hunt in the surrounding jungle.

Ordering of supplies from the outside towns was not always satisfactory. After waiting months for the arrival of a small short-wave radio set, we were much excited when the mule carrying the precious boxes eventually turned in from the Pastaza Trail. We raced for the hammer to pry open the cases and carefully placed the paper-wrapped parts in one corner of the room. How we regretted not having taken a serious interest in the mechanics of radio instead of relying on a repair man when anything went wrong! We might not have had to study the directions so frantically.

When at last the complicated mechanism was put together, we slowly turned the dials in breathless hope and expectation. No sounds came to us but those of the jungle outside. Again we looked at the directions. Had we forgotten anything? Reviewing all the possible reasons why the temperamental radio would not work, we decided to check the accumulator, but we had no hydrometer. Immediately we composed a letter in our best Spanish, feeble enough, but quite correct, to a radio technician in a town thirty miles away. We sent the letter by special runner to Baños and waited impatiently for the arrival of the gadget.

A few days later we sent another runner to get it. Excitedly we opened the precious package to find—a steam gauge! Another

THERE WERE NO SAWMILLS IN THE JUNGLE

Whipsawing lumber by hand is long, arduous labor, especially when sawing planks from some of the extremely hard, almost ironlike tropical woods. Two men work the saw—one at its upper end, and the other at the lower end. The latter runs constant risk of getting sawdust in his eyes.

Photographs by Richard C. Gill

MACAWS KEEP THE MODERN CRUSOES COMPANY

Perched on the fence in front of the house, these birds with their brilliant plumage provide a vivid patch of tropic adornment. They are often seen as lovely flashes of color against the green of the jungle. The macaws are intelligent as well as beautiful.

Photograph by Richard C. Gill

HERE THE RANCH FURNITURE WAS MADE

In this carpenter shop the young man and several other native carpenters made simple chairs and tables patterned after pictures shown them in books or magazines. Just outside the window is a castor-oil tree which sprang from a seed dropped there by chance.

heartbreaking wait. At last the right article came, and then our little world seemed suddenly less remote from the gay, busy life we had so lightly exchanged for this one.

A RADIO IN THE WILDERNESS

The radio was an important link with a world that had seemed so remote. During one small political uprising in Guayaquil we heard the news broadcast from New York before the newspapers in the mountains had published it.

The natives regarded the set with superstitious awe. The first evening we listened to it we happened to tune in on a speech by President Hoover. Turning proudly to Salomón, our major-domo, I said: "Salomón, that is the President of my country speaking." He answered, smiling, "How nice of him to call you up to congratulate you on your new radio!"

The peons were more impressed by being able to hear programs from the mountain cities of Riobamba and Quito than they were by European or North American programs. All things outside of Ecuador were foreign to their experience, but to hear music from towns which many of them had visited was something at which they could really marvel.

Photograph by H. E. Anthony

ORCHIDS FLOURISH IN THE JUNGLE

Mr. and Mrs. Gill transplanted many kinds to their own garden, so that during the season they were never without the blossoms for the table. They grew some 30 varieties, which differed widely in shape and color.

Bit by bit the carpenters finished their work, leaving us to find some system for taking care of all the odds and ends scattered around the house. We had to watch the men closely during all that time, for they would do the most unexpected things. For instance, when the door to a clothes closet was being hung, Luis, the young apprentice, noticed that it would not close. I found him down on his knees gouging out the floor to make the door swing! With the completion of the toolroom and carpenter shop, as necessary as a living room in a wilderness home, we were able to banish the many implements which had cluttered our rooms.

One day a young boy came down the trail and asked for a job as furniture maker. He looked extremely ineffectual, so we told him that we had made no definite plans for a permanent cabinetmaker. He appeared so thoroughly crestfallen, however, that I consented to his staying on the place to do rough carpentry work around the house. Guillermo was to prove invaluable to us, for he could copy any pictured furniture he saw, and, furthermore, he took pride in his work.

To be sure, he did not approve of my own taste. He had worked on the coast under a cabinetmaker and was much attracted to the various adaptations of Louis periods, which are so popular throughout South America. When I insisted on tables and chairs on the style of the French Provençal and early American, he shrugged his shoulders and said, "Well, if that is what you want. . . . I am here to serve you. But I cannot understand how you, who have been out in the world, can like such simple things as this."

I pacified him by telling him that, after all, we had no lathe, and it would be impossible for him to make delicately turned furniture with the simple equipment on hand. I promised that if we ever lived in a city in Ecuador I would give him an opportunity to let him show me what he could really do.

THE FOREST YIELDS A CHAISE LONGUE

We were fortunate in finding the special osier fiber known as *mimbre* growing in our woods. It was readily adapted to the making of wicker furniture. Having heard of a man who made chairs of this material, we sent for him, and off he went into the jungle armed with a machete. Soon he returned laden with rolls of the strong reedy vine and went to work. In an incredibly short time we had some strongly built, comfortable chairs, a chaise longue, and a table.

From passing Indians we bought sacks of kapok. After picking out the seeds, we made soft cushions for the chairs, mattresses for the beds, pack blankets for the mules, and, in fact, found many other uses for this soft, springy vegetable cotton.

I bought many *macanas*, the scarflike shawls woven by the Indian women of the mountain region, and used them as cushion covers and curtains. These shawls, handwoven of white cotton with a geometric design in indigo (or *vice versa*), last indefinitely and can be washed as often as

Photograph by Violet Ohlsen

"MAKING UP" WITH THE ACHIOTE POD

Three of the author's jungle friends paint their tribal and regional marks on their faces. Among the Indians of Ecuador the men paint their faces even more than do the women; but here the practice is not purely esthetic, as the marks serve the practical purpose of showing whence a tribesman comes (see page 168).

necessary. My peons disapproved of this idea of interior decoration, and Guillermo was disgusted that I did not use delicately tinted silks instead.

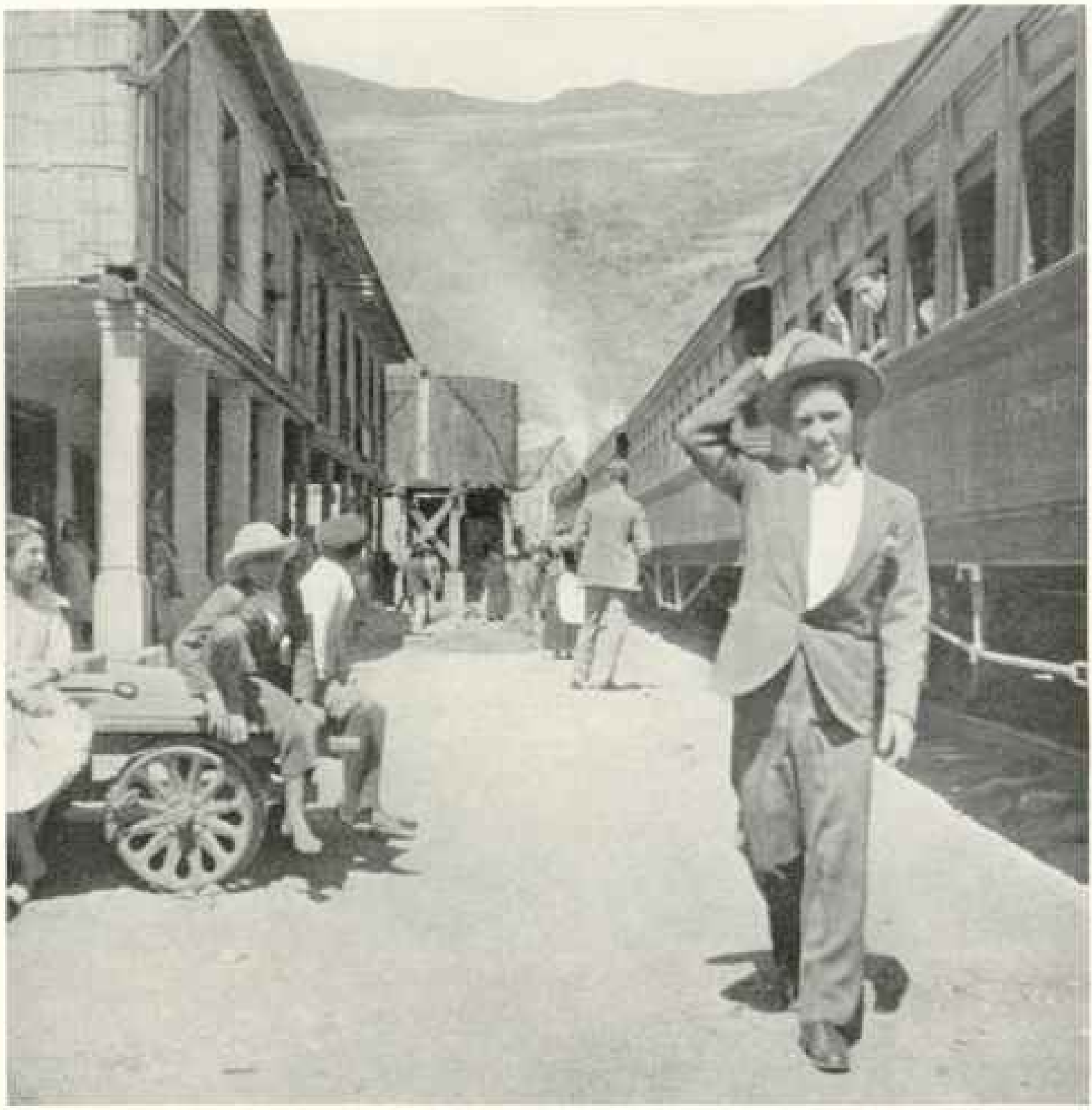
We have no glass in our windows. Heavy shutters of wood can be closed when the rains beat down too heavily. The temperature is so constantly mild that we have no need for further protection. We did, however, find it necessary to screen the windows and doors against a small black fly which, while it carries no disease, bothers all newcomers considerably.

Because we could not bring in bed springs on muleback, we remembered how our grandfathers had arranged their beds, and did likewise. We wove wet rawhide strips in and out of holes made in a strong wooden frame, so that when dry they became taut and were an acceptable substitute for metal springs.

Our kitchen is always a source of wonder to our Indian friends. We purchased a small wood-burning stove in Guayaquil and packed it in to the ranch in sections on muleback. When the new kitchen was completed, we built a small platform for the stove and set it up.

ZOILA IS SKEPTICAL OF A SMOKELESS COOKER

When it was finally ready for the first fire, we placed wood in the firebox and lighted it. As we put the covers back on the stove, Zoila said to me, "But you must leave these covers off, otherwise you can never cook. Why, we cannot see the flame—and where is the smoke?"



Photograph by Violet Gilsen

AN ENGINEERING MIRACLE IS THE RAILROAD UP THE ANDES

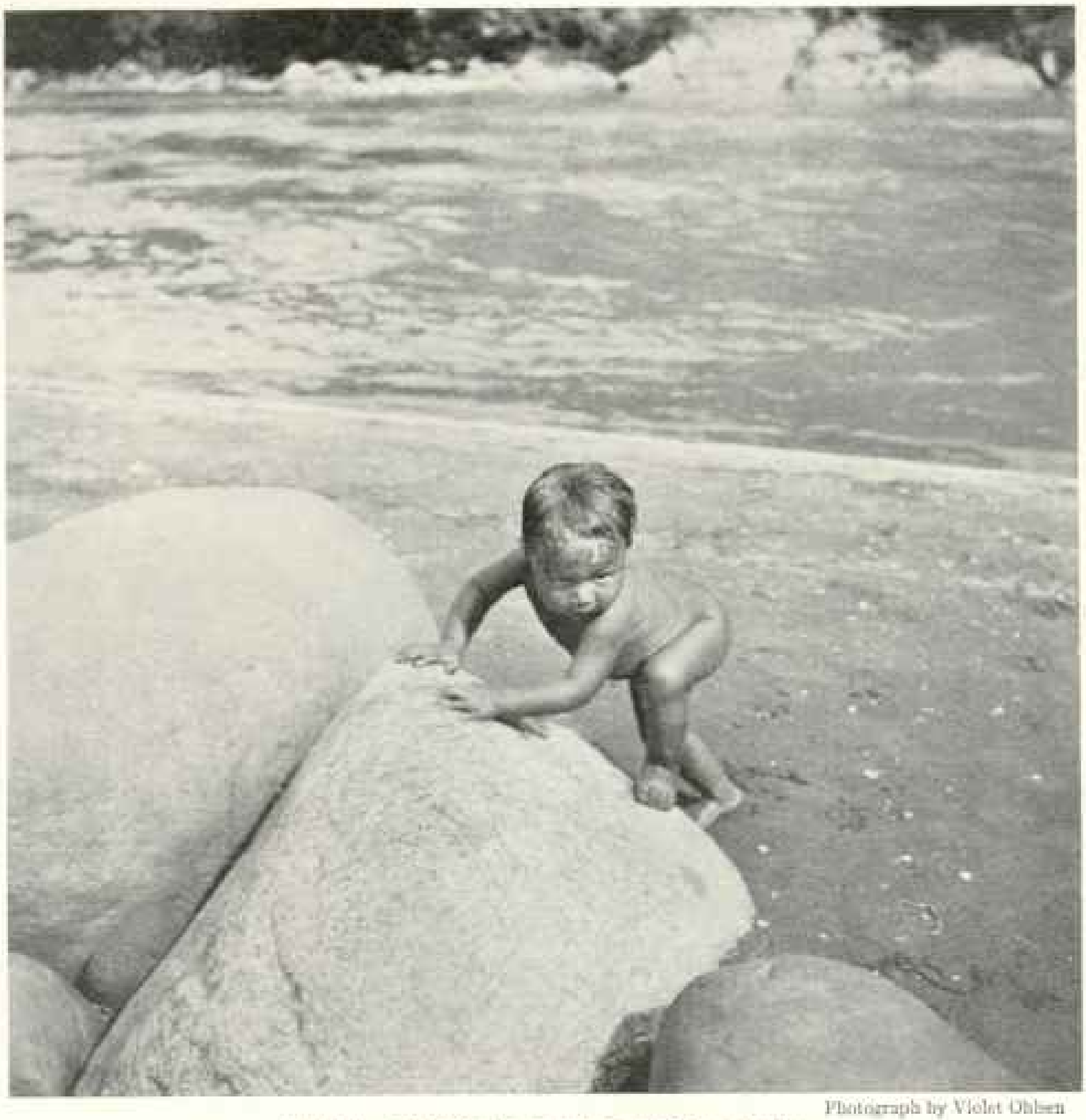
The Guayaquil to Quito line is a monument to North American railroad-building genius as exemplified by two Virginians, John and Archer Harman. Archer raised the funds to finance the enterprise. His brother, as chief engineer in charge of construction, made the dream come true. Here at Huigra, some 4,000 feet above the sea, is the grave of John Harman, who did not live to see the road entirely finished. Above Huigra is the scene of a notable engineering feat, the beetling "Devil's Nose," where the tracks climb upward in a daring zigzag cut out of the mountain side.

When I told her that it was my ambition not to see any smoke in the kitchen, she looked at me pityingly and said, "But it is well known that without the smoke one can do nothing. And this little cabinet—for what is that?"

I explained that it was an oven in which we were going to bake bread. "But how can you put heat below it and the coals on top? Shall we place the coals on top of the bread pan?"

I realized then that I should have to demonstrate the wonders of this stove pretty conclusively to the skeptical Zoila. She insisted that the chief function of the oven was to dry the wood.

That night the peons came, one by one, to see for themselves what a fine little engine we had in our kitchen. When they saw that it really cooked food, they were charmed. Zoila told them complacently, "But, of course, I knew all along how it worked. I understand these marvels of the gringos. Only I can manage it successfully!"



Photograph by Violet Ohlsen

YOUNG AMAZONIA EMERGES FROM A BATH

This future Canelos warrior is climbing back from the beach under his own power, after having toddled into the wavelets of the Pastaza River.

By dint of much hard work on Dick's part, we finally installed a complete water system. He directed the building of a flume of hardwood and bamboo to bring water from a stream on the hillside back of the house to a pressure and settling tank, also built of wood. From this tank the water was piped into the house.

We had no vise in which to hold the pipe steady enough for threading and experimented two days before we could devise a satisfactory arrangement. Dick said that only Providence and pioneers could know how hard it was to thread a pipe without a vise. Many days followed of lying on his back under the house studying the intricacies of connections; but finally everything was completed.

We made an efficient system for heating the water from two 50-gallon drums. One with a serpentine coil served as a furnace and the other as a tank. Thus we had fifty gallons of hot water on tap all the time. In the bathroom we installed the fixtures we had bought in the mountains, and even made a green-and-white tiled shower of commodious proportions. Never before did we so fully appreciate a bathroom. Ours is lighted by candles set in sconces made of hollow bamboo stems.

Photograph by Violet Ohlsen

FROM SPINNER AND WEAVER TO WEARER

The women of these mountain Indian families near Riobamba spin wool during every possible waking hour. With the wool they weave ponchos and all their clothing. The Indians usually own a few sheep and sometimes obtain llama wool.

The construction of a laundry followed: tubs supported on a stand with efficient drains. Encarnación was scornful of it. She preferred going to the creek, kneeling for hours, rubbing more stubborn spots on the rocks, beating the clothes, swinging them around her head, and slamming them against the stones. She said that washing the clothes in hot water would give her rheumatism.

I was in despair at the thought of losing my good laundress. Given the clothes, she would go out at dawn to wash them in her usual way, and when I came out she would smilingly show me the sheets—clean, yes, but with more than occasional holes. At last it occurred to me that by showing her how little soap and rubbing were really required in the new laundry, she might be persuaded to its use. By demonstration and a smiling doggedness I won the encounter.

Ironing was always difficult, for we had only the heavy iron, which had to be filled with burning charcoal made from the hardwoods of our forests. Encarnación was content with it, for she had never known any other.

TILLING A MOUNTAIN GARDEN

One of the first things we did on arriving at our new ranch was to look for land which had good drainage and which was not too far from the house, to clear for the planting of a vegetable garden. We found a shelf of good land overlooking the river and set men to chop down trees, clear away brush, and free it as far as possible from roots. The preparation for planting did not differ markedly from gardening habits at home.

Not everything we tried grew well, but we learned through several experiments what products were best adapted to the climate. Carrots, beets, beans, spinach, and radishes thrived, but lettuce and cabbage grew very tall—into small trees, in fact—and developed disappointingly small heads. Tomatoes flourished. Even stray seeds dropped around the kitchen door grew into strong, healthy plants and supplied our table for months. The small pepper, *ají*, so popular in Ecuador, grew equally well.

We were well supplied with fruits. Pa-

paya trees gave us delicious melons for our breakfast table. Bananas, of course, we planted immediately, making use of numerous varieties. Indeed, so many are the varieties in our own plantation that they can be utilized either as a staple or a delicacy for any course in any meal, when one learns the numerous recipes for their preparation.

SOME EXOTIC FRUITS ON THE MENU

Orange and tangerine trees grew near us; also lemon and lime trees. Wild guava trees bore fruit conveniently near our fences.

There is also the *naranjilla*, which is an orange-colored fruit covered with a prickly, hairy coat. The inside of this fruit is a greenish-yellow color and is filled with tiny seeds.

One species is tasteless, but the juice of the other, when ripe, has a delicate, distinctive aroma and flavor, which may be indicated vaguely to the sense of taste by mentioning a combination of orange, pineapple, and strawberry. It makes a refreshing hot-weather drink. Experimenting with recipes using this unusual fruit, I found it would make a delicious pie similar to a lemon meringue.

With such variety of fruits at hand, it was not difficult to find enough to supply our table.

Ordinary staples we bought in Baños, about 15 miles away. Twice a week we sent out a trustworthy peon to purchase what we needed.

On Saturdays, when the weekly fair is held in Baños, the people come in for miles around with their produce to barter in the plaza—a picturesque, colorful, and highly amusing market.

Whenever our own gardens were not producing, we supplemented our supplies from the Baños Plaza, and could find there, in season, strawberries, peaches, plums, *chirimoyas* (the custard apple), and, in fact, almost any fruit or vegetable we desired (see page 159).

We always keep on hand an emergency supply of canned goods and condiments. Such items, as well as luxuries, have to be ordered from the coast, with two or three weeks' anticipation.

Photograph by Richard C. Gill

ENCARNACIÓN PRIZES HER MANY PETS

The author's faithful peon cook and wife of the ranch herdsman displays a small parrakeetlike bird known locally as the chilicres. These birds make highly amusing pets, as they can be taught to whistle and dance.

Perishable foods are kept by means of a homemade, water-cooled balsa-wood refrigerator. The mountain stream which we diverted over this refrigerator box keeps butter hard and vegetables fresh and crisp.

While we raise our own pigs and chickens, most of our household meats are bought in Baños, although we sometimes butcher on the ranch itself. Oddly enough, in the jungle, predatory animals do not disturb us greatly, though our fowls and rabbits receive occasional visits from possums (*raposas*), coatis, and *tigrillos* (ocelots). Our neighbors told us of a jaguar that killed thirty-five head of cattle a few months ago before a posse was organized to go after him.

We have far more trouble with our plantation products than with our stock. Our wild neighbors, who really seem to be more vegetarian—especially the deer, tapirs, wild hogs, and monkeys—made nightly raids on the bananas, yucca, sweet potato, and white carrot crops. We set many traps, but they were usually too wily to catch.

The mail comes into Baños twice a week, and is brought to us by one of our own runners. We subscribe to two local newspapers and several magazines from the United States. These, in connection with our books, keep us supplied with reading matter and, what is tremendously important, keep us in the reading habit. A new book and the arrival of the mail are always cause for celebration.

CLOTHES CLOSET IS A CORRUGATED IRON ROOM

Outdoor clothing is most practical for daytime use. Boots, breeches, and long-sleeved shirts are adapted to wear indoors and out and provide protection against mud and insects. This costume scandalized my neighbors at first. Even the jungle Indians looked askance at me. A woman might wear almost no clothes at all, as they did, but wearing *pantalones* and riding a horse astride were a bit indecent. At night, however, we change to informal town clothes for dinner. It rests us and keeps us from losing contact with the amenities of the civilized world. Our good clothes are kept in a special room roofed with corrugated iron, consequently very warm and dry.

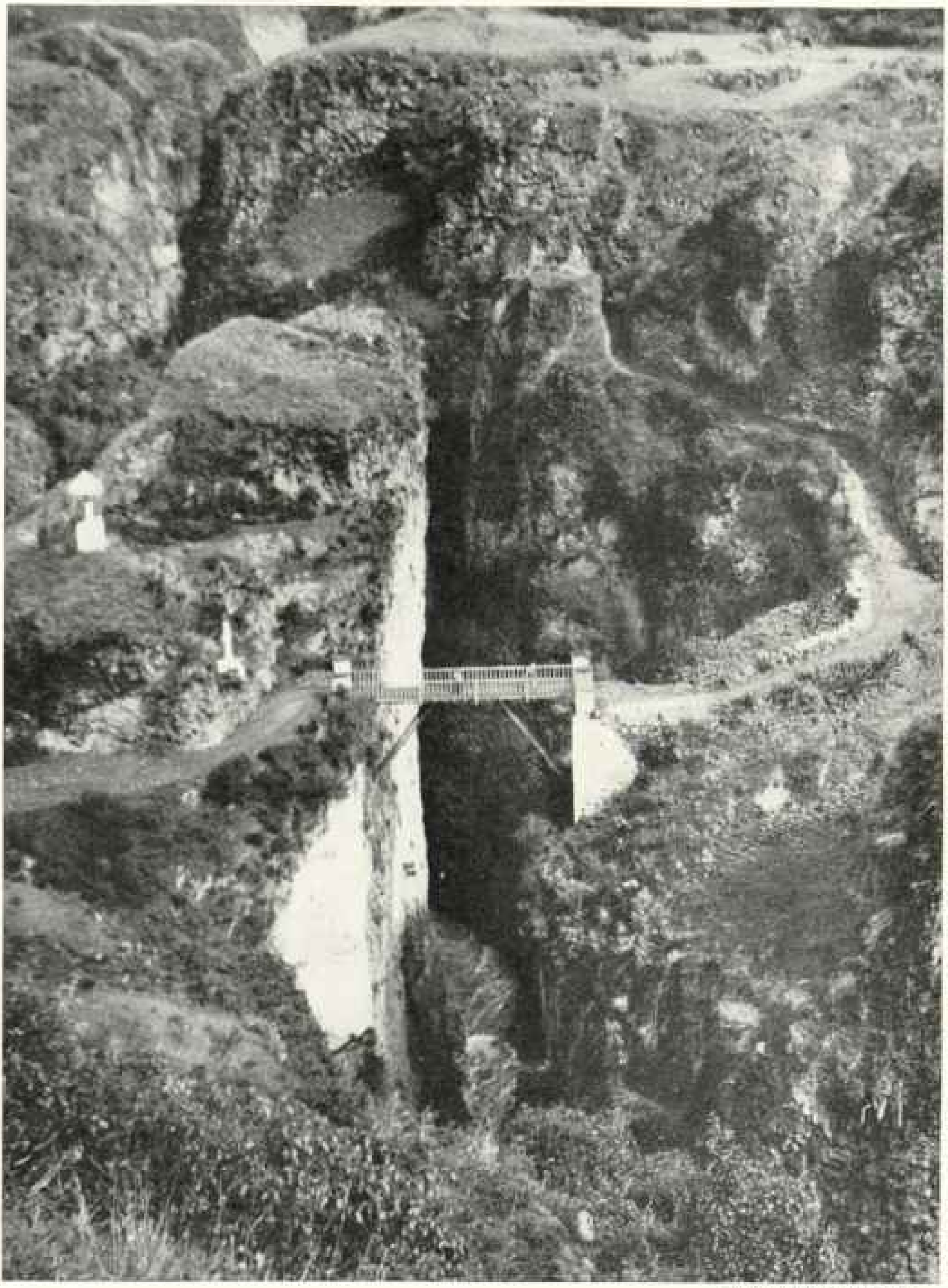
In spite of our living in an isolated place, we are constantly in touch with the outside world by means of our telephone. "Constantly," excepting the times when storms fell trees over the wires and break the connection. The Ecuador Government, through the Minister of the Interior, was kind enough to let us tap a private line which goes to an outpost a few miles beyond us in the jungle. This permits us to telephone to any place within the province, telegraph to any part of the Republic, and by that same telephone we can cable any part of the world and get a reply in a few hours.

In our isolated position, there is neither an army post nor a police force on which we can rely for any sort of armed protection. Consequently we do our own policing and, to a certain extent, govern the petty affairs of our immediate neighborhood. Naturally, we impose and execute our own discipline on the ranch itself, where our personnel has run as high as 38 or 40 people. There are fights to be settled and thefts.

If anything serious happens, we send the offender to the representative of governmental authority in Baños, but on our ranch we are really an isolated bit of the United States. A sign in front of the gate reads: "Propiedad Norteamericana. Se prohibe la entrada sin el permiso del dueño." Translated, this means: "North American property. Entrance absolutely forbidden without the permission of the owner." It sounds much less hospitable than it really is.

Since our ranch is located nine miles from the end of the automobile road, of necessity our transportation is by horses and mules. We have several saddle horses that are now accustomed to the tortuous trail, which is sometimes very muddy and rocky in spots, but everywhere spectacularly beautiful, as it winds around the spurs and ravines of the Pastaza Valley gorge. No matter how many times we ride over that trail, we always find something new. Flowers in bloom, sometimes orchids, wild guava blossoms in their season, lilies, but always some bright, fragrant blooms cheer the trail rider.

Brilliantly plumaged birds fly overhead, their calls echoing in the canyon walls, and occasionally a startled wild animal, a *guatusa* (agouti), maybe, darts across the path. One day we saw a large puma in the brush beside the trail. Several times we have seen the small "spectacled bear" native to that region feasting on sugar cane in a neighboring clearing. As we ride by an occasional thatch-roofed hut, startled pigs grunt



Photograph by Jacob Gayer

DEEP GORGES MAKE ROAD-BUILDING DIFFICULT

The bridge across the Pastaza near Baños, Ecuador, appears fragile against the sheer cliffs. Although the Andes are higher in other parts of South America, they present in Ecuador a particularly rugged succession of steep mountains, deep valleys, and abysmal canyons.

Photograph by Wilson Popenoe

THE VILLAGE OF BAÑOS MARKS THE LINE BETWEEN SIERRA AND JUNGLE

This cobblestone street has known the tread of many Indians and pack animals, but only in very recent years have automobiles disturbed its calm. The large cross in the foreground is typical of the many roadside shrines. At the right are the lower slopes of Tungurahua Volcano. Famous hot springs are located at the foot of the waterfall which appears on the mountain side in the center.

A TRAFFIC ACCIDENT IN THE WILDERNESS

Just as a pack train was passing, one of the cables of this small suspension bridge on the trail below the ranch tore loose, letting down one side. Fortunately, the only casualty was the mule, whose body is seen suspended from the cables.

Photographs by Richard C. Gill

INDIAN RUNNERS BRING MAIL TO THE JUNGLE OUTPOST

Trained to their task from childhood, these messengers thread the wilderness trails with amazing ease and speed. The large leaves serve as protection from the equatorial sun and also from the frequent rains, the water running off their glossy surface.

disgustedly and naked babies smile shyly at us, as they sit sunning their brown bodies by the side of the trail.

Beyond the few scattered little huts and settlements immediately on the trail, the unbroken wilderness stretches on either side of the Pastaza for hundreds of miles. There are hidden valleys and wooded peaks where no white man has ever been and very few Indians have penetrated. Here, on the trail, beyond meeting a pack train in a narrow spot, there are no traffic problems, and we are always sorry when the trip is over.

THE FREIGHT AND THE MAIL

Our freight is carried by mules, although for occasional light loads and mail we use half-breed runners, who are, after all, less expensive and just as rapid. Our head peon is a remarkable man, about 70 years old, who has known these jungles for more than fifty years. Many are the stories he can tell of political uprisings in which he has taken part. He is tall, straight, lean, and does not look his age by many years. When he starts down the trail with the outgoing mail, every piece carefully weighed, marked for postage in Baños, and stuffed into the sleeve of an old raincoat, we know that tireless trot of his will soon bring him into the town. Old Papacito has a deep, booming voice and always comes to the window to bid me good-bye.

When we started to build our jungle mansion, for such it appeared to the awed peons, it seemed utterly impossible and beyond conception to them. I had shown a picture post card of the Roosevelt Hotel, in New York City, to a houseboy, Joel, son of a respectable family in a near-by mountain town.

Joel was reasonably intelligent, could read and write, and took a lively, if sometimes too active, interest in all that was going on. He looked at the picture for a long time, literally counting the rows of windows indicating the number of stories, and said that although he realized gringos could do remarkable things, such buildings as this one could not exist. There was a 4-story structure in Quito, it was true, but higher than that a building could not go. Even a gringo could not hope to fabricate such a place as we designed on the Pastaza.

* * * * * * *

Two years have passed and we have proved that Joel was wrong. We have long ago built the mansion in the jungle. As I sit here writing at my desk of *canelo*, or cinnamon wood, it seems impossible that so short a time ago it could have been a large tree majestically waving its branches on the hillside back of the house. The wicker furniture made from osiers growing in our forests is very comfortable and quite modern. We have at last achieved the comforts of the white man's civilization in the jungle.

An hour ago Joel served our dinner on the hand-rubbed mahogany table made by Guillermo from the picture I asked him to copy. Our china is native-made and hand-decorated in a simple design which resembles that of Italian pottery. The shawls are effective as curtains and stand out brightly against the soft, satiny gleam of the cinnamon-board walls. Joel, dressed in white and moving quietly in his canvas sandals, brings coffee and liqueur into our book-lined living room.

"ALL THE COMFORTS OF HOME"

We enjoy the mellow glow of that room. Against the dark walls, the paintings of a Quito artist emphasize the rich, bold tones of native scenes and native faces, grown dear to us now. Between the book shelves which flank one end of that room is a built-in divan designed for us by a guest, one of New York's foremost stage designers. It is upholstered in the downy kapok of the woods and covered with the weaves of nimble native fingers. The muted radio is bringing in a Broadway melody.

It seems a far cry from those first weeks of discomfort, heartache, and impossible, gleaming hope. How justified our wild dream of life in the jungle! I love this house of mine, with its kitchen complete enough in equipment to serve our varying tastes; the candle-lit dining room, where flickering orange lights enhance the grain of the canelo-wood sideboards, buffet, and table; the bedrooms, each with its curtained dressing table, wide, soft beds, and shuttered, curtained windows. A wide veranda incloses the front and sides of the house, and another of generous proportions outlines the U between the rear wings.

In this east wing is Dick's office, with its own bookcases, homemade desk, chairs, and filing cabinets. Of the latter he is inordinately proud. The walls of the office are decorated with trophies presented to

Photograph by Violet Ohlsen

FRESHLY POISONED ARROWS ARE PLACED BEFORE THE FIRE TO DRY

This smiling warrior, who is not nearly so effeminate as his face would indicate, has just dipped his small, but deadly, blowgun arrows in *curari*, and has placed them before a small open fire in order that the dark gummy poison may dry before he leaves for the hunt (see text, page 163).

him by shy jungle friends. In the office, too, is the small but effective arsenal. This wing also contains the carpenter shop, in which Guillermo now reigns proudly over his bench vise and assortment of tools brought down from the States.

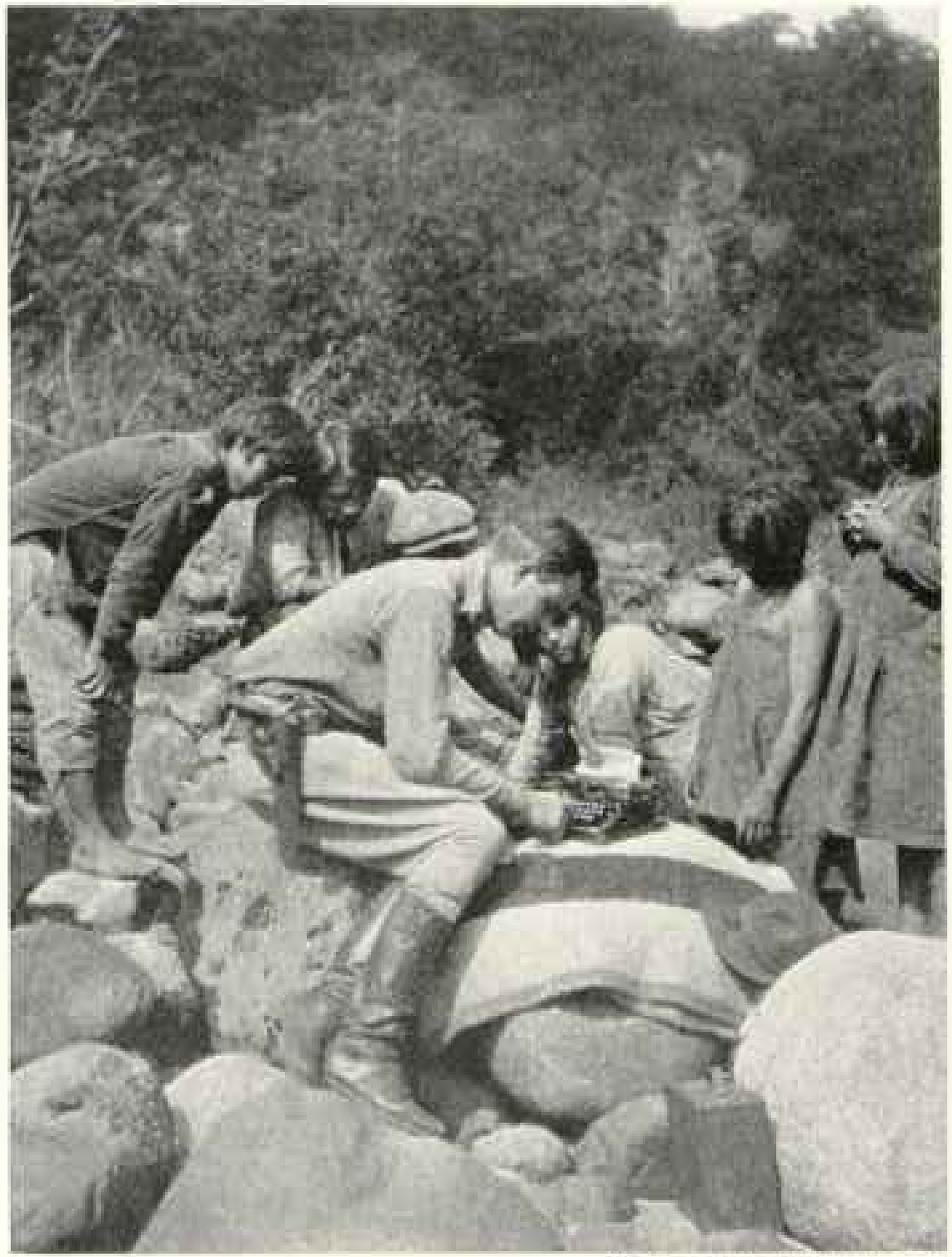
In the other wing is the tiny but well-equipped drugstore, from which Dick, the only "doctor" for miles around, dispenses first aid, clears up infections, dresses wounds, and sometimes, when emergency demands, resorts to simple surgery. The wide top of the peons' food box on the back porch has been used more than once as an operating table.

The cool, spacious hall which runs through the center of the house has become a little museum, for it is here that we can place to best advantage the show pieces of jungle craft: Indian hunting weapons and war spears, daringly brilliant feather ornaments, all collected by Dick in the pursuit of his studies of the aboriginal life around us.

THE RANCH HAS A BLACKSMITH SHOP

Outside, in the "working" grounds, is a blacksmith shop, with an improvised forge and blower, to which the stubborn little pack mules and the riding horses are led for shoeing. Across the driveway is the peon shack, made of split bamboo and covered with thatch, in which my patient Encarnación sits cross-legged, preparing the simple meals for the laborers. Near the big gate is a corral built on the western style, by using whole bamboo poles instead of pine timbers.

That big gate which leads to our hacienda house from the Pastaza Trail was an



Photograph from Richard C. Gill

THE TYPEWRITER ALWAYS DREW A CROWD

Mr. Gill's machine was a never-failing source of amusement to the Indians. They could not comprehend why anyone should spend so much time poking the keys merely to make rows of black marks on paper.

Photograph by Richard C. Gill

"MRS. CRUSOE" INSPECTS A NEWLY MADE CLEARING

Frequent rides formed a pleasant part of the day's routine. This particular one led to a recently cleared-off area which was being made ready for planting bananas.

Photograph by Richard C. Gill

SUNDAY IS MARKET DAY IN BAÑOS

A weekly fair in this small Andean town draws crowds from the surrounding countryside. On sale are peaches, guavas, tangerines, and avocados; cheeses and eggs; and also brooms, straw mats, hand-woven articles, and pottery. A typical market-day crowd is shown in the plaza. At the right of the picture is the fountain which here, as in the Orient, is a community center.

Photograph by Violet Ohlsen

EVEN THE BEST OF PACKS AT TIMES CAUSE TROUBLE

Part of a pack train of the Hacienda Rio Negro has stopped on the orchid-hung trail so that the peon can adjust the pack. The Gills successfully used a handmade combination of the South American and North American types of packsaddle for all pack purposes.

achievement in hand labor. To the top of the huge lignum-vitæ posts, 15 feet high and 20 inches square, the men hauled up on runners a cross-beam weighing 1,700 pounds. Sheer manpower, lacking the assistance of machinery, tugged and sweated that massive lintel into place all one afternoon. There it is now, etched in the moonlight, proclaiming to the jungle and the trail the results of our two-year effort (138).

Around the house is the beginning of a lovely flower garden. We have carefully hauled fresh soil from the jungle and, after scraping off the gravel layer placed there by the former owner, laid deep beds of the rich earth. I envied the jungle hillsides their floral wealth and wanted to capture some of it for my garden. When the peons learned of my love for orchids they began to bring in plants. Now more than 30 varieties flower in exotic splendor. A neglected little hibiscus plant was nursed along to provide shoots from which we have planted a complete hedge surrounding the grounds.

Our first attempt to cultivate roses ended in heartbreaking disaster. Armies of ants stripped the little bushes of every blossom and leaf, until we learned by patient experiment how to combat their raids. Bulbous plants grow luxuriously, but even they have to strive against the depredations of rabbits and coatis, who nibble off the tender shoots.

The vegetable gardens are flourishing. We do not have the unlimited variety found in large city markets, and Dick swears that he will not touch a carrot, beet, or artichoke when we leave for the States; but I am proud of the bounty of that garden.

Some of the fruit trees are bearing, too. On the hillside thousands of coffee plants have been set out, where they must be carefully tended in shade for two more years before they will bear the first crop. The castor-oil trees have been laden with berries in a harvest far greater than the local markets could use.

WATCHING A STRANGE WORLD GO BY

Outside, in the moonlight, lies the old Pastaza Trail, brooding beside the shimmering eddies of the river whose course it follows. At night it seems lost in its own meditations on a wild and gory history. By day we have seen a weird panorama of human freight pass by the big gate—prospectors, explorers, tropical tramps, jungle renegades, gay caballeros, and bronzed Indian chieftains with a slavish retinue from the far depths of the green world downstream.

One of the most interesting derelicts was a young man, a graduate engineer, who had gone slightly mad from too much adversity. Without any apparent provocation, he gave wild whoops which echoed through the jungle, startling all its denizens. This practice earned him the nickname of "The Turkey" from our amused peons. He also had a habit of delivering long, impassioned speeches on social injustice, during which his eyes gleamed darkly with a fanatical light, as he pounded the table before him. Poor Martin! I wonder where he went after he left us to seek his fortune in other lands—for he left with the stark and simple announcement that he was going to walk to Chile!

Another temporary visitor, also an engineer in search of gold farther in, disturbed us with the feeling of a sinister presence as long as he remained on the place. We breathed with relief when he left and were not surprised to hear, months later, that he had been killed in a hold-up in the western United States.

Frequently explorers passed by, driven by that restless urge which sends men to investigate the hidden peoples of the earth, their habits of living, and sometimes to find the treasures which have come down to them through the long centuries.

Invariably our visitors were interesting people, whom one does not meet in the course of ordinary human events.

Even our neighbors are a rather pleasant lot, although they are obsessed with an unceasing curiosity about our habits of living and the strange personal things which we have brought with us from the States, what those things might have cost, and what our plans are, if any.

One of my neighbors—a slender, barefooted half-breed woman—has given me many lessons and much good advice on jungle household craft. Whenever she comes to see me, or I ride by her house, we have long, ceremonious conversations about our respective households. These visits always end in some offer of a little gift or refreshment. They are truly a hospitable, courteous people.

One of the most gracious of our acquaintances is a Dominican priest who lives in Baños.

THE MAN "WHO TURNS ON THE SUN"

The visitors which have intrigued me most are our shy, jungle Indian friends, a group of whom, as I write, is visiting us. The men are impressed by the strange voices which issue from the little radio. They feel that we control some strong magic which enables us to change our voices and they tremble before the weird music which emanates from it at the touch of our hands.

The flashlight is another source of wonder. Great is the man who can turn on the sun in the hours of darkness! Dick had commanded their admiration for his marksmanship with a rifle. Now they also regard him as a powerful *brujo*, or witch doctor! By reason of this reputation he has been able to penetrate the secrets of their occult lore and to gather and correlate the legends of their people, their folklore and witchcraft.

The women of the party are peering shyly in the windows and chattering musically in an Indian dialect. I have just finished showing them the kitchen, with its incomprehensible implements. The shining aluminum of pots and pans answered the gleam in their wondering, smiling eyes. Our dishes and the fact that, seated on chairs, we eat at a table make them giggle with amusement. The beds, with their squashy pillows, seem strange to them, accustomed as they are to sleeping on a sort of bamboo shelf, built out from one wall, with their feet dangling over the coals of the low fire. Our mirrors enchanted them.

These girl women, who have known no childhood, with fat babies strapped to mus-

Photograph by Jacob Gayer

A MAKER OF "RONDADORES" IN THE MARKET PLACE OF RIOBAMBA

These Panpipe affairs, made of reeds, might be called the national musical instrument of the Ecuadorian Indian. The tones are not at all strident or unpleasing, and the minor notes are plaintive and haunting. The melodies are simple and are repeated over and over again.

cular hips, had long since taken on the arduous duties of women of the tribe. They are betrothed from babyhood and are mated when they are 10 or 11 years old.

A PAINTED FACE IS A CALLING CARD

Our jungle Indians are for the most part slender, well-built people of medium height, with copper-colored skin and a Mongolian cast of features. They often wear their black hair cut in a long, straight bang, which falls almost to their eyes and accentuates the slanting eye-set. The women use the *achiote* pod as a face paint, draw large circles of its orange-red color high on their cheekbones, and use it on their lips.

The different tribes use regional markings of well-defined patterns in painting their faces. Sometimes the patterns consist of diagonal lines running toward the cheekbones from the corners of the mouth, sometimes a circle of black on their foreheads. There are many markings to indicate tribe and region—where one's calling card is his own painted face. From occasional white traders the Indians have learned to value highly the more permanent stain of an indelible pencil.

The women to-night are dressed in short jackets of coarse black cloth and have wound a piece of this same cloth around them to form a short skirt which reaches the knees. Usually a strip of their own copper skin shows through as a sort of girdle. The men wear the briefest of shorts. When they go out to some mountain town, however, they add shirts made from this black cloth, which is so highly prized that it is a standard measure of exchange. An Indian carries cargo a

Photograph by Violet Ohlsen

THE AUTHOR'S JUNGLE FRIENDS SERENADE HER

With flutes made of reeds, and handmade drums, the Indian plays plaintive minor songs. The first Indian has a Panpipe instrument (see opposite page) and also a small drum. The other two are using the native flutes.

specified distance for a certain amount of cloth.

My evening's visitors come from a proud, sturdy race that has lived for so many generations in freedom in their jungle fastnesses that they do not have the apathetic look of their sierra kin who have suffered the yoke of the Inca and conquering Spaniard. The fact that they must wrest a living from the jungle entirely through their own efforts and the skill of their hands has made them independent.

They have their own small plantations of yucca, corn, and bananas, and their meat they hunt and kill with weapons made by hand from material the jungle offers. Chief among these weapons is the blowgun, a slender tube ranging from four to ten feet in length, made from the extremely hard outer husk of the chonta palm. Its highly polished barrel rivals that of a rifle in finish and in accuracy.*

Accessories to the blowgun are a quiver filled with splinterlike darts of bamboo, a gourd filled with kapok, and another with *curari*, or *jawbi*, the lethal, viscid black poison of these jungle peoples. The quiver and its gourds are slung by fiber cords around the neck of the hunter. When he sees game he wants to kill, he takes one of these inoffensive-looking darts, half severs the sharpened tip with the razor-sharp jawbone of a piranha fish, twirls a wisp of kapok around the other end of the dart to get air compression, and inserts the dart into the jaguar-bone mouthpiece of the blowgun. With uncanny accuracy he hits

* See "Over Trail and Through Jungle in Ecuador," by H. E. Anthony, in the NATIONAL GEOGRAPHIC MAGAZINE for October, 1921.

A STREET SCENE IN THE SUBURBS OF QUITO

A Quichua Indian family brings its weekly production of handmade brooms into the capital of Ecuador to sell at the fair. The broom straw grows wild in the mountains.

Photographs by Violet Ohlsen

INDIAN DWELLINGS ARE OFTEN PRIMITIVE AFFAIRS

Frequently it is hard to distinguish between the Indian's hut and that of his livestock. This barnyard scene shows a wing of a Quichua dwelling near Riobamba.

Photograph by Violet Ohlsen

POISONED SPEARS MAKE DEADLY WEAPONS

Canelos warriors show their manner of using the chonta-wood spears in jungle warfare. Among the Jivaros the tips of these wooden spears, almost as hard as metal, are often dipped in poison, as are their blowgun arrows (see illustration, page 157).

what may be a tiny target up to 200 feet away. Death follows quickly, for with the *Strychnos toxifera*-tipped darts he has only to break the skin of an animal.

SETTING UP A BLOWGUN TARGET

We were so fascinated by these blowguns that we bought several from an Indian friend and devised a target from a burlap sack filled with straw. On it we painted concentric circles in different colors and set it on a tall easel made by the clever Guillermo.

On rainy days we place this target at one end of the long veranda and hold heated contests for the championship. On sunny days, however, we seek other amusement, sometimes bathing in the clear waters of near-by streams or in one of the limpid pools overhung with giant ferns and reflecting the exotic magenta blossoms of the tree called locally the "Fernán Sánchez." We set up rifle ranges back of the house to while away idle moments and to keep us in practice for occasional hunting trips. We also enjoy horseback rides.

Photograph by Violet Ohlsen

"LITTLE GRANDFATHER" IS A BIT LIGHT-FINGERED

This mischievous capuchin monkey is a successful and wholly incorrigible thief. Many sly depredations in and around the peon bunkhouse where he lives have been traced to him. Cigarettes, buttons, and, of course, food disappear regularly when he is around.

Photograph by George M. Tyson

A BABY TAPIR GOES EXPLORING

When this inquisitive youngster grows older, he will lose his chocolate-colored coat with its pronounced white markings and become much more drab in appearance.

Photograph by Richard C. Gill

THE PASTAZA CARVES A DEEP CHANNEL NEAR BAÑOS

In this view of the river's deep gorge is shown one of the remaining abutments of an ancient fallen bridge that might well serve as a model for the bridge of San Luis Rey. A feature of this Andean region is the number of canyons cut between sheer cliffs by the rushing streams.

Photograph by Violet Ohlsen

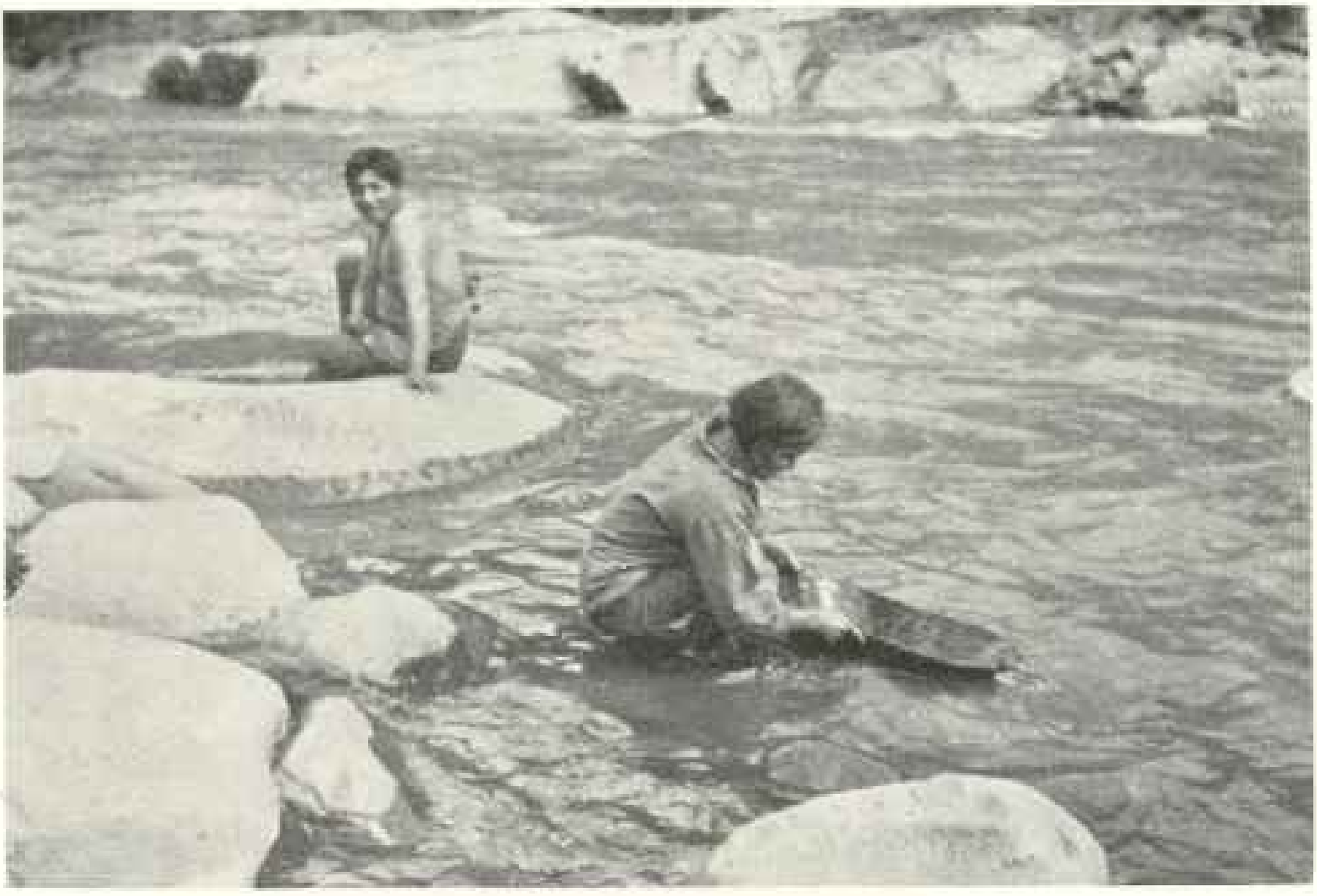
YOUR FACE IS YOUR CALLING CARD IN THE JUNGLE

The painted markings on an Indian's face indicate to the initiated the tribe and the general region to which he belongs. They are often applied with the achiote pod (see page 147). In recent years the Indians of some regions have adopted indelible pencils as substitutes, so that the pencils rank with the beads and trinkets once used for trading.

Photograph by George M. Dyott

THE AGOUTI IS AN INDIAN DELICACY—AND MENACE

These jungle rodents, about the size of rabbits, are extensively hunted by the Indians, both because they enjoy the meat and because the animals often raid plantations.



GOLD IS EAGERLY PANNED BY INDIANS IN ECUADOR

They wash the dirt with a rotary motion for bits of the precious metal. The jungle Indians usually use a wooden bowl more nearly round than the one pictured above. At the outposts of civilization the gold is exchanged not for money, but for trade goods, such as unbleached cotton cloth, beads, powder and shot, and muzzle-loading shotguns.

Photographs by Violet Ohlsen

THIS JUNGLE BABY IS PROUD OF HIS WOOLLY MONKEY PET

Indian babies do not have toys, and the little animals are their most prized possessions. The palm leaves in the foreground are used by the tribesmen to make roofs for their shelters.

Photograph by Richard C. Gill

MRS. GILL DONS A GAY INDIAN COSTUME

An Indian maid in the house of an Ecuador friend loaned her fiesta dress to the author and initiated her into the complicated way of putting it on. The costume seems almost Rumanian in its design and coloring. The Indians use the upturned hat brim to carry many small purchases.

We have found it so much more interesting to observe the jungle animals than to kill them, that, although we make many excursions into the woods, we almost invariably return empty-handed. To see a band of monkeys traveling through the trees with all the family, from the old grandfather to the young females with babies tucked under their skinny arms, is much more fun than to scatter them by bringing down one of their number. Our peons like monkey meat, but I could never bring myself to try it. One look at a little hand in the stew discouraged me. I should have felt like a cannibal, although I know from hearsay that the meat has the pleasantly gamy flavor of rabbit.

The Indians hunt with dogs when they have them, and they value the dogs highly. Black dogs are the most highly prized for the simple but jungle-wise reason that their visibility is low at night! These valuable animals form one of the chief delicacies of the rather catholic diet of the large cats, which when they have once tasted dog meat will stop at nothing to get more.

Several years ago, when visiting the Campa Indians in Peru, we were told how the evening before, while the family was grouped about the nightly clan fire, with its last dog at the edge of the fire, in the center of the human circle, a huge jaguar, with a scream and a single flashing movement, leaped over the heads of the seated group. It seized the dog in its jaws and vanished into the jungle night before one of the Indians could move.

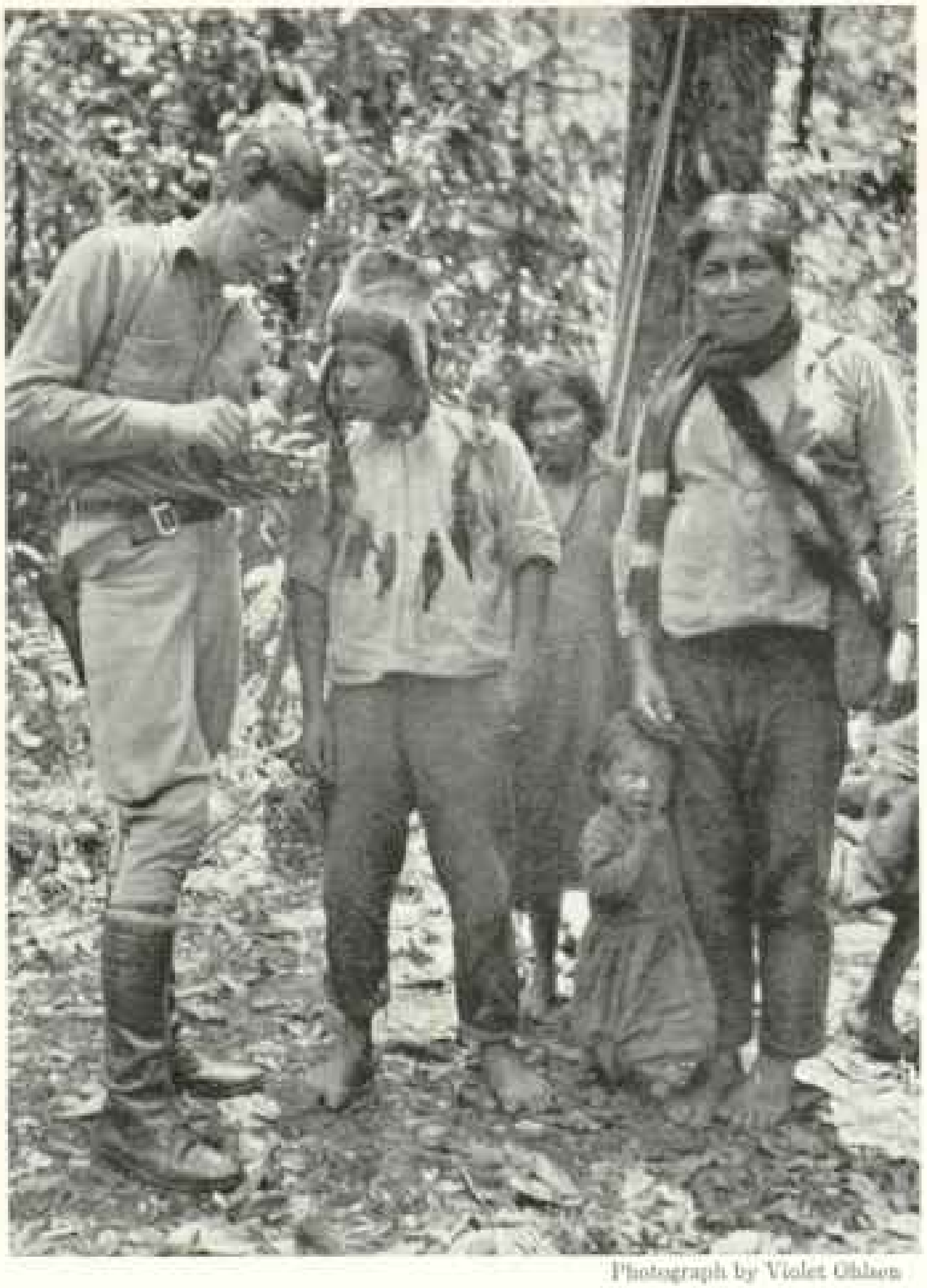
I am constantly being offered egret plumes, jaguar skins, and other strange jungle produce by every wandering band of Indians for my own two beautiful German shepherd dogs. But the whole Amazon Valley could not produce enough of the beautiful cat hides to tempt me to part with my two dogs. They accompany me on all the jungle trails and are now wise themselves in the ways of the smaller jungle fauna, to the grief of the latter.

We have many pets on the hacienda. Most entertaining are five small capuchin monkeys, known locally as *machin*. Until recently they played in complete freedom among the trees outside the house, to which they come when they feel hungry. There they sometimes receive food, to which they add the final touch of jungle cuisine—occa-

sional spiders, grubs, and other forms of insect life.

Lately, however, they have had a house to themselves, for the complete little structure, with its compartments, swings, and play articles, can scarcely be called a cage. It was bad enough when they pulled huge handfuls of cane thatching from the roof of the peon quarters, thus letting the rain in on the sleeping and eating men. But they also dropped down from the rafters over Encarnación's head as she was cooking meals, stole her huge stirring spoons, and leaped back into the eaves to jeer at her rage.

Among our other animals is a moss monkey—small, green, and wicked; a *chichico*, among the tiniest of the monkeys; a coati, raccoonlike and greedy, a marmoset and kinkajou. The two latter are nocturnal.



Photograph by Violet Ohlson

CURIOSITY OVERCOMES NATURAL STOICISM

The usually reserved, almost expressionless faces of the jungle Indians can almost always be made to light up with animation when some mysterious device of the white man is shown to them. In this picture a Canelos Indian is overcome by his desire to look through a camera finder.

Stupid enough during the daytime, the marmoset is a flashing streak of dainty lithe-ness at night, making incredible leaps after insects. She then devours them as she sits on her hind legs ogling the surrounding landscape with buttony, bulging night eyes and wearing under her snub nose a changeless smile which has won her the name of "Mona Lisa."

The kinkajou, cub-bear-faced, weasel-bodied, with a prehensile tail, is more personal in his attentions. Unless means are taken to prevent it, he visits us in the house every night, where he loves to play with the dogs and ride around on their backs, which is all very well and amusing until we have gone to bed. With characteristic kinkajouness, his ideas and ours of the time to retire do not coincide, so there is often a merry chase. It is not so merry when one has to get up in the middle of the night, in a dark house, and capture an agile beast who has just pushed a dish off the buffet and then wishes to play hide-and-go-seek.

Our birds are more reserved and keep more to themselves. The three macaws, two violently red and the other just as violently green, usually can be seen perched on top of the ridge of the peon house, making a lovely splash of color against the background of the green jungle. The favorite haunt of the parrot is the top of the avocado tree in front of the same house, from which point of vantage she scolds the world the livelong day in Quichua. This means, especially when she talks fast, that

Photograph by Richard C. Gill

THE FALLS OF LA MERCED RUSH OVER A VERDANT CLIFF

The cataract flashes silver against a background of green. Then its tumbling waters run into the upper Pastaza River a few miles above the Hacienda Rio Negro (see map, page 136).

she has a certain advantage over us. Parrakeets and *chilicreses* add to the bird list as well as to the general bedlam when feeding time for the zoo rolls around.

It is all very manorial and distinctly a lot of fun. Consequently, as I write this, I am somewhat saddened by the thought that in two days from now I shall be leaving this jungle home, with its lovely, if rather medieval, baronial life for a visit to the United States.

Encarnación, her wrinkled face tear-streaked and her orange-colored skirt falling about her bare feet, as she sits cross-legged on the floor at my feet, is weeping silently, as Indians do, and praying for the safe return of the "children" (Dick and me) from the far-off foreign lands. She has always been my mentor in primitive domestic economy and ever my loyal and faithful friend, Indian that she is.

Outside, the full, mellow, tropical moon is filling the valley with diffused radiance, as the mists slowly lift from the jungle and show range upon range of wooded moonlit hills, thousands of acres of wild virgin forest, ours as much as it is anyone's.

Far away, in the hills to the back of us, come the occasional weird outburst of howling monkeys and the hoot of an owl. Near at hand I hear the muted tinkle of a guitar in the peon shack and from my feet the soft sounds of Encarnación's prayer.

I think I shall be glad to come back.

A NATIVE SON'S RAMBLES IN OREGON

By Amos Burg

Author of "On Mackenzie's Trail to the Polar Sea" and "To-day on 'The Yukon Trail of 1898,'" in the National Geographic Magazine

With Photographs in Color by the Author

DISCOVERY of Oregon came first by sea. But for nearly three centuries the wild and dangerous aspect of the mountainous coast held at bay the navigators of five nations who sighted it. Spaniards, Russians, Englishmen, Frenchmen, and then Americans searched vainly for the fabled "River of the West" that legend said flowed through this coastal mountain barrier into the sundown sea.

It remained for a Yankee skipper, Robert Gray, of Boston, seeking a cargo of furs for the China trade, to find and cross the breaking bar of the mighty river in 1792. He named the river for his ship, the *Columbia*.

Captain Gray, who traded a chisel for 200 otter skins, probably did not sense the river's destiny in the clatter of his plunging anchor chains. After establishing this claim to the River of the West for the infant American Republic, he continued to stoke his hatches with fur, and sailed for the marts of Canton. But the barrier was broken, and the Columbia became the wilderness highway through Indian Oregon.

LEWIS AND CLARK LED THE VANGUARD

In the exploration by land that followed, Lewis and Clark led the way across the continent in search of the headwaters of the Columbia, 13 years after Gray had entered its mouth. Close in their moccasin trails followed fur traders and trappers of two nations, competing for control of this stream that drains an area of 259,000 square miles, taps the snow beds of the Yellowstone and the Saskatchewan, and provides the only sea-level passage through the lofty Cascade Range to the Pacific Ocean.*

For more than a generation Columbian waters echoed to the buoyant songs of the fur brigades before the first covered wagon, hauling an iron-nosed plow, rumbled westward. Then, beginning in 1843, throngs of men, women, and children trekked over the perilous Old Oregon Trail from the Missouri.

Covered wagons, stretching as far as the eye could see, rumbled their toilsome course toward the Columbia, carrying pioneer families into a tragic struggle with stalking death. The old Emigrant Road is strewn with unmarked graves. In 1852 several thousand persons died from cholera alone.

This western migration of home-builders, bearing the elemental beginnings of empire on their wagon beds, created, by the things they did, a heritage of spirit that runs through the years and the generations of people.

THE END OF A FAMOUS TRAIL

The goal of this 2,000-mile trek was the fabulous Eden of the Willamette Valley.

Here, near the junction of the Willamette and Columbia rivers, the building of Portland into one of the world's major inland seaports and the peopling of its enormous domain mark an American epoch.

People once considered the city's distance of 100 miles from the sea a disadvantage, but this location has been a major factor in its growth.

Improvements in the natural sea lane provided by the Columbia River have brought the ocean liner to the threshold of a rich and productive area, and to the center of industrial production at Portland. Mountain and valley contours that dip portions of several States into the Columbia Basin give easy grade to cargoes of golden grain, wool, lumber, and fruits that pour through the gorge into the city's huge terminals and manufacturing plants.

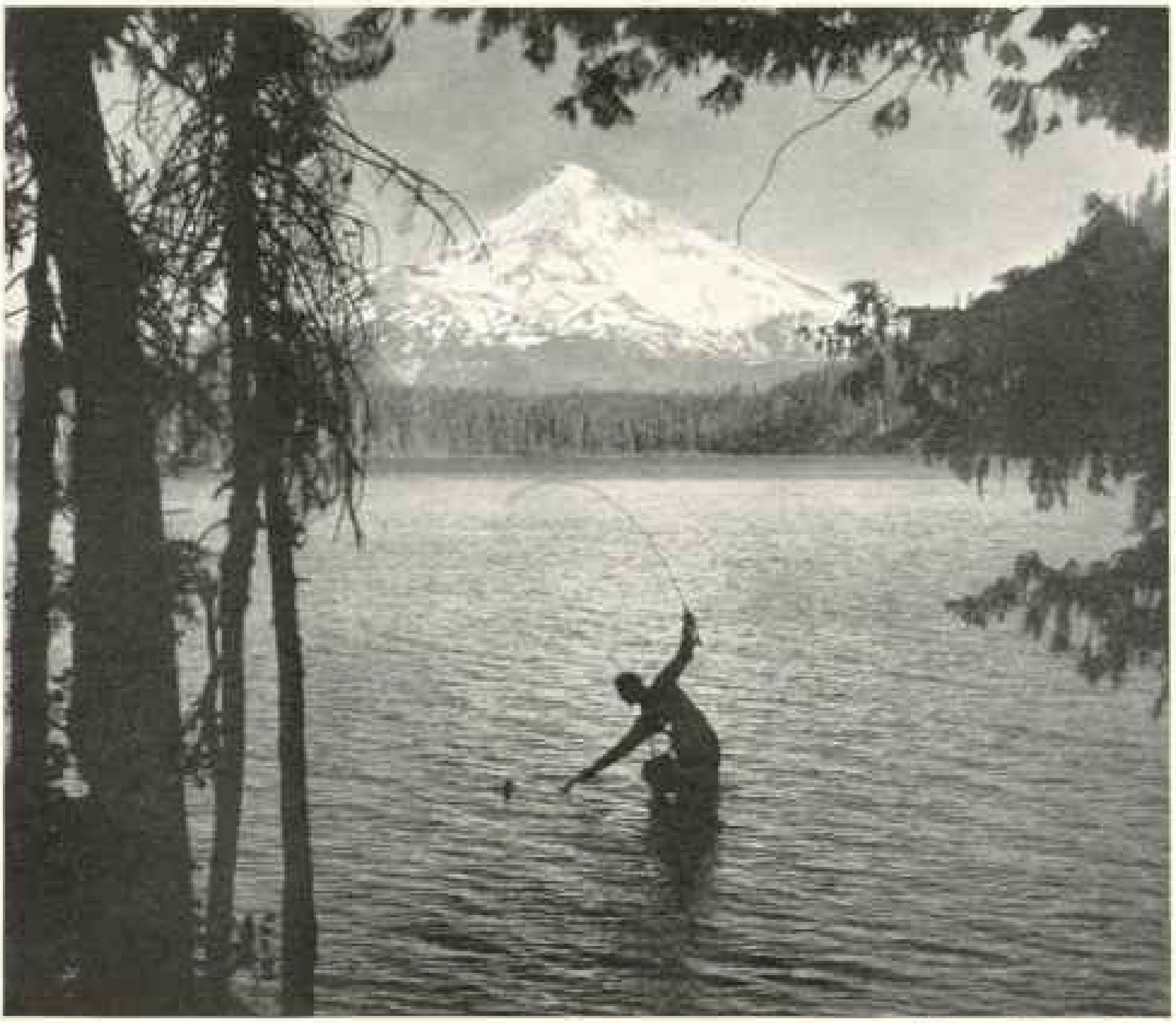
My birth, on the banks of the Columbia, missed the Old Oregon Trail days by half a century, but I was born in the era of river conquest, when "Open the Channel" was the slogan of a people who, assisted by the Federal Government, were fighting for an outlet

* See "On the Trail of a Horse Thief," by Herbert W. Gleason, and "The Mother of Rivers (the Columbia Ice Field of the Canadian Rockies)," by Lewis R. Freeman, in the National Geographic Magazine for April, 1919, and April, 1925, respectively.

Photograph courtesy Caterpillar Tractor Co.

MUCH OF OREGON'S WEALTH IS WRAPPED IN ITS FOREST TREES

Beside the giant fir trunks, the men and tractors handling them seem small. Some of the sections into which the logs are cut are seven and a half feet in diameter and 40 feet long. This busy "Caterpillar Sixty" clears a way through the underbrush and hauls the huge timbers with the aid of a wheeled contrivance, called a "bummer," on which they rest. The Caterpillar's revolving tread provides considerable traction and gives a tanklike ability to traverse rough ground.



Photograph by Amos Burg

LAKES LIKE JEWELS ADORN THE MOUNTAINS

Lost Lake, in the Mount Hood National Forest, lies within hiking distance of the Columbia River Highway. It affords excellent trout fishing and a superb view of Mount Hood. More than 250 mountain lakes are scattered along the summit of the Cascade Range that rifs Oregon from north to south.

to the sea adequate for 20th-century tonnage.

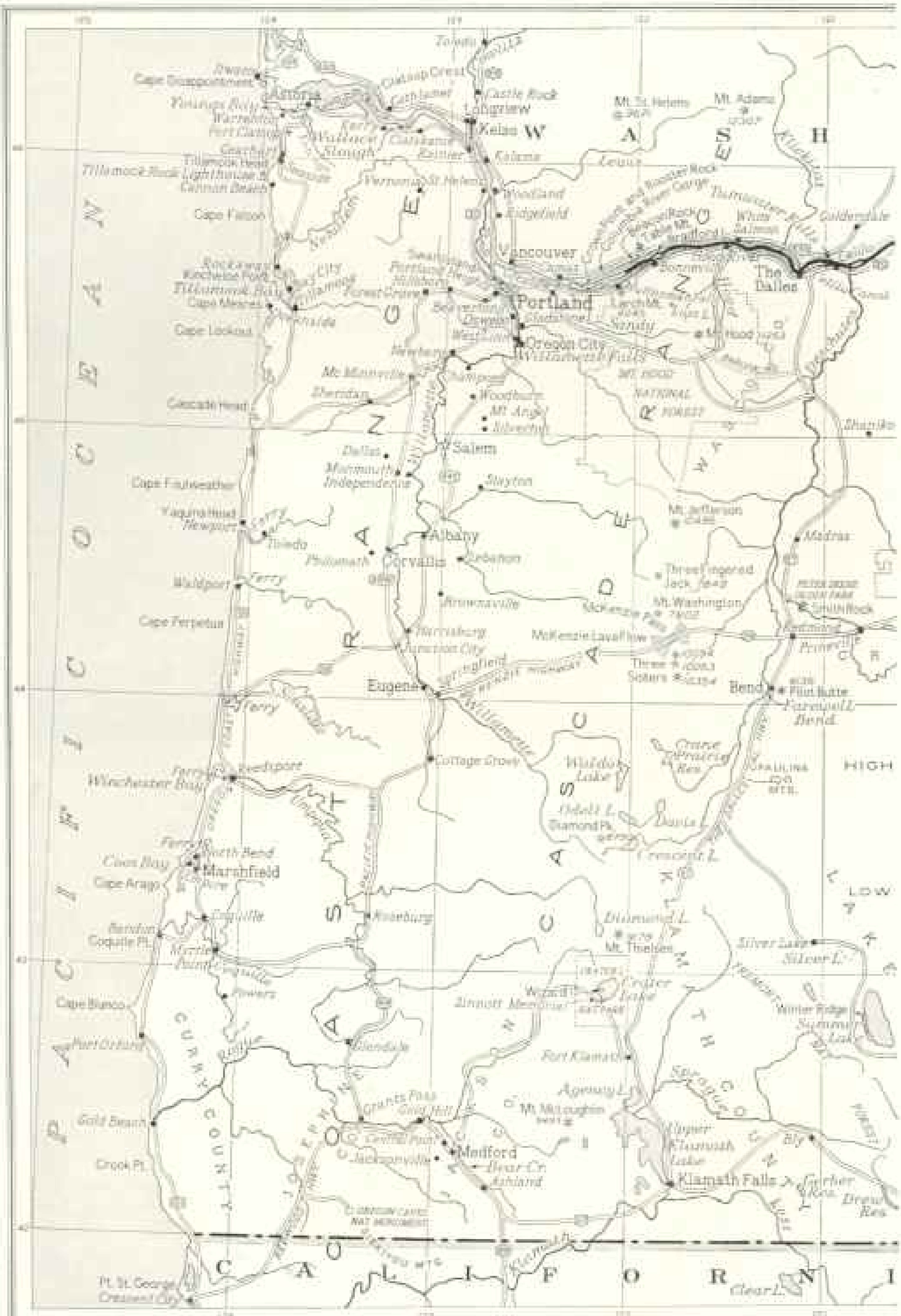
A city and State of half a million persons were battling for existence. This fight went on for five years, 10 years, 20 years, and 30 years. Night and day, turbine pipe-line dredges drilled away, straightening and deepening the 100-mile channel. A hundred spur dikes were erected to keep the tricky Titan from shuffling the sand bars about during flood season. The channel was dredged to 20 feet, to 30 feet, and finally to 35 feet, and stabilized by spur dikes all the way to the ocean.

Down on the bar, millions of tons of rocks were railroaded out to sea and dumped to form two jetties, one of which is seven miles long. The scouring process due to jetty construction deepened the bar channel from 20 to 48 feet at low water.

The traveler entering Portland by river views 29 miles of harbor frontage, lined with terminals, dock basins, grain wharves, lumber and flour mills, drydocks and shipyards, behind which the city's skyline is etched against green-clad hills. Seven bridges span the Willamette, joining the east side, which is largely residential, to the west side, which includes the business district.

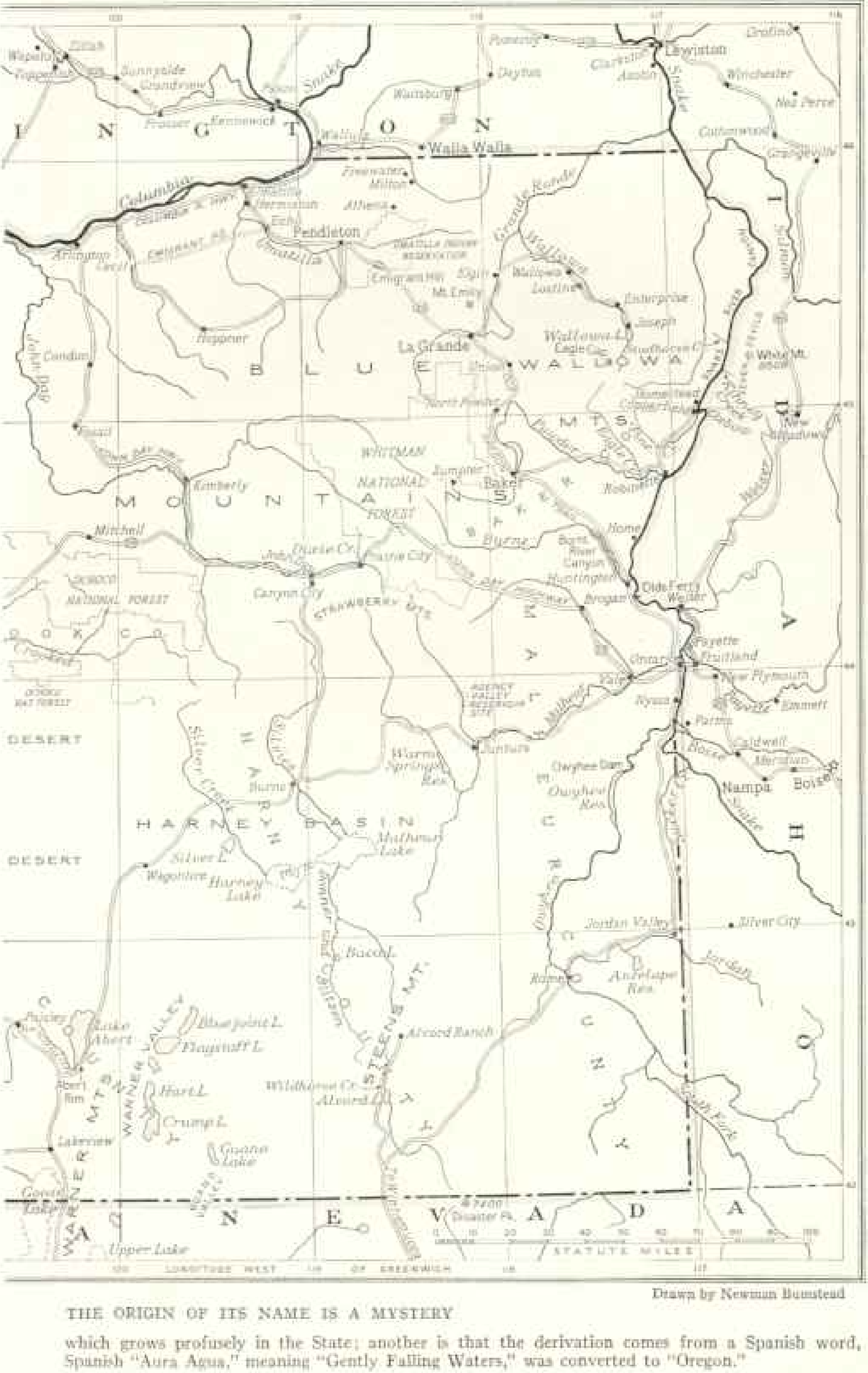
My ambition, when I sailed from Portland down to the sea as a boy, was to return on a whistling vessel and steam through the open draws of these bridges during the rush hour when the east-side residents were scurrying home again. When that dream was realized, I felt that the sea had nothing greater to offer.

In pioneer days the Willamette Valley was the meeting place of two currents, the



A MAP OF THE STATE OF OREGON:

One theory is that the name, Oregon, was taken from that of a species of wild sage called "origanum," "Oregones," meaning "Big-eared Men." More poetic is the explanation that the



Drawn by Newman Bumstead

THE ORIGIN OF ITS NAME IS A MYSTERY

which grows profusely in the State; another is that the derivation comes from a Spanish word, Spanish "Aura Agua," meaning "Gently Falling Waters," was converted to "Oregon."

Photograph by Brubaker Aërial Surveys

OREGON'S COAST LONG DEFIED THE MARINER

Some of the early explorers sailed past its headlands, bars, and forest-covered shore and dared not land. The beauty of the coastline endures, but along it now are splendid highways and inviting summer resorts. This view of the northern Oregon coast shows Rockaway Beach, flanked by the Oregon Coast Highway.

border Missourians, who came by the Plains, and the so-called "Boston men," who arrived by sea. This vanguard of empire was marooned for a generation, until the railroad was built. Portland's fine schools, its symphony orchestra and its junior symphony orchestra, and its patronage of the arts reflect the New England ancestry, while the city's hospitality reveals the influence of the southern strain.

The city in its rise to commercial supremacy in the Columbia Basin has not lost the glorious beauty out of which the State was born (see page 190).

Rising above the valley to the east, snow-capped Mount Hood watches over the city and valley like Fujiyama over the sacred shrines of Nippon. It was worshiped as the spirit mountain by the Indians. For days its peak may be hidden by rain clouds; then the weather will change and the peak appear, glistening and beautiful (see Color Plate III).

There is something akin to life in the green, singing forests surging up to its snow beds, which Bryant called "the continuous woods where rolls the Oregon." To the pioneer, their gloomy, shadowy recesses suggested lurking danger; to the Oregonian to-day, they represent a precious legacy.

My car rolled along the rim of Portland Heights at dawn. A million paling lights flowed down its slopes and sparkled over the valley, divided only where the dark Willamette swirled, streaked with reflected stars. Down there the city was still wrapped in velvety purple, but the mansioned hills were spangled with light from

over the Cascade Range. Above all, Mount Hood lifted its snow peak in the sunrise so close and so high that I held my breath.

My car descended into the awakening city. What activity greeted me! I had arrived during Portland's 25th annual Rose Festival week. The rainy southwest winds had made the city and the Willamette Valley into a vast garden, almost tropical. A cool breeze wafted the scent of flowers through the streets. Flowers! "The Rose City" had become a symphony of them; their color and fragrance were everywhere. Portland was wearing her holiday spirit on her sleeve, welcoming the throngs flocking into the city in answer to her world-wide invitations (see Color Plates IX and XI).

In the afternoon, at the civic stadium, I watched 7,000 school children give an exhibition of dances and gymnastics. A garden of human rosebuds sprang up on the field. Childish arms forming the rose branches swayed as in a heavy breeze, as if all the roses in Portland were making the official welcome.

In the grand floral parade culminates the city's expression for the beauty around it. These folk who think flowers, live flowers, and breathe flowers so joyously put weeks of planning, tedious toil, and great mastery of floral decoration into their floats. Floats also come from sister valley cities to pay homage to the rose and to Portland's queen and lovely princesses.

With amazed eyes I watched the floats stream forth from the civic stadium and enter the four-and-a-half-mile line of parade—huge masses of moving blooms, tens of thousands of them on flower-smothered cars, woven into beautiful rhythms of design and color. Not ten floats, 30 floats, or 50 floats, but nearly a hundred were passing between lines of cheering thousands.

The effect is magical. It gives to the Rose City a soul that is much like the flower that symbolizes it.

THE WILLAMETTE IS OREGON'S NILE

From Portland, the broad and populous Willamette Valley extends south for 150 miles between the Cascade and Coast ranges, containing, in only about 14 per cent of the area, 64 per cent of Oregon's population (see map, pages 176-7). Agriculture is concentrated on either bank of the river in a belt five to ten miles wide.

© Wiener Photo Co.

AN OREGON BEAUTY SPOT

Multnomah Falls, on the Columbia River Highway, is one of the highest cataracts in the United States. The bridge commands a splendid view of both stages of the falls, with a total height of 620 feet.

A vast pattern of paved highways laces a succession of level plains, oak-covered ridges, and fertile alluvial bottoms, connecting the 200 clustered towns and cities that have grown from the agricultural abundance of the valley.

Pausing on the highway above the canyon, I watched the spray from the horseshoe-shaped Willamette Falls rising to mingle with the blue smoke of the woolen, pulp, and paper mills that its thundering waters operate on either bank. These falls have long been famous for their salmon fisheries. A few hundred yards below their base, hundreds of fishermen, mostly from surrounding communities, were trolling for one of the powerful 40-pound chinooks that congregate here before leaping this final barrier to spawning water (pp. 201, 217).

Above this lava obstruction the Willamette Valley for 135 miles to the south has been filled with silt, forming a broad, alluvial valley floor. This floor is 100 feet higher than it would be without this natural dam; hence the streams that flow into the Willamette from the bordering Cascade and Coast ranges deploy upon the plain and form a natural irrigation system for the valley.

Many communities have concentrated in the production of one crop, such as loganberries, strawberries, cherries, prunes, and celery. Most of this produce moves direct to more than 50 canneries located in the valley; some is shipped to distant markets.

THE CAPITAL AND THE "PLYMOUTH ROCK" OF OREGON

Twenty-seven miles north of Salem is Champoeg, the "Plymouth Rock" of Oregon. Here, on May 2, 1843, pioneers organized the first American civil government in the Northwest—an event which, during the dispute with Great Britain, helped to save Oregon for the United States.

Salem, hub city of the Willamette Valley and capital of the State, lying 52 miles south of Portland, is the center of the largest hop-growing area in the United States, and is also one of Oregon's largest fruit-canning centers. With a climate similar to that of Ireland and portions of Belgium and France where flax is grown, Salem has made a persistent effort to establish a linen industry. Not only does this area grow long-fiber flax, but it has two linen mills.

To obtain a better view of the valley, I have often climbed into the lofty copper dome of the State Capitol, overlooking the city, more distant hop fields, and red orchard hills (see page 198).

A stone's throw across the street are the historic buildings and campus of Willamette University, the oldest educational institution in Oregon. Newberg, McMinnville, Albany, and Forest Grove have similar institutions, monuments to pioneer days, when religious sects founded academies and small colleges almost before they were settled on the land.

Both the Oregon State Agricultural College, at Corvallis, and the State University, at Eugene, are surrounded by green-shaded campuses that are veritable garden spots in this beautiful valley.

CEDAR FOR JAPANESE HOMES

The sun was passing below the horizon as I entered Marshfield, on Coos Bay, which is second only to the Columbia in harbor importance. Its barrier bar at one time probably caused many a baffled voyager to twist his mustache in vexation.

The Spaniard, Juan Pérez, sailed north along the coast and back again without putting foot on land. The bar has been engineered into oblivion and Coos Bay into a promising future as a port for southwest Oregon (see page 214).

If Señor Pérez happened along to-day, he would sail right in, provision his ship with dairy products, inspect the humming mills, and perhaps purchase novelties, carved from beautifully grained myrtlewood, for his Aunt Dolores.

Although flanked by vast resources of Douglas fir, the Coos Bay region is noted for its Port Orford cedar. These valuable forests reach south to the Rogue River, in a belt rarely more than 40 miles wide, growing mostly amid protecting firs.

The Japanese flag waves in and out of Coos Bay over the stern of vessels carrying Orford cedar logs and squares to Japan for house construction.

All the verdant richness of spring seems to be blowing landward on the moisture-laden sea winds. For miles the Oregon Coast Highway runs through arcades of rhododendrons. In February, trilliums, shootingstars, ladyslippers, pink, fragrant calypso, and the fawn lilies bloom under the firs in the vast forests.

THE SNAKE RIVER WRITHES THROUGH THE PITS OF "HELLS CANYON"

The Snake River gorge cuts the massive mountains and helps mark the boundary between Oregon and Idaho. Recently a road on the Idaho side to the head of the canyon made this region of topsy-turvy bowlders accessible to motorists.

© National Geographic Society Finley Photographs by Amos Burg

CRATER LAKE IS A COLOR WONDER OF THE WORLD

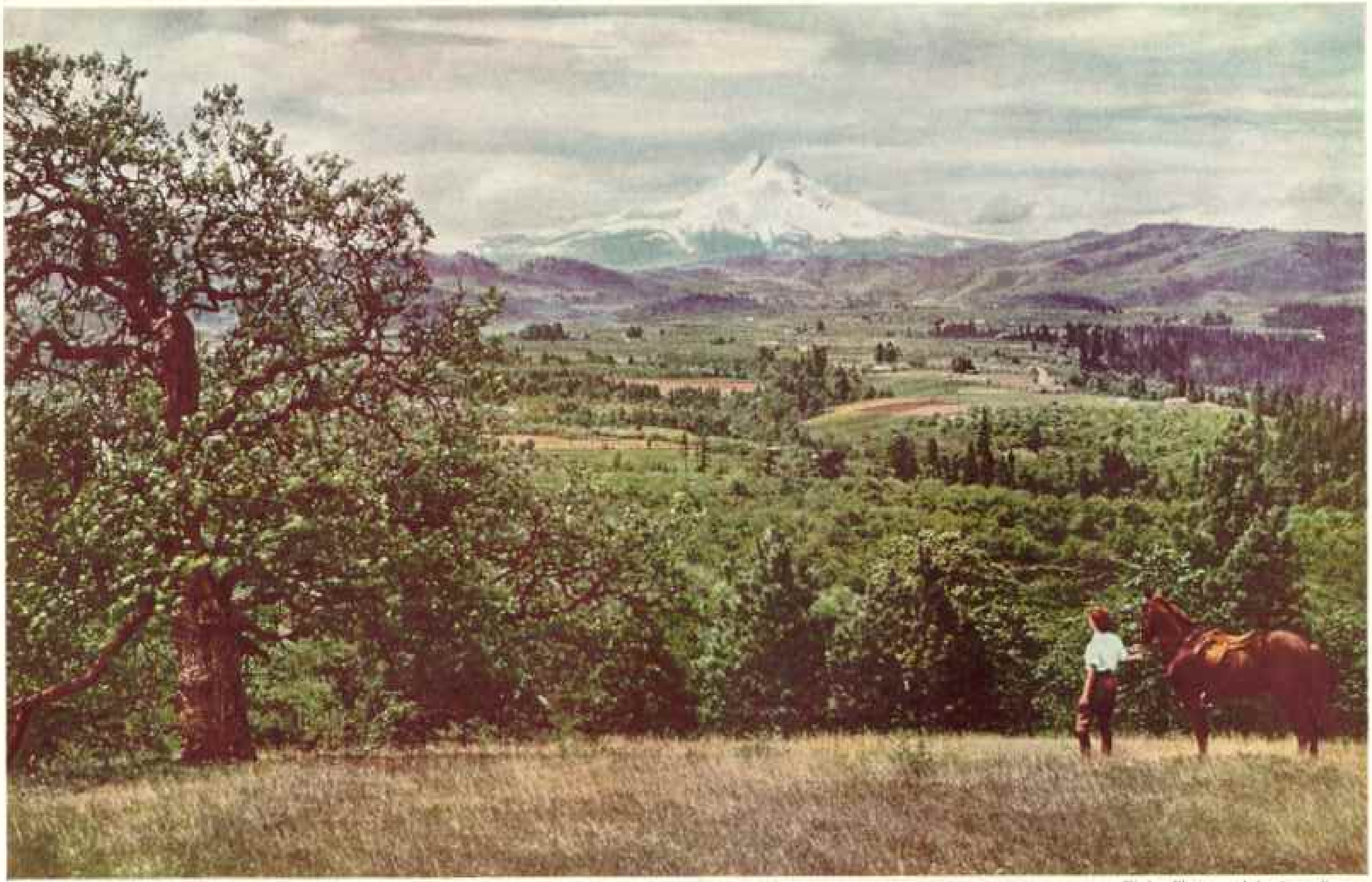
Nature seems jealous of this water jewel of deepest sapphire blue, which she holds aloft in a crater on the summit of Cascade Range. Wizard Island, representing the last gasp of the dying volcano, thrusts its cinder cone 763 feet above the surface (see Color Plate II).

© National Geographic Society

Finlay Photograph by Annie Burg

A PHANTOM SHIP IS ANCHORED IN A SILENT SEA OF BLUE

Across the indigo expanse of Crater Lake rises the jagged rim for 500 to 2,000 feet above the water. In the distance is the glistening, snow-capped peak of Mount Thielsen. The uncanny quiet of the waters and their deep blue bring thousands of visitors annually (see Color Plate I).



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Finlay Photograph by Amos Berg

MOUNT HOOD IS THE QUEEN OF OREGON'S GLEAMING SNOW PEAKS

The eternal reservoirs of snow yield the water which is utilized by irrigation to carpet Hood River Valley with apple and pear orchards. Shipments of the valley's famous apples have run to 3,000 carloads a season.

© National Geographic Society

Finlay Photograph by Anne Burg

THE INDIANS GATHER TO ENTER THE ARENA FOR THE "GRAND MOUNTED PARADE" OF PENDLETON'S ROUND-UP

They have just finished luncheon served in the tepee village, and are dressing papooses, putting beaded buckskin trappings on their horses, and straightening their feathery war bonnets. In twenty-three round-ups the Indians have accumulated marvelous wardrobes of colorful habiliments for this, their gala social event.

© National Geographic Society

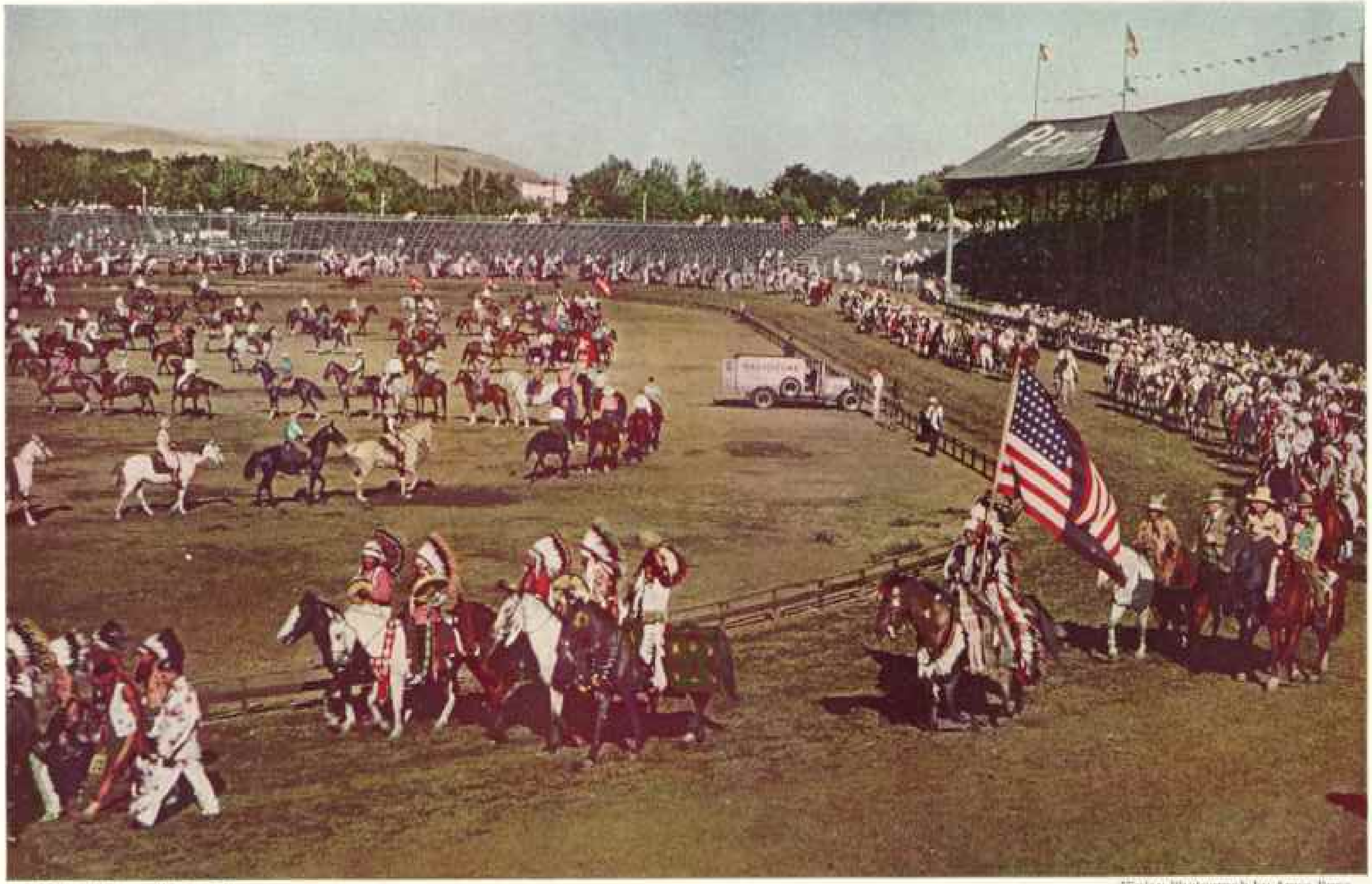
ASLEEP IN A VERTICAL CRADLE

The cradle board enabled Indian mothers to transport their babies on long migrations. To-day the squaws often pile two or three behind them on their horses in the parade and hold their own baby show at the tepee village (see Color Plate IV).

Finlay Photographs by Anne Burg

HOW MANY ELKS' TEETH IN THIS CAPE?

Eight hundred was the count of the squaw who wore it. Many such heirlooms are handed down through the generations. One reason for the round-up is to encourage preservation of Indian arts, songs, dances, and costumes. About half of the Indians on Umatilla Reservation are full-bloods.



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Finlay Photograph by Amos Burg

THE RADIO REPORTS A ROUND-UP OF THE OLD WEST

From the Rio Grande to the Canadian border they come—cow-punchers and cow-girls, Indians and stagecoach drivers—for Pendleton's drama of the historic West. Outside are parked acres of automobiles which brought spectators that fill the grandstands and bleachers to four times Pendleton's normal population, all to pay tribute to King Horse.

© National Geographic Society

THE DRUMMERS SOUND THE ROUND-UP CALL

Costumes glisten with eagle feathers, beadwork, and elks' teeth (see Plate V). Some are more expensive than those made by a king's tailor. The 50 or 60 eagle feathers of a fine war bonnet in themselves would command a substantial price.

Finlay Photographs by Amos Burg

HER ROYAL HIGHNESS, QUEEN TALLA-WE-TON-MI

This Cayuse Indian maiden was chosen to reign at the twenty-third annual round-up. She is descended from a noted chief, Joseph. For several years she won the Indian beauty contest, so she was removed from the competition.

GROTESQUE MONUMENTS IN A GRAVEYARD OF FOSSILS

The highly colored pinnacles of weathered rock are found in eastern Oregon, where the famous John Day mammal beds are exposed. In various parts of this formation are found remnants of three-toed horses, ancestral camels, and other animals.

© National Geographic Society Finlay Photographs by Anne Rittg

SUCH HOMES COMMAND A MEMORABLE VIEW

From "The Heights" of Portland, climbing to 1,200 feet above the river, are seen giant snow peaks, and by night the valley is aglow with electric lights where the campfires of the Indians once gleamed. To the east Mount Hood rises majestically over the Willamette Valley (see Color Plate III).

Half of the people of the State live within three hours of the ocean beaches.

In the spring and winter, along Oregon beaches, low tides uncover immense rock beds where agate hunters make their collections of moss and water agates.

CLAM DIGGING BY NIGHT

About eight or ten days a month tides are favorably low for clam digging. Almost every one digs clams, but many look upon the sport as a job. Armed with shovels known as "clam guns," professional diggers work under the light of gas lanterns if low tide is at night. Clams, when alarmed by the tap of a shovel on the sand, signal their intention to go deeper by leaving an air hole about the size of the finger; then it's up to the digger.

Amateur beach combers scour the beaches at extremely high tide for wreckage washed ashore by the prevailing westerly winds. At Waldport, while eating a clam dinner, I once counted a dozen Japanese glass net floats strung over the counter, that had bobbed their way 4,000 miles across the spacious Pacific to arrive in the tidal wash bearded with barnacles.

North from Tillamook Bay for 35 miles one drives through rich pastoral valleys devoted almost exclusively to the production of Tillamook cheese. Factories of the farmers' association dot the valley floor along the highway, using altogether about a hundred tons of milk daily in the production of a standardized product. Each community builds its own factory and keeps its own books, but the expenses of the buying and selling organization are pooled and prorated according to the number of pounds of cheese produced.

ASTORIA IS A NUCLEUS OF EARLY OREGON HISTORY

About Astoria, at the mouth of the Columbia, much of the early history of Oregon is woven. To the south, across Youngs Bay, Lewis and Clark wintered in 1805–06 at Fort Clatsop. The Pacific Fur Company started, 204 years after Jamestown was founded, to erect the fort, which became the nucleus of the first American settlement in the Columbia Valley. It took four men two or three days to cut down one of the lofty firs (see page 199).

When fur passed, Astoria took to fishing and lumbering, and spread out on pilings over a tide flat along the river. If business was slack at high tide, clerks dangled their hooks through trapdoors and fished; boarding masters shanghaied men through trapdoors of saloons for Cape Horn voyages.

In December of 1922, Astoria literally went up in smoke. Fire spread beneath the pilings and gutted 40 acres out of the heart of the city. Its reconstruction was an amazing feat. Within two years, with a slight shrinkage of population, Astoria became a new metropolis, with subsurface wiring and scores of modern buildings. Twenty-two packing plants, 5,000 fishermen, and 2,000 fishing craft contribute to Astoria's position as a Royal Chinook Salmon capital.

HIGHWAY WEAVES ALONG THE COLUMBIA

A northwest wind accompanied me on my journey up the Columbia, along which the highway weaves, graceful as a gull's flight. I watched him dashing recklessly over the whitecapped river and shouting through the forests where the trees drank of the spume of the sea.

Down on the Columbia a huge cigar-shaped ocean-going raft was being towed out to sea on a 15-day voyage for San Diego. An ambitious tug, pulling on the heavy, sagging links of the 180-foot tow chain, was steaming hard to control the momentum of this ponderous, bow-strong monster.

In the Wallace Slough, near Clatskanie, loggers were constructing one of these rafts. Five million feet of logs were being dumped from logging cars into a mammoth cradle and buckled in 175 tons of self-tightening chains, then stacked with a deck load. The greater part of the ocean-liner dimensions of these rafts, like icebergs, rides beneath water. They make a solid mass about 825 feet long, 55 feet wide, with a 28-foot draft (see page 225).

A NETWORK OF DIKES AND CANALS

I lingered on Clatsop crest until darkness fell and the bobbing, twinkling lanterns on the fishermen's gill-net launches appeared on the river. Bolder range lights marked the bends, piloting commerce upriver through the sand-cushioned channel of the Columbia.

To the east the highway bordered 40,000 acres of alluvial bottom land reclaimed from the river by a network of

Photograph by Ray Atkeson

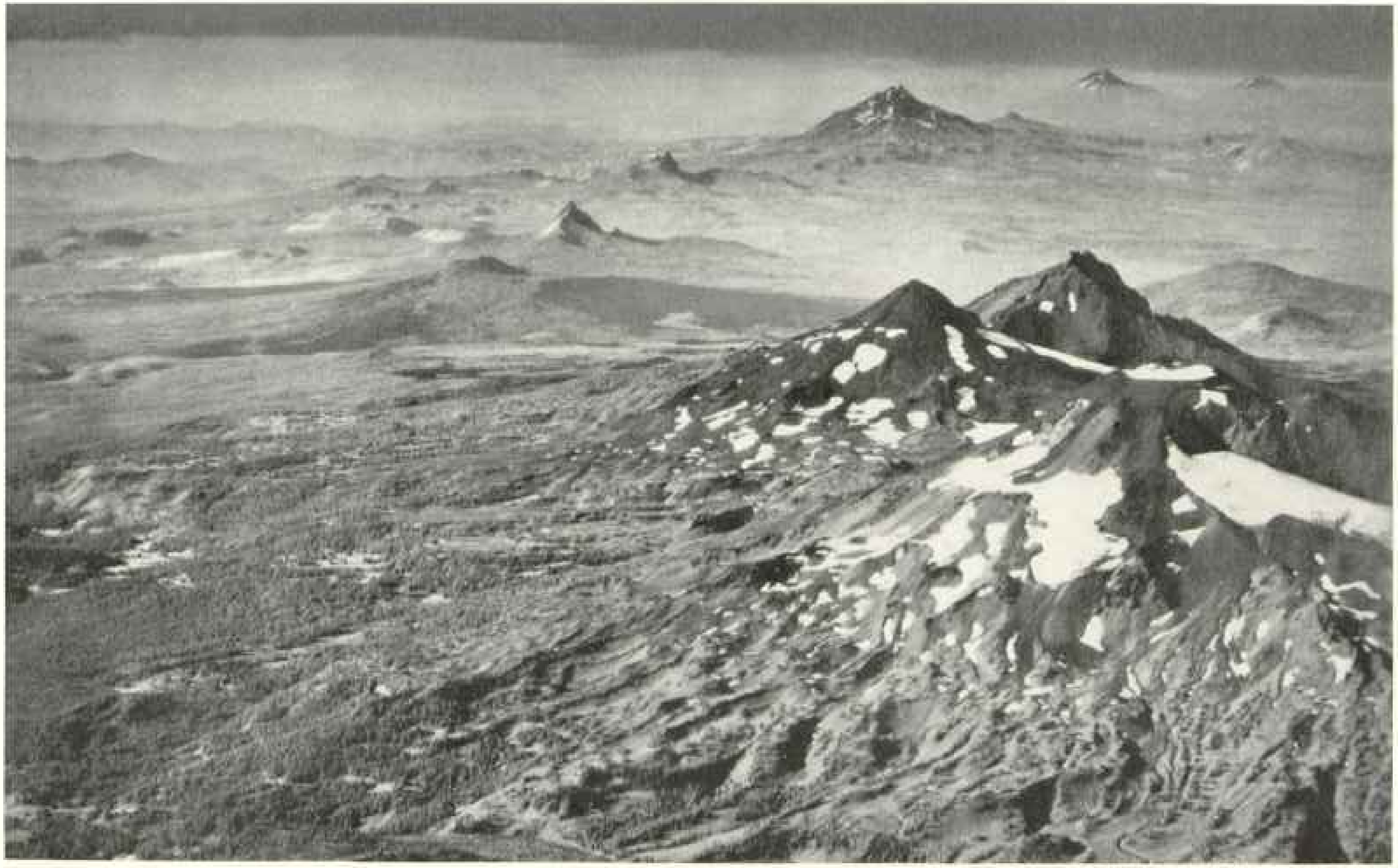
BEAUTY-LOVING PORTLAND DRAWS INSPIRATION FROM ITS SETTING

Mount Hood and the Cascade Range, buried beneath their winter blanket of snow, form a superb background for the city. This scene is viewed from Kings Heights, 1,200 feet above the business district. Two pioneer settlers, in 1845, disputed over the naming of the future city; one from Maine wished it called for Portland, Maine; the other, from Massachusetts, favored Boston. They agreed to toss a coin, and "heads," which was Portland, won.

Photograph by Brubaker Aerial Surveys

SHIPS OF THE AIR AND THE SEA MAY LAND THEIR CARGOES AT BUSY PORTLAND

Here is shown the far-flung harbor of the Oregon metropolis, with Swan Island Airport in the foreground and three lumber boats on their way to the ocean. Portland's location in the productive and populous Willamette Valley helped make the city an important air-transport base of the Northwest, as well as a busy inland seaport. Débris sucked up by dredging the lower harbor was used to build up a low-lying island into a spacious airport.



Official photograph, U. S. Army Air Corps

WHERE PREHISTORIC VOLCANOES RAGED

Mighty peaks were thrown up and now enhance the grandeur of the Cascade Range. In this aërial picture of its summit one looks north from Oregon's Three Sisters, born of a mountain that exploded (see text, page 223), to Washington's Mount Rainier, on the far horizon, 190 miles away. Between are Mount Washington, Three-Fingered Jack, Mount Jefferson, Mount Hood, Mount Adams, and Mount St. Helens.

Photograph by Photo Art Studios

SWIMMING SUITS BY THE MILLION ARE TURNED OUT HERE

In every State and on the beaches of 59 countries are worn the Jantzen swimming suits made by this Portland, Oregon, company. Almost two million are produced by this factory each year. The firm's pictorial trade-mark, the Jantzen Girl, is widely known. Most of Oregon's industrial output is in Portland and the numerous cities of the Willamette Valley lying to the south.

© Brubaker Aerial Surveys

OREGON CITY HARNESSES THE WILLAMETTE RIVER

Paper and woolen mills on either side are operated by the waters of Willamette Falls. Oregon City was surveyed in 1829 by Dr. John McLoughlin, "the Father of Oregon," who served the Hudson's Bay Company as governor in the Oregon country.

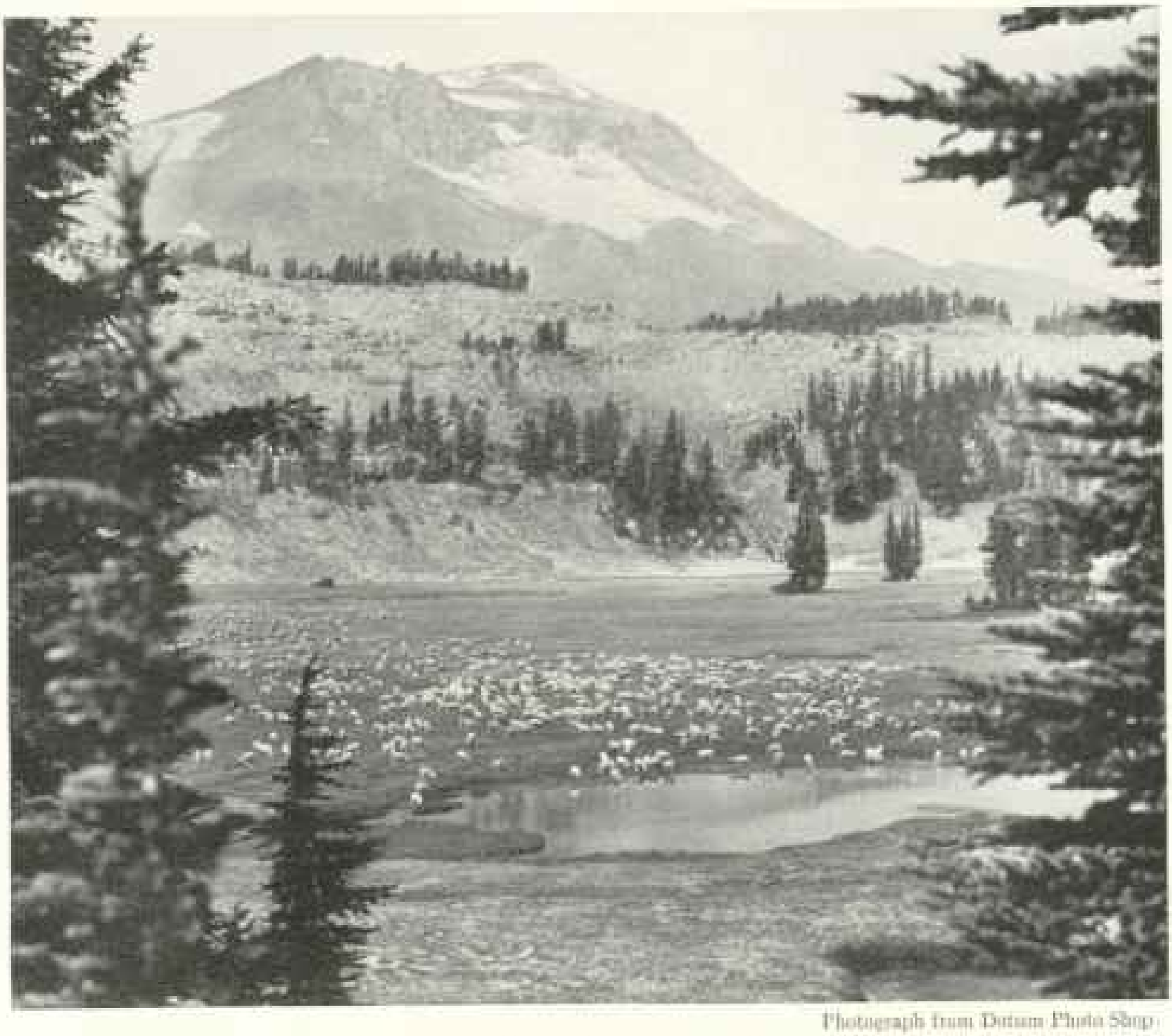
dikes and canals that resembles that of the Zuider Zee. In this soil, covered by successive deposits of river silt, pine cones have been discovered at a depth of 200 feet. Narcissus bulbs, originally imported from Holland, have added a valuable specialty crop to dairying and diversified farming.

Logging railroads, reaching from the river back into the Coast Range forests, supply mill after mill with timber. The hundred miles of Columbia River frontage make it possible for mills to load steamers for all parts of the world at their own wharves. Lumber is king, of course, but the farms in the rich Columbian bottoms are supplying ribs to this backbone of industry.

In crossing the glacier-born Sandy River east of Portland, I had recollections of spring smelt runs, when the fish almost choked the stream by sheer numbers. While thousands of gulls fish from the air, traffic police untangle miles of automobiles rushing to the river bank with bed springs and porch screens to use as seines. One man was scooping and adding to his huge pile of smelts with a close-meshed bird cage.

For several miles the highway follows the Sandy River, and then climbs over a height of land and niches the rim of the Columbia Gorge to Crown Point. Other travelers were stopping on this rock promontory to view the magnificent gateway. To the east the green waters of the Columbia roll majestically through the basalt ramparts, where, through the ages, the river has eaten its way (see Color Plate XIV).

The Columbia River Highway, hewn out



Photograph from Dotum Photo Shop

SHEEP SUMMERING IN LOFTY ALPINE PASTURES

High in the Cascade Range, near the Three Sisters Mountains, a flock finds well-watered grazing ground. The sheep and their shepherds follow the grass to the uplands in the spring.

of towering rock walls, was built with an eye single to the natural beauty everywhere about. Only the shrubs, ferns, and wild flowers in the exact path of the finished roadway were disturbed.

Mighty waterfalls, fed by the perennial snowfields on Mount Hood, break over the lofty ramparts of the gorge, close to the winding road. The foliage of the gorge is refreshingly green during the spring and summer, a colorful flame in autumn.

HARNESSING THE TURBULENT COLUMBIA

A mammoth power and navigation development has been undertaken by the Federal Government at Bonneville, near the foot of the Cascade Rapids, about 40 miles east of Portland.

The Public Works Administration has granted an initial allotment of $20,250,000 for the undertaking, and under the direction of the War Department hundreds of men are at work on a dam across the rushing river at a point where a small island divides its waters.

The Cascade Rapids, harnessed at last, will provide power for a wide area and, in addition, the dam will afford notable navigation benefits. Since the white man first came to Oregon, the swirling waters above Bonneville have been a difficult barrier. The Cascade Rapids form the first obstruction on the Columbia for 140-odd miles from the sea.

In the nineties locks were completed around these rapids to handle steamboat traffic. But except for high-powered boats the narrow channel between Bonneville and the rapids has been practically impassable because of the swift current.

The Bonneville Dam will raise the level of the river and create a navigable barge

Photograph by Edward M. Miller

ONE OF WESTERN OREGON'S "WALL STREETS"

Such sights emphasize the fact that lumber is one of the State's major sources of income. The "leaning-tower" effect is not an optical illusion. The lumber is piled at a slant to provide proper drainage as it stands in the mill yards to cure.

channel extending 44 miles up the river to The Dalles.

There another series of rapids begins, around which the Federal Government, nearly two decades ago, built the Celilo Canal at a cost of nearly $5,000,000. For eight and a half miles it stretches along the turbulent river to the head of rough water at Tumwater (Celilo) Falls (see page 216).

CELILO CANAL LINKS IDAHO WITH PACIFIC OCEAN

This canal forms an important link in the Columbia-Snake River route that makes navigation possible from the sea for more than 400 miles, to Lewiston, Idaho. But with the swift current above Bonneville blocking the route to all except high-powered vessels, the full benefit of the canal has not been obtained.

Now The Dalles cherishes dreams of a busy water front. The Columbia River Valley Association, with membership scattered throughout the Columbia Basin, has been active in advocating hydroelectric development and barge lines for the movement of grain and fruit from the Inland Empire through the Columbia Gorge to Portland.

At the big dam at Bonneville adequate fishways will be provided to prevent interference with the silver streams of salmon periodically pouring upriver to the quiet spawning grounds.

The largest of the 18 salmon hatcheries in the State is located at Bonneville. Approximately half of the natural spawning area in Oregon has been lost by the development of dams, hydroelectric power, and irrigation. The hatcheries replenish much of this loss, and without this aid it is said that the salmon runs might become extinct in two or three cycles. A remarkable fact about these salmon is their return, at the end of two to six years' wandering at sea, to the stream down which they were released as fingerlings.

THE ORCHARD VALLEY OF HOOD RIVER

The fish wheels along the Oregon shore, their use now forbidden by State law, hang idly like Ferris wheels over the swift water and add to the picturesqueness of the wild river scenery.

No region in Oregon is more famous for its fruit than the orchard valley of Hood River. It is noted for apples of fine color, flavor, and good keeping qualities, for its pears, cherries, and strawberries.

Beyond Hood River Valley a remarkable change occurs in the river panorama. The rainfall is lessened by half. The dense fir forests west of the Cascades give place to scattered ponderosa pine, and brown basalt bluffs rim the river. These mark the beginning of the third geographical and climatic zone in Oregon, comprising mostly a timberless plateau 3,000 to 4,000 feet high, covering 70 per cent of the State and inhabited by only 20 per cent of the population.

The Dalles, lying at the eastern end of the Cascade gateway, was the real terminus of the Old Oregon Trail, "the Thermopylæ which all must pass." Here the pioneers unhitched their teams, placed their wagons on rafts, and floated them down the dangerous gorge to the Willamette Valley, with disaster haunting them every foot of the way.

Almost equally terrifying was the route followed later over the old Barlow Road that climbed through appalling snow canyons and forests around Mount Hood. Samuel K. Barlow, who surveyed the road, said: "God never made a mountain without some place to go over it."

The meat-weary Missourians not only swapped their spare clothing with Indians for vegetables, but cut and sewed their canvas wagon covers into shirts to appeal to the fashionable taste of the natives.

TUMWATER FALLS, AN INDIAN RENDEZVOUS

In spite of odors from drying salmon, the ancient fishing village at Tumwater Falls, near the head of the Celilo Canal, has always fascinated me. Indians from afar have come here for centuries to spear salmon, swap horses, and gamble. The Indians who dwell here permanently have always been shrewd, arrogant traders.

A toll of blankets, guns, and miscellaneous trade goods was pilfered from the voyageurs of the early fur brigades, whom the Indians dogged and tricked from one end of the long portage to the other. A man is at a disadvantage carrying bales of fur or merchandise, and the Indians seemed to realize this.

The construction of Indian fishing platforms and the one-man cable ferries over dangerous waters between the lava islands

© Sawyer Scenic Photos

OREGON'S CAPITOL STANDS AMID SHADED LAWNS

Trees and shrubs add to the quiet impressiveness of the stately structure in many-sided Salem, center of the Willamette Valley's extensive hop-growing area. From its copper dome one may overlook the city and the fertile countryside. Across the street is Willamette University (p. 180).

reveal the same primitive ingenuity that goes into the erection of a 16-pole tepee (see Color Plate XV). I hung around the rocks near the falls for hours, hoping a cable might break with my pet aversion, a large, greasy hanger-on, who continually threatened to demolish both me and my camera with a club whenever I tried to take a picture—that is, unless I paid each Indian five dollars.

RICH SOIL IN EASTERN OREGON

Oregon was originally solidly covered with timber from the Cascade Mountains to the Pacific. Douglas firs, which constitute more than two-thirds of the timber cut, are the giants of this forest. They are in places found 250 feet high.

But eastern Oregon, robbed of its sky moisture by the Cascade Range, was not neglected by Nature. Its soil is rich, the débris of old lava plains, blanketed with ashes from the belching Cascade craters that drifted eastward on prevailing winds in ancient times.

Irrigation projects have brought expanding and diversified crop areas and new-born cities into this plateau region, otherwise limited to livestock and the growth of hardy grains (see text, page 204).

In eastern and western Oregon alike, the Columbia gives the pulse-beat to modern industry.

Hardly less important than a navigable Columbia to eastern Oregon are its snow-fed tributaries that flow from the south through extensive areas of little rain. The boisterous and beautiful Deschutes, receiving the drainage of snow peaks on the eastern slopes of the Cascades; the poky, aged John Day, draining an immense area of low mountains, both empty into the great river above Celilo.

As the road wound up to Arlington, a scattering of Canada geese on a sand island marked a bird reserve in the river. Later in the fall thousands of geese stop over in their southern flight from the Arctic to rest and feed in the wheat stubble that stretches endlessly across the plains above the rims of the plateaus.

Some of the farms along the river are encircled by tall poplars, planted as windbreaks and protection against drifting sand. At Umatilla the Columbia River Highway

merges with the Old Oregon Trail and swings south from the Columbia along the Umatilla River to Pendleton.

ROUND-UP DAYS AT PENDLETON

Pendleton was an adventure. From the moment of entering this wheat metropolis during Round-Up time, one feels part of the big show. A thousand cowboys, cowgirls, Indians, and stage drivers assemble here each year, from the Rio Grande to Calgary, to enact a drama in which the old sports and the passing life of the frontier West relive in pauseless thrill.

The Round-Up is not a commercial show, but a vast community enterprise, owned by the people of Pendleton, who contribute months of work without compensation. They have no pompous committees with labeled badges; the whole town dons sombreros and continues to act with refreshing naturalness.

Photograph by Amos Burg

HERE THE STORY OF THE OREGON COUNTRY IS TOLD

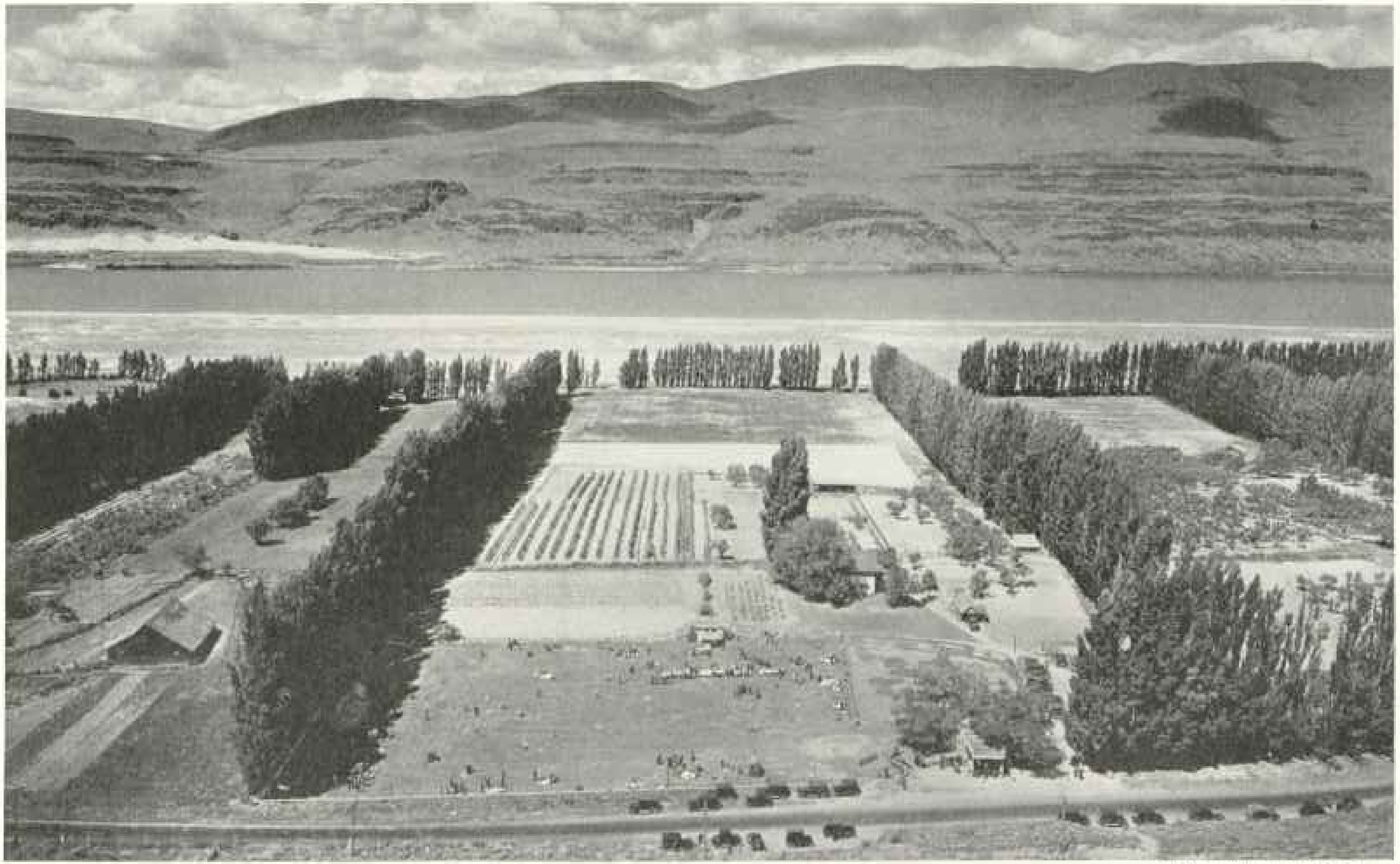
On the Astoria Column, on Coxcomb Hill, are 15 panoramas, depicting history from the days of the redskin reign and the covered wagon up to the first railroad. The column, 125 feet high, overlooks Astoria and the mouth of the Columbia, 700 feet below (see text, page 189).

Down on the Round-Up grounds, ex-cowboys, doing odd jobs around the gates, spun tales of days when they, too, rode in the arena. Indians were gambling for dimes with a stick, in a game similar to "button, button, who's got the button?" Farmers were arriving with sacks of wheat as admittance money. An old chief, unsteadied by one drink too many, was searching for his tepee among the hundred that looked alike.

I stopped to watch an old squaw saddling a horse for her modern, silk-stockinged daughter while she muttered, "Indian girl getting all same white girl. All she know is how to ride car" (see Color Plates IV, V, VI, and VII).

In the arena, which seats four times the population of the city, the horse is king. Automobiles are forgotten outside—cold, inanimate. This is no acted program. Buckaroos, Indians, horses, and steers play their parts without rehearsal. The announcer's words are not honeyed. In a strong, vibrant voice he calls out the events of the arena: "Bob Crosby now riding 'In the West' for the bucking championship of the world."

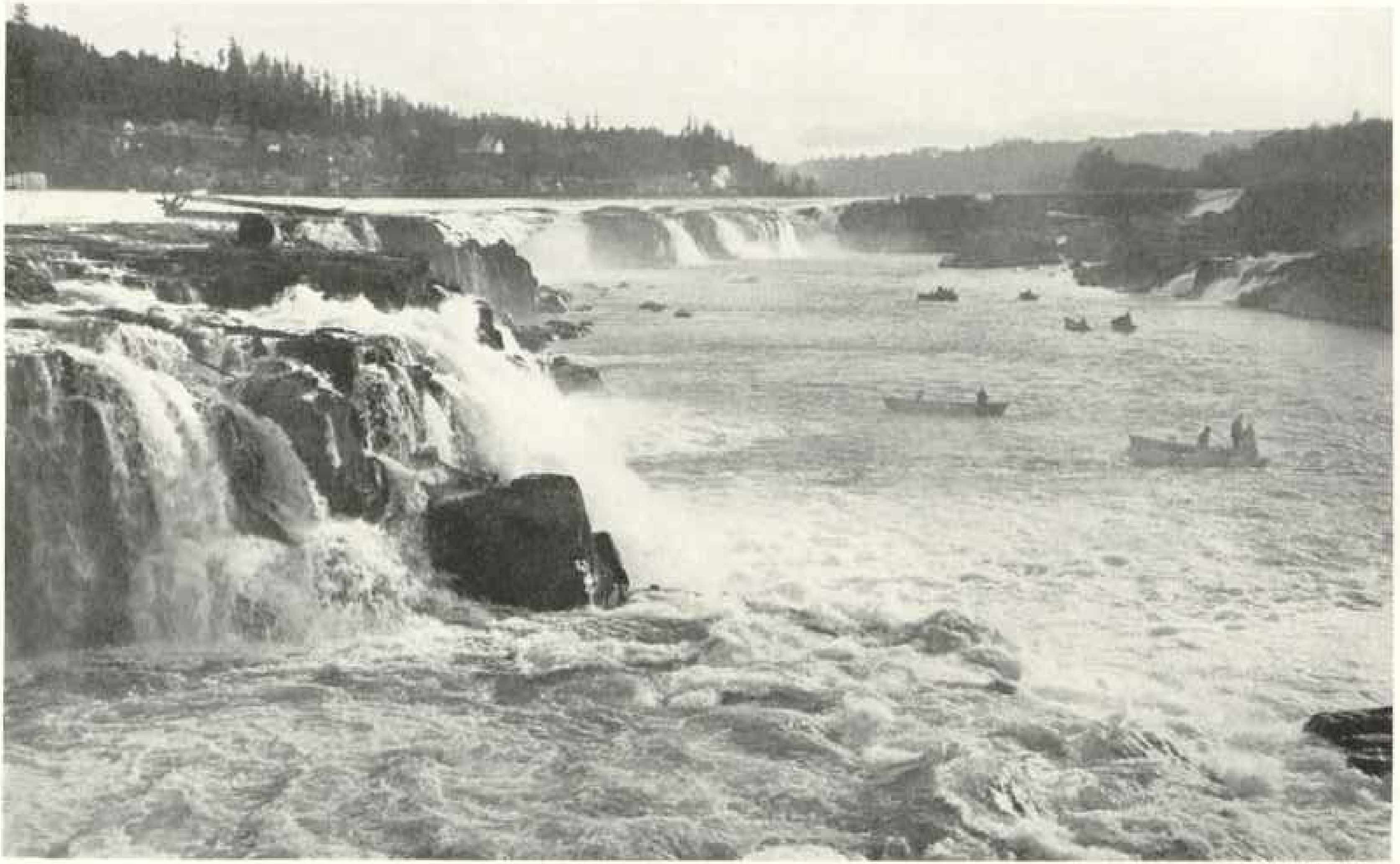
Steers rush bulldoggers into the fences; buckaroos are tossed sky high. The sullen-faced Indian boy who was seen in the morning slouching outside against the



Photograph by B. C. Markham

LONG ROWS OF TREES SCREEN THE VALLEY FARMS

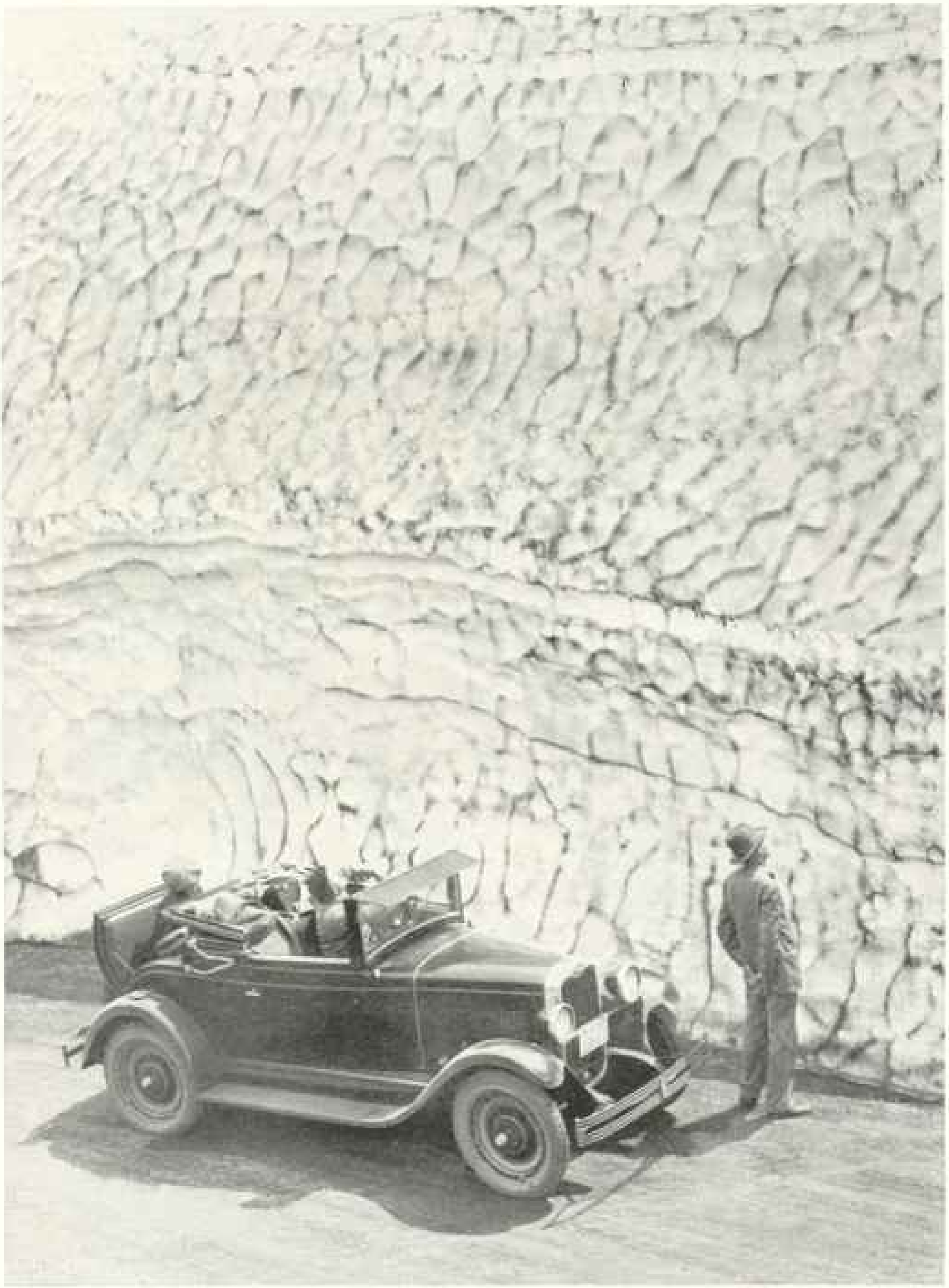
Poplars are planted to serve as giant hedges and to keep the loose, sandy soil from being blown by the winds along the shores of the Columbia between Arlington and The Dalles. In summer the "northwesterlies" blow up the Columbia Gorge from the sea and sweep across the treeless eastern Oregon plains.



© Ralph J. Eddy

IN THE SPUME OF A CURVING CATARACT MEN BATTLE THE HUSKY SALMON

Below the base of Willamette Falls, fishermen troll for the thrill of landing one of the powerful chinooks that congregate here before leaping this final barrier to spawning waters. Sometimes one may see hundreds of men enjoying the sport (see illustration, page 217).



Photograph by Edward M. Miller

A CANYON OF SNOW IN THE CASCADE MOUNTAINS

A snowdrift 20 feet high was cut through by road crews opening the McKenzie Highway, which connects central and mid-western Oregon. The highway runs through an immense lava flow near the summit of the range, the cuts forming a trough which fills rapidly with snow during the winter and makes the task of snow-removal crews exceedingly difficult.

Photograph by Edward M. Miller

NEW FORESTS ARE PLANTED ON CUT-OVER LANDS

Lumbermen and Government officials are reckoning with the day when Oregon forests, now the most extensive in the Nation, will dwindle before the march of the axmen. This crew is planting baby fir trees grown in a Government nursery. The trees are placed at carefully designated intervals and subsequently guarded from the menace of forest fires.

sloping tepee becomes eager, cyclonic energy in the Indian races.

Aloof, apparently indifferent, are proud Indians from the Umatilla, Bannock, Nez Percé, Cayuse, and Yakima tribes in gorgeous beaded habiliments. Their costumes are priceless heirlooms, preserved and handed down from generation to generation for the Round-Up, while the Indians themselves grow into conventional mold.

At night the wild, wide-open, embryo gambling town of Happy Canyon stages a pageant, depicting the days of the red man and the coming of the whites, in a classic drama. The Westward Ho parade on Saturday morning is the grand finale, in which every part of the Round-Up passes in review.

After this sombreros may be hung up for another year, but in Pendleton the spirit of the Old West has been fanned again into thrilling freshness.

Southeast of Pendleton the Old Oregon Trail runs through the Umatilla Indian Reservation. The tribes represented by the Umatillas are plains Indians, born with a heritage of the chase in which farming has no background. Many lease their lands to white farmers, retaining only enough space for their houses. This frees them for restless summer wandering, during which they pick huckleberries, dig roots, pack apples, or fish along the Columbia.

The strange mystic legends of Indian Oregon are passing with the older Indians, for they have little significance to the educated, younger generation.

Just before the ascending highway loses itself in the Blue Mountain pines, on Emigrant Hill, every traveler stops to view the vast checkerboard of wheat farms extending 200 miles to the Cascade Mountains.

IRRIGATION MAKES EASTERN OREGON BLOOM

The yellow squares are wheat stubble, the black ones summer fallow. Since wheat is grown in eastern Oregon with less than 15 inches of rain, sufficient winter moisture must be stored in the soil by planting it to grain one year and fallowing it to idleness the next.

The deep, disintegrated lava soil, carpeted by immense showers of volcanic ashes, has shown amazing productivity under irrigation. Even in the apparently lifeless desert, plants burst into perfect life at the touch of water.

Engineering genius has tapped the far-spreading waters of the Columbia River system and brought the magic streams to thousands of thirsty acres, transforming them into flourishing farm and orchard lands.

There are four large Federal irrigation developments east of the Cascade Range.

The Malheur and Owyhee rivers, tributaries of the Snake River, which in turn flows into the Columbia, are furnishing the water for the Vale and Owyhee projects, which will put 150,000 acres of land under irrigation in their basins. Already water has converted parts of these sage lands into productive farming districts, in which Vale, Nyssa, and Ontario are vigorous communities.

Owyhee Dam, creating a reservoir 52 miles in length when full, will be a colossal water treasury.

To provide employment and to expedite the benefits expected by the owners of property in the region, the Public Works Administration has allotted $5,000,000 for completing the North Canal system on the Owyhee project and $1,000,000 for construction of the Agency Valley storage reservoir on the Vale project.

The brave tracks of the Old Oregon Trail, obliterated almost entirely on the sage plains, can still be seen crossing the Blue Mountains among resinous pines. Descending into the Grande Ronde Valley, I passed through La Grande and then steered through the alfalfa, hay, and grain ranches of the Wallowa Valley.

BARTER IN THE AUTOMOBILE AGE

These are cow-country folk, a little reticent toward strangers, but hospitable and friendly when once acquainted. They were busy bartering produce among themselves, stocking their cellars for the winter. A gas-station operator at Lostine remarked that it was a novelty not to have me offer him a sack of potatoes for gas and oil.

At Enterprise and Joseph, the granite walls of the Wallowa Mountains rise abruptly from the valley floor. This change of altitude is essential for a livestock country, as it gives pasturage for stock throughout the year. In the winter the stock mark time on maintenance rations in sheltered canyons; during June the cattle graze up the lower slopes, while the sheep are driven higher into the alpine pastures as summer advances.

In the late afternoon the sun's slanting rays glinted on the stone shaft marking the grave of Old Chief Joseph, buried with his tribal ancestors in the "Land of Winding Waters," overlooking Wallowa Lake.

On his death-bed Old Chief Joseph had called his two sons to him and requested them to hold forever the beautiful Wallowa for his people. But settlers came. To avoid conflict, the Government decided to remove the Nez Percés to a reservation in Idaho. Misunderstanding followed, resulting in conflict. After defeating two companies of the United States Army, Young Chief Joseph began one of the most spectacular military retreats in history. Handicapped by women, children, livestock, and all possessions, he led his people through the worst mountain wilderness of three States for more than 1,000 miles, fording torrential streams, giving battle, eluding, outwitting, outgeneraling the three armies in pursuit.

Within 50 miles of the Canadian boundary and freedom in Montana, Chief Joseph was prevailed upon by promises to surrender. But his people never returned to their "Land of Winding Waters," and Young Chief Joseph died an exile.

To see the beauty of the region, dawn found me hanging to a saddle horn on a horse, climbing so steeply up a trail into the Wallowas that it was only a few hours before my packer led me to the summit of one of the highest pinnacles. Set aside as the Eagle Cap Primitive Area are 223,100 acres where primeval nature, with the exception of a few trails, will remain unmolested. The traveler must bring his outfit and depend upon his own resources (see Color Plate XII).

Seated on our lofty vantage point, overlooking grassy alpine meadows and sparkling blue lakes, we gazed upon the encircling horizon jutted with 16 snow-turbaned peaks from 8,000 to 10,000 feet high, a refuge rugged enough for the last remaining bighorns who live here. To the east a wilderness of peaks and canyons extends until it meets the basalt ramparts of the Seven Devils Mountains, forming the Idaho wall of the Snake River Canyon.

"THE PIONEER" SYMBOLIZES THE COVERED WAGON ERA

The University of Oregon, at Eugene, is a part of the State's public school system, and one of the five State-supported institutions of higher learning.

© National Geographic Society Finlay Photographs by Amos Burg

QUEEN DOLORES AND TWO OF HER PRINCESSES

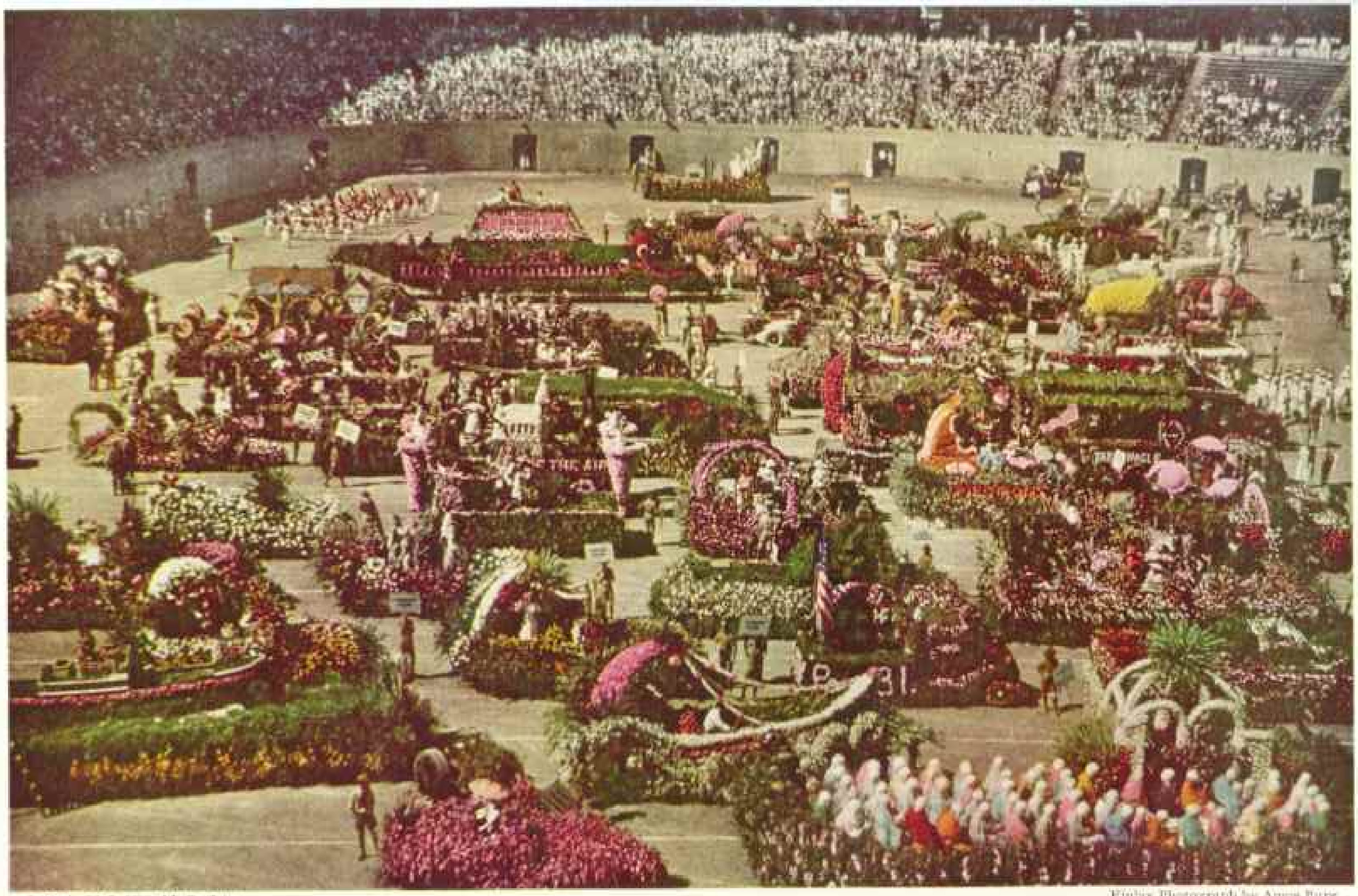
A juvenile floral parade with 200 miniature floats is a highlight of the Junior Rose Festival each year at Portland. Eight Oregon cities send a Queen and her Royal Family, consisting of six princesses, six boys as Royal Rosarians, a Prime Minister, and a Crown Bearer. All are under seven years of age.

© National Geographic Society

Finlay Photograph by Asaph Burg

CATTLE GRAZE ALONG THE STEEP SLOPES OF STEENS MOUNTAIN

The Alvord Lake pasturage area is in the heart of the Oregon pampas, the Alvord Great Basin region, which comprises about a fourth of the State's area. In Malheur, Harney, and Lake Counties is some of the last of the unfenced plains country, which helps swell the State's high aggregate of cattle and sheep, and livestock products.



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Finlay Photograph by Anson Bartz

FLOATS MASSED IN PORTLAND'S CIVIC STADIUM FOR THE GRAND FLORAL PARADE

With the blooming of roses in June, lawns, hedges, and flower beds are groomed for crowds that visit "Rose City" for the festival. Seven thousand children go through gymnastic drills and dances at the stadium; the auditorium is given over to a rose show that has had 325 varieties entered; and the International Rose Test Gardens at Washington Park are opened for public inspection. The culminating event is the parade of the floats.

AMONG THESE RUGGED RIDGES BIGHORN SHEEP STILL LIVE

The Wallowa Mountains, rising sheer from Snake River Valley, help form the deep-cut "Hells Canyon" (see Color Plate I). In this region of white stone and emerald-blue lakes the Eagle Cap Primitive Area of 223,100 acres has been set aside to remain in a natural state.

© National Geographic Society Finlay Photographs by Amos Burg

AUTUMN WAFTS A COLOR WAND OVER BRADFORD ISLAND

This land cleaves the blue waters of the Columbia River at the foot of the Cascade Rapids. Bald eagles hover about cliffs in the vicinity and seals ascend to this point, 140 miles from the sea. Prevailing winds cause the tall fir trees to point their limbs, like signal fingers, toward the east.

BRANDING YEARLING STEERS AT THE BASE OF STEENS MOUNTAIN

The vast, fenceless plains of this Oregon cattle area (see Plate X) lack a railroad, so cattle from this ranch are driven overland to a transcontinental line at Winnemucca, Nevada, some 250 miles distant by trail. The mountain is the highest in southeastern Oregon.

© National Geographic Society Finlay Photographs by Amos Burg

AN OCTOBER GARDEN IN PORTLAND

The pride of the city's residents in their dwellings and gardens, and of the Willamette Valley people in their trim farms, attests the spirit of the New England settlers who came west in covered wagons avowedly to win land for the United States, to convert the Indians, and to establish homes.

© National Geographic Society

Finlay Photograph by Amos Burg

THE COLUMBIA RIVER GORGE, GATEWAY THROUGH THE CASCADE RANGE

Tides sweep through this cleft to the heart of the lofty Cascade Range, 140 miles from the ocean. Rooster Rock, at the left, was a shrine of Indian worship; the highest point on the right is Larch Mountain, locally known as "Nature's Grandstand." In the distance, to the left, Table Mountain rises more than 3,000 feet, marking the Cascade Range divide.

© National Geographic Society

Finlay Photograph by Anne Burg

FOR CENTURIES INDIANS HAVE FISHED AT TUMWATER FALLS

Formerly they congregated at this and other barriers where the fish leaped and pierced them with spears in mid-air. There are four distinct species of salmon which run up the Columbia: the chinook, silver, sockeye, and chum. To-day travelers along the highway pause to watch Indians plying their nets from the fishing platforms.

THE TRANSPLANTED BASQUES PRESERVE THEIR FOLK CUSTOMS

First of the settlers from the Spanish Pyrenees arrived in Oregon more than 40 years ago. With their sheep they roam the sagebrush plains of the southeastern part of the State. Many of the children have never seen a railway train; they are more familiar with airplanes.

© National Geographic Society Finlay Photographs by Anton Bruehl

SALMON SLABS SMOKING OVER AN INDIAN VILLAGE FIRE

The fish are taken by dip net or spear at Tumwater Falls and are dried for winter provisions. Some are ground like pemmican and taste, said an Indian, "all same as hamburger!" This mixture is spread on boards and dried in the sun (see Color Plate XV).

Leaving Wallowa Lake, the trail now dipped south from La Grande toward Baker, through a series of irrigated valleys, where haystacks dotted the landscape like a continuous village of African beehive huts.

BAKER A SURVIVAL OF GOLD RUSH

Baker remains the most prosperous survivor of the gold towns that sprang up in the sixties. For 20 years the long trails of covered wagons had rolled westward up the Powder Valley and over the Blue Mountains, headed for the green Willamette Valley, using eastern Oregon merely as a series of overnight camps.

When gold was discovered in eastern Oregon in 1861, miners poured into this region lying between the Wallowas and the southeastern spurs of the Blue Mountains, followed by freight wagons hauling supplies from Umatilla Landing and The Dalles.

Those were the days when steamboat fortunes were made on the Columbia, with freight littering the overtaxed portages from end to end. But a new star was already ascending. In the early 1880's the steel of two railroads gave Oregon direct all-rail communication with the eastern United States, via the Columbia River route.

Baker began with mining, followed by livestock, irrigated farming, and lumbering. Not only is it one of the largest shippers of beef on the hoof in the State, but its specimens of wheat, corn, and peaches from seven irrigated valleys will meet any competition.

Above the hum of its pine mills, Baker talks of mines. In the hotel lobby a dozen mining scouts talked of gold. Mining classes, giving practical work in panning, sluicing, and rocking, are putting prospectors into the hills to make new strikes, working on the theory that the early miners scooped only the rich pockets.

A trip into the Blue Mountains toward Sumpter will bring one to ghost towns, stamp mills, and abandoned mines, where frontier justice was meted out so swiftly that both the murderer and his victim were buried on the same day. The deserted miners' cabins are interesting as antique libraries in which newspapers printed on the awkward pioneer presses of the eighties are occasionally found in the jumbled masses of forgotten things.

Snake River, between its brown, parched banks, appeared green and inviting as I followed it north from Huntington, on the Homestead Road, where flocks of doves were feeding on the wild sunflowers.

My real reason for taking the Homestead Road was to see the Snake River Gorge, especially that section of it which is locally known as Hells Canyon. For a long time, by reason of lack of roads, many scenic places in Oregon were inaccessible. Even Gertrude, who had lived near it all her life, had never seen the canyon. At my invitation she wrapped up a few of her father's peaches and came along.

SNAKE RIVER CANYON RIVALS GRAND CANYON IN DEPTH

Hells Canyon, shared jointly by Idaho and Oregon, begins at Kinney Creek, where the tumultuous Snake roars its way northward between huge, uplifted masses of the Seven Devils and Wallowa ranges. Here, above the raging Snake, mountain after mountain piles its walls skyward in volcanic desolation (see Color Plate I).

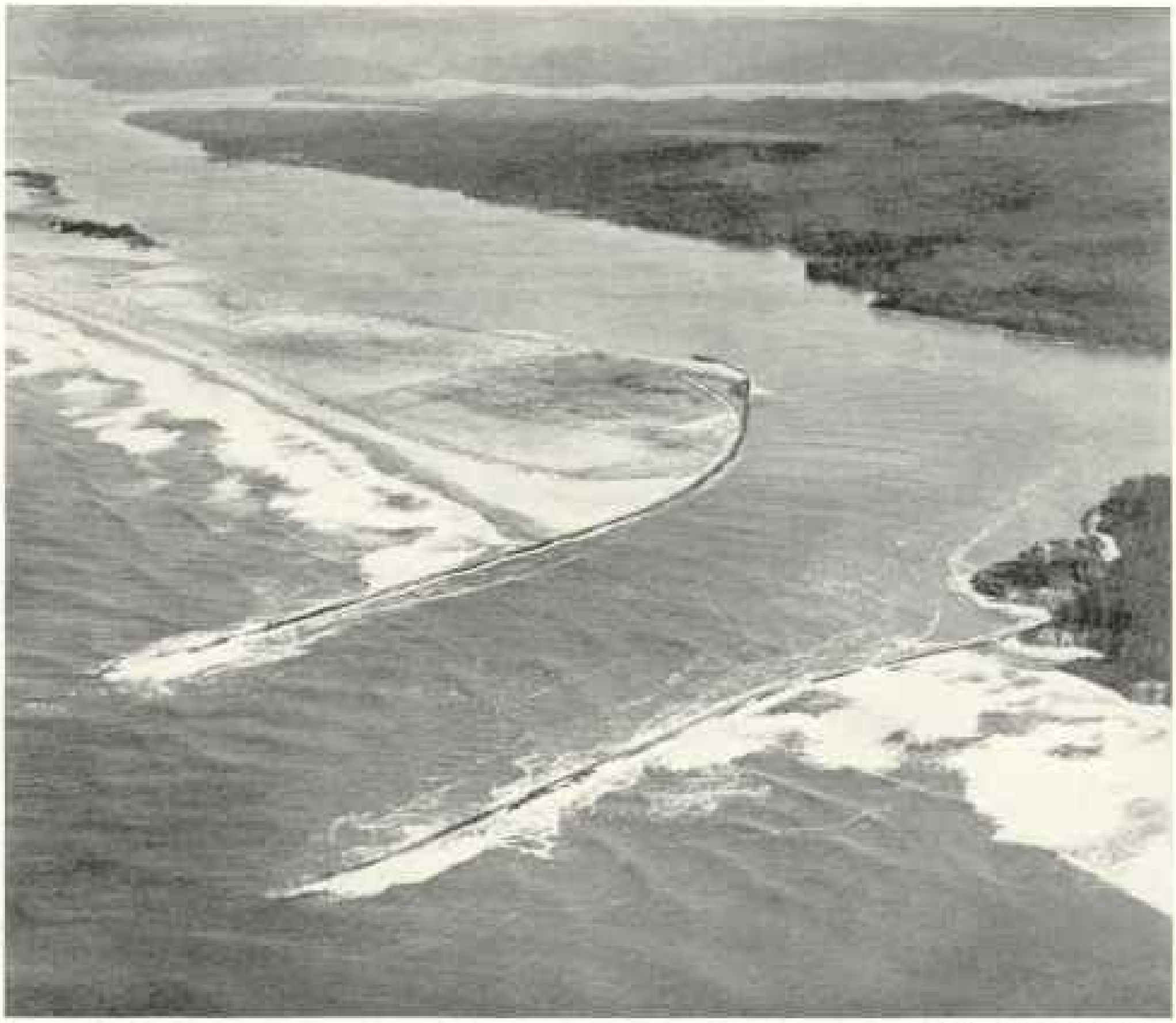
Although neither so well known nor so kaleidoscopic in color as the Grand Canyon, Hells Canyon is classed as rougher, deeper, and narrower between the rims than the more famous canyon.

The deepest portion is where the pinnacle of White Mountain rises to more than 8,000 feet; from the summit the river, miles away, resembles a small mountain stream.

Despite the unfriendly attitude of the canyon, Capt. William Polk Gray, a Columbia riverman, piloted the steamboat *Norma* safely through it in May, 1895. Accounts of this feat were repeated through the newspaper columns for 40 years, until his death.

Intrigued by its savage isolation, I have voyaged twice through the canyon by canoe. My first companion, John Mullens, of Homestead, a "rim-rocker," self-classified, with careless scorn for portages, steered me through in six days. My second voyage, on which I steered, took me 14 days to the Salmon River.

Years ago a few solitary tenants lived on the bars in the upper canyon, but they were finally overwhelmed by their environment. On the lower end ranchers run cattle in the side canyons and on the benches.



© Brubaker Aerial Surveys

COOS BAY OPENS ITS ARMS TO SHIPPING

A barrier bar long bothered mariners, but engineering has overcome that obstacle, and a wide entrance now invites the world to come and trade. In the distance lie Marshfield, North Bend, and Empire. Coos Bay is second only to the broad mouth of the Columbia among the harbors of the State (see text, page 180).

John, whose prospecting voyaging has made him very familiar with the canyon, regaled me with yarns. He told me about the Squaw Creek hermit who fed his chickens flour and water until they were blinded by paste, and then bumped into one another; about the deer licks at Studhorse Creek, where a hunter measured the deer he wanted, then backed away to shoot it. The only deer I ever saw in the canyon was the one that stood and gazed at my companion on my second voyage while he was cleaning his gun.

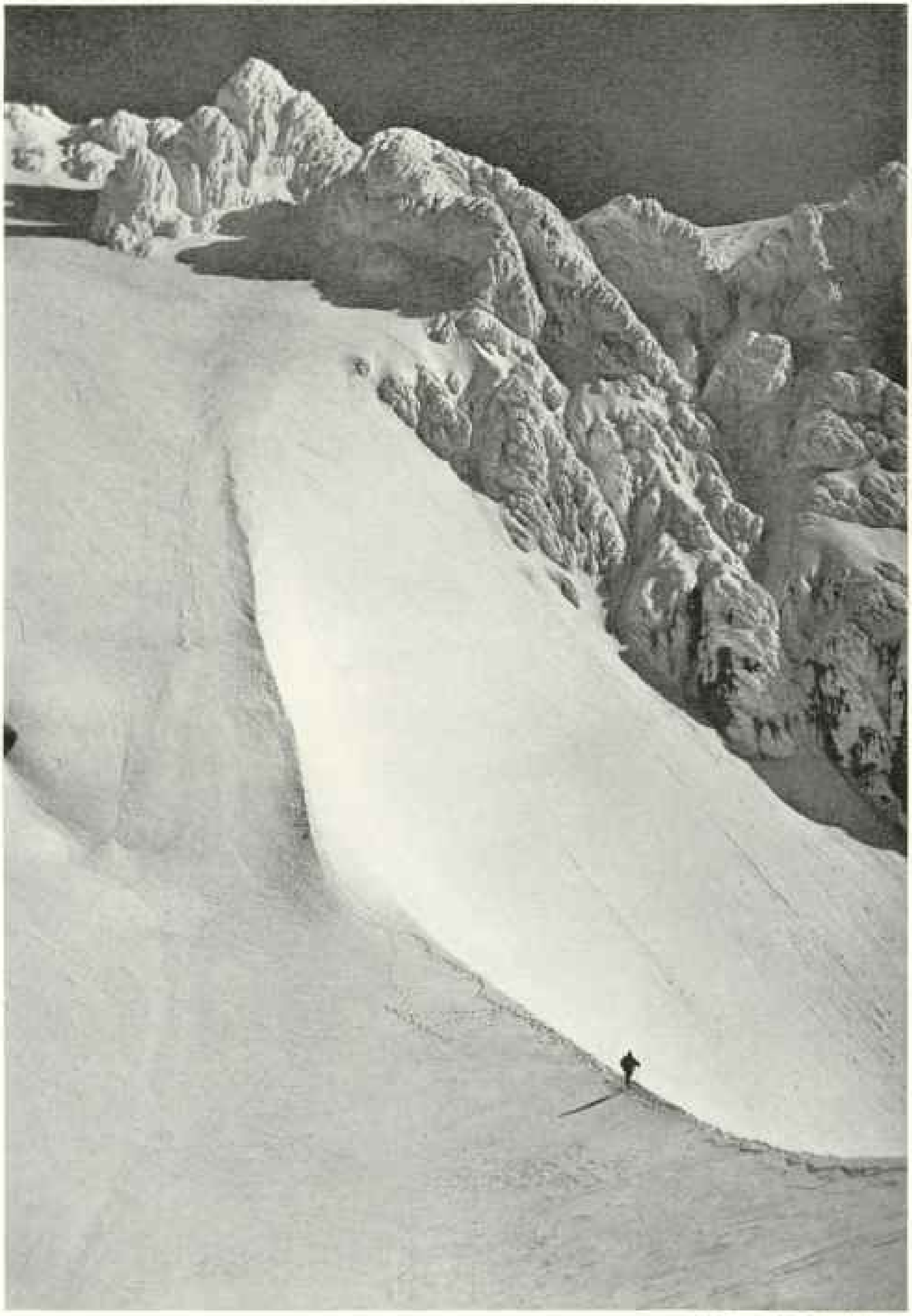
In early afternoon gullies in the black, ruptured walls were darkened by lengthening shadows. During winter months, on account of its abysmal depths, the bottom of the canyon receives only a brief spell of sunlight during midday.

From the Snake Canyon I doubled back through the broad, irrigated tracts of Ontario and headed west on the John Day Highway. The green alfalfa and hay lands finally ended their limit of conquest and gave way to the boundless expanse of sagebrush plains.

JOHN DAY VALLEY A LIVESTOCK RANGE

Eighty-two miles from Ontario the highway ascends the Blue Mountains out of the juniper-studded sage plains into the Whitman National Forest. It was all so sudden and refreshing that I drew in deep breaths and listened to the winds soughing through the pines at the John Day Monument, near the summit.

These seemingly endless fringes of Blue Mountain forests furnish summer range for



Photograph by Ray Atkeson

MOUNT HOOD CASTS A FINAL CHALLENGE TO THE CLIMBER

"The Chute" is the fitting name of this last steep icy slope to the summit of the towering peak. In summer months a 1,200-foot rope is stretched down the incline to aid the climber; but in winter those who would reach the crest must pick their slippery way upward by chopping each step in the ice as they progress.

Official photograph, U. S. Army Air Corps

THE CELILO CANAL SKIRTS THE COLUMBIA'S IMPASSABLE DALLES, OR RAPIDS

The waterway can be seen along the bank, looking westward down the river. In the foreground is Tumwater (Celilo) Falls, which forms the upper end of the obstruction to navigation. The canal, opened for traffic in May, 1915, was designed to enable steamboats to ascend the Columbia and Snake some 400 miles, from Astoria to Lewiston, Idaho (see text, page 197).

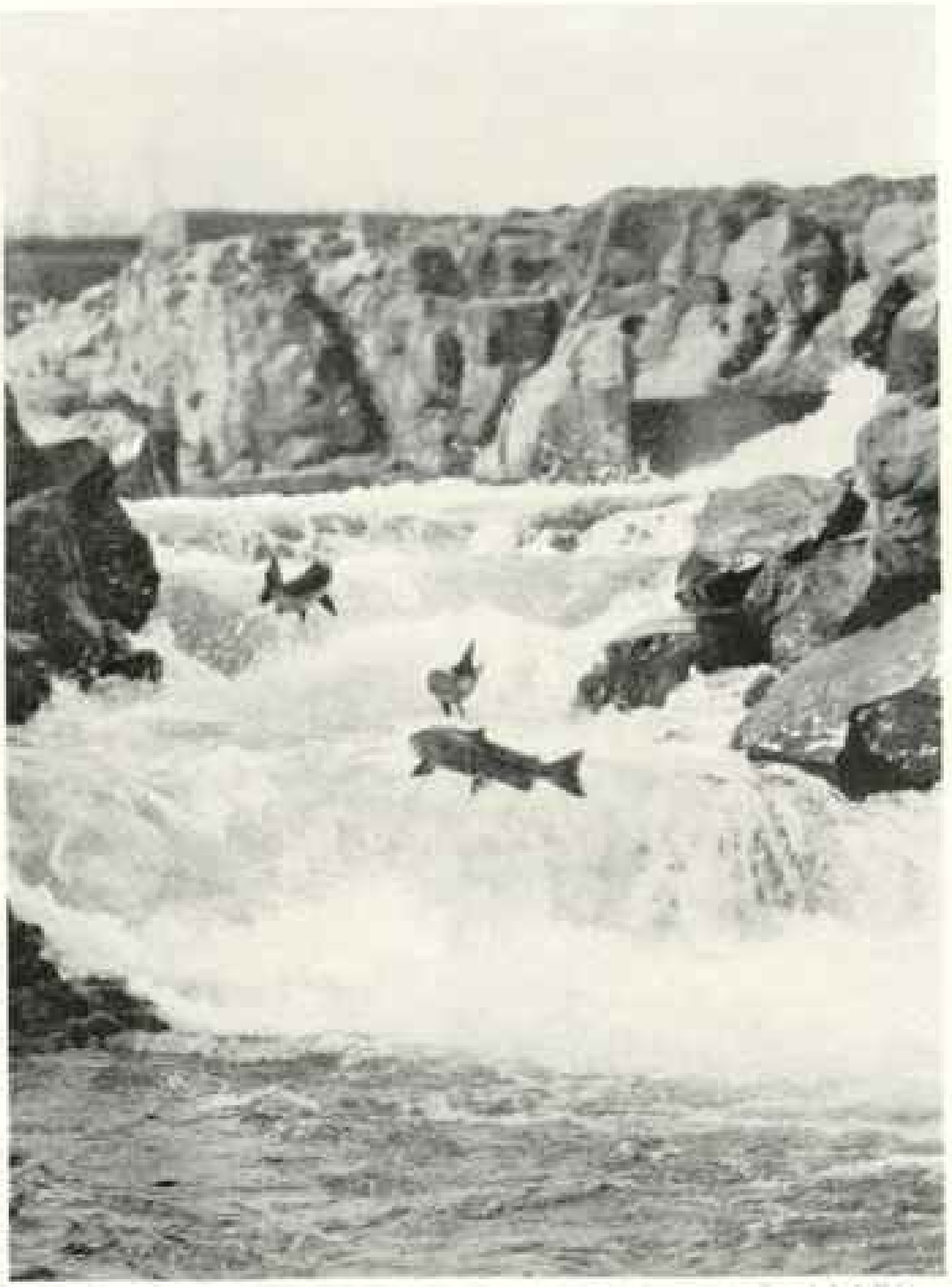
the John Day Valley, one of the most important livestock regions in the State.

On the western slope the highway dips down and parallels the John Day River, sauntering off the slopes of the Strawberry Mountains. The waters of this stream are diverted to irrigate fields to produce the thousands of haystacks strung along the valley in the fall for winter feeding.

Already cattle and sheep were moving in from the summer ranges, blocking the highway at times and streaming unhurriedly through the towns. The herders make no effort to clear the way for vehicles; the animals responsible for the "bread and butter" in this valley are given courteous right of way.

The town of John Day, named also for that famous hunter of Astor's overland party, is a trading center for the cattle country. Canyon City, adjacent to it and situated to suit its name, was a gold town that survived after its placer diggings and lurid Whisky Gulch days vanished. Joaquin Miller was judge here, and wrote poetry when ranchers were sinking wells and striking gold. A bucket gold dredge near Prairie City grumbles away as it overturns the rocky river bed of Dixie Creek to extract particles of gold (see page 224).

Farther down, around Kimberly, where the river has eroded picturesque canyons through the ancient sediments, fossil beds offer another type of mining. During lunch at a farmhouse I observed shelves littered with mineralized remnants of ancient animals gathered by the children in their strolls along the walls of the valley.



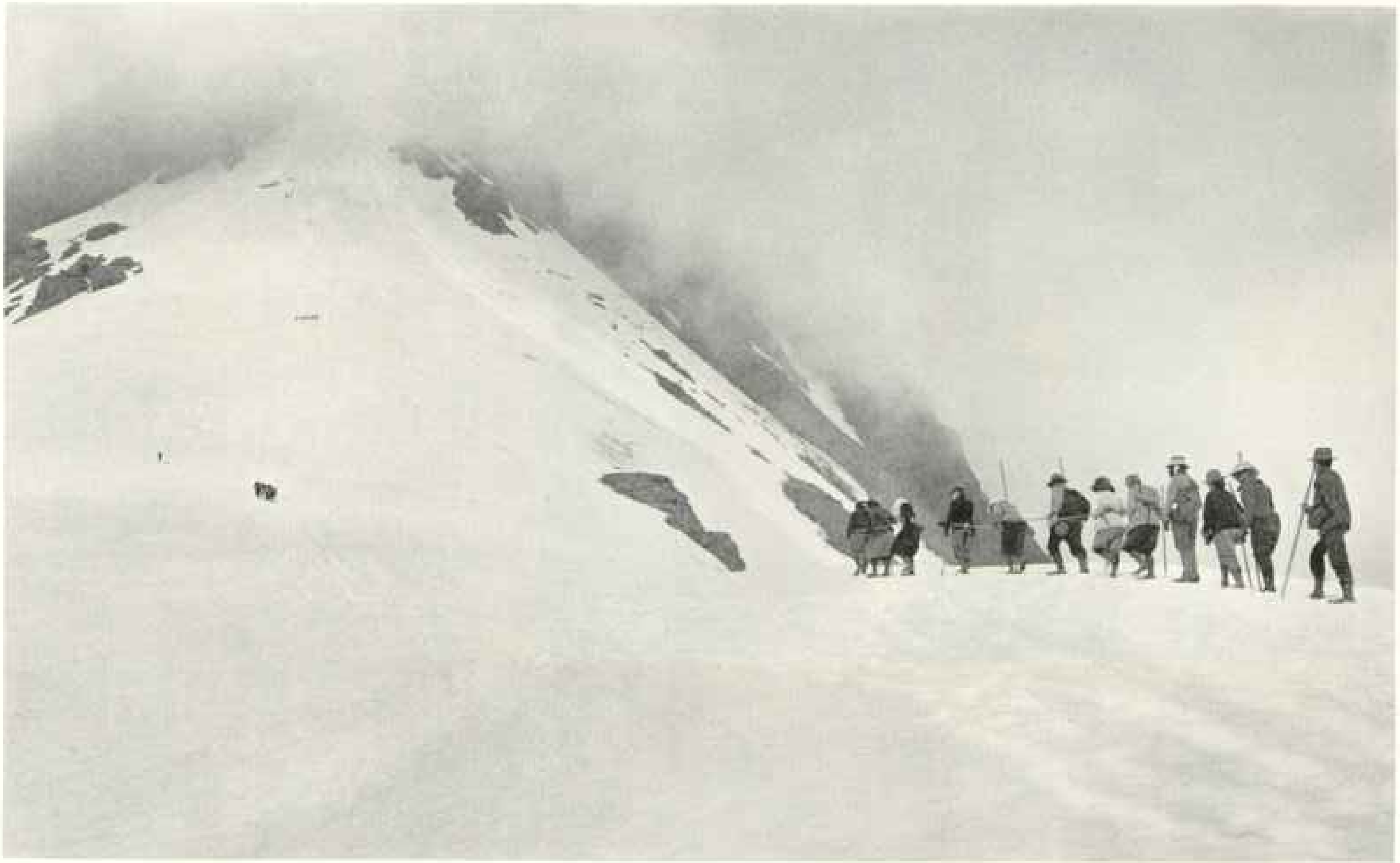
© Ralph J. Eddy

UPSTREAM THROUGH THUNDERING WATERS

With unerring instinct, the salmon fight their way back to the spawning grounds they left as fingerlings years before. They leap, as if they were propelled by steel springs, up the fishway at Willamette Falls, a horseshoe-shaped cataract formed by ancient lava flows. Famous salmon fisheries are located here (see illustration, page 201).

These fossil areas have lured scientists from all over the world to reconstruct the ancient landscape and seek the remnants of primeval fauna protruding from creek bank and canyon wall (see Plate VIII).

A day was spent prowling around the "painted hills," colorful mounds of red earth, near Mitchell, before I drove over the last spur of the Blue Mountains, through the Ochoco National Forest, into Prineville. As one emerges from the screen of pine into sage plains, a dozen snow-capped peaks, rising along the skyline of the Cascades, present a magnificent mountain panorama.



© Winter Photo Co.

UP SNOWY MOUNT HOOD CLIMB THE "MOUNTAIN GOATS"

Roped together, men and women members of Portland's famous Mazama Club ascend the north side of the lordly peak. Far ahead, three climbing parties appear like ants against the snow. The top of the mountain is shrouded in clouds. The Mazama Club was formed on the summit of Mount Hood in 1894; the name was derived from *mazama*, the Spanish name for "mountain goat."

A TRACTOR RESCUES SNOW-BOUND SHEEP

When a flock on the Bar Z Ranch, in central Oregon, was stranded in the snow, a "Caterpillar Thirty," equipped with a homemade plow, was used to haul feed to them and to clear runways on which they might exercise. On the broad expanses of the eastern and central parts of the State wander more than 2,000,000 sheep, with their hermitlike shepherds, most of them Basques or Irishmen (see text, page 233, and Color Plate XVI).

Photograph by Anna Burg

THE SUNNY CHEWAUCAN VALLEY IS DOTTED WITH HAYSTACKS AND FEEDING CATTLE

Many of the southeastern Oregon marshes have been drained and irrigated and their wild hay cut for winter feed. Chewaucan Valley, surrounded by brown buttes and rolling sage hills, is the scene of a vast autumn cattle round-up every year, when the stock is driven down out of the Fremont National Forest into the valley for winter feeding.

Photograph by Edward M. Miller

OREGON COWBOYS ROUND UP WILD HORSES ON THE HIGH DESERT

Fleet and fearful of man, these animals roam the arid parts of our Northwest and southwestern Canada. Cowboys, sometimes aided by low-flying airplanes, which drive the quarry into traps, round up large numbers annually for shipment. Shown here are a few of the 500 wild horses that were driven across the desert to the railroad at Bend (see text, page 228).

© Brubaker Aerial Surveys

REGIMENTS OF PEAR TREES NEAR MEDFORD YIELD THOUSANDS OF CARLOADS

Wealthy easterners saw the possibilities in Rogue River Valley orchard development some 25 years ago and headed west. To-day ten thousand acres in irrigated pear orchards cover the hillsides and valley bottoms. Medford, the valley's pear center, ships 5,500 carloads annually, one stream moving north to the Willamette Valley canneries, the other to the east as fresh fruit (see text, page 227).

Photograph by Amos Burg

SLUICING THE VERY FOUNDATIONS OF A TOWN FOR GOLD

Prospectors honeycomb the yards in old Jacksonville, seeking the unmined gold of early days. In 1851 leaders of a California-bound pack train went searching for water, found the magic metal instead, and the town they established became the center of a whirlwind rush. The town site itself was untouched, but recently somebody remembered it. The ground is tunneled 18 feet to bedrock. Lack of water limits sluicing to four months a year.

From huge openings of different types flowed the molten lava that buried eastern Oregon under volcanic terrain. They also stacked up the string of lava piles that constitute the Cascade peaks as we now see them.

A SCENE FROM DANTE'S "INFERNO"

The McKenzie Highway, between Eugene and Redmond, carves through a lava flow which is 65 miles square. This death-like scene of desolation reminds one of slag heaped up from the furnaces of a gigantic smelter.

It was growing dusk as I entered Redmond; so I motored up to Peter Skene Ogden Park, on Crooked River, for the night.

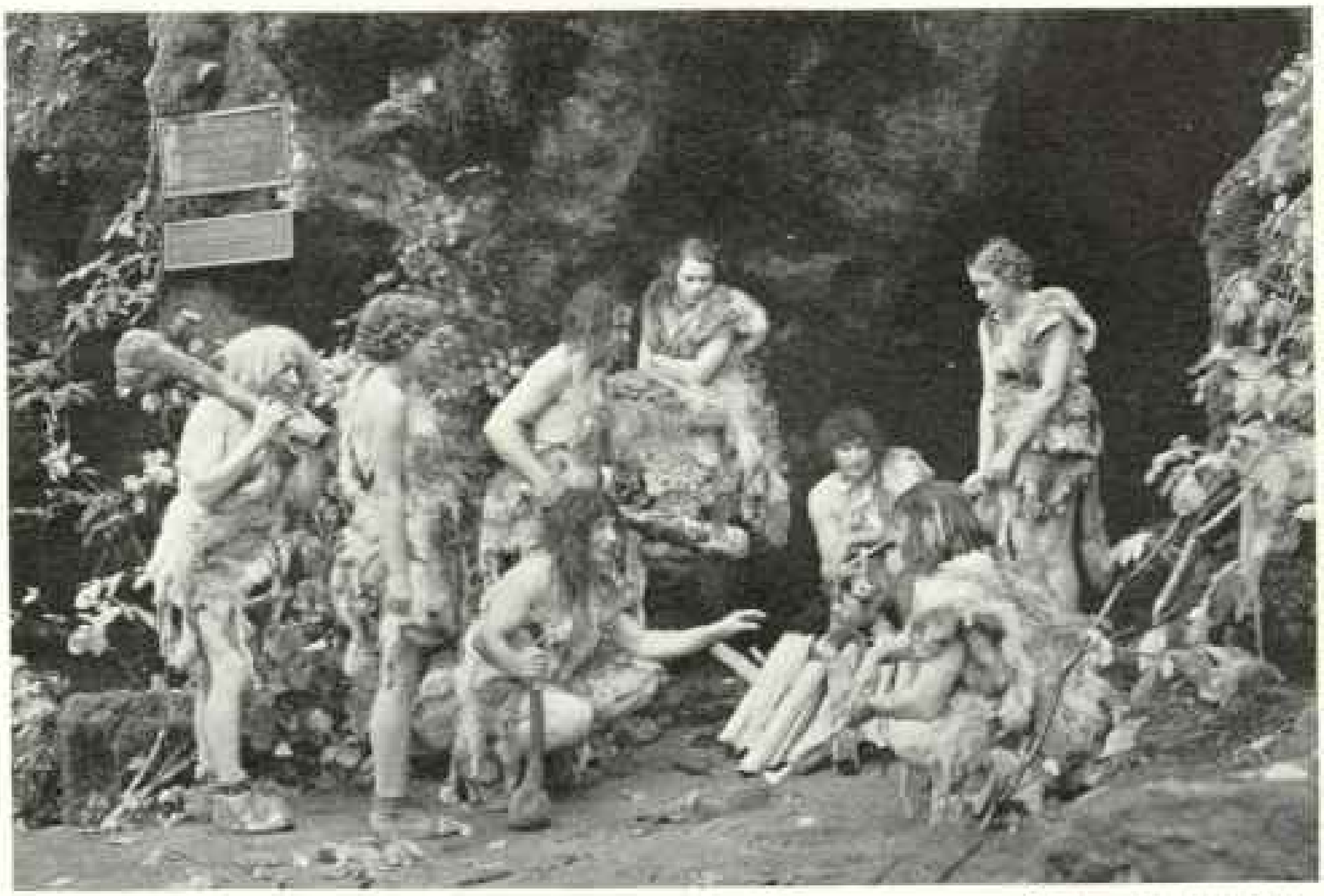
Since the autumn nights on the high eastern plateaus are sometimes frosty, I drained the radiator of the car, intending to refill it from the river the following morning. Dawn brought distress. I stood with an empty bucket on the Crooked River Bridge, gazing at the waters of Crooked River, 304 feet straight down into a box canyon.

This precipitous break-off of the plateaus into canyons is characteristic of the Deschutes and its tributaries. The uniform flow of this remarkable stream is caused by the seemingly inexhaustible pumice reservoirs that store excess water and release it when the river drops below reservoir level. It is ideal for power and irrigation.

A generation ago Hill and Harriman waged a spectacular track-laying duel up Deschutes Canyon to gain control of this gateway into central Oregon. Before a truce was effected the race for monopoly had cost them millions.

Bend was six years old, with 500 inhabitants then. In two decades its population has increased 18 times and built a modern city.

The two large pine mills marked the beginning of Bend's growth. The logging railroads tap the forests to the south, for Bend is Oregon's northern limit of pine in commercial quantities.



Photograph by Amos Burg

OREGON'S 20TH-CENTURY CAVEMEN ENTERTAIN TOURISTS

Donning appropriate regalia, citizens of Grants Pass call attention to the Oregon Caves, in the Siskiyou Mountains, 52 miles southwest of the city. The caves, carved from lime rock by underground water, have been called "The Marble Halls of Oregon." They were proclaimed a national monument in 1909.

The interest and the effort of the mills is for perpetual operation, which is being assured by their policy of reforestation and selective logging. The loggers are encouraged in the protection of young trees, and the land is left in suitable condition for regrowth.

Every visitor to Bend drives on the circular road to the crest of Pilot Butte, a cinder cone on the eastern limits of the city. The butte was named by early travelers, who used it as an important landmark in guiding them across the plains to the point where the Deschutes could be crossed at Farewell Bend.

A RAMPART OF LOFTY PEAKS

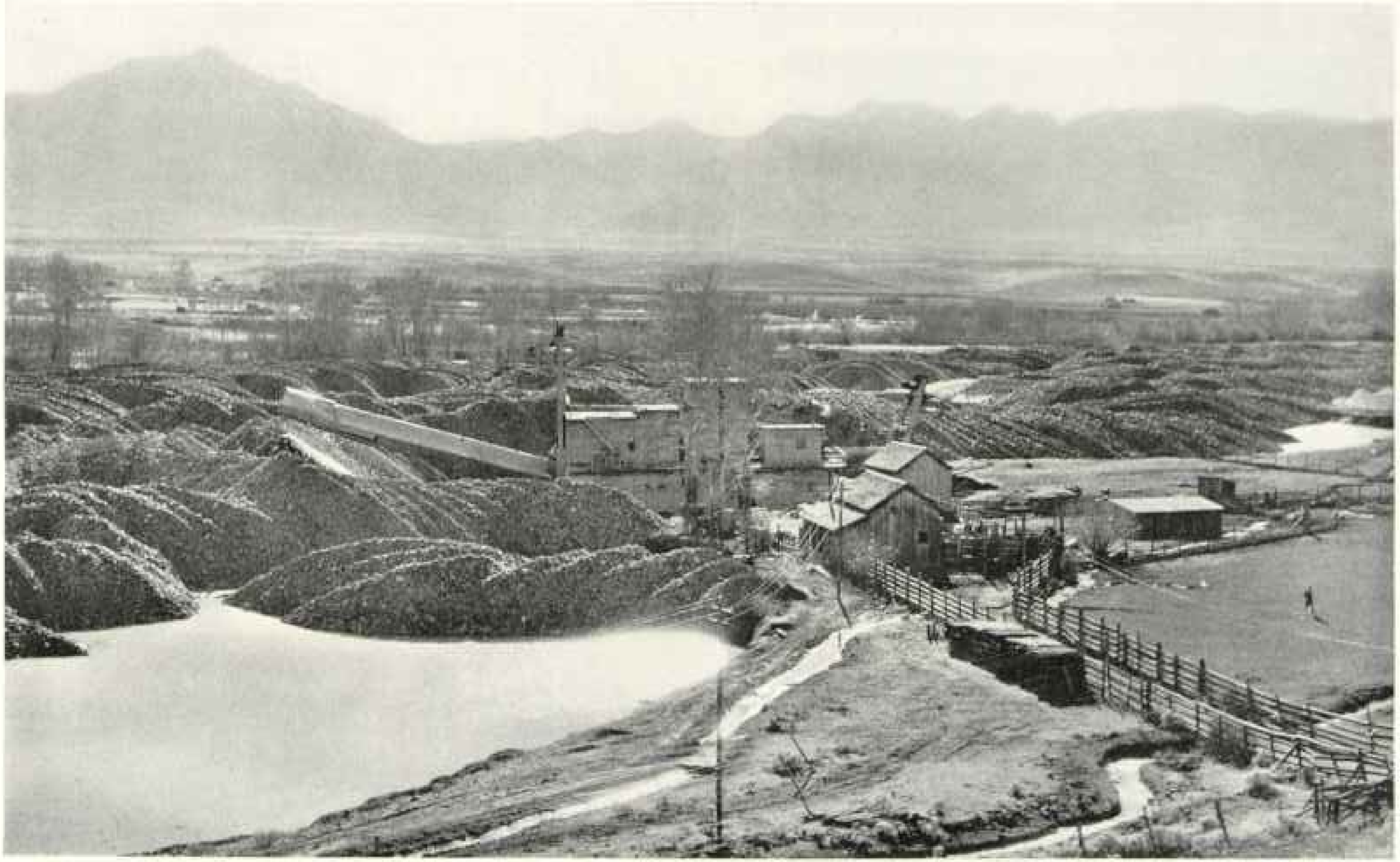
From Pilot Butte 14 mammoth snow peaks of the Cascades dominate the western skyline: Mount Hood, 93 miles away, commands the position farthest to the north; Mount Thielsen, 73 miles away, lies farthest to the south, with a dozen peaks scattered between (see map, pages 176 and 177).

A range finder, marked with the points of the compass, gives the names of the peaks and their distances. Overlooking Bend is the most majestic alpine group of all, the Three Sisters, said by geologists to rest on the caldera rim of a lofty mountain the top of which was blown off by an explosion. Each of the Three Sisters is more than 10,000 feet high (see page 192).

To the north Smith Rock resembles an ocean headland breaking off into the plain. To the southeast rise the volcanic cones of the Paulina Mountains.

In every direction one sees pines. Although the railroads now tap the forests 60 miles away from Bend, no devastation of timberlands lies in the wake of their operations. Bend itself is like a park, shaded by the growing pines.

South I drove fast and straight down the spectacular Dalles-California Highway, paralleling fresh glistening peaks which crop out of the Cascade Range. The continuous pine forests were broken by occasional scattered lava beds lying in frozen heaps resembling piles of clinkers dumped on the fertile ground.



Photograph by Amos Burg

A FARMHOUSE AND BARN ABOUT TO BE SWALLOWED IN THE SEARCH FOR GOLD

On the western outskirts of Prairie City, in the John Day Valley, a gold dredge chews up the bed of Dixie Creek, where gold was discovered in the sixties. Although the excitement of the early stampede has long since died, the Empire Gold Dredge and Mining Company has been operating in the valley since 1916. Just behind the dredge rises a bald dome of the Strawberry Mountains.

Photograph by Anne Burz

A FLOATING FOREST IS SENT IN CHAINS DOWN THE COAST TO CALIFORNIA

These mammoth lumber rafts are as long as many of the large ocean liners. They comprise 4,000,000 to 5,000,000 feet of timber and in their construction 175 tons of chains are used. The sight of such ocean-going monsters being towed out of the Columbia River and along the California coast has been a familiar one for several decades (see text, page 189).

Photograph by Brudaker Aerial Surveys

WHERE THE LOG TURNS INTO LUMBER

From aloft big trunks look like matchsticks, as they float at the edge of Upper Klamath Lake, awaiting the hungry saws of the Ewauna Lumber and Box Company plant in Klamath Falls. Beyond, like skyscrapers of cubist design, stand piles of finished lumber.

One hundred miles below Bend I branched off the main highway, through historic Fort Klamath, and climbed steadily through the south entrance of Crater Lake National Park to Crater Lake.

THE BLUE OF CRATER LAKE

The beauty of Crater Lake is seldom fully comprehended by the beholder gazing for the first time into its blue sea of silence. By many it has been described as possessing a bewitching charm, a touch of the supernatural, that fascinates the pilgrim to its rim (see Color Plates I and II).

Around its water surface, the accumulated rains and snows of centuries, rises the 2,000-foot, richly colored rim of the caldera in which it lies. The story of its blueness is carried by wondering travelers everywhere, for it is blue only like itself and few other waters in all the world. The purity and depth of this color so impress that I imagined being close to and gazing into the vault of heaven, the mountain winds singing melodies the while through the embattled, twisted pines struggling for footing on the rocky edge some 8,000 feet above the sea.

Various reasons are given for the vivid color of the lake, but the combination for producing this intensity can be found only in the crater of a volcanic mountain at a very high altitude. The water is clear and very deep; there are few particles in the air, and the high rims cut off the oblique rays of the sun.

The Sinnott Memorial, on a rocky balcony overlooking the lake, is being used as a scientific laboratory, in which the

Photograph by R. H. Cook

A FURRY FAMILY ENJOYING UNCLE SAM'S HOSPITALITY

This mother bear and three cubs roam the national forest near Crater Lake, Oregon. Their informal photograph was made near nightfall in the deep woods.

public is shown how the original mountain was formed and how it was destroyed.

During the summer the University of Oregon football squad works on the trails and roads around the lodge in order to keep fit for the fall football season. Their clipped hair and striped football jerseys, marked with large numerals, led a nice old lady to make the comment: "You have such a lovely park here; I think it is a shame that you employ convict labor. And some of them really look intelligent!"

It was with a feeling of regret that I left Crater Lake and headed out of the park, down the 92-mile slope through the Rogue River Valley toward Medford. On this drive I passed tall, majestic pines with golden bark, limbless from 100 to 150 feet above the ground. The spirited Rogue, churning through the half-light of tortuous gorges, is harnessed on its upper reaches to turn electric turbines, but farther down, in Jackson and Josephine counties, it and its tributaries irrigate densely populated valleys, where the cities of Medford, Grants Pass, and Ashland have grown into a fruit empire.

Placer gold discoveries in 1851 lured miners into southern Oregon, but they failed to provide for their continued existence. About 1908 the development of the Rogue Valley began to interest wealthy easterners.

Attracted by the combination of climate and scenery, and the opportunities to engage in orchard cultivation for profit, they staged a sort of repetition of the gold rush. Every train brought fresh arrivals, with their prize bulldogs, golf clubs, and a high, serious purpose. Not only did these easterners bring capital, scientific knowledge, and business training to the pear industry, but they introduced a culture to the valley that is reflected everywhere (see page 221).

Ten thousand acres in irrigated pear orchards cover the hillsides and valley bottoms to which agriculture is limited by the

Photograph by Shangle Studio

THE FARMER HELPS THE FISHERMAN

To the spruce-fringed gorges of the Rogue River, renowned alike for its fly fishing and its wild, primitive beauty, come fishermen from other States by automobile and even airplane. Hunting and fishing lodges have been built along its banks all the way through the Coast Range to the sea.

mountainous terrain. Medford, the pear center of the valley, ships 3,500 carloads annually, which move in two streams, one north to the canneries in the Willamette Valley, the other to the east as fresh fruit.

WHERE THE HERDSMEN FOLLOW THEIR FLOCKS

In the vast, unfenced, open range of sage of eastern Oregon, sheepmen drift seasonally with their flocks, following the snows down to the lowlands in the winter and the grass to the uplands in the spring. The cow-puncher does similarly with his cattle. More than two million sheep graze on the plains of eastern and central Oregon.

The map suggested to me that the best way to see this region was by airplane, and I inquired at the Lakeview airport for the aviator. "Why, he's down in Guano Valley, wrangling wild mustangs with his plane," I was told. And that was true. These animals, running in bands of 10 to 35 over countless acres of desert grazing lands, are thought to be Spanish horses that have drifted north and mixed with strays from the ranches (page 220).

The pilot sights a band and weaves his plane about, sometimes as close as 200 feet above the ground, driving the animals into a trap built in a draw. Cow-punchers now ride up and attempt to capture them.

For hours my car climbed tortuous trails through one unbroken table-land after another.

In every direction this land of endless distances stretches toward horizons where sky and desert merge through dim purple. Only the cow-puncher who rides for cattle straying in the desert, or the even lonelier sheep herder, can tell the story of its measureless solitudes.

Here is the home of a large herd of antelope, fleet, beautiful animals that subsist on the desert grasses and lowland saltbrush. In the spring they scatter out over the desert, but in the fall, during the mating season, they bunch and are often found in bands of hundreds.

The sheepmen of this country are largely Basques and Irishmen. Two nationalities, far from their native birthplaces, meet here on this lonely desert (see page 233).

As darkness fell the temperature dropped so far that I drained the radiator and saved the precious water that must be hauled many miles from the hot springs in Warner Valley. Above the murmur of the night wind floated the melodious tinkle of the bell sheep. Through the mysterious moon shadows on the sage 2,000 sheep drifted, covering the desert like a vast billowing blanket. The sheep were being kept near the water hole until snow fell, when they could be driven for hundreds of miles across the waterless High Desert.

The highway skirts the eastern shores of Lake Abert under the ramparts of Abert Rim. This world-famous fault scarp was caused by a fracture in the earth's crust, when a block equal in size to half a county tilted and formed a cliff 2,000 feet high.

At O O Ranch, near Harney Lake, I pulled the latchstring of an old-time cattle king, William Hanley, known as "the Sage of Harney County." The harassed migrating waterfowl find refuge here around the hot spring and lakes of the famous O O. Mr. Hanley protects them because he got the point of view of these birds, who were his friends when he came to Harney as a boy.

Photograph by Edward M. Millet

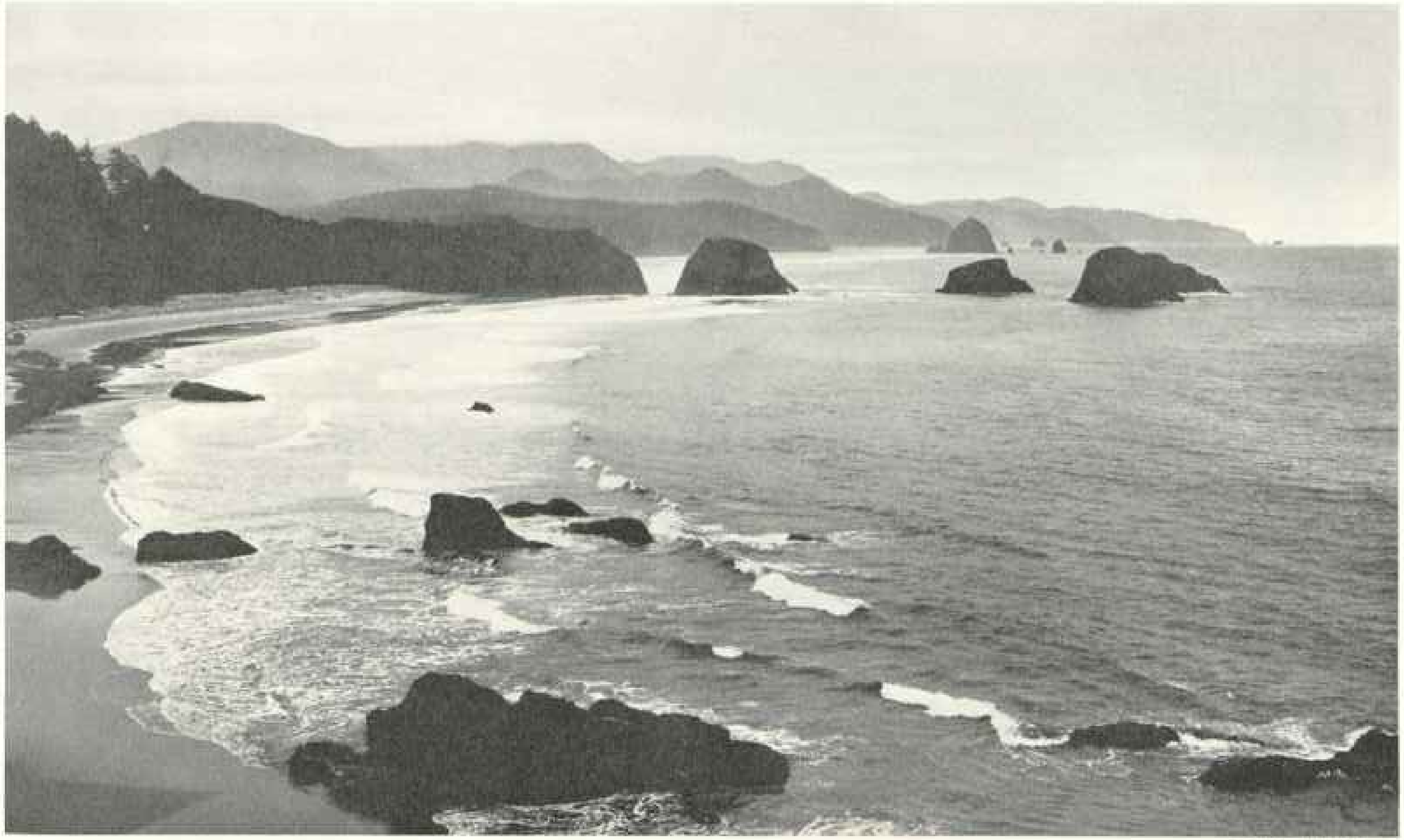
NOT ALL ANIMALS ARE WILD IN THE FAR WEST

A piece of lettuce was sufficient to tempt this fawn onto the running board of a tourist's car. The deer was a pet of a service-station operator on the Oregon coast and apparently had no desire to escape to the near-by forests. Wild deer are a common sight on many Oregon highways.

Harney and Malheur lakes form one of the most noted bird reserves in the State. At this time Harney was dry, and haylands were encroaching on the receding waters of Malheur. So flat are these lakes of no outlets that they appear to have no boundaries.

"The mold for the cowboy was broken when the long cattle drive passed," Hanley told me. "Nothing could be marketed unless it could walk out 300 miles and over." The old P Ranch, down on the west slope of Steens Mountain, comprising 150,000 acres and extending north and south for 70 miles, is one of the largest of these eastern Oregon ranches. The cowboy and his pony drove the bellowing thousands from here on long marches of several hundred miles to the railroad at Winnemucca, Nevada.

A silky robe of November mist hung over the marshes and low hills as I drove on to Burns. As Bill Hanley explained, the people of Burns were bottled up with no railroad, and many of them grew old and



© Wiatw Photo Co.

AN AIR OF MYSTERY OVERHANGS THE COAST

The witchery of Oregon's shoreline is exemplified at Cannon Beach, a few miles from the Columbia River's mouth. For hundreds of miles along the Pacific white-maned surf pounds on broad beaches of glistening sands or frowning, jutting headlands, wave-carved caves and cliffs. In the spring and winter low tides uncover immense rock beds, where agate hunters make their collections of moss and water agates. Surf bathing, deep-sea fishing, crabbing, clam digging, hiking, and riding attract thousands.

Photograph courtesy U. S. Forest Service

CATTLE GRAZE IN THE SUN-FLECKED AISLES OF OREGON'S NATIONAL FORESTS

Pioneers approaching the end of the long and dangerous Old Oregon Trail pushed on through virgin timber stands. To-day the national forests of tree-minded Oregon comprise more than a fifth of the total area of the State. They afford recreation to thousands of people and furnish pasturage each year for cattle, horses, sheep, and goats, whose owners pay a fee. The national reserves lie principally along the Cascade Range.

Photograph by B. C. Markham

A WHEAT COMBINE HARVESTS GOLDEN GRAIN ABOVE THE DESCHUTES RIVER VALLEY

Wasco County, just east of the Cascades, marks the beginning of the vast dry-wheat plateaus of the Inland Empire, where hundreds of thousands of acres are harvested every summer in eastern Oregon, Washington, and Idaho. Two-thirds of this golden tide passes through the Columbia Gorge, through the water-level pass in the Cascade Range, to Portland and thence to the seven seas.

died before any one could uncork the bottle. But Burns has its railroad now, with its livestock industry supplemented by one of the most modern electric pine sawmills in the country.

One look at the map's tangled crisscross of unmarked desert roads in the south end of the county, and I shouted for help. Fortunately, Mr. Larson, the county agricultural agent, heard me. His official business took him over my route and he agreed to accompany me.

As is characteristic of cultivated eastern Oregon regions, the persistent sage holds its own to the margin of irrigated conquest. For miles below Ontario we motored through diversified farms; then the highway empties suddenly into an ocean of sage plains, extending straight south in Malheur County for 115 miles, and beyond the Oregon boundary through the great central desert to the Rio Grande.

BASQUE SHEPHERDS FROM SPAIN

As the car coasted over a hill, we heard a melodious voice singing in a foreign tongue. It was a Basque herder seated on a rim watching his flocks below. These are mystery men of the range, courteous, agreeable, but reticent, fitting in perfectly with their unattended solitude.*

When we drove into the Basque town of Jordan Valley, another aspect of these people was presented. It was late Sunday. Dashing mounted vaqueros, with fringed chaps and tilting sombreros, caracoling up the street on spirited ponies, and strolling young ladies with a vivacity of natural charm and dress, gave to this frontier Oregon community a touch of the Spanish Pyrenees (see Color Plate XVI).

When the first Basque settler wandered into Jordan Valley more than 40 years ago and saw the endless sheep range, he wrote for his brother in far-away Spain to come. That was the beginning of the mail correspondence that spotted the shelterless sage plains of southeastern Oregon with Basque herders and their nomadic flocks.

These cleanly, industrious, and hospitable people are gradually having their language and customs modified by the young people attending school. There are still many of the children, however, who have never seen a train. They refer to a trip to Ontario as "going out to the railroad."

After a Basque dinner the entire population assembled in the community hall and gave a Basque dance in our honor. The snapping fingers, gayety, merrymaking, and frequent bursts of song that accompanied the dances flowed from the deep roots of their ancient heritage.

We left Jordan Valley at noon and in two hours crossed the Owyhee River at Rome. A hearty wind roared down the stream's picturesque canyon, as if to assure us that it, too, was part of the immensity and freedom of the plains that lay before us.

Hour after hour we drove south, with not a sign of bird, tree, or human habitation. Only the snow-capped Steens to the west broke the undulating landscape. Roads crossed, unmarked by signs, uncharted on the map. We were lost in a sea of sage.

In the lingering blur of November dusk we saw a tired road sign lying face down along the road. Mr. Larson turned it over. It indicated our position, 16 miles above the Nevada boundary. Getting our bearings, we took a road leading toward Steens Mountain through the old Piute Indian country. When doubtful of our navigation, Mr. Larson would lean out of the window and consult the points of the Great Dipper. Lights that flickered across the plain in the darkness led to the whitewashed buildings of the historic 30,000-acre Whitehorse Ranch, which in the heyday of beef raising ranged many thousands of cattle.

The next day the road dipped through Wildhorse Valley, and then eight miles across the smooth, cracked clay bed of Alvord Lake to Alvord Ranch, lying at the base of beautiful Steens Mountain. The smoke of branding irons rose from the willow corral. We were strangers and brought the news. Hearty hands gripped ours in welcome (see Color Plates X and XIII).

Somehow these handshakes to me seemed to symbolize the spirit that greets one from Man and Nature alike in this western Commonwealth of contrasts, just as the tawny Malheur, the first Columbian system tributary to the north, symbolizes the sources of its wealth and happiness.

* See "The Land of the Basques," by Harry A. McBride, in the NATIONAL GEOGRAPHIC MAGAZINE for January, 1922.

Photograph by R. H. Cook

NATURE SPRINGS AN ICY TRAP

Ducks frozen in the ice of Upper Klamath Lake on the night of December 11, 1932, are being rescued. The luckless travelers were caught over an area of more than ten square miles.

Photograph by Ray Atkeson

THE LAST OUTPOST

Storms sweeping across the Cascade Mountains of Oregon have left the hardy trees of the timber line shrouded in tons of grotesquely formed ice.

THE GOLDEN ISLES OF GUALE

By W. Robert Moore

Author of "Motor Trails in Japan," "Along the Old Mandarin Road of Indo-China," "Coronation Days in Addis Ababa," etc., etc., of the National Geographic Magazine

OUR plane races down the tide-bared sands of Sapelo Beach for the take-off. As it climbs aloft, my age-stained Spanish map springs to life. The six large islands and countless smaller ones, together with the segmented marshlands, that slip beneath our wings appear like a vast, staggered, jig-saw puzzle, their interstices formed by labyrinthine rivers, sounds, and twisting salt-water creeks.

Here are the famed Sea Islands of Georgia, the "Golden Isles of Guale," as they were known to 16th-century Spanish cartographers.*

These low-lying lumps of land, spawned by the tides and winds off the 100-mile arc of the Georgia coast, were once friendly hunting grounds, where Indians stalked deer, wild turkeys, raccoons, opossums, and waterfowl. To-day, as subtropic playgrounds and winter retreats of happy isolation, they have again become hunting preserves and game sanctuaries.

What history has marched across the savannas and hammocks and beneath the moss-scarfed arms of the mighty live oaks of these islands in the nearly four-century span since white men entered this New World theater!

Here, in the late sixties of the 16th century, came Spanish grandees and black-frocked friars, from their Florida headquarters at St. Augustine, to plant sword and cross among the Indians to the "glory of the king." Here, too, came adventurous French voyagers to trade and to make unsustained colonial claims.

HAUNT OF FAMOUS PIRATES

Bold pirates and buccaneers, such as Agramont (the notorious "Abraham") and Blackbeard, after plundering along the Spanish Main, brought into the hidden anchorages of these secluded waterways their treasure galleons and, under cover of the island oaks, found respite from their high adventures.

Here, in the 1730's, came Gen. James Edward Oglethorpe and his followers, who, within a few years, struck blows that helped preserve for the Anglo-Saxon race a large portion of the continent.

Refugee Santo Domingo planters, escaped French royalists, human cargoes from African "slavers," wealthy ante-bellum aristocrats of the old South, masters of extensive island plantations; then ruin, and, finally, delayed rehabilitation, mark the succeeding chapters of the Sea Islands' history.

WHERE AMERICAN TRADE HAD A BEGINNING

Five flags have waved over this offshore cluster of lands where some of the earliest seeds of American trade were sown (see map, page 239).

However, the unfolding panorama gained from the vantage point of the airplane cockpit is essentially a lesson in coastal geography, not history, even though isolated bits of old Spanish ruins, Oglethorpe's Fort Frederica, and remnants from prosperous colonial days can still be distinguished through the foliage.

It is a surprise to discover that at no place along the Georgia coast do the inrolling waves of the Atlantic break against the mainland. Instead, the slender white lines of surf shatter themselves on the smooth sandy beaches that stretch the length of the larger islands; in effect, these islands form the Atlantic coastline of the Commonwealth.

Between the leeward side of the islands and the mainland lie expansive reaches of salt marshes, ranging roughly from two to eight miles in width. Generally wide at the northern end, toward Savannah, they narrow at the lower portion of Cumberland, the southernmost member of the Golden Isles.

The pilot taps my shoulder and points down over the edge of the cockpit toward the maze of interlinking waterways that course this wide, swampy waste. A toy-like speedboat is kicking up a long silvery wake in a winding channel. A large pleasure yacht and other speedboats are berthed at a pier not far distant.

As we fly along the chain of islands, I can trace a continuous serpentine passage

* See "Marching Through Georgia Sixty Years After," by Ralph A. Graves, in the National Geographic Magazine for September, 1926.

Photograph by J. T. De Graaf

THE THRILL OF WIND-FILLED CANVAS

Pleasure craft now ply up and down the Florida Passage and skirt among the islands where friars once traveled in dugouts and early sailing craft came with colonizers, traders, and pirates.

in the network of sounds, delta-divided river mouths, and meandering creeks. It is the Inside, or Florida, Passage, a portion of that inside water route which extends all the way from New York to the Florida Keys.

LAND OF FORESTS AND SWAMPS

As we swing to a course over the ocean side of the islands, an interesting feature of their formation is revealed to advantage. Heavily wooded areas appear in long bands, stretching in a north-and-south direction, and are separated by slender marshes and ponds, in some cases even expanding into narrow lakes.

Through the passing centuries the tides and winds have piled the sand and river-debouched sediment into a series of parallel dunes interspersed with the swamps — hammocks and sloughs, they are termed in Georgian parlance. Enormous live oaks, pines, cedars, and other trees luxuriate here. On Sapelo Island alone remain the wide, open fields where colonial plantations flourished.

Here and there are tiny islands, with little more than a fringe of sandy beach to inclose a small area of marshland. After centuries of existence, they still seem undecided whether to become firm ground or to slip back beneath the tidal waters.

"Wild ducks," my companion shouts above the noise of the exhaust, as we zoom down over one of the long ponds. Hundreds of birds take to the air from a large black blotch on the surface of the water. Little wonder that hunters gravitate to these lands in open season!

Cumberland, Jekyl, St. Simon, Sapelo, St. Catherines, and Ossabaw (named in order from south to north) are the six islands awaiting our rediscovery.

Wheels bounce on firm beach and the tail skid cuts a mark in St. Catherines sands.

THE SPANIARDS' FIRST VISIT TO GUALE

One cannot come to St. Catherines without recalling that April day in 1566 when Menéndez de Avilés, one of Spain's ablest pioneers, and his party of fifty men dropped anchor and came ashore on this island. He had established St. Augustine,

MEMORIES OF AARON BURR LINGER UNDER THESE MOSS-HUNG OAKS

Amid a tangle of vines and bramble lie the foundations of the old Cannons Point plantation home, at the north end of St. Simon. Aaron Burr was a guest in the house for a while, after his duel with Alexander Hamilton (see text, page 262, and illustration, page 249).

Photographs by W. Robert Moore

A QUICK EYE AND QUICK TRIGGER FINGER ARE THE REQUISITES IN SKEET SHOOTING

With hunting preserves, rich fishing grounds, miles of moss-hung bridle paths, golf course, and wide stretches of sandy beaches, the Golden Isles have a varied appeal.

Photograph by W. Robert Moore

THINK OF SELECTING NAMES FOR THIS FAMILY!

Emma and Emmett Johnson and their family live on Sapelo Island. There are several pairs of twins in the group, which Emmett always refers to as his 15 "head" (see text, page 253).

OVERLOOKING THE ONE-TIME HAUNT OF BLACKBEARD

It was at the loop of the river, secluded from the view of passing ships, that the notorious pirate established a stronghold and careened his treasure galleons (see text, page 255). The northern tip of Sapelo Island shows at the left; the southern end of St. Catherines, the first of the Golden Isles to be visited by the Spaniards, can be seen through the haze beyond Sapelo Sound.

Drawn by A. E. Holdstock

THE "GOLDEN ISLES OF GUALE" FRINGE THE GEORGIA COAST

in Florida, only the year before, and was already out to destroy the remaining traces of any settlements the French may have founded.

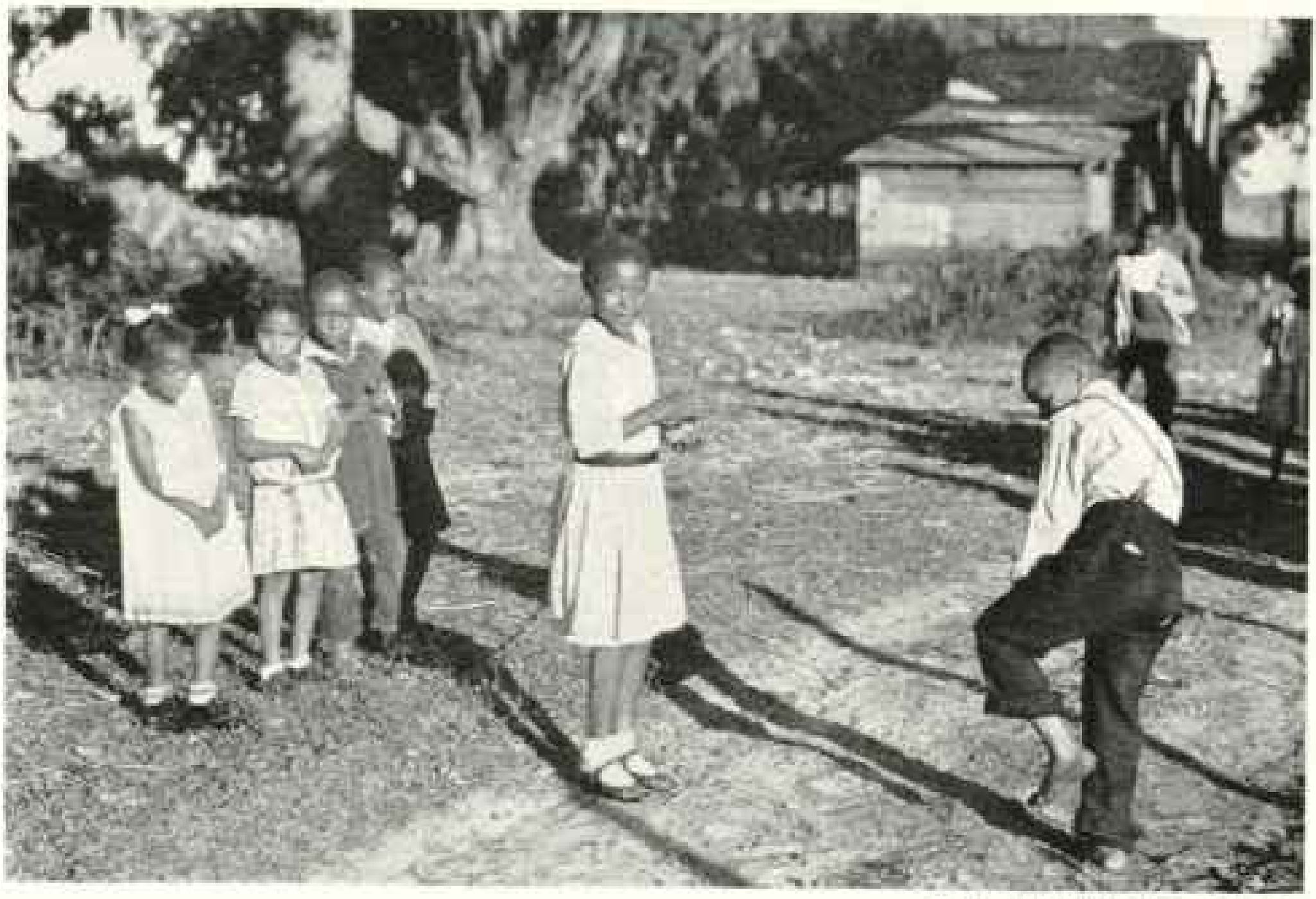
Menéndez, we are told, lost little time in planting a cross and flag in the Indian village to claim the land for Spain. Later the governor and his small band, armed with crossbow, arquebus, and rattling sword, were grouped on the beach and plied old Chief Guale with biscuits and honey. While munching away with audible gusto, the chief imparted the information that his people were suffering from drought and were at war with the Orista tribes to the north.

His warriors had drunk the "black drink," which the squaws brewed from the leaves of a species of holly known as the yaupon (the *Ilex vomitoria*, which colors the woods with its bright-red "Christmas" berries during winter months), and had already captured two of the Oristas.

So Menéndez entered the rôle of peacemaker, and Guale finally agreed to let the

A CANNON THAT SPOKE FOR ENGLISH SUPREMACY AGAINST THE SPANISH

Constructed under the direction of General Oglethorpe, Fort Frederica was a fortification built by the British in colonial America. It commanded a sweeping curve on the Frederica River, the chief water route lying between St. Simon and the marshlands that stretch out from the mainland (see text, page 259, and illustration, page 254).



Photographs by W. Robert Moore

"BALLING THE JACK"

Young Isaac exhibits a pair of agile feet burning with African rhythm, while his sister provides the cadence by clapping her hands. A few of his 14 brothers and sisters who are gathered about seem more interested in the novelty of photography than in the dance (see text, page 253).

Spaniards return the two hostages and negotiate for peace.

GEORGIA'S FIRST WHITE SETTLEMENT

Upon their return the Spanish were warmly welcomed. Rains had fallen; the cross was believed to have caused the cessation of the drought. The Indians further prevailed upon them to leave some Christians on the island; so a garrison of thirty men remained, the first white settlement in Georgia and the beginning of Spain's occupancy of this land.

News passed down the coast to the other Indians, with the consequent request for more crosses to be placed in the several villages.

Venerable Chief Guale gave his name to the island, and later it came to be applied to the whole northern province above Florida; hence the designation, the Golden Isles of Guale.

Photograph by W. Robert Moore

THE TROPHY OF A WILD-PIG HUNT

When full grown, the wild boars are ferocious creatures and are often extremely dangerous when at bay. Many hunting dogs have been victims of their savage tusks (see text, page 255).

Missions were Spain's solution to colonization, and a chain of them was established on the islands and adjacent mainland. This mission-building era antedated by two centuries that of California.

In 1568 Brothers Domingo Augustin and Pedro Ruiz, priests of the Jesuit Order, came to take charge of the new mission of Santa Catalina de Afuica on Guale. Within the first six months of their stay, what with learning the Guale language, visiting the other islands in wooden canoes (called *periaguas*), and teaching, Brother Domingo still found time to translate the catechism and write a grammar in the native dialect!

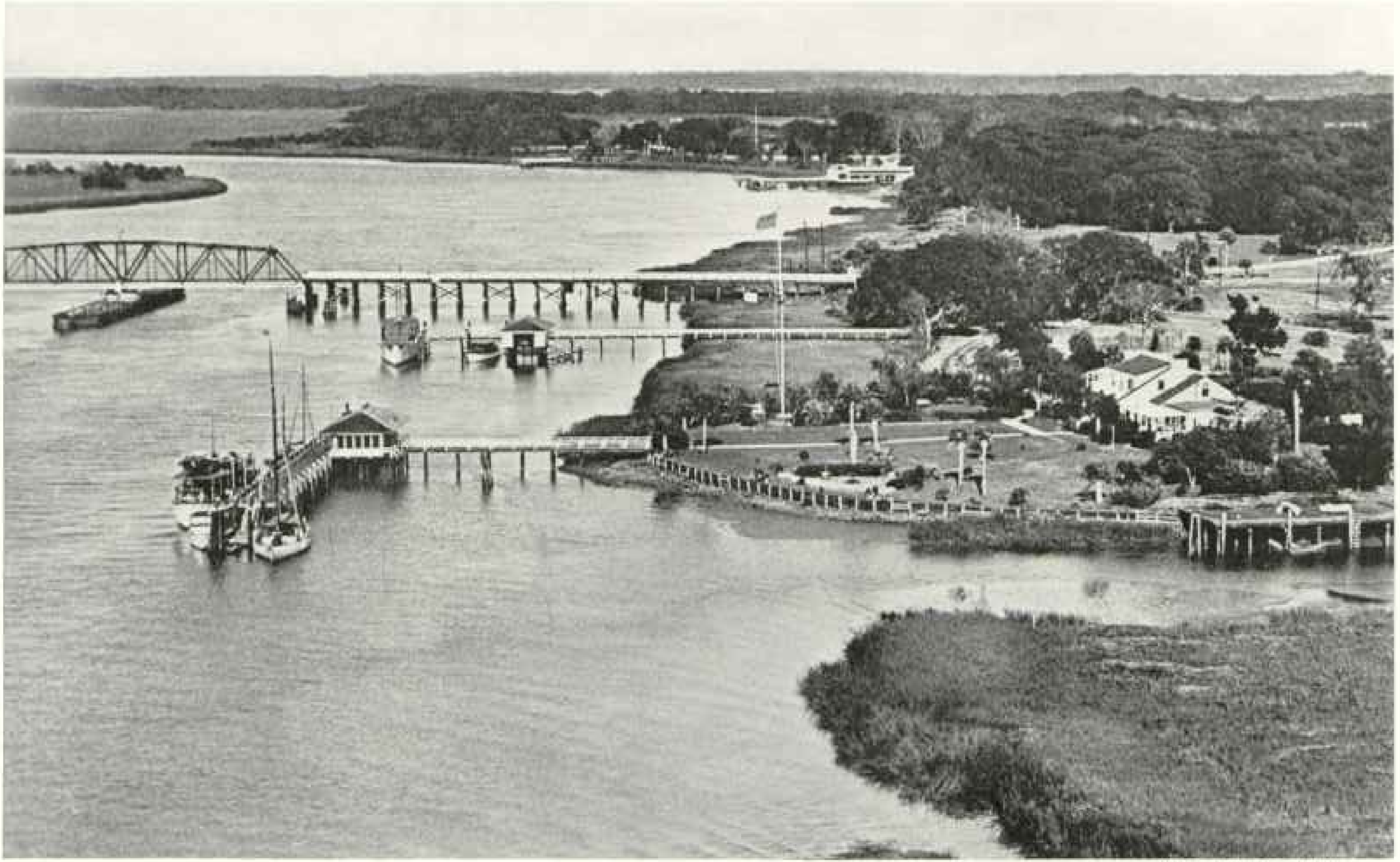
Utilizing the easiest available and most enduring material for the construction of their garrisons and mission buildings, the Spaniards selected "tabby" (Spanish, *tapia*). The tabby was composed of sand, oyster shells, and lime from burned shells. The mixture was then molded into blocks or poured into forms, as is concrete, and when dry it became almost imperishable. Even to-day, builders on the islands find it an excellent material for construction purposes.

For almost four centuries some of these old structures have defied the weather, prying tree roots, and even enemy attacks. One of them, Santa María de Guadeloupe, on the mainland opposite the southern tip of Cumberland, is still in an excellent state of preservation (see page 245).

Photograph Courtesy Howard E. Coffin

FORMER PRESIDENTS COOLIDGE AND HOOVER SOJOURNED HERE DURING BRIEF OFFICIAL HOLIDAYS

Built originally in 1800 by Thomas Spalding, the Sapelo Island plantation residence was destroyed in Sherman's march to the sea. The present structure was built in and around the original "tabby" walls less than a decade ago (see text, page 248).



Photograph by Kenneth Rogers

LAUNCHES AND YACHTS LIE AT ANCHOR WHERE THE TIMBERS OF "OLD IRONSIDES" WERE LOADED

Gascoigne Bluff, at the motor causeway entrance to Saint Simon Island, was immortalized by Sidney Lanier. Wild turkeys, deer, beaver peltries, and sassafras were shipped to Europe from here in 1575. The bluff is now occupied by the Sea Island Yacht Club (see text, page 259).

Photograph by W. Robert Moore

DESCENDANTS OF PLANTATION WORKERS

The woman is just returning home after a four-mile walk, carrying her youngster and balancing a bag of yams on her head.

Unrest among the Indians soon ended the efforts of the Jesuits; later the Franciscan friars came to continue the labors in colonial Spain. The presence of the French and, later, of the English did not make the task an easy one.

Within a decade after the English had established their colony in Charleston, in 1670, and began pressing their campaign southward, the Spanish were forced to withdraw from St. Catherines. The islands became a buffer land by treaty, and as such they continued until Oglethorpe's arrival, in 1733.

St. Catherines, together with Sapelo and Ossabaw, became Indian hunting preserves, largely in deference to Mary Musgrove, a half-breed interpreter who assisted Oglethorpe in his many parleys with the Indian chiefs.

Mary and her third spouse, the misguided Rev. Thomas Bosomworth, once chaplain of Oglethorpe's regiment, eventually sold it, shortly after 1765, to Button Gwinnett.

AMERICA'S MOST VALUABLE SIGNATURE

Gwinnett, however, spent comparatively little time on St. Catherines; his talents were needed elsewhere. One of the signers of the Declaration of Independence, a member of the committee which drafted the first Constitution of Georgia, and later the Governor of Georgia, not to mention his part in a duel which cost him his life, Gwinnett was a busy man—too busy, it seems, to have written much, because only 37 of his signatures are known to exist. One of them was sold not long ago for $51,000—the highest price ever paid at auction for a man's signature!

Apparently, however, he did find time to build a new home on St. Catherines, and its thick tabby walls have been incorporated in the great house that now stands on the island.

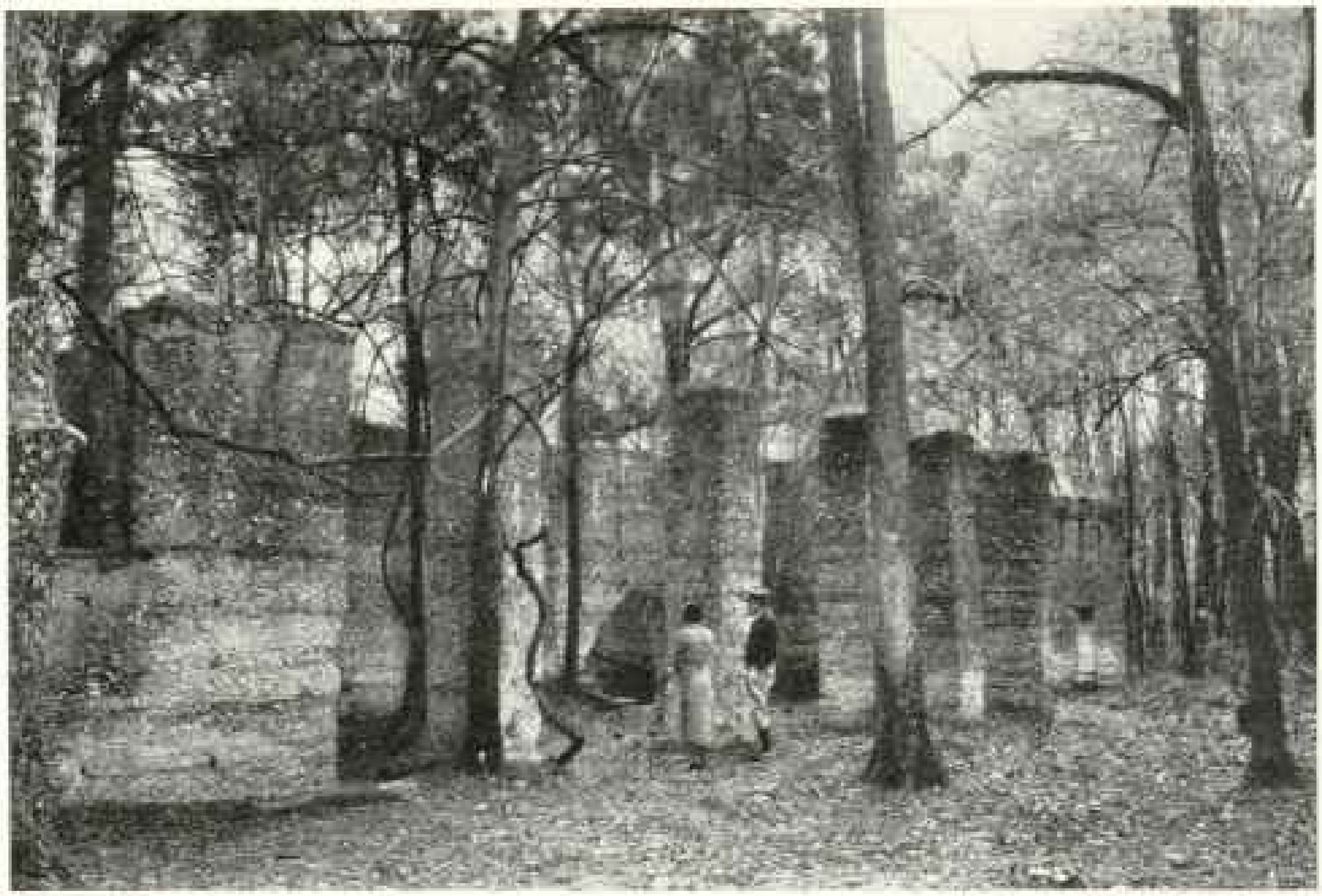
Magnificent pine forests, untouched by the woodsman's ax, cover the larger part of the northern end of the island. And throughout its whole area, some ten and a half miles in length by four miles at its widest part, wild life roams with as much freedom as when it was an Indian preserve.

If contrast adds to the enjoyment of life, then St. Catherines certainly approximates the ideal for a winter home for its New York owner.

Let us hop across the mile and a half expanse of Sapelo Sound, skirt over

RELICS OF COLONIAL DAYS

These old "tabby" huts on Ossabaw were once slave quarters. The only change that seems to have taken place in the last century and a quarter is that radio aërials now festoon the roofs. The tabby, made of sand, oyster shells, and lime from burned shells, provided a durable material for the island builders (see text, page 241).



Photograph by W. Robert Moore

WHERE BLACK-ROBED FRIARS LIVED AND WORKED FOR THE INDIANS

Near the town of St. Marys, on the Georgia mainland, is Santa Maria de Guadeloupe, one of the best-preserved and most extensive missions built by the Spanish colonists. Nearly 400 years ago they established a chain of mission stations all along the Golden Isles and on the adjacent mainland.

A "GUSHER" OF PURE WATER

Thirty-six of these artesian wells supply the island of Sapelo with water for household needs and for the 1,000 or more head of cattle that graze its acres.

Photographs by W. Robert Moore

THE "WESLEY OAKS" FORMED AN ARBOREAL PULPIT

Under these moss-festooned trees, near old Fort Frederica, on St. Simon Island, Charles Wesley preached to the garrison which General Oglethorpe commanded (see text, page 260).

© Hamilton Maxwell, Inc.

A JIG-SAW PUZZLE OF MEANDERING RIVERS, SALT-WATER CREEKS, AND ISLAND FARMS

The entire expanse of marshlands between the islands and the Georgia mainland are segmented by these looping waterways. On these fields of Sapelo, where cattle now graze, once flourished the colonial plantations of one of America's famous pioneer farmers, Thomas Spalding (see text, page 248).

Photograph by W. Robert Moore

STRANGE CUSTOMS PREVAIL IN NEGRO CEMETERIES

The graves are decorated with dishes, lamps, alarm clocks, and even coin banks and other possessions of the dead. It is stated that the alarm clocks, such as the one seen at the left, are to awake the person on Judgment Day (see text, page 251).

Blackbeard Island, and land again at the south end of Sapelo, or Sapeloe, the Zapala of the Indians.

Nowhere else have I seen such a delightful setting for a great house as that on Sapelo. In the midst of a cathedral-like bower of live oaks, with hoary beards of Spanish moss depending from their outstretched limbs, stands the majestic colonial home. Projecting from the porticoed entrance is a cruciform formal pool which catches and tosses back the reflection of the mossy oaks and the vast white walls. In its center a kneeling woman of Florentine marble, "The Awakening," had just caught in her upstretched hands a wisp of the live moss that had dropped from the overhanging boughs.

Since its reconstruction, two Presidential parties have been guests at the mansion. One day, while one of the First Ladies was admiring the near-by rock garden, her cicerone was heard to remark, "They even used imported stone for this rock garden." Whether or not he acquainted her with the fact that the imported rocks were brought over from Europe as ballast in the sailing ships that came for cargoes of cotton, I cannot say!

SAPELO FLOWERED UNDER SPALDING

The big house of the South End Plantation was first built by Thomas Spalding in 1800-1802, after he had returned from England to take up plantation farming on Sapelo (see pages 242 and 247).

As noted a farmer as he was a builder, Spalding cleared more than a thousand acres on his island kingdom, and raised indigo, sea-island cotton, sugar cane, and staple foodstuffs.

He it was, in fact, who introduced cane cultivation and sugar manufacturing into Georgia. The live oaks which he cut while clearing the forests to make bigger fields served to fill large timber contracts for the budding United States Navy. He also supplied the Navy and merchant marine with beef and hogs. Spalding further installed an extensive drainage system and even tried to harness the tides to furnish power to crush the sugar cane. In truth he was rated as one of the foremost agriculturists of his day.

Photograph by W. Robert Moore

OPEN FIREPLACE AND DUTCH OVENS OF A PLANTATION KITCHEN

While colonial plantations prospered by revenues from sea-island cotton and hospitality was a watchword, yet the cooks knew not of electric ranges, mechanical refrigerators, and running water. These are ruins of the kitchen at Cannons Point plantation house, St. Simon (page 237).

As a slave owner, however, Spalding came ultimately to suffer, even though he treated his "helpers" with such kindness that the planters in the South dubbed Sapelo "Nigger Heaven."

Then came the Confederacy, against every protest of this aged man. Sherman's march to the sea laid waste the big house and the plantation developments. Fortunately, Spalding did not live to see that day of ruin.

Vines and bramble claimed the fire-smoked tabby walls of the mansion until the present owner cleared them and rebuilt again in 1925.

NEW LIFE COMES TO THE ISLAND

To-day, too, the old canals have been redredged and new ones have been cut in many places to supplement the drainage of the island. An adequate supply of fresh water is provided by 36 gushing artesian wells. More than a thousand beef cattle now graze on the luxuriant carpet grass, Japanese clover, and Bermuda grass that have been sown in the one-time cotton and indigo fields.

The tick infection which has wrought such havoc among the cattle in the South has been eradicated on the island, and the introduction of Guernsey and Aberdeen-Angus bulls into the herds has vastly improved the earlier stock.

Delightful trails and motor roads lace the island retreat. In many places they wind beneath bewhiskered old oaks; elsewhere they skirt the broad savannas and cross between marshy ponds that teem with ducks, teal, and other waterfowl.

On the west shore, commanding the approach to the Florida Passage, stand the tabby ruins of the octagonal fort built by the Spaniards in 1680. Within its concentric walls troops were stationed to protect the friars of the Mission of San José de Zapala. Thomas Spalding built a sugar mill on the mission foundations, and within recent years the "long tabby" has been converted into a guesthouse, a portion of which is now used as a schoolroom for the nine white children on the island.

A short ride farther north brings one to the ruins of Le Châtelet. This old site recalls the colonial efforts of five Frenchmen

Photograph by J. T. De Groot

BOWLING ON THE GREEN IS A POPULAR ISLAND PASTIME

Tennis, golf, riding, and many other forms of sport enlist many devotees at Sea Island Beach and St. Simon when the short winter period brings a lull in sea bathing.

Photograph by W. Robert Moore

THE MONUMENT TO THE BATTLE OF BLOODY MARSH

In this locality on St. Simon Island, in July, 1742, was fought the battle that marked the ascendency of the British colonial power and the defeat of the Spanish, who had held the land for one and three-quarters centuries. Some of the marshland may be seen in the distance (see text, page 262).

Photograph by Foltz Studios

SEA-ISLAND SECLUSION ATTRACTS A DISTINGUISHED VISITOR

The late Calvin Coolidge found relaxation from his Presidential cares in a Christmas holiday visit to the Sapelo Island plantation of Howard E. Coffin in 1928. In a quaint conveyance he and his host are returning from a successful hunt. The head of a deer may be seen beside their small and dusky coachman. The rear guard is Col. E. W. Starling, of the White House staff.

who bought the island and settled at several places in their little haven. The agreement which they made in St. Malo, France,* before the beginning of their venture, is one of the treasures of the Sapelo library.

Soon to disagree, four of them moved to Jekyl. Later Le Châtelet passed into the hands of Marquis de Montalet, a French nobleman who had fled from Santo Domingo, where his whole family had been massacred in a slave uprising. The marquis had ambitious plans for developing his plantation, but, in company with his bosom friend, Chevalier de la Horne, he could more often be seen wandering through the woods with a pig on leash. While the strange pet searched for acorns under the oaks, the marquis entertained the hope that one day they would thus find truffles.

In a little cottage near the old slave quarters of Le Châtelet, I met dusky Christine, a picturesque character of the island.

For years Christine has ridden the forest paths and swamp lands of the game preserve to keep poachers from killing deer, turkeys, and other game that abound in its wild acres.

* See "St. Malo (France), Ancient City of Corsairs," by Junius B. Wood, in the National Geographic Magazine for August, 1929.

CLOCKS LAMPS, AND DISHES ADORN NEGRO GRAVES

Only a short distance from Le Châtelet we came upon a negro cemetery. Ancient practices, mingled with their religion to-day, are evident in these graveyards. Short posts are planted at either end of the grave, and upon the mounds of earth are placed cups and dishes, oil lamps, and alarm clocks. On one I also saw a broken thermos bottle; on another a small coin bank! The oil lamps are to furnish light through the unknown paths, the alarms are to sound on Judgment Day, and the dishes—the banks, too, I assume!—are for the personal use of their former owner (see page 248).

Many of the descendants of Spalding's slaves still live on tiny farms on the island. Of the three settlements—Raccoon Bluff, Hog Hammock, and Shell Hammock—the former is the largest.

Mohammedan in the days when the powerful Bu Allah served Mr. Spalding as

Photograph by Thomas M. Carnegie, Jr.

A GATOR TAKES A STROLL ON ONE OF CUMBERLAND ISLAND'S LONESOME DUNES

The relentless moving sands slowly yet surely engulf trees and growing things, as they march on to the bidding of the wind.

Photograph by George Shiras, 3d

COUNTLESS EGRETS NEST IN PONDS ON THE ISLANDS

Especially on Ossabaw and Cumberland, the marshy waters and surrounding trees are sometimes veritably white with these birds. Numerous other waterfowl also inhabit the secluded ponds and wide stretches of marshland of the island chain. These two large white egrets were photographed on Cumberland Island.

headman and kept the plantation accounts in Arabic, the negroes are all good Baptists now. At Raccoon Bluff and at Hog Hammock they have established the Free African Baptist Church; practically every home in all the settlements is also within a few steps of a "praise house." Baptisms are performed in near-by creeks at ebb tide.

Pleasure, too, has its proportionate share in the lives of the colored groups. There are several "to do" halls, where the secret societies hold their meetings and Terpsichorean devotees give vent to their African-born rhythm.

FIFTEEN "HEAD" OF CHILDREN

At Hog Hammock I talked with Emma and Emmett Johnson.

"Yes, suh," said Emmett proudly. "We have fifteen head of children. They's all here to-day."

Emmett beamed at my immediate request to photograph his kinky-headed group (see page 238).

"We had better count them up to see if they are all here," remarked my companion just before I was ready to "shoot."

There were sixteen! We counted again; sure enough, there was one too many.

Then Emmett checked his family. One of the youngsters belonging to a neighbor had joined the group.

After the shutter had clicked, nine-year-old Isaac rolled up his long trouser legs and began "balling the jack," while one of his sisters provided the cadence by clapping her hands. One would have to be a good tap dancer indeed to teach any new steps and movements to Isaac. His bare feet pattered in the dust with such skill that he could well cause envy in many who are doing their daily turns on vaudeville stages.

Julius, Cæsar, Ishmael, Isaac, Nero, and Balaam are some of the picturesque names of the island negroes. Bi-lal-y, as Spalding's Mohammedan headman, Bu Allah, was familiarly called, is still a popular name among the menfolk.

Motoring through the northern end of Sapelo, we found traces of the island's original inhabitants in the form of several large Indian mounds built of oyster shells. Some of these are burial mounds; others are undoubtedly only kitchen middens, the result of many primitive oyster dinners. In

Photograph by Clifton Adams

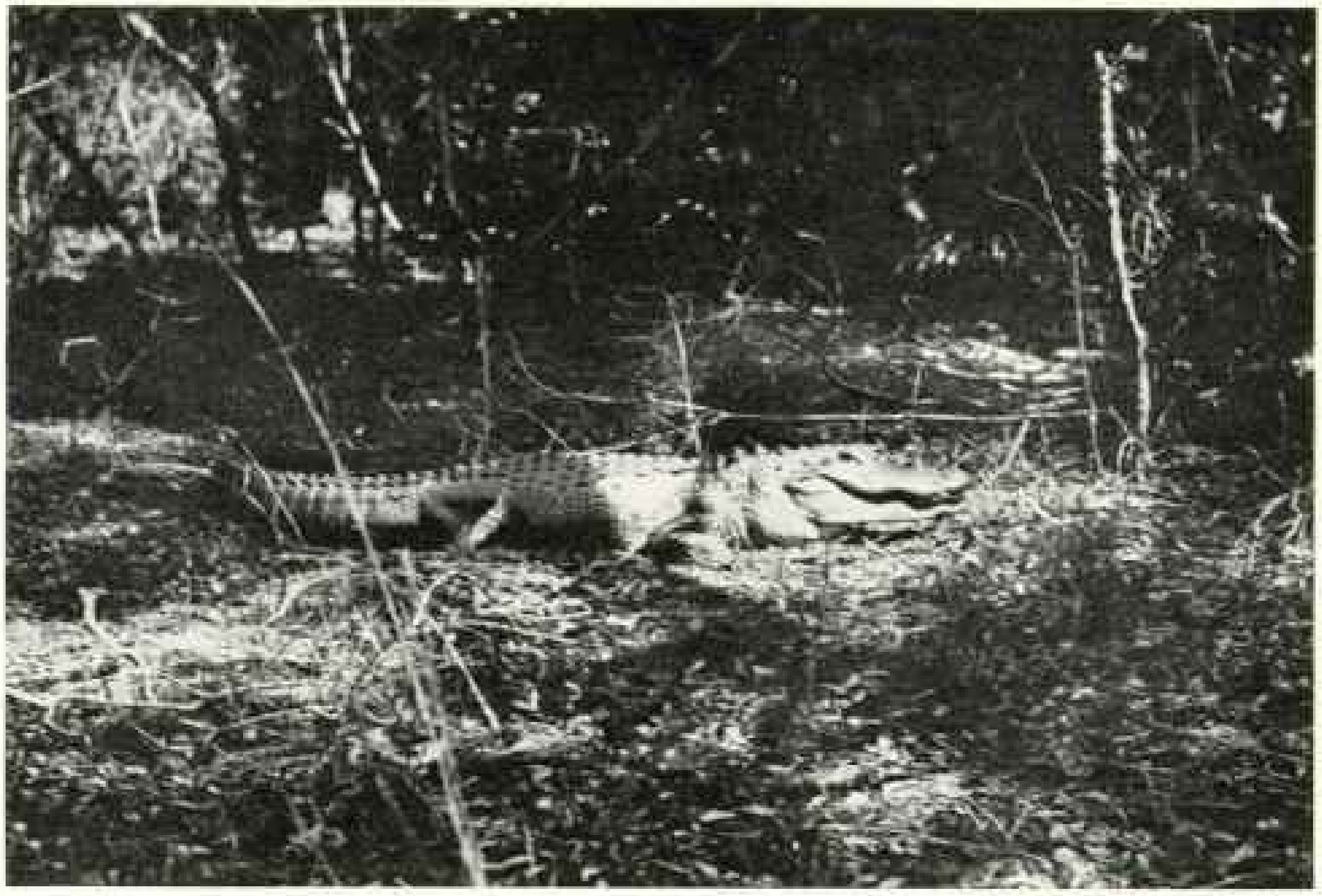
A LITTLE WILD PIG BECOMES A CAPTIVE

It is usually only by a lively race through the thickets and at considerable risk from the enraged sows that one can capture one of these young animals. Thousands of wild hogs range the woods of Ossabaw and other islands.

Photograph by W. Robert Moore

FORT FREDERICA, OUTPOST OF THE BRITISH IN COLONIAL GEORGIA

Built in 1736, Fort Frederica served for only six years and was then abandoned after the defeat of the Spanish. These old tabby ruins and portions of the moat are almost the sole reminders of the historic fortifications (see illustration, page 240).



Photograph by Thomas M. Carnegie, Jr.

A FRIENDLY SMILE FOR THE PHOTOGRAPHER!

When this snapshot was made, the alligator was migrating across Cumberland Island's seldom-visited area and was more than 200 yards from the nearest body of water.

another place is a curious circular wall, approximately 300 feet in diameter, which once served as a fort or as a place for tribal ceremonies.

REFUGE OF THE PIRATE BLACKBEARD

Pirates! What pictures of notorious buccaneers, buried treasure, "walking the plank," and high adventure under the Black Flag this word recalls to mind!

Beyond the northeast point of Sapelo, and separated from it by a narrow stream and low marshland, is Blackbeard Island. Here was a retreat of Edward Teach, more commonly called Blackbeard because of his bushy hirsute adornment, the ends of which he tied with ribbons over his ears. Rumor has it that he buried much of his treasure here during his visits to the island at the beginning of the 18th century; thus far, however, it has not been uncovered (238).

For many years Blackbeard Island has belonged to the United States Government. It was purchased with the intention of utilizing its oak forests for battleships by the Navy Department. More recently, the control of the island was transferred to the Treasury Department, and in 1924 it passed to the charge of the Department of Agriculture and has been designated as a game sanctuary under the Biological Survey.

Near the north tip of the island are the decaying remains of an old tank and a dock, where existed a quarantine station in the days when yellow fever was an unconquered foe.

Late one afternoon, as the sun was gilding the marshlands, I left Sapelo by speedboat for the mainland; then motored from Darien (the New Inverness of Oglethorpe's Scottish Highlanders) to Savannah.

By rare fortune a supply launch was returning to Ossabaw Island the next morning and I found that I could go along.

Porpoises rolled in the water as we threaded the lagoons on the 20-mile run to the island pier.

The splendid winter home of Spanish architecture and the administration buildings are all grouped at the north end of Ossabaw (the Indian Obispa, or Asopo). Beyond this little settlement extend forests of oaks, virgin pines, and scrub palmetto, broken only by secluded ponds, narrow fresh-water lakes, and grassy marshes. Save for a few truck gardens near the houses, cultivation does not exist; the 42,000-acre estate is reserved for the wild life within its cloistered area.

When the present owner bought the land, in 1924, it was estimated that there were about 5,000 deer, 2,000 wild cattle, at least 10,000 wild hogs, and countless turkeys ranging its acres.

Texas cowboys had an exciting year rounding up and exterminating the wild, tick-infected cattle. Hunting the ferocious boars has also provided many thrilling fireside stories, especially in cases when 300-pound animals have become unusually belligerent toward the dogs when at bay. By continued hunting, their numbers have been kept from increasing. Some of the savage tusked heads now adorn the walls of the residence, along with the trophies of an African hunt (see page 241).

DEER, DUCKS, AND A BALD EAGLE

"We have so many deer here now that they are almost a pest," explained my host. "I've had to put a 12-foot fence all around my garden to keep them from coming in and destroying our shrubs and Satsuma orange trees."

Yet, as we drove over the island, I saw not a single deer. However, during the evening, hundreds can be counted along the trails. At Five-Mile Lake the waters were dotted with thousands of ducks. In another pond the water and surrounding trees were white with egrets; here is one of the finest egret and heron rookeries to be found anywhere.

In the top of one of the mighty trees in the forest I saw the eyrie of a bald eagle,* and later saw one of the huge birds soaring above the marshes. Several pairs of them, I learned, nest yearly on Ossabaw.

Sea turtles, too, some of them as much as five feet in diameter, are sometimes seen crawling on the sands of the 15-mile beach.

Motoring over the trails, one passes many oyster-shell mounds left by the Indians. Some contain skeletal remains, beads, and pottery.

To-day it is somewhat difficult to appreciate the fact that, during the prosperous colonial days, Ossabaw had four large plantations which supported 300 slaves. In some of the overgrown fields, however, one can trace a few of the old boundary ditches

* See "The Eagle, King of Birds, and His Kin," by Alexander Wetmore, in the NATIONAL GEOGRAPHIC MAGAZINE for July, 1933.

CREW RACING WAS A FAVORITE SPORT OF SLAVERY DAYS

Recently these races have been revived and have become an annual event at Sea Island Beach, where duplicates of the original hulls have been constructed. Descendants of the old plantation workers man the boats and sing the crew songs as they row. The St. Simon causeway, marked by palms, can be seen in the background.

Photographs by J. T. De Groot

AN AFTERNOON CONSTITUTIONAL ON THE BEACH

Bicycling is in vogue on the tide-packed sands of the Golden Isles. The beaches also serve as landing places for airplanes.

Photograph by W. Robert Moore

A VISTA ACROSS "SWAN POOL," ON THE FORMER RETREAT PLANTATION

Golfers now play over the excellent St. Simon golf course, located on the acres where the first sea-island cotton was grown (see text, page 260). The building in the background, now the golf club, was formerly a warehouse, where the famous cotton was stored. The swan can be seen just beyond the bridge.

A BATTLE GROUND OF TIDES, WINDS, AND TREES

The trees at the right, which have taken root on the dunes, have been shorn off smoothly by the constant action of wind-blown sand.

Photographs by W. Robert Moore

OFF FOR CHURCH IN A HAY-BURNING, HORSELESS VEHICLE

Sapelo Island has several Negro settlements, descendants of the old slave population. Besides serving as transport, the ox is used to plow and cultivate the small parcel of land which provides the family sustenance.

and plowed furrows which then divided the lands.

A PAGE FROM SLAVERY DAYS

My host showed me the original invoice sheet, dated 1812, of the slaves who then worked the plantation at the northern end of the island. Lewy, the carpenter, aged 28 years, was considered the most valuable man, and was entered at $700; the youngest member, William, two months old, was rated at $50. Trailing the list was old Pluto, already five years past his allotted threescore and ten, at a mere $25.

One of the most appealing spots that attracted my camera lens was the long avenue of massive oaks that formed the approach to the former plantation home. In the 150 years of their growth, their brawny moss-hung arms have intertwined to form an extensive Gothic arch of compelling beauty. However, if one wishes to see a real hoary giant, Ossabaw offers one oak which is some 31 feet in circumference and has limbs with a spread of more than 150 feet. Experts estimate its age at 600 years.

Northwest from Ossabaw lie Wassaw, Skidaway, Wilmington, and Tybee islands. None, however, belonged to or has shared the richness of history of the Golden Isles. Recently Tybee has become a pleasure resort for Savannah, and during several months of the year thousands come to swim and acquire sun tans along its excellent beach.

THE MARSHES OF GLYNN

It is a delightful 81-mile motor journey along the well-paved "sea-level" route from Savannah to Brunswick, Georgia's second largest seaport. "St. Simon's Island, Sea Island Beach," reads a sign at the outskirts of the city, and an arrow points to a palm-bordered asphalt road that branches to the left. Unlike the other islands, to which access is had only by water or air, St. Simon boasts a motor causeway.

Ten years ago the city of Brunswick and Glynn County shared the expense of building this excellent boulevard and the four sizable bridges which span the four miles of intervening marshland. Sea Island Beach, a stretch of beach land contiguous with the eastern shore of St. Simon, was also made accessible in the same highway project.

Only a short distance from the mainland approach to the road stands a sprawling live oak, beneath which Sidney Lanier sat while penning his best-known work, "The Marshes of Glynn," a poem which has immortalized this expansive grass-covered marsh area.

The completed task of building the causeway, from the time that the dredges began pumping the eleven million cubic yards of roadbed from the muddy, tide-washed flats until it was finally surfaced, cost the city and county $468,000.

ST. SIMON FURNISHED OAKS FOR "OLD IRONSIDES"

As soon as one touches St. Simon (Spanish, San Simón; Indian, Asao), after crossing the drawbridge over the Florida Passage, one enters historic ground. The Sea Island Yacht Club now occupies this prominence, known as Gascoigne Bluff.

Where yachts and speedboats now lie at pier, oak timbers were loaded in 1794 and shipped north for the construction of America's infant Navy. From these outgoing live oaks was shaped the famous United States frigate *Constitution*, known and endeared to every American citizen as *Old Ironsides* (see page 243).

Old Ironsides is still afloat, after having been rebuilt for the fourth time, and the only original timbers which she still carries are from St. Simon oaks.

Back in 1573 thirty French vessels visited St. Simon and the adjacent islands; they came to barter with the Indians for sassafras, deer and beaver peltries, and wild turkeys. French royalty had the privilege of enjoying turkeys on their tables nearly half a century before the colonists at Plymouth Rock feasted on that noble fowl the first Thanksgiving Day. One report states that more than 10,000 wild turkeys were purchased from the Indians in a single year.

The sassafras roots which the French carried back with them were made into tea, and the brew soon became popular in Europe as a cure-all, after the manner of some of our patent medicines to-day. In the South sassafras tea is still drunk in springtime to "thin the blood."

To the north, about midway along the western shore of the island, commanding a position overlooking a sweeping bend of the inland waterway, stand the weathered ruins of historic Fort Frederica. One rusty cannon still lies atop the tabby structure where General Oglethorpe and his men

Photograph by W. Robert Moore

VENERABLE LIVE OAKS FORM A SYLVAN ARCHWAY

This avenue of moss-bearded trees is 150 years old. It once sheltered the approach to a plantation home at the north end of Ossabaw Island (see text, page 259).

zealously guarded the island against the Spanish (see pages 240 and 254).

When Oglethorpe asked and was illegally granted the privilege of settling in Georgia territory by the British Parliament, he had a dual purpose. Ostensibly he sought to establish a colony where England's unfortunate, though honest, people might escape the unjust hardships of the debtor prisons. His second and more important plan was the erection of a stronghold to prevent the Spanish from regaining their foothold in the buffer land north of Florida.

Last year Georgia celebrated the bicentennial of Oglethorpe's arrival on her shores. Savannah, 1733; New Inverness (now Darien), 1735; Frederica, on St. Simon, 1736; the defeat of the Spanish, 1742—these are the outstanding dates in Oglethorpe's colonial career.

As soon as Oglethorpe's troops had triumphed over the Spanish, the fort was abandoned, the soldiers were given parcels of land, and Frederica became one of the "dead cities of Georgia." An orphanage for boys now occupies a portion of the area within the old moat.

Only a short distance beyond the confines of the moat are the Wesley Oaks, under whose moss-draped canopy Charles Wesley had his first "charge" and preached and sang to the soldiers and their families, a task later to be taken over by his brother John (see page 246).

Both John and Charles Wesley came with Oglethorpe on his return to Georgia in 1736, Charles as Secretary to the General and John as representative of the "Society for Propagating the Gospel in Foreign Parts."

After the Revolutionary War, St. Simon came into the hands of seven men. Hampton Point, Cannons Point, Hamilton, West Point, Harrington, Saint Clair, and Retreat soon became impressive plantation names throughout the South.

FORTUNES FROM SEA-ISLAND COTTON

At Hampton Point and Retreat the first sea-island cotton was grown from seeds introduced from the island of Anguilla, in the West Indies. This remarkable long-fiber cotton created much comment among cotton

FOREST AND OCEAN PROVIDE THE SETTING FOR THE ISLAND HOMES

The dark sections in the water just off the north end of Ossabaw Island are extensive beds of oysters, which in the shallow water are usually massed into thick clusters.

Photograph by W. Robert Moore

A FIREPLACE MADE OF BALLAST ROCK

On the islands and along the mainland are found heaps of rocks that served as ballast in the old sailing ships which used to trade in cotton and timber.

buyers when the first crop, shipped from Hampton Point, reached Liverpool.

Island plantations expanded rapidly; agriculturists on the Georgia mainland and in Carolina were eager to plant the seed in their fields. Sea-island cotton was at a premium. Many of the plantation owners became millionaires.

The fibers, two or more inches in length, allowed it to be spun into more durable and finer threads than short-fiber cotton. In fact, one pound can be converted into 160 miles of thread!

In the manufacture of mail sacks, the fabric for airplane wings, and other things which require considerable strength and durability, long-fiber cotton is of high importance.

John Couper, owner of Cannons Point, also grew olives and dates in addition to his cotton crops and introduced cowpeas and Bermuda grass into the United States.

During the first half of the 19th century, St. Simon became highly developed and the greater portion of its 15,000 acres was under cultivation. To-day flourishing truck gardens on Hamilton Plantation are the only cultivation now existing on these once prosperous acres.

It is a worthwhile hour spent to visit the northern end of the island, where the ruins of the Cannons Point and Hampton Point mansions lie smothered in vines and thorn under the massive oaks.

WHERE BURR FOUND REFUGE AFTER A FAMOUS DUEL

At these two plantations, separated only by a creek, Aaron Burr found refuge after his duel with Alexander Hamilton. To Hampton Point came Fanny Kemble, the English actress, after her marriage to Pierce Butler, grandson of Maj. Pierce Butler, of sea-island cotton fame. A talented actress who could send all Washington into furor by her acting and cause a learned Justice of the Supreme Court to write sentimental poetry to her, Fanny Kemble also proved herself to be a brilliant writer in condemning the use of slaves on the great plantations.

Motoring to the south end of the island, past Redfern Aviation Field and an avenue of magnificent oaks, one comes to Retreat, once the plantation home of Maj. William Page and later of Thomas Butler King.

King was a powerful figure not only at Retreat, but in Congress. He was the first to conceive the idea of a transcontinental railway from Brunswick to California; later he was one of the organizers of the Southern Pacific Railroad.

Negro boys now caddy over a superb golf course where their ancestors picked the fluffy bolls of luxuriant cotton, and the old tabby warehouse where the first sea-island cotton was stored has been converted into a clubhouse (see page 257).

COLONIAL DESTINIES SHAPED AT BLOODY MARSH

A short distance away from Kings Retreat stands a bronze-tableted marble monument at the edge of a wide sweep of marshland—Bloody Marsh! (See page 250.)

Here Oglethorpe's troops came to grips with the Spanish forces in 1742. The Governor General of Cuba and Don Manuel de Montiano of Florida, acting on orders from their king, had sent an armada of 51 vessels and 5,000 men under Montiano's command against Frederica and its outposts to oust the interloping Britishers. From late June until well into July, thirty of the vessels lay in St. Simon waterways, and landing parties had many lively forays.

Then came the surprise. Finding spiked cannon and deserted barracks at the south end of the island, some of Montiano's troops pursued the retreating English toward Frederica. Ambush awaited them as they stacked their arms to eat. Colonial destinies were shaped in those awful moments at Bloody Marsh.

Hard by the Bloody Marsh monument is a small building in which the negroes of the island gather to sing their spirituals, plantation, and work songs that have come down from ante-bellum days.

It is stirring to hear the naïve rhythmic spirituals of "I Heard the Mighty Moanin'," "Knee Bone, Bend," "Pharaoh, Why Don't You Let God's Chillun Alone?" and "Mary, Don't You Weep, Don't You Moan."

The plantation and work songs were evolved when the hands picked the bolls of cotton or tugged together at the heavy timbers. In the rhythm of these accompaniments to their labor, the muffled beat of African tom-toms seems to sound dimly in the background.

In recent years Sea Island Beach and part of St. Simon have had tremendous impetus as resorts. In addition to nearly sixty beautiful homes, Sea Island has a fine

Photograph by J. T. De Groot

SURF AND SAND BEACH OF THE GOLDEN ISLES LURE MANY VACATIONERS

The beaches on all of the islands slope out gradually for several hundred yards. When the tide is out, the fine sand is as smooth and firm as a speedway. These sun worshipers are on Sea Island Beach.

hotel and casino on its excellent beach, together with nearly every outdoor sport.

Adjacent to St. Simon on the north is Little St. Simon. Its densely wooded acres were purchased some years ago by one of the leading lead-pencil companies of the United States. The great cedar forests, however, have never been converted into pencil sticks. Instead, the island has been preserved as a game sanctuary. Deer and other animals from many countries have been added to the prolific stock of game already there.

Immediately north of this island, at the mouth of the Altamaha River, are Egg Island and Little Egg Island, two small plots of land. Along the edge of the marshland, back of their narrow beaches, thousands of waterfowl nest and rear their young.

Early one morning we left the Sea Island Yacht Club by speedboat to complete our survey of the historic isles.

WATCH RESPONSIBLE FOR CUMBERLAND'S NAME

Speeding down the winding channel of the inside waterway, we came soon to the north end of Cumberland Island, opposite Little Cumberland. A dusky Jehu was waiting with an ancient chariot (if such I may term his dilapidated Model-T truck) to take us on a maniacal 18-mile dash through the forest trails.

"What time is it?" I inquired of at least six people that morning on Cumberland. None had a watch.

Curiously enough, this island, where time seems to be of such little consequence, owes its name to the gift of a watch. On one of Oglethorpe's visits to England he took with

him an Indian youth, Toonahowie, and while there the Duke of Cumberland presented the young man with a gold watch. Deeply impressed with the gift, Toonahowie later asked Oglethorpe to change the name of San Pedro to Cumberland in honor of the Duke.

Before the Spanish had called it San Pedro, the island was known as Tacatacaru, or Missoe. Missoe has been variously interpreted to mean "Beautiful Island," or "Sassafras Island," whence came some of the sassafras that the French took to Europe (see text, page 259).

Oglethorpe maintained garrisons on the island until after his victory in 1742; after they were abandoned, the island became the home of wealthy planters.

DUNGENESS RECALLS INCIDENT IN DEVELOPMENT OF COTTON GIN

Shortly before his death Gen. Nathanael Greene purchased Dungeness, at the south end of Cumberland. His widow lived here for a number of years after her marriage to Phineas Miller, who was manager of General Greene's estates.

The names of Mrs. Greene and Mr. Miller are intimately associated with that of Eli Whitney, the inventor of the cotton gin. While visiting the Greene home in Savannah, Mrs. Greene had introduced Whitney to a group of cotton planters, and from their conversation came the inspiration for the construction of a ginning machine. Miller assisted in financing their construction. The first crude machine to be constructed proved inefficient because of the accumulation of lint on the teeth.

The story is told that one day Whitney and Miller were trying a new design at Dungeness in the presence of Mrs. Greene, when suddenly she exclaimed, "Why, Mr. Whitney, you need a brush," and with the stroke of her handkerchief removed the lint. Grasping the idea at once, he remarked, "Mrs. Greene, you have completed the cotton gin!"

Near one of the four homes at south Cumberland is a lovely garden pool surrounded by luxuriant clumps of West Indies bamboo, said to have originated from a single stalk brought there by General "Light Horse Harry" Lee upon his return from Cuba, in 1818. While visiting there, he died and was laid to rest in a little oak-covered cemetery near by; in 1913, however, his body was removed to Lexington, to lie beside that of his illustrious son.

Since 1880 the southern portion of the island has been a private winter retreat possessing unusual natural charm. The homes are situated amid subtropic gardens where fronded palms rustle in the Atlantic breezes. On every hand majestic oaks, with pendants of moss on their spreading branches, cast a friendly shade.

The greater portion of Cumberland, however, has reverted to its former wooded state, and, in addition to the varied wild life found on the other islands, bears roam without interruption on their berry-seeking expeditions.

As we cruised northward again, a dusk-filled horizon closed over Cumberland. Time had come to leave the Golden Isles with their moss-festooned oaks, happy beaches, and expansive marshlands replete with historical and friendly personal associations. Some day I am going back. . . .

INDEX FOR JULY-DECEMBER, 1933, VOLUME READY

Index for Volume LXIV (July-December, 1933) of the NATIONAL GEOGRAPHIC MAGAZINE will be mailed upon request to members who preserve their copies and bind them as works of reference.

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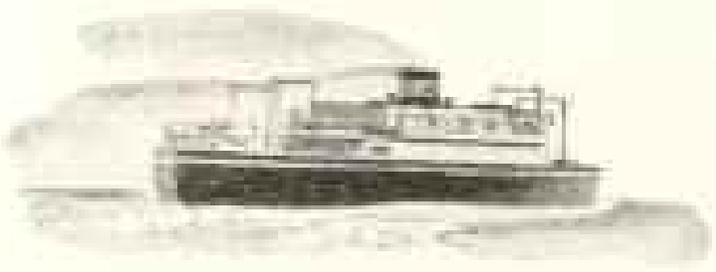

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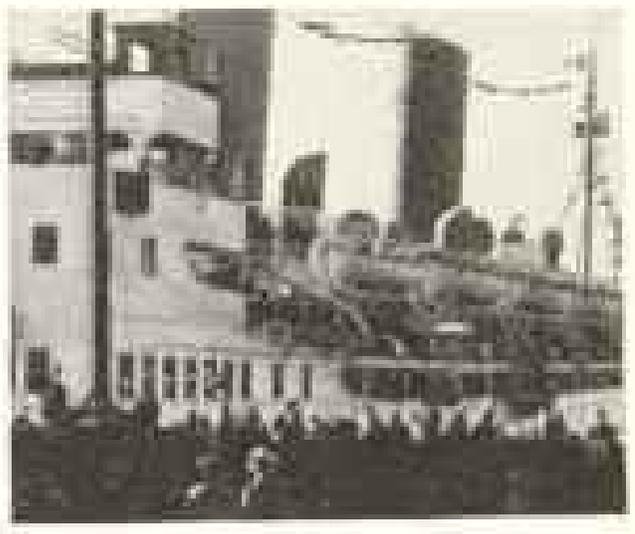

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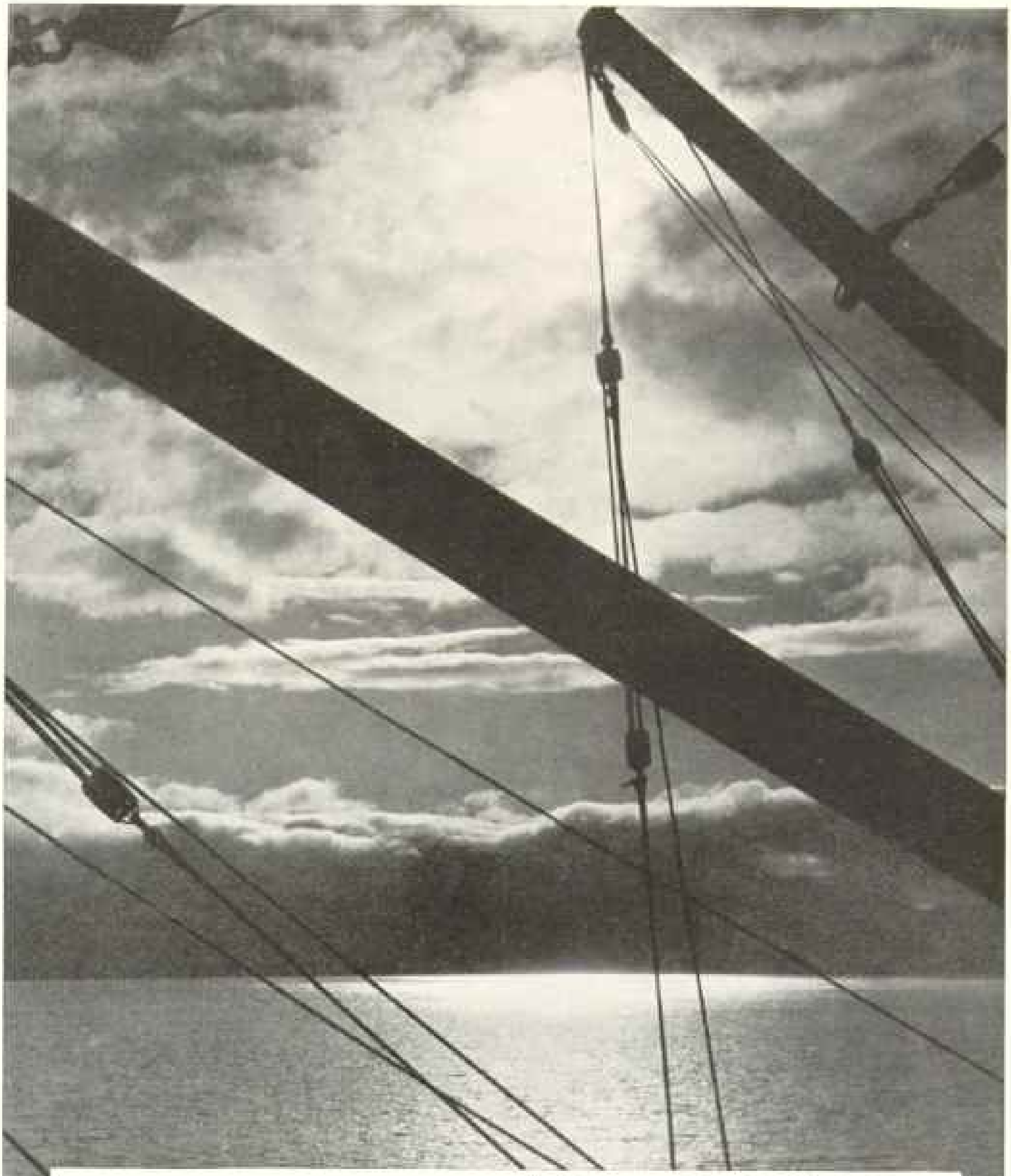

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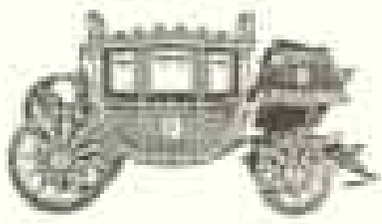

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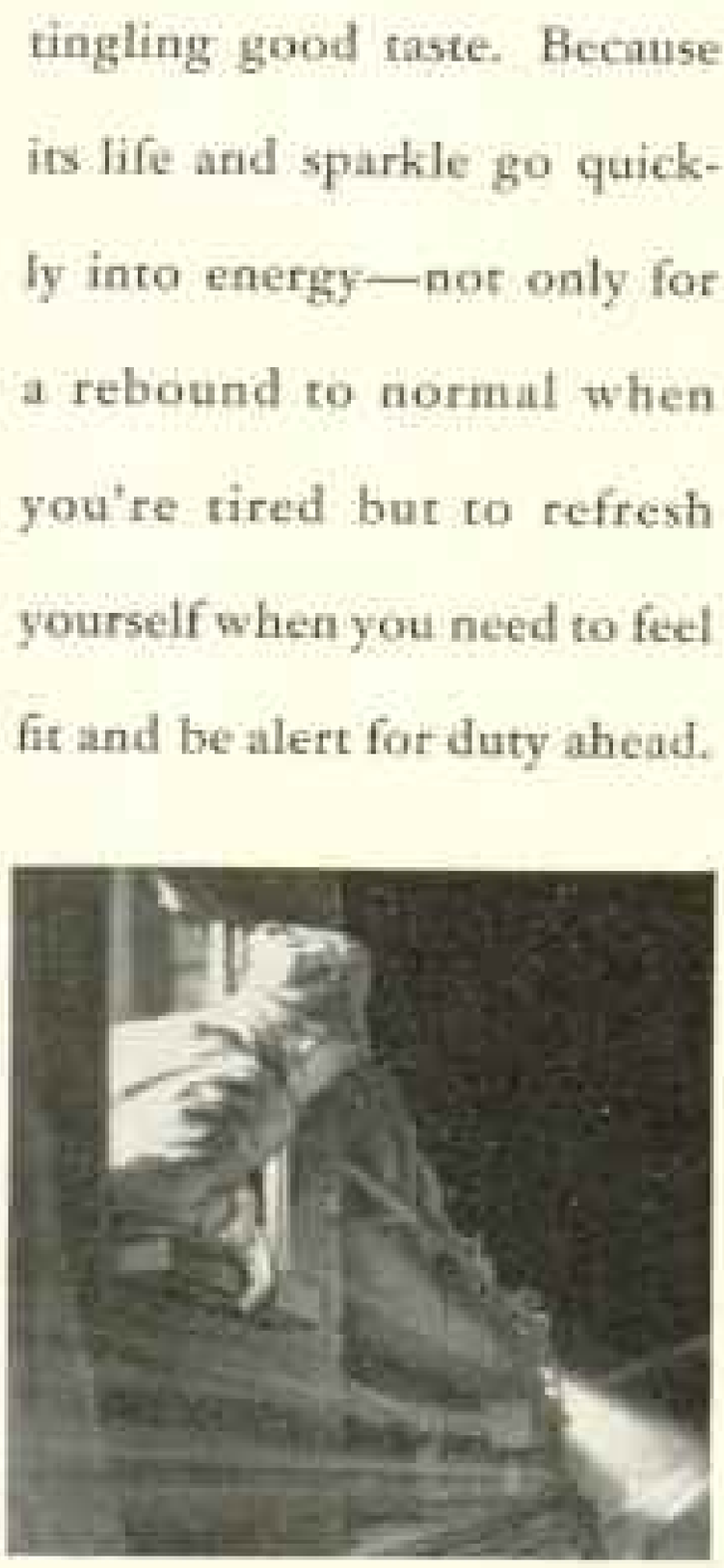

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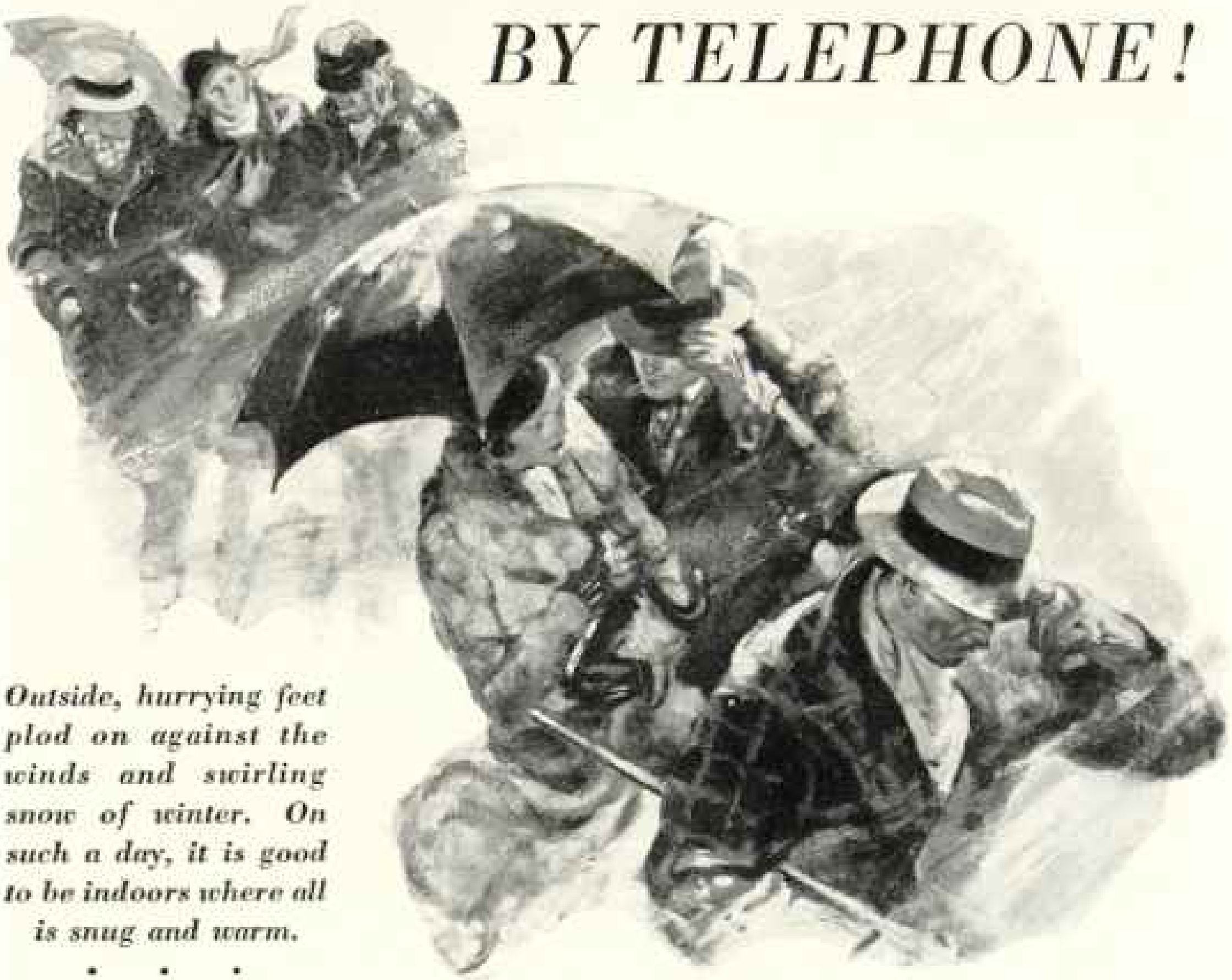

Outside, hurrying feet plod on against the winds and swirling snow of winter. On such a day, it is good to be indoors where all is snug and warm.

• • •

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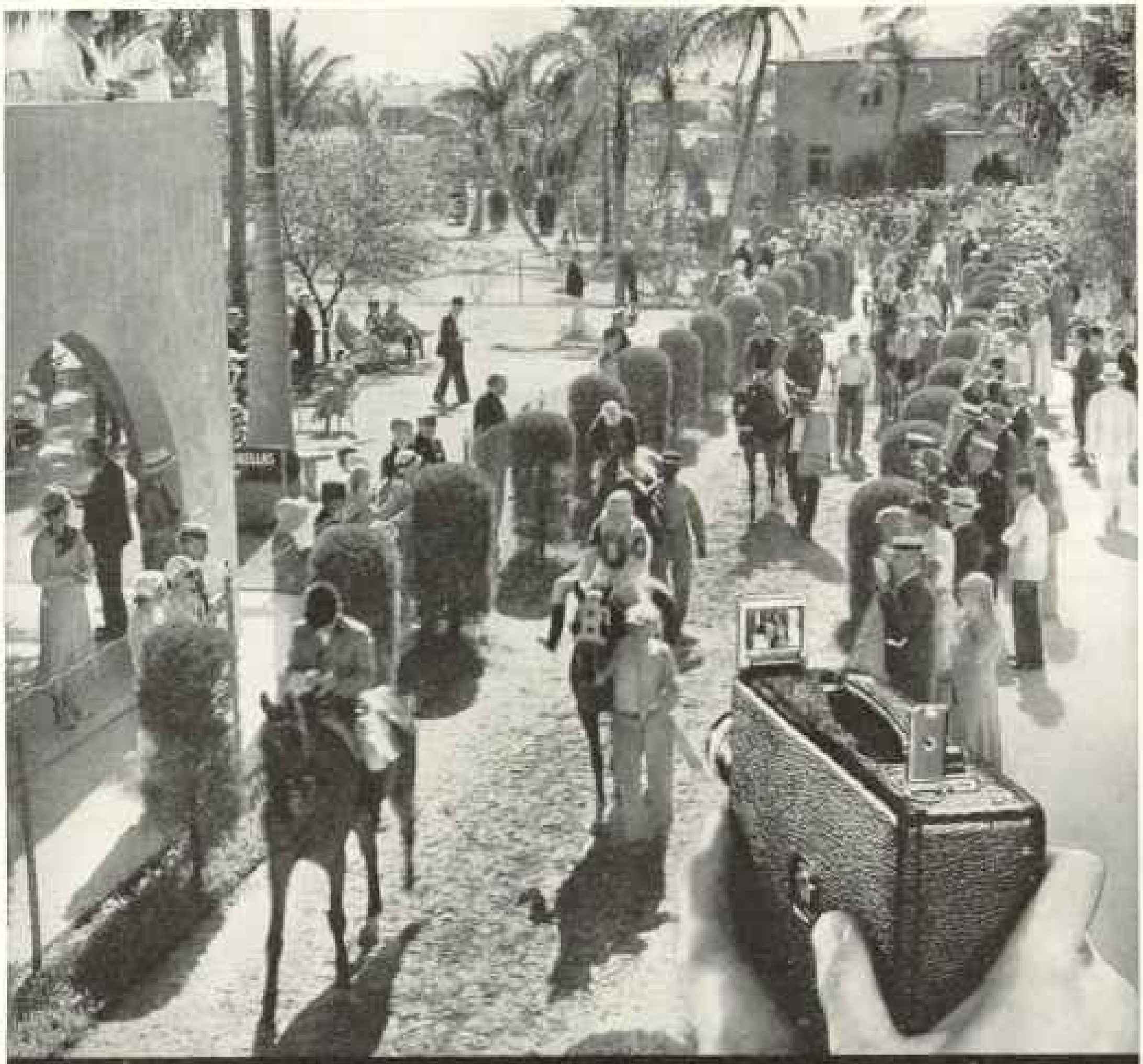

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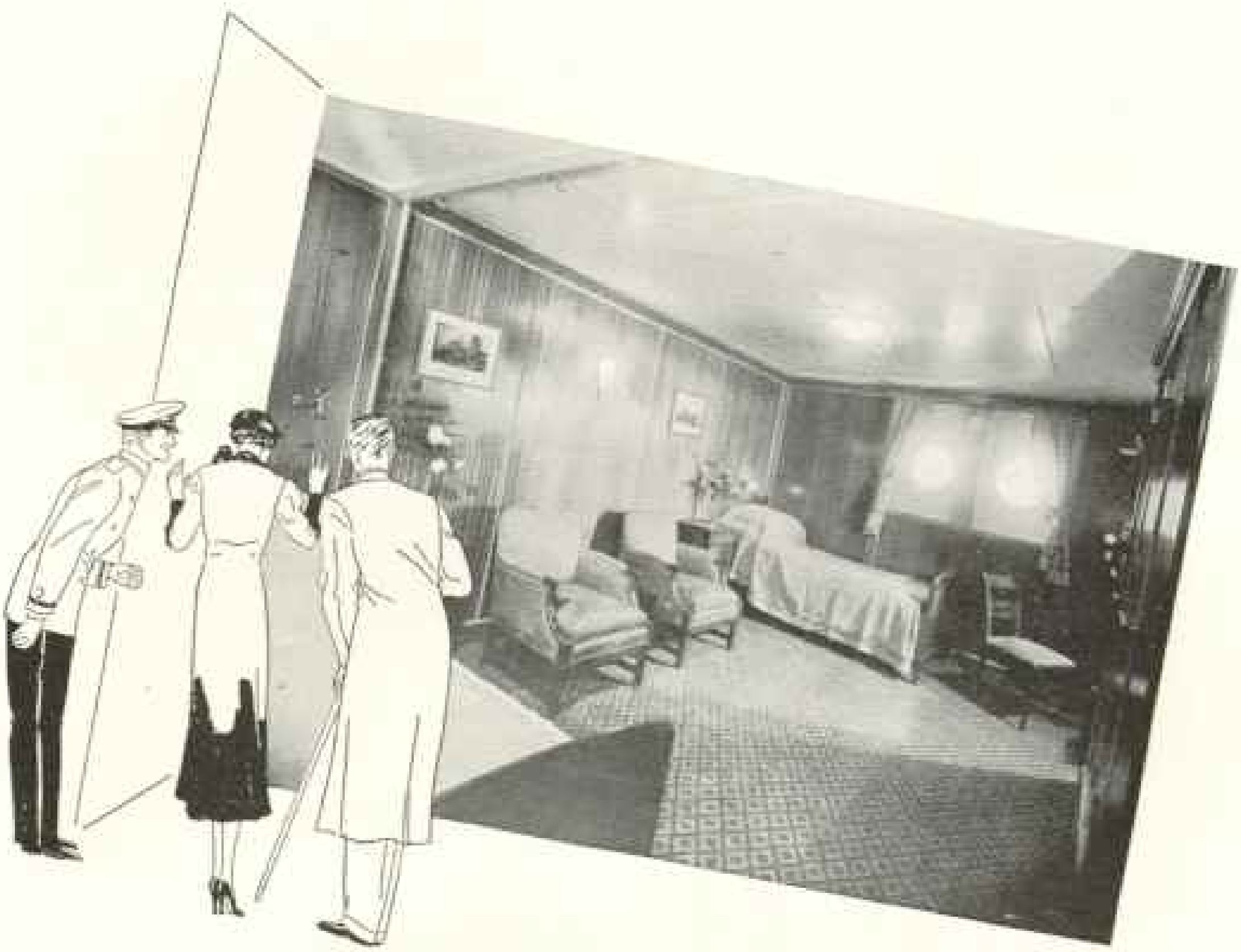

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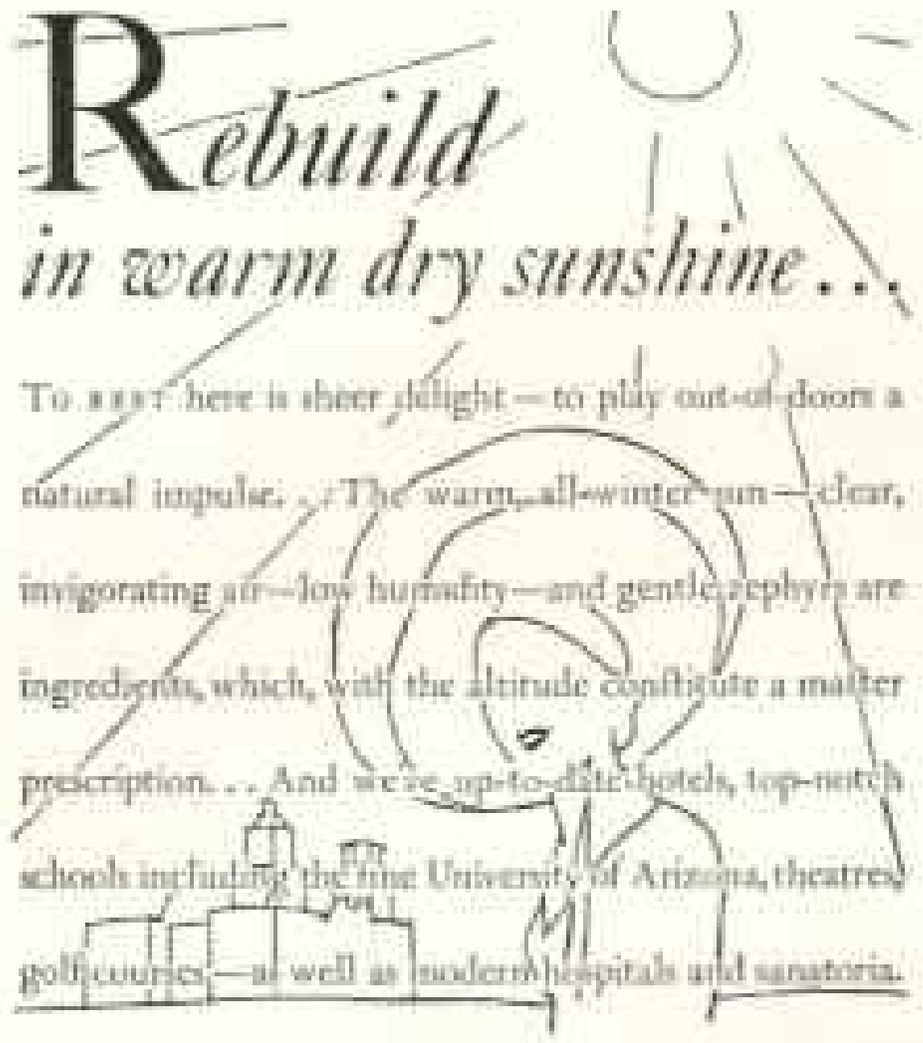

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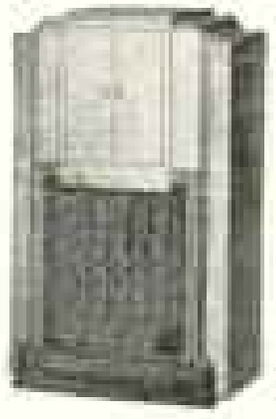

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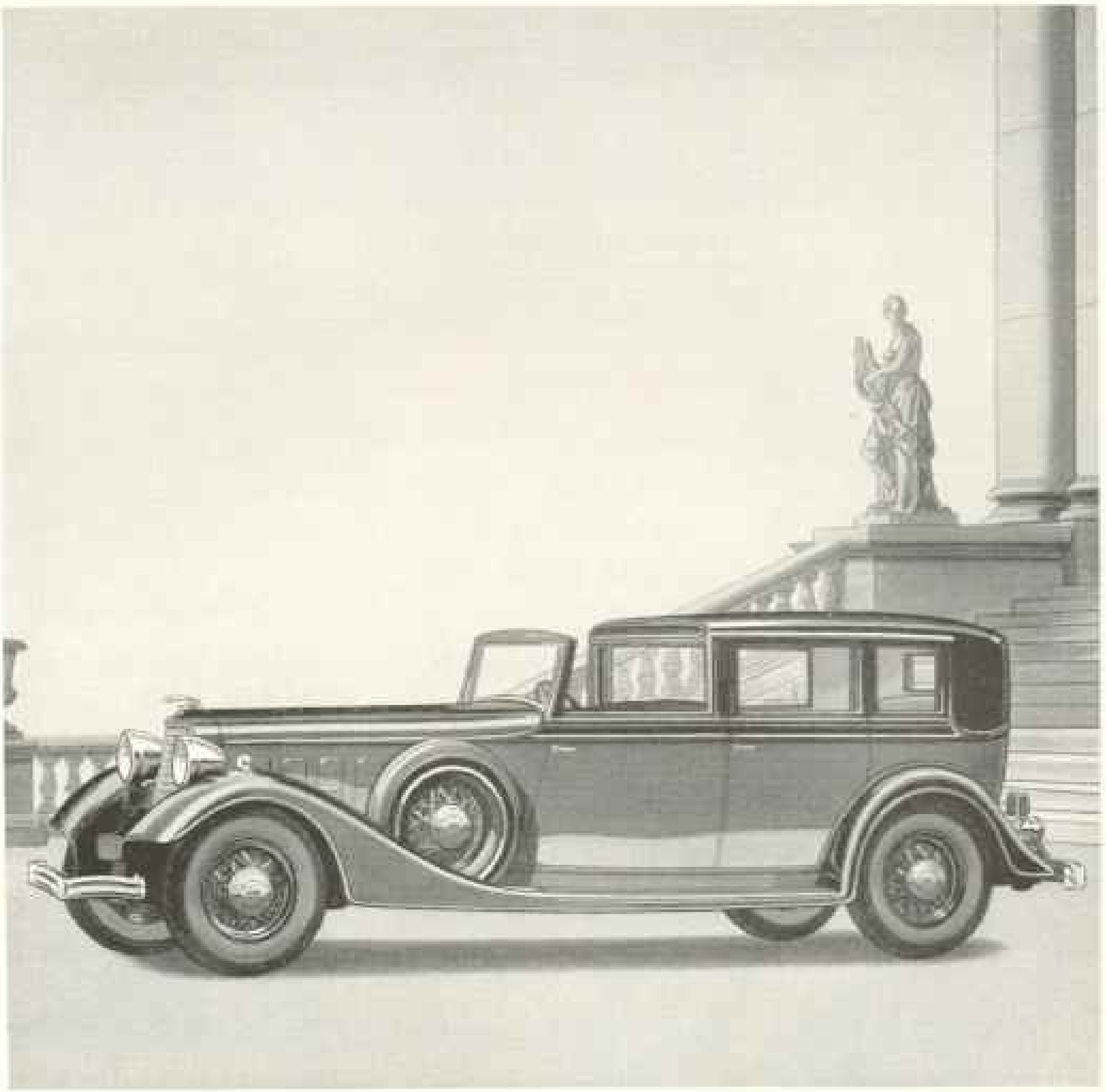

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