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AROUND THE WORLD FOR ANIMALS

By William M. and Lucile Q. Mann

*With Illustrations from Photographs by Maynard Owen Williams, Geographic Staff Representative with the National Geographic Society-Smithsonian Institution Expedition**

SINCE our return from a nine months' animal-collecting expedition around the world under the auspices of the National Geographic Society and the Smithsonian Institution, we find ourselves with a new appreciation of the problems of Mr. and Mrs. Noah.

Most of their days must have been spent in feeding the animals, and a goodly number of their nights in listening to the squalling of their diversified cargo or worrying about the health of their punier charges.

Mrs. Noah, by the way, is a rather neglected character in the story. Nobody seems to know just what she said or did when her husband began filling up her house and his boat with live animals. But the best guess would be that she rolled up her sleeves and started in peeling bananas, cutting up vegetables, and helping her husband worry about the weather.

She probably also kept the records and made notes on the voyage. Undoubtedly she had her hands full taking care of sick monkeys and baby animals.

All this is involved in playing Noah, and we were entirely satisfied that our last stretch of fifty days at sea with some 890 assorted wild creatures was considerably shorter than the cruise of the original Ark.

No flood was responsible for our voyage, but rather the opportunity of greatly expanding the horned, hoofed, furred, scaled, and feathered population of the National Zoo at Washington.

Some 2,300 animals, birds, and reptiles already were making their home in our Zoo. But now, thanks to the Federal Government and its Public Works Administration, we had room for at least 800 more.

VACANCIES IN ZOO APARTMENTS

We had a brand-new Pachyderm House, embodying ultramodern touches of interior design. But several important places were vacant. Elephants, hippos, and a rhino we had. But giraffes were a crying need (pages 675 and 714), and tapirs, too, and wild cattle from India and Africa.

Nearing completion was a splendid Small Mammal House, and now we could properly display to our thousands of visitors the wonders of many strange, obscure little animals of the earth—or, rather, we could if we had the animals.

There were many we needed, unusual creatures seldom seen in collections, such as the mouse deer, which is really a deer although only about twelve inches high; the diminutive, clawless tropical otter; the hog badger with its long nose, the subterranean-living bamboo rat; tree kangaroos, tree shrews, and the varicolored squirrels of the Orient.

A new wing was being added to the Bird

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PALM FIBER OF LIZARD DESIGN HOLDS BATAK WALLS TOGETHER

Built on piles, roofed with thatch, and having a bamboo-pole veranda is this home of Karo Bataks of Sumatra. Mother comforts her timid son; big sister faces the camera happily. At Kabandjahe, elevation 4,000 feet, thick clothes are a nuisance by day, blankets a necessity at night.

House (no pun intended) and we had room now for a really representative collection of birds of paradise.

We had designs, too, on the fairy bluebird of Java, the giant red-crested Moluccan cockatoo, and numerous gaily colored lories of the East, not to mention various pigeons, bulbuls, and barbets, storks, hornbills, and cassowaries.

Among miscellaneous needs was a king cobra. Ours had succumbed at last to old age. Also we could use a new Komodo dragon lizard; and Susie, our orangutan, had lost her mate.

Besides, we longed to add to the Zoo's collection the rare and beautiful clouded leopard, perhaps the prettiest cat alive.

Plainly the time had come to launch the ambitious expedition for which tentative plans had already been laid by the National Geographic Society and the Smithsonian Institution. Accordingly, the Geographic Society now stepped forward, and, cooperating with the Smithsonian, made possible our journey.

To collect wild animals and to gather geographic and natural-history information and photographs, we were to spend many months in the field and travel more than 30,000 miles.

We planned to establish our base camp on the island of Sumatra, in the Netherlands Indies, and to pick up animals at other points in our circuit of the world.

WILD ANIMALS AS GOOD-WILL GIFTS

One of the first things to be done was to assemble a collection of American wild animals to be taken with us to the Far East, for we planned to give as well as receive (page 673).

To the resident of Japan, China, India,

A SACRED WHITE ELEPHANT IS FAR FROM WHITE

Behind the Throne Hall in Bangkok, Siam, are two albino elephants, sacred because they may contain the soul of a Buddha. At death, such public guests are mourned as though they were gentry. When a new white elephant arrives, yellow-gowned priests chant: "We now trust that thou wilt not return to the forest where thou hast no servants. It is very unpleasant to sleep 'mid dust and dirt, with flies and mosquitoes to torment thee." The term "white elephant" for an unwelcome gift refers to the pachyderm a king of Siam presented to a powerful courtier so that the expense of caring for the animal would ruin him.

or Sumatra, an American opossum, raccoon, or mountain lion is as strange and interesting as a tiger or a pangolin is to a zoo-goer in the United States.

In all we took along 26 of these zoological ambassadors—two mountain lions, ten alligators, three opossums, two raccoons, two black bears, two jaguars from South America, and five hellbenders, or large salamanders, found in Ohio Valley streams.

The good-will value of these offerings was immeasurable, and in return we found ourselves showered with numerous exotic specimens. A friend told us on leaving that we should have put on each cage the old saying, "Beware of the Greeks bearing gifts."

The task of escorting our menagerie was placed in the capable hands of Roy Jennier and Malcolm Davis of the Washington Zoo staff. With the animals and our equipment, they were to sail from New York on a boat bound around the Cape of Good Hope for Sumatra.

The other three members of the expedition planned to meet them there, almost exactly on the opposite side of the world, after crossing the Pacific and stopping in Japan and China. We (Dr. and Mrs. Mann) left Washington on January 12, 1937, and at Vancouver we were joined by Dr. Maynard Owen Williams, staff representative and photographer of the National Geographic Society.

We had one day in Honolulu. The curator of the aviary had recently been

Drawn by Newman Bumstead and Ralph E. McAleer

NETHERLANDS INDIES, ISLAND JEWELS ON THE EQUATORIAL BELT—THEIR SPAN IS GREATER THAN THAT OF THE UNITED STATES

Were this chart superimposed on an equal-scale map of the United States, with Koeta Radja, Sumatra, near Portland, Oregon, Batavia would fall near Santa Fe, Makassar on St. Louis, Sorong at Albany, and New Guinea would extend into the Atlantic.

"QUACK!" SHOUTS A SUMATRAN DONALD DUCK

Dr. Williams writes, "If I'd waited for the shy Menangkabau woman's smile, I'd have lost the duck's." Semiweekly market in Fort de Kock over, she is carrying home her purchases on her head.

HENRY THE HORNBILL SHRUGS HIS SHOULDERS AND SQUAWKS

Aside from his oversized beak and his eyelashes, the hornbill is interesting because he juggles his food before swallowing it and walls up his mate on her nest in a hollow tree during the incubation period (page 692).

"YOU CAN'T THUMB A LIFT ON MY BACK"

The black Sumatran gibbon begs to be taken for a ride. Jennier wants him to walk. Note the adhesive tape, which shows that even experienced handlers of animals do get bitten or clawed.

collecting in Java, and among other rarities we saw, stalking in a large enclosure, the first Tantalus storks we had ever seen alive. Months later the zoo in Batavia, Java, presented us with a pair of them, and they are now two of Washington's prominent bird citizens.

EVEN A WHALE IN CAPTIVITY

Japan is a land of excellent zoos. Collections are large and varied. In one of the smaller zoos, at Koshien, was a penguin pool with forty birds of all ages, from the egg up.

Back of the aquarium there was an open-air pool in which was swimming a real live whale. It was a small one, about eleven feet long, and its name should have been "Perpetual Motion." It swam continually, counterclockwise, and rose three times in each circuit of the pool.

At Shanghai we began to acquire animals. At the zoo in the Foreign Concession we arranged for a fine pair of blue sheep and a Chinese alligator to be sent us in Sumatra.

In Hong Kong arrangements were made for obtaining some giant salamanders, largest of amphibians and rare in collections.

The snake stores in Hong Kong were particularly interesting to us. They are really drug stores, the snakes being eaten by the Chinese as cures for various ailments.

The stock is kept in large wooden boxes and the merchant gropes among tangled clusters of snakes, including cobras as well as harmless varieties, to pull out the one indicated by the customer.

In native drug stores we saw many kinds of dried snakes and lizards, the "flying lizard" of South China and Malaya being one of the most popular drugs. In Japan we had already seen dried adders being ground to powder for medical use. One wonders what this powder cures!

Four days at sea brought us to Singapore. Here in the Punggol Road Zoo, several miles from the heart of the city, is main-

tained an excellent collection of animals and birds, chiefly from the East.

BLACK LEOPARDS FROM THE CROWN PRINCE OF JOHORE

Across the strait, on the mainland at Johore Bahru, the Crown Prince of Johore was building a zoological garden of the type of the royal menageries of olden days. Here we saw a magnificent pair of orang-utans which had been presented to him by the Sultan of Langkat in Sumatra.

When we discussed with His Highness the possibility of exchanging animals, we learned that above all things he wanted a pair of American mountain lions.

We did not tell him that we expected a pair of them in the collection being brought by Jennier and Davis by way of the Cape of Good Hope, because one never knows whether animals will get there or not. But within two weeks they all arrived safely in Sumatra and we were able to send His Highness a nice pair of these animals as well as an American black bear.

He put the mountain lions in a large and comfortable cage and in three months the lioness bore a litter of cubs!

Later we received from him a pair of beautiful black leopards and a rare Bennett's cassowary.

Singapore was, and still is to some extent, an important animal market, a clearing house for the animals of Malaya and even New Guinea and Australia. In the Chinese shops in North Bridge Road were enough specimens, many of them of rare species, to stock an ordinary zoo.

"AM I TOUGH?"

Mischievous and mean are such "cute" Himalayan bears. Wrists and ankles are never safe from their claws and teeth. In honor of their mountain birthplace, a pair, now fascinating exhibits in Washington, D. C., are called Himal and Ayah. They rode to the ship at Singapore in the Consul General's car (p. 690).

BABY BEARS, PARROTS, AND FINCHES OFFERED FOR SALE

Baby Malay bears were pulled out of their cages and offered to us for sale. There was a young tiger on a string, and large collections of caged Australian parrots and finches.

PUZZLE: HOW CONFINE A FAT LIZARD IN A THIN BAMBOO?

The cage problem was artistically solved by this lad of Piroe, Ceram, who split a bamboo tube, widened and wove it into a basket, inserted the lizard, and tied the end. As tin cans, crates, and boxes become more common, such native arts die out. Lizard, cage, and a smile of thanks cost 11 cents.

We made arrangements to have certain animals secured and saved for us, then sailed for Sumatra, which was to be our headquarters and home for the next five months.

The K. P. M. boats that serve the entire archipelago often carry large numbers of coolies. The purser asked us to guess how many passengers were aboard. We guessed forty. He said there were more than 1,400 —coolies coming from Java to work on tea or rubber plantations in Sumatra, where they stay for at least two years.

Early the next morning after leaving Singapore, our ship, the *Plancius*, wound in and out among fish traps into the harbor of Belawan, Sumatra. A sight that greeted us as we neared the wharf was a Brahmany kite darting down and seizing a wriggling sea snake, then flying off with it.

Medan, a provincial capital of Sumatra, is half an hour's automobile ride from the port. We collected our mail at the consulate, presented our credentials, and then chartered a car for the trip to Pematang Siantar, about 80 miles by road to the south, where Dr. J. A. Coenraad, a local naturalist, was awaiting us.

A valuable addition to our party at Medan was a Borneo Dyak named Layang Gaddi Sang (Plate XIII). An experienced collector, known to numerous of our friends, he had come down from Siam to join us.

It was a hot morning when we left Medan. Before we had gone ten miles the car broke down and we spent several hours in the midday sun waiting for it to be repaired.

At last the senior member of our party strolled down the road to examine the native market.

On returning he found Mrs. Mann very excited and trying her best to unlimber a big camera. Forty feet in back of the car she had seen a troop of entellus, or Hanuman monkeys, big gray fellows with long tails, coming down from trees on one side

MAKE WAY FOR A SHARP-TOOTHED TOKEN OF GOOD WILL!

Among the animals carried as trading gifts was a black bear from the United States, as strange in Sumatra as a tiger or gibbon in Washington, D. C. Bruin is now at the Pematang Siantar zoo.

TRAPPED NEAR THE EXPEDITION BASE, THIS SUMATRAN TIGER FACES CAPTIVITY WITH A SNARL

"Samson" was driven from trap to cage with firecrackers! It is unlikely that bottle-fed Hari, whose babyhood was spent among human friends, will ever develop such ferocity as this fellow still shows (Plate III and pages 674 and 680). Whenever Dr. Mann enters the animal house, Hari, now almost as large as this wild brute, comes to the bars, eager to be petted and scratched behind the ears.

"HE STARTED IT," MIGHT HAVE BEEN HARI'S DEFENSE

Always full of monkeyshines, the jet-black siamang usually began every friendly quarrel with the baby tiger. Don't let his fright, here pictured, deceive you. It was usually a case of "Gibbon Slaps Tiger" before the fur began to fly.

"LET GO! YOU'RE HURTING ME!" SQUEALS THE GIBBON

Fond friends were Hari the tiger cub and this siamang. Daily playmates for several months, they went through all the motions of fear and ferocity, but never lost their tempers. The Sumatran gibbon was too full of feet for his sharp-fanged antagonist (page 704).

of the road and scooting across to other trees.

Before long, however, monkeys had become a commonplace sight. In fact they were so abundant, particularly the rhesus monkeys and pigtailed macaques, that on some plantations native boys are mounted on platforms in the gardens to scare the raiders away with stones.

Our car's ailment continued incurable, so we finally shifted to another and arrived in Pematang Siantar late in the afternoon. We found the town had all modern improvements, including several motion-picture theaters, one showing a Clyde Beatty jungle feature!

On a field trip for animals the most important thing is to make headquarters and have a place to keep and care for living things as they come in.

On the outskirts of Pematang Siantar was an abandoned hospital, the Roemah Sakit (literally, "Sick House"). It was maintained, however, in excellent condition and was obtainable through the manager of a plantation, Mr. J. M. Lyncamp.

"SIMPLE LITTLE HUT IN THE JUNGLE"

This, then, became our home for five months—very elaborate quarters to which we used to refer as "our simple little hut in the jungle."

With the hospital went a corps of five gardeners, who kept up the twelve acres of beautiful lawn, surrounded by a dog-proof fence. We also had a night watchman.

The whole thing cost us, in United States money, $16 a month.

The water pipes ran along the surface of the ground, so we used to say that we had hot and cold running water—hot in the daytime and at least cooler after sundown.

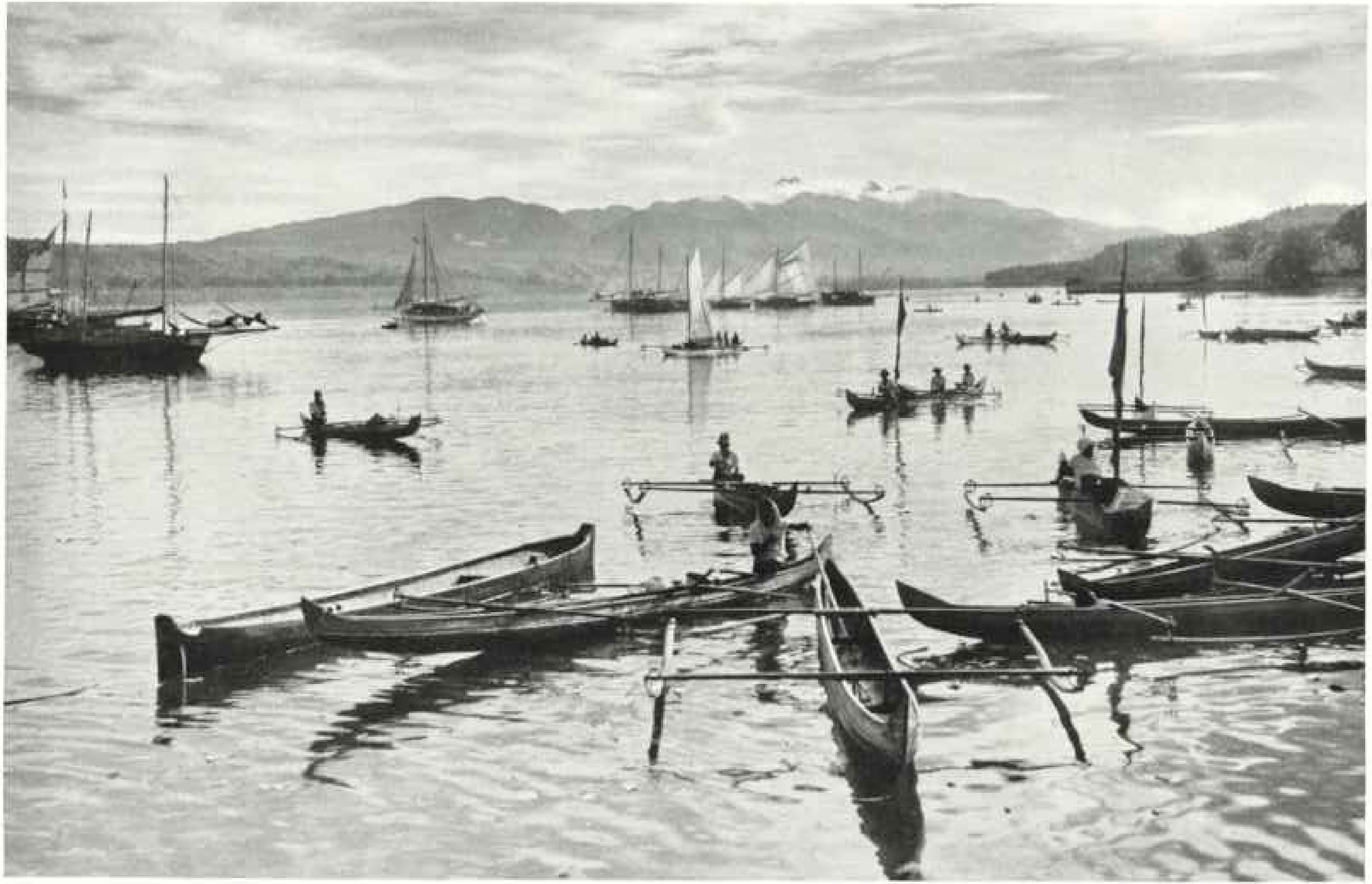
Electricity was put in and we rented an icebox for 26 cents a month.

The first thing to do on a trip such as ours is to interest the natives. When many natives know there are foreigners in the

Photograph by Richard H. Stewart

YOUNG WASHINGTON EDITOR CRUSADES FOR A BIGGER ZOO

When ten-year-old Arthur Arundel launched his mimeographed *Nicky's News*, the first plank of his platform was, "Two giraffes for the Zoo." His lead editorial urged that "Dr. Mann, a very nice man, with a nice new building for giraffes, has no giraffes to put in this building. This newspaper feels this is wrong." The Expedition brought back not two giraffes, but four.



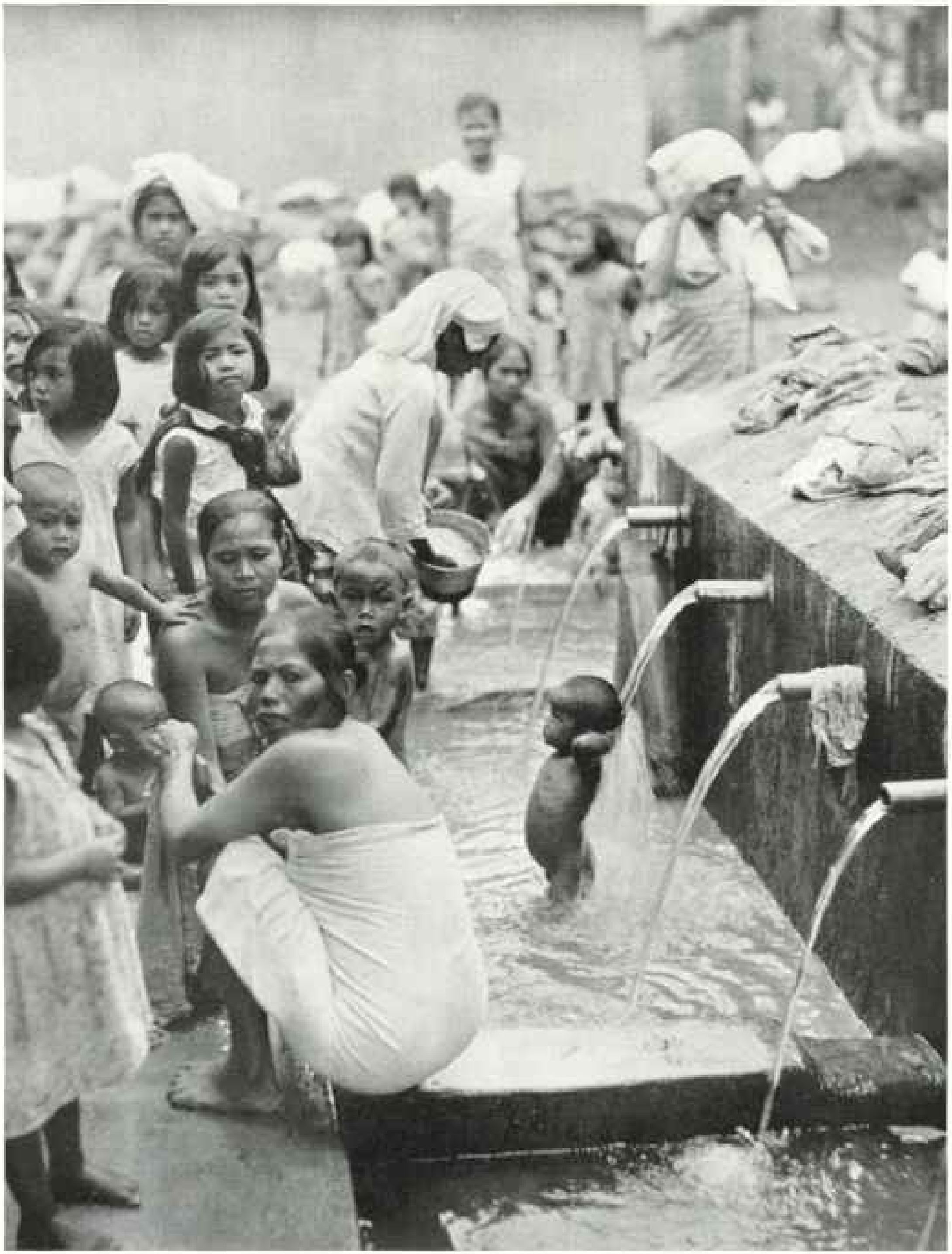
DAWN RISES OVER HISTORIC AMBON BAY, ONCE A SPICE CENTER, NOW A SEAPLANE BASE

Here, in 1631, the Dutch tried to establish a monopoly in cloves, but the island soil and climate were not favorable. Since this early-morning scene was taken, with water-bug outrigger canoes moored near the central market, photography has been strictly limited for military reasons. Over near-by Fort Victoria, built in 1605 and remodeled in 1775, now roar modern seaplanes, policing the East Indian seas between New Guinea and Borneo (Plate XI).

WATER BUFFALOES, SOUTH OF KOETA RADJA, TREAD SUMATRAN SANDBARS SWEPT BY THE INDIAN OCEAN

CURVED LIKE THE HORNS OF THEIR DRAFT BUFFALOES ARE THE ROOFS OF MENANGKABAU CARTS

Rain clouds mass low around Marapi's truncated cone as these heavy vehicles return from the semiweekly market at Fort de Kock (Plates II, IV, V, and VI).



RELIGIOUS CUSTOM TO GROWN FOLKS, ABLUTIONS ARE FUN FOR A MOSLEM BOY

Moslems, Christians, and pagans all live near the Sumatran town of Sipirok. Local Mohammedans, in the midst of a building campaign, have new schools and also a special mosque for women. After exchanging salutations with a hadji (pilgrim), just back from Mecca, the GEOGRAPHIC representative was guided to this spot, designed for ceremonial bathing by women only, but also used as tub and laundry generally by women and children. Coffee plantations are climbing the hills in Sumatra and Java, driving the jungles and wild animals before them. Mendailing coffee, which commands a high price in the United States, comes from Sipirok.

A ZOO CANDIDATE ARRIVES IN SWADDLING CLOTHES

Collecting is largely a matter of selection and obtaining permission to export the desired wild animals. This young hornbill at Takengon, Sumatra, was refused, since its chances were slight of surviving confinement and a voyage halfway around the world.

vicinity who will actually pay money for what they consider vermin, animals come in much more rapidly than the expedition members alone could catch them.

In the weekly village markets we spread the news, and incidentally picked up Mr. Milquetoast, our first monkey, a simian "Timid Soul" if ever there was one; some parrots, and a number of bulbuls.

Before long, going farther afield, we made a trip to Dolok Silau, a little Batak village rarely visited by Europeans other than the government inspector—and even he goes there only at infrequent intervals.

With Dr. and Mrs. Coenraad, we chartered a bus not unlike an American station wagon, and rode fifty miles to the end of transportation on a side road. The Rajah (or Radja, as it is spelled in that part of the world) had been notified in advance and had sent porters to carry our baggage, so we marched in, about six miles, at first through rice fields, and then through beautiful forest, to the isolated village.

The last mile of the path had been carefully swept for our coming, and the first sign of the village was a tiny hut by the roadside. This was built near an enormous durian tree, and was inhabited by two watchers who stayed there day and night to collect the fruit as it fell.

A FRUIT THAT TASTES LIKE ICE CREAM AND ONIONS

The hut was for their protection against falling durians, which have been known to kill people standing beneath the trees.

A wag remarked that these fatalities were probably caused by the smell of the durian. It does smell vile, but is a much-maligned fruit. One traveler states that it is worth a voyage to the East Indies to taste it. Others denounce it. Some hotels will not permit guests to bring the fruit into their rooms or the dining room.

These opinions are all too extreme. While it may not be worth a long voyage for a taste, a durian is not at all bad to eat. One of our party later gave a good description —"like vanilla ice cream with fried onions."

With much formality the Rajah escorted us into his home and we camped out in the large front room. There was another room in back, and the whole place was full of people. Besides ourselves, there were the Rajah, his wives, and the children—we never could ascertain just how many there were.

Also present was the former Rajah. He lay in state, sealed in a large wooden coffin where he had been for 13 years, awaiting a propitious time when the village could bury him in the style to which a rajah is entitled.

DOG MEAT—"ON THE HOOF"

Overrunning the establishment were pigs, chickens, and dogs. You have to go to Sumatra to know the full meaning of the words "domestic animals."

These Bataks are exceedingly fond of dogs—in a culinary sense. On the country roads you see packs of them, escorted by natives. The uninitiated supposes these are hunting parties, but actually they are meat on the way to market.

Forewarned, we had plenty of tinned food and an alcohol stove. For three days we stayed in the village, varying our canned goods with occasional native fruit, strolling through the woods, butterfly nets in hand, and trying to educate Bataks, who probably knew more about it than we did, in how to collect live animals and birds.

We returned to Pematang Siantar with a fine monitor lizard and a number of birds, including more bulbuls, to find that Jennier and Davis had arrived at Belawan with their cargo of globe-trotting animals from America. Some of these we left aboard ship to be taken to Singapore for Johore Bahru; others we brought to Pematang Siantar and later sent to the zoo at Batavia.

With all five of us in camp, we contracted with the Siantar Hotel a mile away to have meals brought three times a day. They were always delivered by a Batak boy whom we came to know by the Batak word of greeting, "Horas!" Horas would show up always on time, mounted on an ancient bicycle and carrying a huge basket of food.

TRAPS YIELD SURPRISES

Our assistants had brought with them our specially designed traps for catching things alive, and Mr. Davis put out a line of them.

The first captive was a Javanese coolie. He was very much frightened, as he thought a snake had struck at him.

Then we caught a couple of pariah dogs. These were harder to get rid of than the coolie.

The most surprising catch, however, was brought us by an amateur naturalist who lived eight miles away and to whom we had loaned some of our traps. He came to us very much excited, saying he had caught an animal absolutely new to science in Sumatra, a creature the like of which he had never seen before.

Trembling with excitement, he held it up—one of the opossums we had brought from the United States. It had found a weak spot in its cage, had ambled eight miles away, and had promptly fallen into one of our own traps!

WILD KITTENS, AND A BOTTLE-FED TIGER

To Mrs. Mann the days spent in camp were the happiest part of the expedition. There were always pets in the back yard to play with and new ones coming in.

One of the loveliest animals in Sumatra is the smallest of the leopard cats—smaller than a house cat—and two of these graceful, spotted little creatures were among the first animals we acquired. One was a kitten, so little that it felt like a mere bunch of fur in the hand, and so playful that it never tired of tugging at our shoelaces.

Eventually, however, we found out why these animals are almost never seen in captivity. It is next to impossible to keep them alive. Although they became tame, seemed affectionate, and ate well, neither of our little pets survived.

During our first week in camp, a Malay appeared one day with a baby tiger, evidently one that he had found somewhere in the vicinity. It was a rather thin kitten and we doubted whether we could raise it, but we took a chance.

We named him Harimau, the Malay word for tiger, and called him Hari for short. Although he had a few teeth, he was still a baby and had to have a milk diet. After trying him out on various brands of canned and powdered milks, we finally found one that agreed with him, and we fed him from a nursing bottle.

The first few nights that we had Hari we kept him in our bedroom, and he howled so vigorously that we wondered whether his mother would hear him and come in through

A BATAK RADJA'S UMBRELLA IS PROUD; HIS INCOME HUMBLE

This stern-faced official represents a million Bataks, whose name is translated "pig eaters." He resides in Pematang Siantar, Sumatran base of the National Geographic Society–Smithsonian Institution East Indies Expedition, which brought back alive 890 animals, birds, and reptiles.

 Finlay Photographs by Maynard Owen Williams

WITH FIRE IN HER EYE, MOTHER BUFFALO PREPARES TO CHARGE THE CAMERA

Leaving her flower-strewn bath where she had been peacefully soaking herself beside her calf, this carabao drove the intruder away.

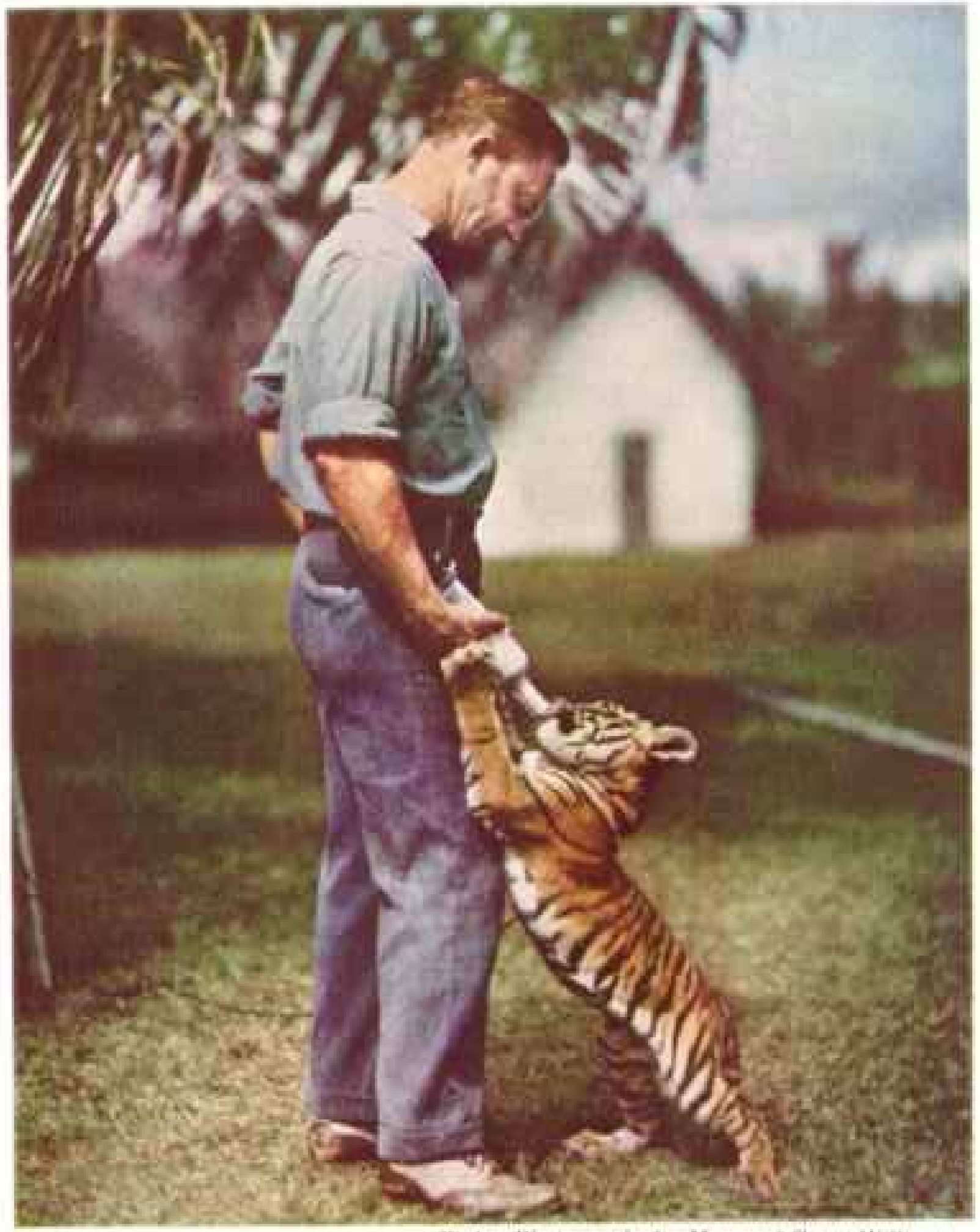
Finlay Photograph by Maynard Owen Williams

TWICE A WEEK FORT DE KOCK SPREADS ITS POLYCHROME MARKET AT THE BASE OF 9,000-FOOT MARAPI

Two volcanoes, Marapi and Singgalang, look down on the capital of the Padang Highlands, Sumatra's scenic home of the Menangkabau tribe (Plate XV).

ONLY CONNOISSEURS FIND FLAVOR IN THE BRIGHT DJAMBOE AYER

This shiny pink "watery fruit," with its crisp pulp, is more refreshing than palatable. Foreigners prefer the purple-and-white mangosteen or even the ill-smelling durian whose custardy pulp hides in a sharp-spiked shell.



Finlay Photographs by Maynard Owen Williams

BOTTLE-FED "HARI" IS NOW A FAVORITE WITH ZOO FANS

Captured when no larger than a cat, this fine tiger cub, here seen with Roy L. Jennier, is now a husky attraction at the National Zoological Park in Washington, D. C. "Hari" is short for "harimau," meaning "tiger."

IN COOL FORT DE KOCK, THIN BLOUSE AND BATIK SARONG ARE CONVENTIONAL DRESS

The temperate capital of the Padang Highlands is always a pleasant city, 3,000 feet above the rainy west coast of Sumatra. Wednesdays and Saturdays a human rainbow occupies the market place.

 Finlay Photographs by Maynard Owen Williams

TROPICAL FOLK BURN THEIR STOMACHS HOPING TO COOL THEIR BROWS!

"Some like it hot." Hence the role red peppers, torrid curries, and incandescent chili play in the equatorial cuisine.

PUFFED RICE COOKIES ARE WRAPPED IN AMERICAN NEWS

Bales of United States newspapers exported to Insulinde provide American travelers with an Occidental setting for Oriental foods. Crisp wafers at Pajakoemboeh are light, palatable, and cheap.

 Finlay Photographs by Maynard Owen Williams

MAIZE RANKS HIGHER THAN RICE IN THE SUMATRAN HIGHLANDS

At Fort de Kock a large part of the lower market is given over to golden piles of the grain Americans call Indian corn.

Finlay Photograph by Maynard Owen Williams

A MOVING BELT OF LOCAL COLOR JOINS THE UPPER AND LOWER MARKETS AT FORT DE KOCK

Under the umbrellas the poultry market spreads its quacks and cackles. Along the wall, bright sarongs vary the effect of fruits and peppers. On the paved incline between the sellers march hundreds of marketers carrying their purchases on their heads.

Finlay Photograph by Maynard Owen Williams

MORE TREADMILL THAN ESCALATOR IS THIS LEG-TIRING SHORT CUT TO THE SECOND FLOOR OF A SUMATRAN MARKET

Graceful in carriage, tireless in toil, independent in spirit are the Menangkabau women of the Padang Highlands.

HOST AND HOSTESSES AT DOLOK SILAU WERE THE RADJA AND HIS WIVES
For the formal reception of Dr. and Mrs. Mann, flags were hung, gala dress worn, and a clean mat unrolled in the rocky village square.

© National Geographic Society Finlay Photographs by Maynard Owen Williams

SUMATRA'S BRUSH MAN DOUBLES IN SUN HATS AND DRYING TRAYS
Bamboo and palm trees provide material for basketware, trays, brooms, and sun hats. In the Sunday market at Pajakoembohh, as in the five-and-ten, similar products are grouped.

the window to rescue him. That was when we borrowed a shotgun to keep in camp. But she never came.

With five bottles of milk a day, Hari soon began to grow plump and strong, and remained the camp pet for the entire time we were in Sumatra. He was friendly as a puppy and spent his days either with us in the house or tied out in the yard under a palm tree, playing with a black Sumatran gibbon, "Decline and Fall."

Today, handsome Hari, in the National Zoo, is getting pretty big, and bears little resemblance to the pitifully skinny cub he was when we met him just over a year ago, but he comes to the bars to be rubbed every time we enter the animal house (Plates III and XIII and pages 674, 701, 704).

AN ALLIGATOR IN THE BATHROOM

Animals now were coming in from many sources.

A near-by planter gave us two porcupines and two pythons from his private collection.

One night some boys brought us a big monitor lizard, which caused considerable excitement by escaping from the crudely made native cage. When he was recaptured he was put into the cage that, up to that moment, had housed an American alligator. The alligator was tamer, and so was turned loose in one of our vacant bathrooms.

An elderly Chinese who lived in Atjeh, the northern province of Sumatra, became one of our best collectors. On his first visit he brought us a wild dog (which is now in the Zoo, and the only one of its kind we have had), a marten, an otter, a hog badger (another very rare specimen), a loris, and some small birds.

When he told us that he had taught the otter to eat rice, we hastened to give the little animal a mess of small fish, one of its natural foods, and the eagerness with which they were gobbled up was touching.

For a long time we could get no hornbills at all. Then a native whom we came to call "the hornbill specialist" began to show up every few days. We got so many we had to cable Batavia to get permits to export more specimens.

The animals were brought to us in all sorts of containers. In fact at one time our collection of native cages was almost as interesting as our collection of animals and birds. We had a carpenter working all day making cages that could really be trusted.

In the back yard there was room for plenty of pets, and we had them outdoors much of the time, on leashes.

NATIVES FLOCK TO SEE THE ANIMALS

As soon as our collection took on the proportions of a zoo, we began to have visitors. School children came in regular classes, much as they do to the zoo in Washington.

They wanted to see the animals and also to look at the strange "Europeans" who were in charge of them—"European" being the term by which all white people are known to natives in these Netherlands colonies.

Among our most spectacular performers were the siamang gibbons. Largest of the gibbons, the siamangs are great gymnasts and also can make a terrific sound. A pouch in the throat swells up like a toy balloon and gives their call a booming quality that makes it carry long distances in the jungle. We often heard them out in the woods, and one of the thrills was to find a troop and watch them swinging through the trees.

Sometimes animals appeared right under our noses. A palm civet rambled into camp one day, and Jennier promptly caught him and put him in a cage.

One morning a gardener working on the estate appeared with a big black cobra that he had found in our own back yard.

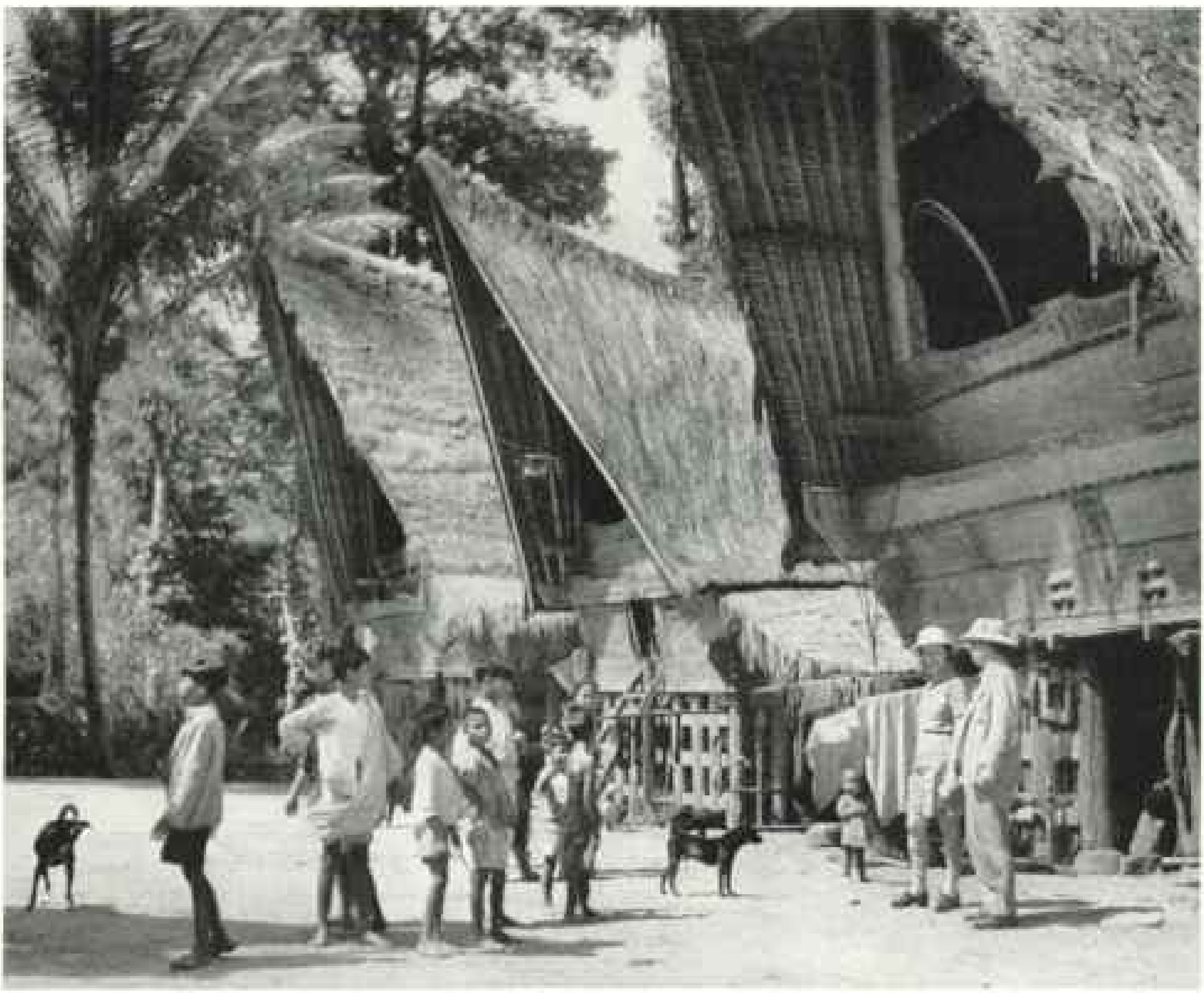
Small snakes, geckos, scorpions, and big spiders used to turn up on our kitchen shelves or in the bathroom from time to time, and they were all added to the menagerie, or to the jars of pickle for the National Museum at Washington.

THROUGH THE MALAY ARCHIPELAGO IN QUEST OF MORE ANIMALS

Seeing that the collection was growing satisfactorily, and that Jennier and Davis were capable of caring for it, the writers, with Dr. Williams and Dr. Coenraad, set out for a six weeks' journey through the Eastern Archipelago (map, page 668).

Makassar, at the southwest tip of Celebes, proved to be a good hunting ground. We heard vague rumors of a Chinese bird dealer, and went to call on him. He in turn knew of another man who had some birds, and we spent most of two days poking around in the back alleys of the Chinese quarters. We found cassowaries in kitchens, and cockatoos, lories, and parakeets in the dingy little back yards.

An elderly German who has lived in



DR. AND MRS. MANN VISIT THE SHARP-ROOFED HOMES OF A KAMPONG, OR JUNGLE VILLAGE, AT PRAPAT

The Bataks, numbering about a million, are divided into two major tribes which take their names from adjacent Lake Toba and the Karo Plateau, to the northeast. Many are now Christianized and their Moslem neighbors, to whom pork is forbidden, called them "pig eaters," a nickname which the Bataks have proudly adopted (Plate I). Men still living can remember when adulterers, traitors, and spies were eaten, but women and children officially were exempt.

Makassar for forty years had an amazingly good collection of birds, monkeys, and snakes, and we spent hours with him and them in his little garden.

Two more days at sea brought us to the island of Ambon, and we came into the harbor of Amboina, or Ambon, the principal town (page 676).

OFF FOR SELDOM-VISITED CERAM

Here we had to wait nearly a week before we could get a boat to Ceram, the largest island in the Molucca group; but in the meantime, as guests of F. J. Buitenbos, we collected insects and reptiles among the nutmeg trees and picked up two cuscus (curious opossumlike marsupials, with soft fur, pointed noses, big eyes, and prehensile tails).

At length, aboard a small K. P. M. steamer, we left for Piroe, near the western end of Ceram, and after about twenty-four hours we found ourselves sailing into the harbor.

Except for a thatched roof or two along the shore, there was no sign from the water that the place was inhabited. However, a few natives wandered down to see the ship come in, and upon being rowed to the coral jetty we found a thriving little village with a native market and the usual Chinese shops.

The Netherlands Controleur had already notified the natives that we were coming, and had a few specimens in his garden waiting for us—more cuscus, a cockatoo, and a couple of parrots.

Hospitably he directed us to the government resthouse, which was a fairly large, thatch-roofed building fronting on the beach. Although the customary Malay

SLOW-FOOTED AND WIDE-EYED, THE MOLUCCAN CUSCUS CANNOT LIVE IN CAPTIVITY

Instead of draping her young about her, the mother, a marsupial, carries hers in a pouch in the Australian manner. Principally a leaf eater, and nocturnal in her habits, the cuscus ignores a banana to turn her goggle eyes on the spectators.

THE BEST HANDLE TO A HORNBILL IS ITS BEAK

Though weak in the bite, a hornbill can drive its gargantuan nib deep into an arm. Two Malays here help Malcolm Davis clip one wing of a valuable specimen to prevent its escape before reaching the National Zoological Park at Washington, D. C., halfway around the world.

name for these resthouses is Pasanggrahan, this one was called "Roemah Sobat," which means "The House of Friendship." It was a pleasant touch, for we were not only feeling very far from home, but were actually some 2,000 miles away from our base camp!

Early the next morning, we walked along the beach to the little village of Eti, some five miles away. There we called on the Rajah, told him why we were there, and brought away with us a black-capped lory.

Coming back to the Roemah Sobat, we found numerous small boys hanging around the entrance, each carrying a bird or animal (page 672). There were purple lories, red lories, a tame green lory with a brown head, a white cockatoo, two small boas, a burrowing snake, turtles, white fruit pigeons—very young ones that had to be fed by hand; also more of our friends the cuscus, one big and one medium-sized.

This was a heartening collection for our first day on the island. We had brought a few empty cages with us from Ambon, and these were soon full. The turtles were turned loose on the floor of an empty room. Pigeons sat on the tops of otherwise occupied cages. The cockatoo and "Miltiades," the green lory, sat on home-made perches over the doorway.

The snakes were put in bags and hung on our clothes racks—and we began scouring the town to see if there was an unemployed carpenter. There was, and we put him to work.

Piroe has no automobile, electric light, movie house, newspaper, telephone, or cable. To travel from here into the interior one goes on foot or, for a few miles, by bicycle.

But word of our arrival spread in some mysterious manner, and men, women, and children wandered in, bringing any live thing they could pick up, to see if it was really true that foreigners would pay them for the effort.

STRANGE BIRD—AND WHAT AN EGG!

One bird that we were especially anxious to secure was the maleo, a curious megapode that looks like an undernourished, long-legged black chicken. We had heard its plaintive call on every stroll through the bush.

Several of the natives told us they could trap them in the jungle, and to our delight they began bringing in these curious birds—more interesting for their habits than for their appearance.

In a moundlike nest of earth and leaves on the ground they lay eggs which are about three times the volume of hens' eggs, although the birds themselves are considerably smaller than a domestic chicken.

The mother maleo does not sit on the nest, but simply leaves the egg to be kept warm by heat generated in the decaying vegetation until it hatches. When the chick burrows out of the mound it scratches for itself in the jungle.

We had difficulty inducing these birds to eat; we tried them on rice, cooked and raw, brown and white; on maize, bananas, grasshoppers, chopped pig's liver, chopped chicken, sago pith, and papaya. But the birds were shy, and it was some time before they settled down to a ration of mixed grain. They evidently need considerable gravel, and we always kept plenty of sand in their cages.

We are particularly proud of the ones we brought back to Washington.

CHROMATIC PYTHONS

Among reptiles, we especially wanted the amethystine python, and we were fortunate in getting two of these, one light colored, one almost black, but both with the beautiful purple sheen that gives them their name.

Our favorite among our pets at this time was Henry, a young hornbill, with black back and wings, a brown breast, and long, almost featherless neck, and an enormous appetite. We spent much of our time pushing bananas into Henry's gargantuan beak (page 669). During the day he sat on the back of a chair on the veranda; at night we put him into a vacant room.

Incidentally, there were three rooms on one side of the house for visiting Netherlands officials, and three rooms on the other side for visiting native rajahs. As the rajah's rooms were empty we used them for our menagerie, and had many misgivings lest a rajah turn up and find his quarters full of turtles, pigeons, and hornbills.

April 30 was Princess Juliana's birthday, and to celebrate it the Controleur asked men and women from a village six miles away to come and dance.

About eight in the morning the Rajah arrived, clad in an immaculate white suit and a sun helmet. We sighed with relief when we found he was not planning to use his official quarters.

DRYING SHEETS OF RUBBER FRAME A SUMATRAN MADONNA

Full of holes and lacking in uniformity, these elastic bands are pure rubber, freshly curdled by chemicals and ironed by rollers. Milklike latex is drawn from the tree by a wide slit in the bark, and even when it dries around the edges of the collecting cup it is full of stretch. Before large modern plantations came into bearing, it was such "native" rubber produced on a small scale that gave impetus to the Netherlands Indies industry. Although Sumatra has a few factories making tires, most of its rubber is exported raw to the United States.

HIS MALAY NAME IS "PANGOLIN" BECAUSE HE CAN ROLL HIMSELF INTO A BALL

Even when hanging by his tail, the scaly anteater of Sumatra tucks its more vulnerable surfaces inside and presents a tough hide to the world. Miss Barbara Lawrence, a skilled collector for the Museum of Comparative Zoology, Cambridge, Massachusetts, allows this armored ball to cling to her finger.

With the Rajah were thirteen of his people wearing the traditional dress of Ceram and prepared to do a *tjakalèlè* for us. Three women and six men were dancers; four men made up the orchestra.

The men were bare to the waist, with a painted breechclout of bark cloth which hung down like an apron in front. On their heads were turbans of turkey-red cloth, trimmed with small shells, and into the turbans were stuck feather headdresses. Most of the feathers were from cockatoos and parrots, but there were occasional decorations of bird of paradise feathers, dating from the days when traffic in these plumes was still permitted.

The women wore hand-woven sarongs, jackets of printed red and white cotton, silver and seashell bracelets, bead necklaces and belts, and headdresses of strung rings of brass and nickel.

They danced for us, to the music of bamboo flutes and conch shells, on the beach leading down to the bay—a colorful dance depicting war scenes, ending with a good hand-to-hand combat in which one dancer pretended to cut off the other one's head.

This was followed by a dance of triumph around the head, represented, in this case, by the senior author's sun helmet!

Thirty years ago they probably would not have accepted such a substitute.

After nine days in Piroe we had 24 crates of animals, and our worry was whether we could stow them all away on the little government launch that had come to take us back to Ambon. Somehow or other, they all got aboard, and we found places for ourselves among the crates, with the cockatoo and one parrot on perches hung over our heads.

While we had been in Ceram, Dr. Coenraad had been in Sorong, on the coast of New Guinea, and he rejoined us in Amboina. We sat on the veranda of the little hotel while rain, in a rushing tor-

rent, fell with true Amboneşe violence, and listened to his list of acquisitions: eighteen birds of paradise of five different species, twelve crowned pigeons of three species, two tree kangaroos, two wild pigs, and an assortment of parrots and lories—a fine collection for so short a time.

The following day we boarded the steamer for Makassar, and here we found our collectors had been busy. In addition, Capt. J. W. F. U. Diedrich had picked up three anoas, a babirusa, a Nicobar pigeon, and a monkey, all of which he offered to us.

There were a few complications, however. The anoas (pygmy buffaloes of Celebes) and the wild pig, or babirusa, had been seized by the police! Government permits are necessary to export these carefully protected animals, but inasmuch as we had permits for a babirusa and for two anoas we were able to get them out of the police station and lead them down to the ship.

Other prizes included a couple of 18-foot pythons, some crested lizards, dozens of brilliantly colored lories, racket-tailed parakeets, and cockatoos.

IF A COBRA STRIKES HIM THE VICTIM IS FINED

Formerly this ambidextrous juggler with venom received a bonus when he was bitten. But venom cannot be wasted, so now the fearless assistant in Bangkok's Pasteur Institute snake farm is penalized if he lets a hooded death's head hit its mark. The concrete igloo is a snake house, painted white to keep it cool.

SEVEN HUNDRED BANANAS A DAY

When our menagerie was finally assembled between decks on the S. S. *Pahud* it numbered about 80 cages. Although we started from Makassar with a large food supply, it was quickly exhausted and had to be replenished at Lombok, where we stopped for a few hours, and at Boeleleng in Bali. We were using 700 bananas a day, in addition to potatoes, apples, and greens, with, of course, grass for the anoas.

At Soerabaja we had to transfer to another K. P. M. steamer, always an anxiety when cages of delicate birds and animals have to be moved. However, they were well handled here, and stowed between decks along with 2,000 coolies going to Sumatra to work on the rubber, tea, and tobacco plantations.

WITH OUTRIGGERS TO KEEP THEM FROM ROCKING THE BOAT, A DUGOUT MAKES A COMFORTABLE NURSERY

Assisted by a palm-leaf sail and a steering oar, Malay lads of Toelehoe, Ambon, came out to meet the birds and reptiles Dr. Mann brought from seldom-visited Ceram, to the north.

In Batavia at the zoo, we were presented with two lutongs, or leaf-eating monkeys, a pair of big binturongs, ten Borneo gavials, two Tantalus storks, and two Brahmany kites. These were to be crated and sent down to the boat.

There were only a few hours before we were to sail, and the dock was several miles away, but the director assured us he could catch the animals, cage them, and send them to us in time.

The whistle blew, however, before there was any sign of the animals. Just as the *Op ten Noort* moved away from the wharf a zoo truck came dashing around the corner, exactly one minute too late. Our little collection had to go back to the zoo and be shipped on a later boat, but it reached us in Pematang Siantar the following week in good condition.

Even our brief three-hour stop in Singapore was not entirely unproductive. Harold Coolidge, who had been in Indo-China with the Harvard Primate Expedition, had sent us two little Himalayan bears (page 671). The American Consul General had been keeping them in his garden, and we brought the mischievous rascals down to the ship in his car.

A 12-FOOT COBRA PROVIDES A TENSE HALF HOUR

It was like coming home again to be back in Pematang Siantar. We found that the bird collection had grown appreciably and that Hari was a sturdy young tiger, beginning to enjoy a daily ration of raw buffalo meat in addition to his bottles of milk. Two siamangs, a flying squirrel, several of the common macaques, a golden cat, and a 12-foot king cobra had been added to the menagerie.

Jennier and Davis told us that the king cobra, the largest and most venomous of all serpents, had been brought in, tied to a stick, after dark one night, and they had had a nervous half hour getting it into a cage with only their flashlights to show them what they were doing.

READY FOR A DAY'S FISHING IN LAKE TOBA

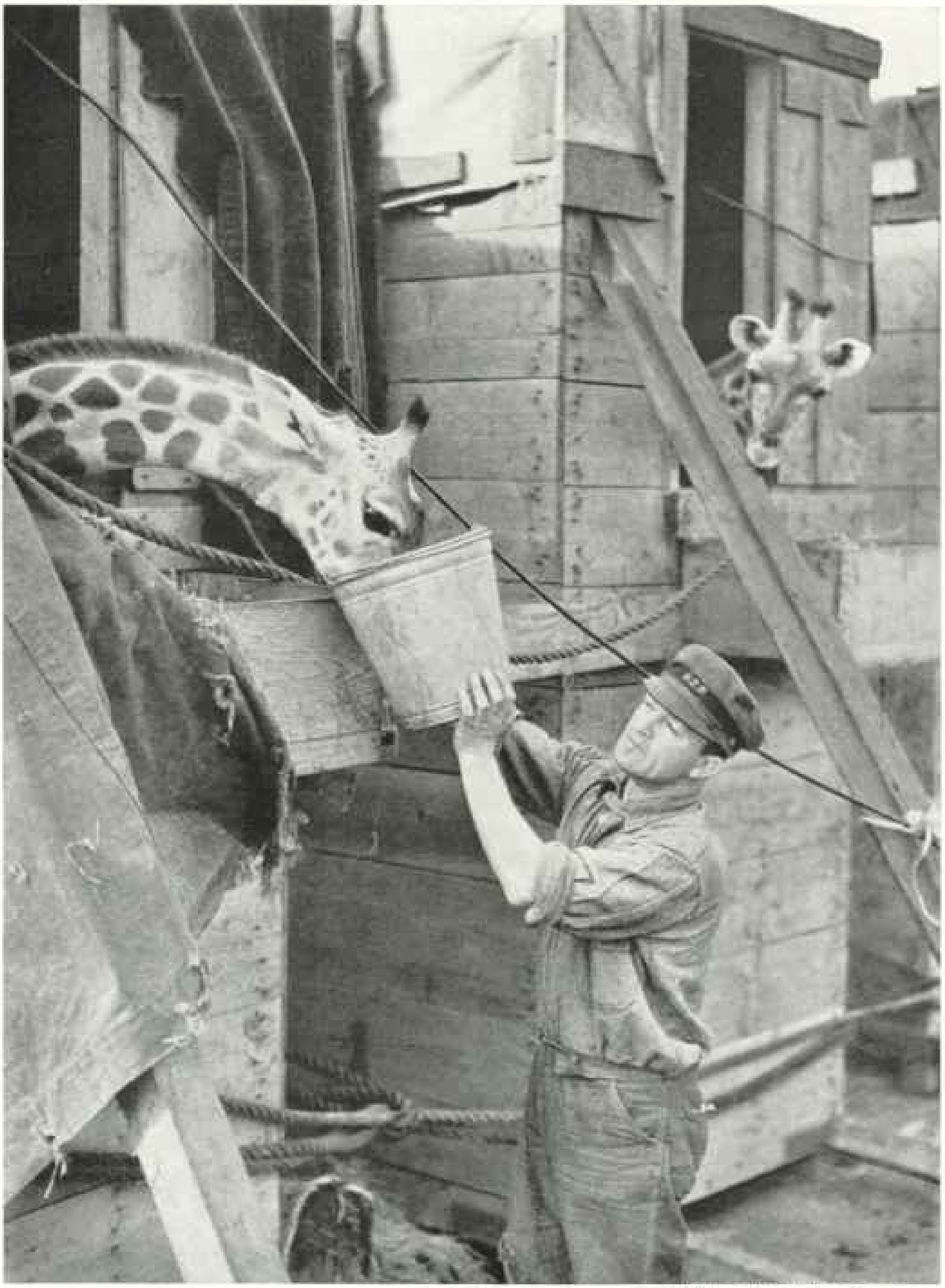
With the seat of his dugout canoe swung from his paddle and circular net taken down from its rack, this Batak fisherman is about to go to work on Sumatra's largest lake, twice as long as Lake Geneva. Agriculture is displacing hunting and fishing even in Sumatra, but Toba teems with fish, which, as well as dogs, are relished by the Bataks. While driving along the highways, motorists see what seems to be hunting parties with packs of hounds on the leash. Actually, they are dog meat going to market "on the paw."

IT'S A JOKE, BUT NOT TO THE LAD WHO IS ABOUT TO PART WITH HIS COCKATOO

Dr. Mann, holding out a cent, is adding this modest present to the bid price. The white-shirted bystander "gets it," but the central character, still serious, decides to hold out for more pay. The background is the veranda of the Government rest house at Piroe on the island of Ceram.

"OH, WHERE, OH, WHERE HAS MY OLD TIRE GONE?"

It may be in the doormat, a pair of Yugoslav sandals, or sun-rotting in a storage lot. But here it is cushioning a Sumatran highway for the hoofs of a water buffalo, as he hauls a heavy load up to Sipirok, center for extensive coffee plantations.



Photograph by J. Baylor Roberts

THE "LEOPARD CAMEL" CAN GO A LONG TIME WITHOUT A DRINK AND REACH FAR TO GET IT

Known in ancient times as a "camelopard," the Nubian giraffe is an expert at camouflage, for his spots make him almost invisible amid the mimosa trees of the Sudan. This baby animal, lacking room to spread his legs, has his drink passed up to him by Roy Jennier. A second of the four fine giraffes brought from Port Sudan signals "me, too." During the chill days before docking, 500-watt lamps were installed in the crates to prevent the longest of sore throats (page 714).

Photograph by J. Baylor Roberts

BY THE DAWN'S EARLY LIGHT NEW YORK WELCOMES THE "SILVERASH," TWENTIETH-CENTURY ARK, BACK FROM SUMATRA

With two sturdy tugs fighting the breeze which spreads wide the Stars and Stripes and the earth, sea, and sky flag of the National Geographic Society, this floating zoo is about to dock at Staten Island after a 50-day voyage halfway around the world.

Photograph by J. Baylor Roberts

EVEN TO THE MOVIE MEN OF NEW YORK, A TIGER HUG IS NEWS

Though Hari is only a youngster, his sharp claws and strong jaws make his playful hugs and back-scratching an adventure. While the playmate of all the expedition members claimed the spotlight on arrival in New York, rarer and more valuable animals were hurried by express to Washington, D. C.

PET BIRD MARKETS IN JAVA ARE HAPPY HUNTING GROUNDS FOR ZOO DIRECTORS

Every city has its avian bazaar, many a house its bird cage hanging from a pole before the door. Fanciers meet on market days in Semarang to trade their feathered pets and buy new ones.

After a few days in camp we started out, this time by automobile, to see what luck we would have in other parts of Sumatra.

Three days of travel brought us to the Equator, and a little later to Fort de Kock, high up in the mountains of the west coast. This is beautiful country, with virgin forest, steep, shady canyons, waterfalls, mountain lakes, and a cool, invigorating climate.

TIGER TALES—AND A TIGER

In Fort de Kock we found Mr. C. Grootes, the secretary to the Resident, most interested in the very fine local zoo and full of helpful suggestions. He offered to have their collectors get a number of specimens for us, and before we left Sumatra he was as good as his word, sending us two beautiful golden cats, a pair of adult tapirs, a pair of serow (the rare goat antelope), a hog badger, marten, otter, squirrels, binturongs, and hornbills, besides a number of exquisite small birds.

All through this west coast country we were constantly hearing tiger stories—how in one town a native had been killed at nine o'clock in the morning in front of the post office; in another village 13 buffaloes had been killed in the last three weeks; in still another the Controleur had just shot a tiger that had killed three men.

We kept our eyes open, hoping that we would have an opportunity of seeing a tiger in the jungle, but never a glimpse of stripes did we see.

After this, it was an anticlimax to come back to Pematang Siantar and learn that Jennier and Davis had trapped a big tiger just five miles from camp. He was now snarling angrily through the bars of his new cage, into which he had been driven, from the trap, with the aid of firecrackers.

Photograph by J. Baylor Roberts

PITY POOR NOAH—HE HAD NO REFRIGERATED FRUITS, FLASHLIGHTS, FROZEN BEEF, OR OREGON APPLES

While sailing home from the Netherlands Indies, 13,000 miles away, with their 800 charges, Malcolm Davis and Gaddi were able to offer them a varied diet. Feeding the animals was an all-day job, and Mrs. Mann, "champion banana peeler of all time," considers Mrs. Noah "a rather neglected character" (pages 665 and 713). But the modern ark's trip was only fifty days.

Though he gave us a few unpleasant moments we successfully brought him back alive (page 673).

The tiger's furious snarling caused some uneasiness among our natives, and one night our watchman woke us up shouting that the tiger was escaping. His imagination had only gotten the better of him, however, and this proved to be a false alarm.

"SNAKE EAT BOY!"

One day the American Consul General in Singapore came to see us with his wife and little boy Tom, and during their visit we experienced the most exciting few seconds of the entire trip.

They had seen our zoo and we had finished lunch when Tom, a slight boy of ten or eleven, asked if he could go back and see the collection once more. We told him yes, but to stay with Mr. Jennier and Mr. Davis and not go near the cages of the bears and snakes.

He went out and we were talking when one of our native boys rushed in.

"Doctor, Doctor!" he yelled. "Come quick. Snake eat boy!"

We had five pythons in the back yard, ranging from 17 to 20 feet long.

We rushed out and found Jennier and two natives wrestling with a python. The Consul General's boy had obeyed my instructions and was safe, but the big snake had grabbed our Borneo boy, Layang Gaddi, driving its teeth nearly through his hand.

Had the youngster instead of the experi-

enced Dyak been the victim he undoubtedly would have been killed, but Gaddi was able to keep clear of the lethal coils.

We hurried Gaddi to a hospital where he was given first aid, including four stitches in his hand and a shot of tetanus antitoxin. Then we brought him back to camp and told him to take it easy.

We said goodbye to our visitors—and then a few minutes later, when we came out, there was Gaddi, feeding his usual line of animals with one hand. That was one of the reasons we brought him back to Washington with us.

A COMIC "FIGHT TO THE DEATH"

One of our gibbons and Hari, the baby tiger, provided the camp with comic relief. They were great friends, and their playful battles were like a ludicrous parody on the traditional "law of fang and claw," the "relentless ferocity of the jungle," and all that.

These were among the few times anyone has seen an ape bullying a tiger. The tiger was heavier, but the gibbon seemed to have too many feet. There was always one of them in Hari's face (page 674).

Every once in a while the war would be stopped for refreshments—nursing bottles for two.

By now we were beginning to think we had about enough animals. Besides, it was time to go home, before cold weather in the United States endangered our tropical treasures.

But first we made a hurried trip up to Atjeh, northern Sumatra, where we arranged to obtain a big bachelor orangutan as a mate for our zoo's Susie.

Then we (Dr. and Mrs. Mann) and Dr. Williams went up to Bangkok, where we acquired half a dozen gibbons, and a fine collection of poisonous snakes given us by the Pasteur Institute of Siam (page 695). In five big teakwood boxes we had king cobras, kraits, Siamese cobras, and Russell's vipers—enough venom to kill an army.

It was a red-letter day when, from a trader in Singapore, we got a Siamese clouded leopard. Today visitors to the Zoo exclaim at its beauty.

There are many kinds of squirrels in the Orient, one a beautiful white squirrel found only on Koh Si Chang, an island off the coast of Siam. We had heard rumors of this animal becoming very rare, and hardly expected to get any.

When we anchored off the island, some native peddlers came aboard and we asked one of them the usual question:

"Are there any birds or animals that we might buy in the village?"

He thought a moment and then replied:

"Nothing but some common white squirrels."

He went ashore and brought some to us, and they are now cavorting in their cage in the Zoo at Washington.

On a little Danish freighter we traveled from Bangkok to Singapore, and there transferred to the motor vessel *Silverash*, which was to be our home for the next seven weeks. On August 6 we went aboard with our Siamese collection, a number of Malayan animals that had been gathered for us, and a small collection from Batavia which included two Komodo dragon lizards.

LOADING THE ARK

About noon on August 8 we reached Belawan and found the animals from Pematang Siantar stacked in freight cars on the wharf. The Deli Railway Company had given us a special night train so that the animals would not have to travel during the heat of the day.

Animal collecting had gone on right up to the last minute. Just before the departure from camp, Davis yelled to Jennier, "Look, there's a monitor lizard out!"

They hurriedly grabbed the lizard, about four feet long, and looked for the empty box. But they found it had not escaped. It was a wild one that had happened to wander into camp—just in time to make the boat.

Finally everything, including our tremendous stock of food, was aboard, and we tried to group the cages in order.

It took several days to arrange the containers so we could work among them with any degree of comfort and safety, but eventually we lined up all the big stock on deck, and stacked birds, monkeys, small mammals, and reptiles in the two holds assigned to us.

Among our stores were more than a ton of bananas (in four stages of development from green to ripe), 250 pounds of string beans, 1,250 pounds of sweet potatoes, 100 dozen eggs, 75 pounds of peanuts, 90 pounds of papaya, 900 pounds of fresh grass, 600 pounds of frozen beef, 100 pounds of frozen fish, and several crates each of evaporated milk and strained honey.

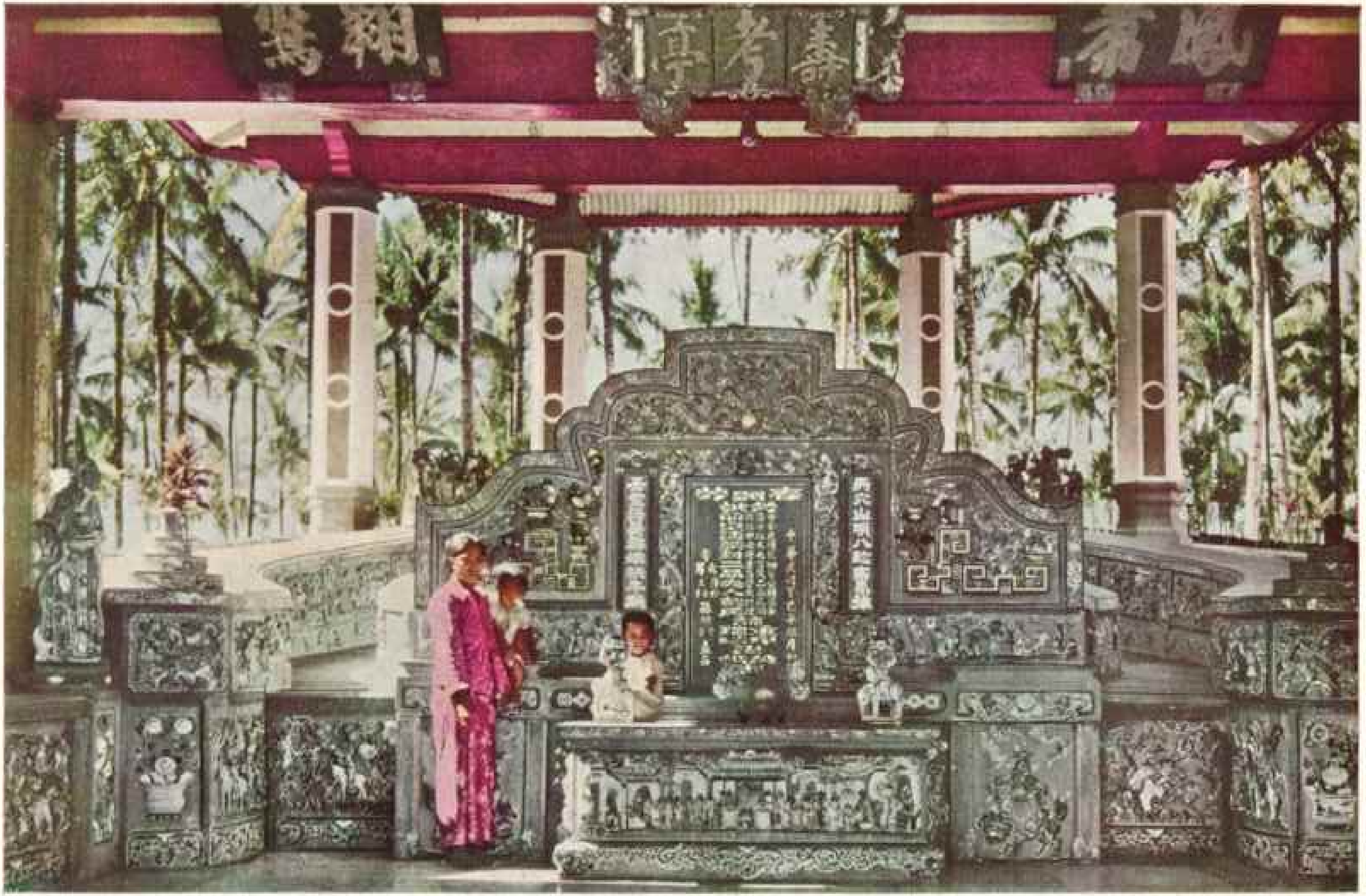
A NATIVE MONKEY STEALS THE SHOW AT KEDADAPAN

Leaving his animal-hunting colleagues, the Geographic staff representative induced a Malay schoolmaster to pose his pupils. Up came a monkey—and the camera was forgotten.

© National Geographic Society Finlay Photographs by Maynard Owen Williams

MOHAMMEDAN VEILS DO NOT VEIL MALAY FACES IN SUMATRA

Outnumbered in many regions, separated by many dialects, the Malays give Malaysia its name and its common tongue. Converted to Islam in Marco Polo's day, they are a gentle, industrious race.



Finlay Photograph by Maynard Owen Williams

AMID GREEN LAWNS UNDER SHELTERING PALM TREES, THIS ORNATE TOMB COMMEMORATES A LOCAL TYCOON, OR "GREAT LORD"
Beloved on the Celebes coast was "Captain China," to whose immaculate mausoleum in the suburbs of Makassar come visitors from many lands.

Finlay Photograph by Maynard Owen Williams

"LITTLE SHADOWS" COME TO PARADE REST UNDER WAVING PALMS NEAR A NEW SEAPLANE BASE AT AMBON

Because of the tropical sun and torrential rains in the Moluccas, an umbrella is almost as much a part of the costume of middle-aged Ambonese Christian women as is the long, thin blouse or small-patterned sarong. Older women wear black. The younger generation affects such knee-length cotton dresses, white stockings, and canvas shoes as are worn the world around.

Finlay Photograph by Maynard Owen Williams

THE ARRIVAL OF HUNDREDS OF THE EXPEDITION'S ANIMALS FROM CERAM COULD NOT DISTURB THIS PEACEFUL PORT IN THE SPICE ISLANDS (MOLUCCAS)

Cockatoos chattered, rainbow-hued lories screamed, and marsupial cuscus blinked wide eyes as porters carried them ashore at Toelehoe.

Finlay Photograph by Maynard Owen Williams

ANIMALS, FREED FROM CAGE AND LEASH, AND EXPEDITION PERSONNEL CELEBRATE JULY 4 UNDER THE NETHERLANDS TRICOLOR

Between native helpers, Malcolm Davis (left) holds a white cockatoo. Handsome Hari, the tiger cub, wins a smile from Mrs. Mann. The leader, Dr. William M. Mann, seems worried about his rare lutong, or leaf monkey. Miss Barbara Lawrence cuddles timid "Mr. Milquetoast," a Java macaque. Dr. Maynard Owen Williams holds a coal-black Sumatra gibbon, nicknamed "Decline and Fall," while the Sikh watchman stands by. Roy L. Jennier exhibits a black siamang. Layang Gaddi Sang, Dyak hunter, shoulders a macaque, and Horas brings a five-course lunch on a bicycle.

Finlay Photograph by Maynard Owen Williams

VOLCANO, PALM TREES, GRAZING WATER BUFFALO, AND CURVING ROAD TO A HIGHLAND SWIMMING PLACE—THE FEATURES EPITOMIZE SCENIC SUMATRA!

Occasional mountain climbers tackle Mount Sinaboeng, whose 8,000-foot cone is seen here, but even inexperienced parties tramp to the broken crater and sulphurous fumes of Mount Sibajak, nearer Brastagi. Managers of tea, palm-oil, or rubber plantations spend their vacations in the cool climate of the Karo Plateau, and support a school at Brastagi for their children.

Finlay Photograph by Maynard Owen Williams

ARTISTIC PRIDE OF THE MENANGKABAU VILLAGE IS THE "BALAI," FOUR-HORNED MEN'S CLUB AND DORMITORY

In legendary days the people of the Padang Highlands won a buffalo fight through craft. They starved a calf and fastened a sharp spike to its nose. When let loose, the hungry calf, trying to get milk, dealt its opponent a mortal blow. This *menang* (winning) *kabau* (buffalo) gave the Menangkabau their tribal name.

SUCH HIGHLAND WOMEN RENT HUSBANDS WHO MAY NOT VISIT THEIR QUARTERS BY DAY

The Menangkabau swain sleeps in his wife's home or in the men's house (Plate XV). If she feeds him, the husband pays for his food. If she wants to divorce him, she changes her sleeping quarters and he goes home. Married couples are "comrades," but must not call each other by name.

Finlay Photographs by Maynard Owen Williams

"BUY YOUR TICKETS TO SEE RAFFLESIA ARNOLDI, 40-INCH GIANT AMONG JUNGLE FLOWERS"

Color fades and fleshy petals soon wilt, but the village mayor sends out announcements for the two-day showing and sells tickets to this floral attraction in the depths of the jungle.

Naturally, the refrigerator space on a small cargo ship that normally carried supplies for about fifty persons was severely taxed by this load. Much of the food for our animals had to be put in the hold; and all perishable supplies had to be fed to the stock first, with such dried foods as prunes, apricots, and apple rings held in reserve in case the other things spoiled.

GIBBONS NEED THEIR AFTERNOON TEA

Many hours of each day were spent down in the hold preparing food—slicing bananas, apples, and potatoes by the bucketful (page 703).

The Chinese cook was induced to bake bread for us, and to furnish tea in the afternoon for the gibbons, which seem to find in this drink some element that reminds them of their natural leaf diet.

Fortunately, we made frequent stops on the way home, enabling us to take on fresh supplies.

In Bombay we remained for three days and found the market there an esthetic delight as well as a practical necessity. Grapes from Quetta, melons from Kabul, and pears from Kashmir made the fruit stalls seem to us as romantic as they were colorful.

And how our animals enjoyed a taste of some of these delicacies after the monotony of their meals at sea!

Some time before we left Sumatra we had arranged through the zoological gardens at Mysore to have a pair of gaur (the wild cattle of India) shipped to Bombay to be quarantined in the zoo there for us. They were fine, sleek young animals, and although they were jungle-caught and are considered the largest and most ferocious of the buffaloes, their days in the zoo had taught them placidity, and they seemed as well-behaved as any young calves.

The Director of the Bombay Zoological Gardens let us have a fine full-grown Indian leopard and two leopard cubs from his collection, and at Karachi we obtained from an Afghan dealer a number of cobras, four Indian pythons, and a cage of finches.

At Karachi, unfortunately, the ship took on a supply of bad drinking water, and an epidemic of dysentery broke out among the officers.

Our big orangutan also came down with it, and died in a few days—the most serious loss we had on the entire journey.

Of course, with nearly 900 animals on a 50-day voyage, one expects some deaths among them, if only from natural causes, but the loss of the big orangutan was a bitter blow. However, we still had Wrestler, a young orangutan, who may eventually become Susie's mate.

In Port Sudan we took on four giraffes, two African buffaloes, and two shoebill storks, all of which had been obtained for us by the Game Department of the Sudan.

The giraffes and buffaloes were young animals, but their spacious padded cages took up considerable room on deck, where we lashed them to the rail.

With these final acquisitions we had all the animals we had wanted to fill the splendid new buildings of the National Zoo—and many more besides. The job now was to get them safely home.

For three days in the Red Sea we had heat that was almost unbearable. The senior author, a Himalayan bear, and a siamang gibbon all went down with heat stroke. The gibbon, "Decline and Fall," actually succumbed to the heat, and all the animals were exhausted by it.

Once out of the Red Sea, however, the weather improved, although we had choppy seas and considerable rain.

We came through the Mediterranean during the Nyon Conference on piracy, and used to gather about the radio every evening, to learn whether another cargo ship had been sunk.

We dodged a floating mine, and were examined one night by the searchlights of a warship (nationality unknown), but came through with no serious incidents.

GIRAFFE CRATES LOOSE IN A STORM

The Atlantic was kind to us almost until the end. Two days out of Halifax, however, we ran into a gale that made animal-keeping a nightmare.

About midnight the giraffe crates, eleven feet high, broke loose and started to slide on the heaving deck. The captain hove to and called out all hands to lash the cages before he turned the ship back on her course.

Our final worry was over weather conditions in Halifax. The temperature dropped to 58 the afternoon we left the Gulf Stream, and the chief engineer and the electrician worked for several hours putting 500-watt lamps into the giraffe cages to take the chill off the night air. All our other stock was covered with tarpaulin and given plenty of straw for bedding.

Photograph by Charles Del Vecchio, courtesy The Washington Post

NAGEOMA NIBBLES HAY OFFERED BY HELEN GROSVENOR, WHO NAMED HER AFTER YOUR MAGAZINE

Safely lodged in the new Pachyderm House, the young Nubian giraffes from Port Sudan won instant popularity. Judges in a newspaper naming contest did not know that Na-Geo-Ma was proposed by the Editor's granddaughter. Another giraffe, "Nicky," bears the name of a ten-year-old journalist who campaigned editorially, "We want two giraffes!" (page 675).

Although the temperature dropped another ten degrees, these precautions seemed to be effective and none of our charges developed colds. They stood this chilly weather better, in fact, than they had endured the heat spell in the Red Sea.

AN "S O S" FOR MORE BANANAS

Bananas had been the stand-by of the animals on our voyage. In the Far East we purchased them by the ton, in India by the bunch, and in Egypt by the pound, the quality getting poorer as the price increased.

When we arrived in Halifax there were only six left. So we radioed ashore for bananas.

To our delight, when the pilot boat approached the ship there were four people sitting in it, each holding an enormous bunch of bananas.

We were so glad to see these needed supplies that it was some time before we realized that each bunch was being carried by a friend of ours who had come from Washington to meet us—two of them members of the National Geographic staff.

We stopped for a day in Boston, and reached New York on September 27, where we unloaded all our cargo.

The hoofed stock we sent to the Department of Agriculture station at Athenia, New Jersey, for quarantine, and the rest of it we shipped immediately by express train to Washington.

The following morning the joy of taking the animals out of their shipping crates and putting them in comfortable cages in the Zoo more than made up for the work and worry we had had on the voyage.

Nearly 900 specimens were added to the national collection. There were 172 different species, including some not seen in America before, and many that we had never had in the National Zoological Park. At the present writing the majority of them are in good condition and waiting for the readers of this article to come and get acquainted.

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

NEW YORK STATE'S AIR-CONDITIONED ROOF

By Frederick G. Vosburgh

IROQUOIS Indians, seeking beaver pelts in the mountains of what is now northern New York State, sometimes found a dead campfire and traces of moccasined feet leading off to the north. A hunting party from one of the hated Algonquian tribes of Canada had passed this way.

The lips of the Iroquois curled in mocking scorn.

"Hatirontak," they muttered, deep in their throats. "Hatirontak" ("Tree-eaters," or "They eat trees").

This was an insult, a fighting word. For thus the proud Iroquois contemptuously implied that these northern woods rovers lived by grubbing about for roots and bark like famished animals—as indeed they may have done in famine times when game eluded their arrows.

The name stuck—but not to a mere Algonquian tribe. White men liked its tripping, rhythmic sound, and they came to apply it, in time, to this whole wide wilderness where wandering bands of "Hatirontaks," or Adirondacks, once fought the Iroquois. The Adirondack Mountains had acquired a name.

Today, paleface tribes from the cities pour into this land of evergreen and birch, of avalanche-scarred peaks and densely wooded slopes, of bubbling trout streams and clear, cold lakes—the air-conditioned roof of New York State (map, page 720).

These mountains rank among the oldest things on earth

In altitude the Adirondacks are not remarkable. The haughty Himalayas would hoot at them. The young Rockies would smile at their puny height and the Alps and the Andes would laugh in lofty derision.

Yet the Adirondacks have been standing here since long before those spectacular ranges were folded and boosted into existence. These ancient granitic rocks, with scattered iron deposits, date from the earliest known geologic era, the Archean, and once as islands looked down upon a vast primeval sea.

Their heads have stood much higher than they are today. Time, with ice and water, lowered the summits. Glaciers, grinding down the valleys and dumping debris, formed lakes and ponds—some fifteen hundred of them. Evergreens and hardwoods blanket the slopes, for trees thrive in this light, thin soil where little else will grow.

In the deep woods the hermit thrush sounds his flute. Deer often wander across the roads at night and from the dim distant shore of a lake rings the maniacal laugh of a loon (page 741).

Haven for hay-fever sneezers

Heading into the mountains from the southwest, through Rome, I crossed the fertile Mohawk Valley, today a peaceful pastoral in silver and green, but once—during the Revolution—the scene of savage attacks by scalp-crazy Indians led by green-clad Tory rangers.

As the road climbs higher the air grows cooler. And now (wonder of wonders) if it be late August or September when the ragweed hay-fever sneeze is loud in the land, a miraculous change often makes itself felt: the sneezing, snuffling, and weeping subside, for ragweed in most parts of the Adirondacks is practically unknown.

State health officers, exposing thousands of oil-filmed glass slides and then, with a microscope, hunting for pollen grains on them, made a map which shows the relatively pollen-free sections, and copies of this are proudly handed out at Old Forge, "Gateway to the Central Adirondacks."

Key to canoe land from the south is this town at the foot of the Fulton Chain—eight little linked bodies of silvery water named for Robert Fulton of steamboat fame.

Here I talked with old-timers among the guides. One was Phil Christy, a wiry little figure, with piercing, pale-blue eyes, a stubbly face, and a pugnacity that at first was a little alarming (page 716).

"Yessir," he said, "I was 83 years old on March 28, and I can kick the hat off your head before you can turn around."

Adirondack guide, old style

It developed that Mr. Christy's favorite punch was a quick kick to the point of the chin, a gentle form of attack perfected in his youth as a "canawler" on the old Erie Canal and often used later in Adirondack arguments.

"I know every holt there is," said my host, and reaching out a sinewy hand he hooked the thumb under my jaw while a finger found the eye socket. "Now what

Photograph by Frederick G. Vosburgh

AN OLD-TIMER DISPLAYS HIS MARKSMANSHIP—WITH DEER RIFLE UPSIDE DOWN

One of the oldest active guides in the woods is Phil Christy of Old Forge who offered to hold his gun like this and still outshoot any ordinary man. He said he was 85 last year, but nimble enough to "kick the hat off your head before you can turn around" (page 715).

kin you do when I put pressure on that artery?" It wasn't the artery, it was the eye. But I readily admitted I was powerless and politely changed the subject.

"Deer?" he said. "I know a place up Moose River where they'll come and eat out of my hand. I call 'em by name and feed 'em chawin' tobacco."

With pride Mr. Christy showed me his guideboat. "It'll go through the water like a snake and climb a wave like a puffball—six mile an hour an' never sweat a hair!"

"Some fellows up at Eagle Bay told me a guideboat would tip over too easily," I said. "According to them, a good sneeze and over it goes" (page 717).

"They're crazy," Mr. Christy scoffed. "I've run Moose River 39 year an' never tipped over yet. But you got to know how to handle 'em."

Fondly he patted the fragile keel. Mr. Christy, it seems, has his softer side.

"DEVIL-BUG" MAKER

Most of these old woodsmen are thoughtful observers of Nature, and one who made his observations pay dividends is O. C. Tuttle. In the back room of his cottage on Third Lake this kindly, gray-mustached gentleman of the woods fashions hand-made baits used by fishermen all over the world, particularly his curious "deer-hair lures." He told me the story.

At the edge of a stream one day he saw the floating carcass of a deer; it seemed to be all atremble. He looked closely and saw that the water under it was alive with brook trout, tearing away at the hide of that dead deer. When he caught a couple and cut them open he found they were full of deer hair.

That started Mr. Tuttle thinking. "There's a salt and alum taste in that deer hair that the fish like," he mused, "and

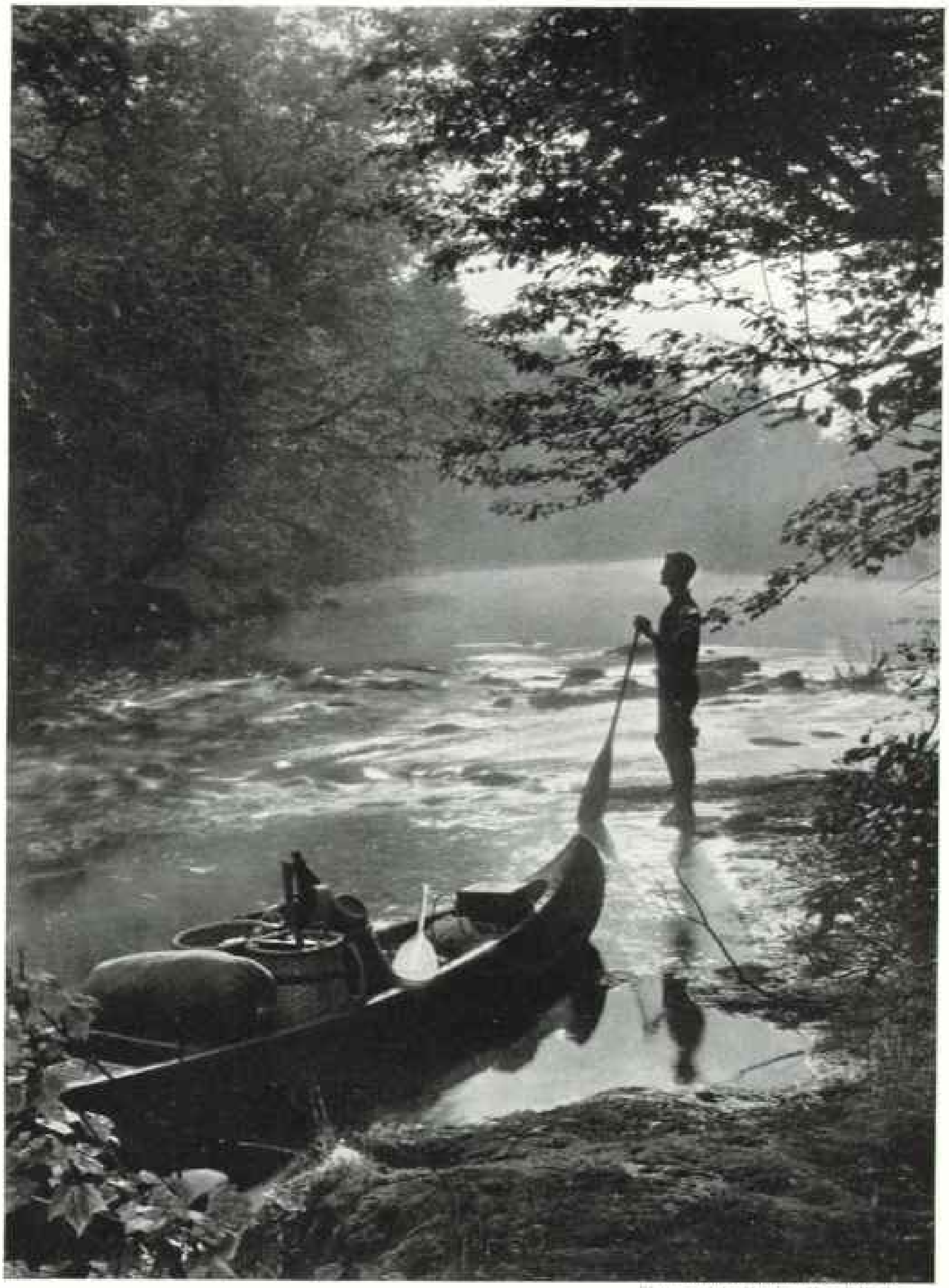
LEWEY LAKE SHIMMERS A WELCOME TO BOY SCOUTS FROM LOCKPORT, NEW YORK

Little Scout, big Scout, and middle-sized Scouts—heavily laden with blankets, packs, fishing rods, lanterns, and miscellany—were hiking along a lonely forest road when the author gave them a lift. Lewey Lake, north of Speculator, is known for its pike, lake trout, whitefish, bass.

Photographs by Frederick G. Vosburgh

"A GOOD SNEEZE AND OVER SHE GOES!"

So said Tommy the boatman at Eagle Bay, referring to this dainty craft, an Adirondack guideboat. "All right," replied the author, "sneeze." "Ah-choo," cried the boatman, and over he went—but the camera showed he had to pull the gunwale to make the boat tip over. Like a cross between a canoe and a skiff, the little craft was invented by Adirondack guides who needed a rowboat light enough for one man to carry over portages. Its thin pine hull is ribbed with carefully selected spruce roots. Most of the few remaining guideboats were made at least thirty years ago.



Photograph by Harrison Howell Walker

"HARK! THERE'S THE SONG OF A HERMIT THRUSH!"

Enthralled, a canoeist in the Adirondacks drinks in every note of that vesper song, flutelike music attuned to the wilderness and to the gurgle of the stream. He and his companion are about to camp for the night on Bog River between Sabattis and Tupper Lake.

that's the taste of all insects, nearly."

While he was still turning it over in his mind, he noticed a number of large beetles that he never saw before or since. Wherever they hit the lake the water would boil. The bass were taking them.

That night Mr. Tuttle made one like it—out of hair from a deer head on the wall. His wife thought it "looked like the devil," so he dubbed it the "devil-bug."

In the morning Mr. Tuttle went fishing and caught 25 bass—24 of them on the devil bug. Before night fishermen were standing in line to buy the lures for a dollar apiece. The fame of the bugs spread over the earth, wherever fresh-water anglers gather.

Many fishermen come to the Adirondacks, for the State is continually restocking these waters with native brook trout, brown trout, rainbow trout, lake trout, whitefish, landlocked salmon, small-mouth and large-mouth bass, pike, pike-perch, muskellunge, and other fighters (page 743).

EYES OVER THE ADIRONDACKS

On fifty peaks scattered over the mountains, State forest fire observers are stationed, with map and telephone, to watch for telltale smoke.

Above, like a huge restless hawk, soars a State patrol plane, radio equipped.

When word of a forest fire is flashed, the rangers, under New York State law, can draft anybody they need for 25 cents an hour. This is an emergency, a kind of war.

Only one who has seen a bad forest fire can know the full horror of it—red fury racing through the brush and leaping from tree to tree, 250-year-old pines blazing up like candles and consuming themselves in a trice; fierce, searing flame licking up all life, killing the fish in the streams, putting every wild creature to panic flight and burning alive the slow of foot; threatening towns, leaving black desolation behind, sometimes robbing the very soil of fertility for years to come (page 739).

Fortunately most of the disastrous fires were twenty or more years ago, for lumbermen and campers have grown more careful and incipient fires are spotted early. Chief cause of those that do occur is the match or cigarette of the careless smoker.

Wild animals are still fairly abundant in the Adirondacks, but the gasoline age has brought them new troubles.

Near Forestport I talked with a new-style trapper of foxes, mink, and other fur-bearers. He covers his forty-mile trap line by automobile, on roads kept open by plows.

When I reached Fourth Lake in the Fulton Chain, I saw a little red plane with big pontoon feet poised lightly on the waters of Eagle Bay. Every few minutes it scurried away, bearing a new summer visitor eager to see the Adirondacks from the air.

"It's even busier in the hunting season," said Benjamin Sperry, who runs the hotel. "A few years ago a trip over into the wild country around West Canada Lake took several days, by boat and on foot. Now the pilot of that plane will take you over there in a few minutes, show you where to hunt, and bring you back with your buck—all for $15 a trip."

MAN-MADE MANNA FOR STARVING DEER

Each autumn some six thousand bucks are shot, yet still the deer thrive (p. 723). One July night I saw three within fifteen minutes, one on the grounds of a hotel, wandering around among the parked cars.

But as soon as the leaves begin to redden and fall all the graceful whitetails grow suddenly scarce; something tells them that the time has come to play the annual hide-and-seek with death.

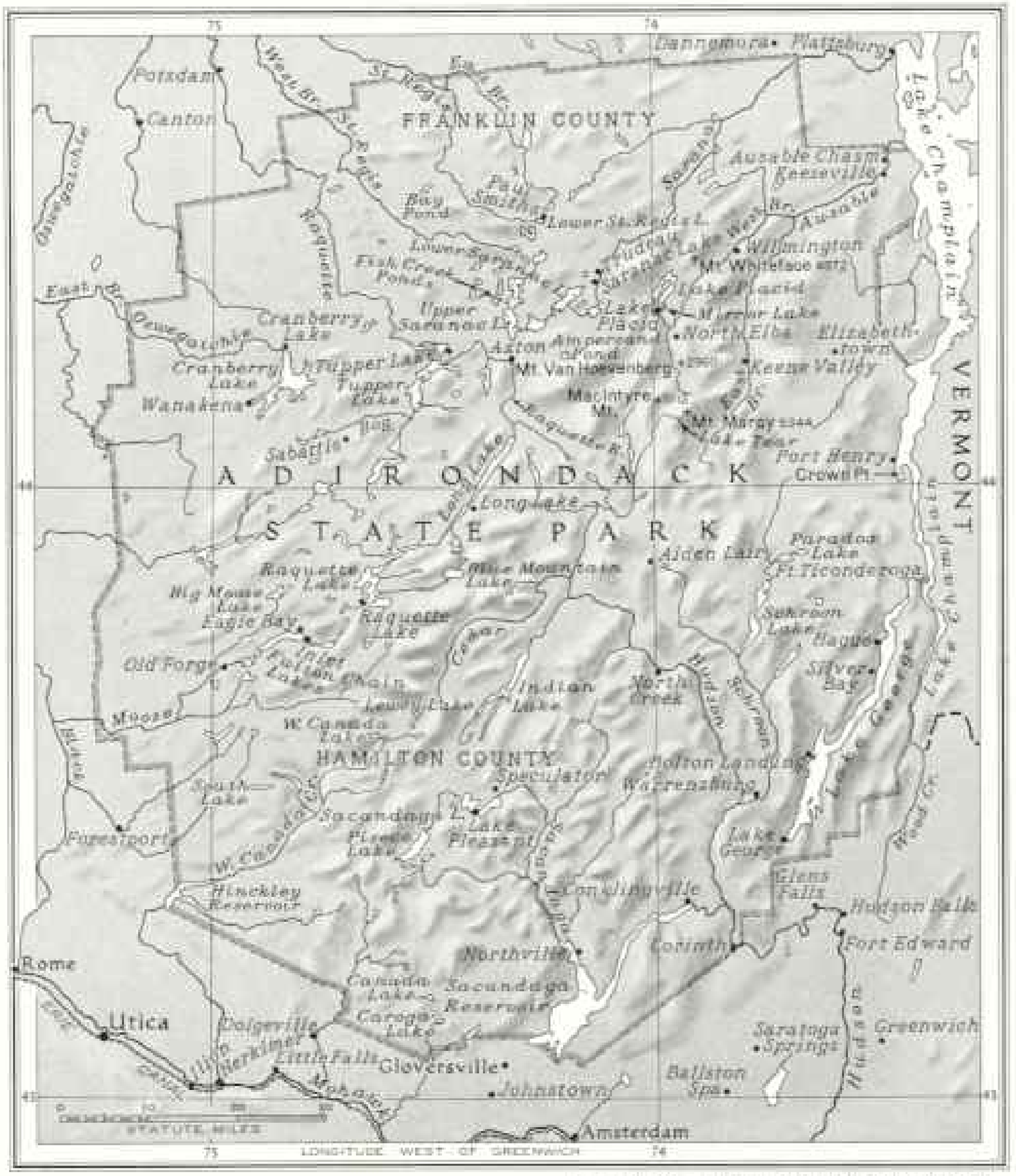
Sometimes, in hard winters, deer exhaust all the browse within reach of their yarding grounds and many starve to death. The State said, "Let them eat cake"—and proceeded to provide it: a concentrated deer cake of coarsely ground soybeans and molasses, developed by the Conservation Department and the State College of Agriculture at Cornell after months of studying what deer like to eat.

This deer cake, in 25-pound tins, is carried into the yards by game protectors on snowshoes and hung on a stump for the half-starved creatures to lick. Thus many a gentle life is saved.

BEARS ORDINARILY ARE HARMLESS, BUT—

In my wanderings in the mountains I had heard that a man had been attacked by a black bear a few weeks before, north of Dolgeville, and narrowly escaped with his life. So unusual is such an occurrence that I drove fifty miles out of my way to talk with the man, Frank Mang, of Dolgeville.

Mang, a tall, red-headed young chap, wore a bedroom slipper on his chewed left foot. He got excited all over again as he told the story.



Drawn by Newman Bumstead and Ralph E. McAlert

8,555 SQUARE MILES OF WOODS AND LAKES IN THE NATION'S MOST POPULOUS STATE

All of Connecticut plus Rhode Island could be fitted into the Adirondack State Park and still not come within 2,000 square miles of filling it. Included within its boundaries are towns and numerous privately owned tracts. The State-owned land, in large patches checkerboarding the park, comprises nearly half of its total area and under the New York Constitution must remain forever wild.

He and a friend, Charley Cannon, had been fishing when they sighted the bear in the bushes about a hundred yards away. It sniffed the air and suddenly charged. Each man picked a different tree and by the time they reached the lower branches three hundred pounds of angry bear was rushing around below them, growling furiously and snapping its teeth.

Mang reached in his pocket for his camera, and at the sudden motion the bear started up the tree. It was a little tree with a smooth trunk, a beech, and four times Mang was able to dislodge the bear—once with a branch, three times by "stomping" on its nose. Twice the animal sank its fangs into his foot, but they pulled loose. Each time the bear came back for more.

Photograph by Clifton Adams

IN THIS "HATBOX HOUSE" AT SARANAC LAKE, ROBERT LOUIS STEVENSON DREW INSPIRATION FROM "THE PURITY OF FORESTS"

A visit to the little Stevenson Memorial Cottage, with the cigarette burns on the mantelpiece, the pictures, manuscripts, first editions, and other Stevensonia, gives a new insight into the personality of the restless genius who wandered the world in quest of health. Here he spent the winter of 1887-8 under the care of Dr. Edward L. Trudeau, pioneer fighter of tuberculosis. Walking on the veranda one dark winter night, Stevenson conceived the story of *The Master of Ballantrae* (page 737).

Photograph by Harrison Howell Walker

RAQUETTE RIVER IN SIGHT, AT THE END OF THE OLD "INDIAN CARRY"

Many a hardy pair of paddlers sets out on the 80-mile water trail that leads through lake, stream, and portage from Old Forge to the Saranacs, or vice versa. This three-mile carry, over which Indians bore their birch-bark craft, connects Upper Saranac Lake with the Raquette River at Axton.

Photograph by Edward L. Gockeler

SLEIGH BELLS JINGLE AND EVERGREENS ARE DECKED WITH SNOW WHEN WINTER ERMINE-WRAPS THE ADIRONDACKS

Main roads, however, are kept open for motor traffic all year round, and more and more visitors are discovering that these slopes are made for skiing and the frozen lakes for cutting curlicues on ice. Not so the dyed-in-the-wool old-timer. "What do you do in the winter time?" the author asked one veteran guide. "Shovel snow and chew the rag—and shovel snow some more," was the reply. Beyond these husky grays and sledge at Ray Brook near Saranac Lake looms the bulk of Scarface Mountain.

Photograph by Orren R. Louden

SILENT FOREST AISLES, DIM-LIT, CATHEDRAL-LIKE—THEN, SUDDENLY, TWO DAINTY WHITE-TAILED DEER

But this picture, taken near Tupper Lake, was anything but an accident. "It took about two days to coax the deer and persuade them that I wasn't a wolf," the photographer says. In hard winters State game protectors keep deer from starving by feeding them a specially concocted "cake" of soybeans and molasses (page 719).

Photograph by Fairchild Aerial Surveys, Inc.

1,900 FEET ABOVE THE SEA SITS LAKE PLACID, WHOSE BUSINESS IS PLEASURE

Out of season this summer and winter resort town is a mere mountain village of about three thousand. Then, with the coming of vacationists, it expands to a bustling little city of as many as fifteen thousand. Along Mirror Lake, right, runs the town's main street, with island-laden Lake Placid in the background and Whiteface looking down from a distance (Plates I, II, IV, and VI).

The fifth time, it reached the lower branches and came like a monkey, Mang climbing frantically ahead of it until, as he puts it, "there was nothing to hang onto but the sky." He cannot remember uttering a sound, but Cannon, goggle-eyed in the other tree, says Mang was making the most outlandish noises.

Under the weight of bear and man the little tree bent till its top nearly touched the ground. At last it snapped. Mang hit the ground running, the bear only a couple of jumps behind. At every jump it lunged and missed.

Mang, hysterical, ran off a steep embankment and lay in a heap twelve feet below, expecting the bear to land on him any moment. But when Cannon saw his friend disappear he thought Mang had tripped and would be torn to pieces. He shrieked.

At the sound the bear wheeled and went to Cannon's tree. Cannon froze motionless and the bear did not try to come up.

Mang had just strength enough to climb another tree and after a long time Cannon called to him that the bear had gone.

"I felt as if the only way anybody could get me to come down from that tree would be to shoot me down," said Mang. His foot was badly bitten.

The bear was probably a female with cubs near by. Ordinarily, of course, the Adirondack black bear promptly heads the other way at the faintest whiff of man.

BEAVER LOVE THESE LAKES AND STREAMS

Beaver, easily trapped, had been almost wiped out in the Adirondacks by the turn of the century. Then several, brought from Canada and Yellowstone National Park, were

Photograph by Harrison Howell Walker

A ROLLING HOME STOPS ROLLING AT LAST AMID PINES AND SILVER BIRCHES

The State's biggest city-on-wheels, Fish Creek Pond free public camp site, curves entirely around a glassy lake, with 448 tents and trailers peeping through a filigree of birch (page 728). Each summer more than half a million people from all over the country stop at the twenty-odd State camps in the Adirondacks. Among the most popular are Caroga Lake camp site, near Johnstown and Gloversville, and Hearthstone Point on the wooded shore of Lake George (page 740).

liberated here under protection, and in these miles of poplar- and birch-bordered streams the little fur-coated workers multiplied rapidly.

In fact they propagate so fast that every few years complaints are heard of damage caused by Old Paddletail's dam-building and cutting of trees. Then the State declares a brief open season, many are trapped, and the beaver population has to start increasing all over again.

Fur farming is carried on in the Adirondacks, where the cold winter climate makes coats grow long and thick.

At an up-to-date "pedigreed furs" establishment near Lake Placid I saw six hundred healthy-looking mink, each in its own special wire coop, complete with running water.

The insatiably gnawing porcupine, so abundant it is often a pest, has one important claim to consideration: it is about the only animal that a man lost in the woods and weaponless could kill for food with a club.

BIRD VOICES ARE HEARD ON EVERY HAND

In birds the Adirondacks are especially rich. A partial list compiled by a summer resident of Big Moose Lake, near the Fulton Chain, contained more than fifty species, including that shy minstrel, the hermit thrush.

I have seen almost as many, among them the bald eagle and the great blue heron (page 748). And he who hears a loon "laugh" will never forget it.

Photograph by Harrison Howell Walker

AUSABLE CHASM'S CABLE LETS BOATMEN REST AFTER RUNNING THE RAPIDS

All day long in summertime boatloads of visitors descend the gorge. Exciting is the downward trip through "white water," two men deftly handling the boat with paddles. To return, the craft is merely hooked to the power-driven cable. The Ausable River, born amid the high peaks of the Adirondacks, has cut through many strata of hard, reddish sandstone in its dash toward Lake Champlain. This water-carved cross section of geology is 175 feet thick in places, and is about two miles long.

Photograph by Harrison Howell Walker

A SPECIAL OPEN-AIR "POST OFFICE" FOR WOULD-BE INITIAL CARVERS

Calling cards, envelopes, or scraps of paper with scribbled names and addresses may be posted here in Ausable Chasm by those who feel the urge to leave their marks in famous places. Thus the water-sculptured rocks are saved defacement by deep chiselings. When winter comes, with its gales that sweep through the gorge, the "post office" is house-cleaned.

But the still small voices of the Adirondacks to me are the thin, sad piping of the white-throated sparrow and the lisping of the stout-hearted little chickadee. I have heard chickadees steadfastly calling their names near the very top of mile-high Mount Marcy, in the "five-foot centenarians," the stunted balsams near timber line.

SOLITUDES OF "TEEMING" NEW YORK

Driving on up the Fulton Chain from Eagle Bay, I entered the big county of Hamilton—population only 2.3 persons per square mile. The Belgian Congo in the heart of Africa is nearly five times as densely populated as this cityless county in supposedly teeming New York State.

Above Inlet the road penetrates a part of the State's 2,170,000-acre Adirondack Forest Preserve. It took a constitutional amendment to build this road. Before a tree could be cut or a bowlder blasted, an amendment to the State Constitution had to be approved by the people in a referendum, for their fundamental law provides that these lands shall be kept forever wild.

At the village of Raquette Lake every winter hundreds of carloads of ice used to be cut and shipped out of the mountains.

"To keep the cutting channel from freezing up during the night, a rugged French Canadian was hired to drag a float back and forth," a former resident recalled.

"Each night before beginning work, he invariably bought two pints of whisky—never a quart, always two pints. I learned why.

"He put one bottle of whisky at one end of the channel and the other pint at the other end. He'd take a drink out of one bottle, then start off with his float to get a drink out of the other bottle. He'd keep that up all through the night. The wind was cold and the whisky warming. No wonder that channel never froze."

CALLING ON A HERMIT

At North Point on Raquette Lake I heard of a "hermit" who lived on the far shore of Outlet Bay.

Peering into the velvet blackness of the Adirondack night, I wondered just what sort of man would choose to live way over there, all by himself amid the silence and

the dark. Next morning, in a boat with a little "one-lunger" kicker, I went buzzing across the bay to see for myself.

Forest as wild and unbroken as in Indian days came down to the very edge of the water. Driftwood in grotesque, naked shapes lay here and there like bleaching bones. I had to look intently to see a tiny green tent amid the trees.

On shore I found something new in hermits. Here was no oldster with long white beard and somber misanthropic eyes, but a smiling young man, with a clean-shaven, sun-browned face topped by a mass of curly blond hair. Not tall but enormously strong, he had a chest that bulged his denim shirt.

Three years before, he told me, he had been a skinny kid in a New England industrial city. He loved the outdoors, but, working in a factory, he had little chance to see it.

So at 21 he got out a road map and looked for the spot with the most lakes and fewest towns. His pencil stopped at Raquette Lake.

He had never been here, but it looked like the place. He shipped his pup tent and canoe ahead and came up. He has been here ever since, living in a tent in the summer, a cabin in the winter—hunting, fishing, trapping, guiding. He isn't antisocial—just content with his own company for weeks at a time.

The hermit's pride in his lake is justified, for mountains never wedded waters with happier results. Inquiring bays explore the wooded hills; long promontories silvery with birches reach out caressingly into the lake, and pine-steepled islands ornament its surface. Both Raquette and near-by Blue Mountain Lake come close to being the ultimate in Adirondack eye appeal.

THROUGH A PRIVATE GAME PRESERVE

Pushing on, ever deeper into the mountains, I passed through the village of Long Lake, crossed the lake itself, really a widening of the Raquette River, where fishermen were trolling for northern pike, and drove for miles through forest marked with the yellow sign of the Whitney game preserve.

This big private holding—with its hundred thousand acres of Adirondack forest, including 77 lakes and ponds—is typical of the extensive preserves owned in the mountains by individuals and organizations such as the Adirondack League Club, which holds 99,000 acres in the Old Forge section. Small armies of men patrol them against poachers, especially in the hunting season.

"Bears are unusually numerous this year," the Whitney Park superintendent told me. "Our lumberjacks are complaining that the bears are stealing their lunches. Deer are so thick that we have to be careful not to run them down with our cars. . . ."

A WELCOME PARKING TICKET

A bright yellow tag dangled from the door handle of my car as I hurried back to it after mailing some letters at Tupper Lake. A parking ticket!

But instead I read:

"WELCOME VISITOR . . . This tag entitles you to park your car as long as you please in Tupper Lake."

On the other side were listed the attractions of the village, including its municipal bathing beach, golf courses, and winter sports; also the near-by New York State American Legion camp, and Sunmount, huge Government veterans' hospital.

The town's biggest business is a forest industry. In a factory with a towering smokestack, machines turn the mighty hardwoods of Adirondack ridges into wooden dishes for butter, meats, and salads, spreaders for smearing mustard on hot dogs, wooden spoons for eating packaged ice cream, wooden tongue depressors used by the doctor in peering down your throat.

Cranberry Lake, to the westward, pokes its angular bays into wild country veined with trout streams. The Summer Camp of the New York State College of Forestry at Syracuse University is here, and near the State Ranger School at Wanakena are some 300-year-old virgin white pines.

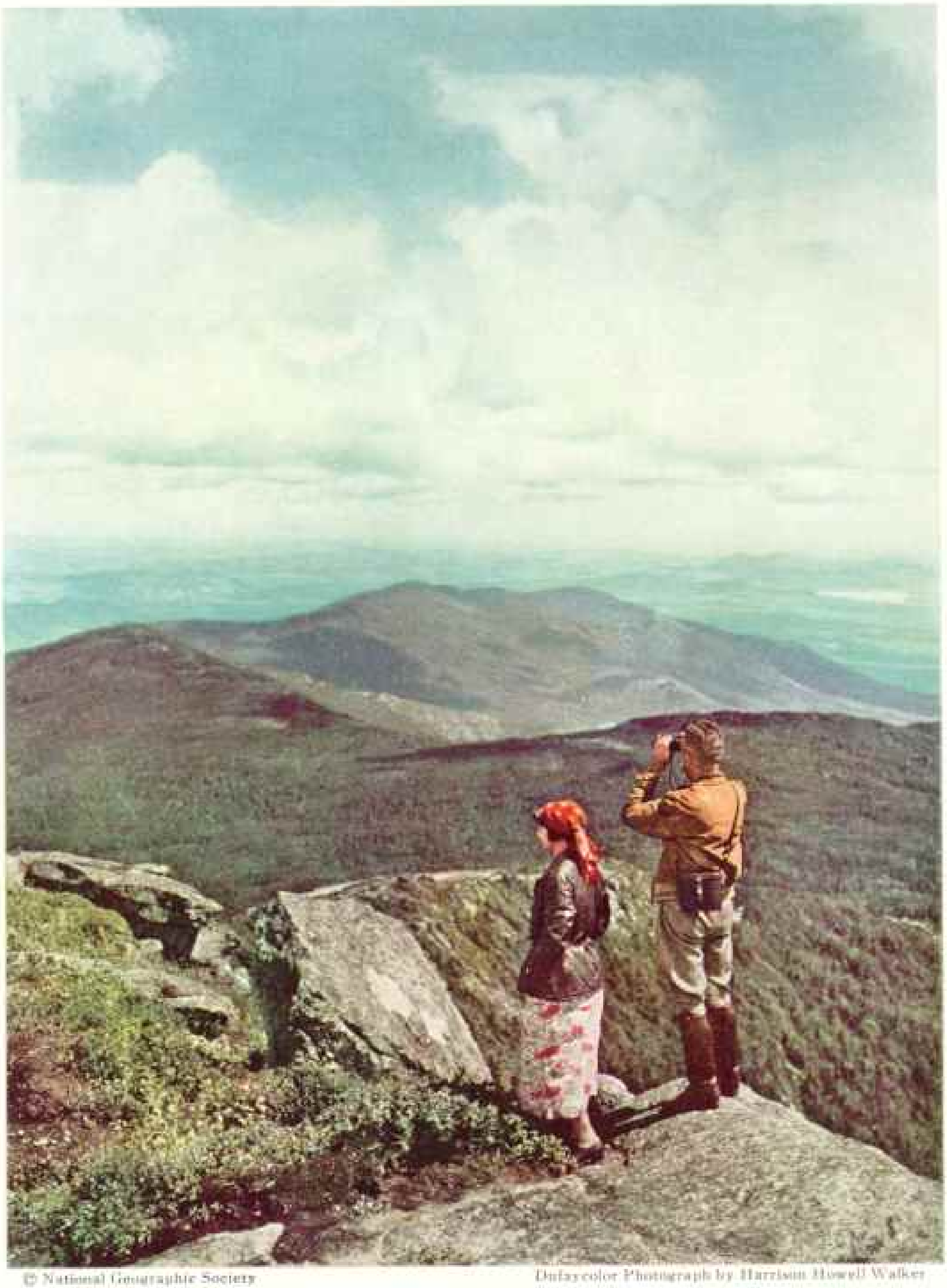
At Tupper Lake's municipal beach on Little Wolf Pond I heard a lifeguard's lament.

"I took a day off yesterday and went over to the State camp at Fish Creek Pond," said a leathery young guard, John Maroun. "I went in swimming—habit, I s'pose—and darned if I didn't have to help pull a guy out of the water.

"Tall and skinny he was, and that kind don't float easy. He had a heart attack, I guess, and he was going down for the third time when three of us got to him.

"Wonder if anybody'll make me work next time I try to take a day off."

On the way to Saranac Lake I stopped at Fish Creek Pond myself. This is New York State's largest free public camp site,



Dufaycolor Photograph by Harrison Howell Walker

FROM WHITEFACE, GRANDSTAND OF THE ADIRONDACKS, THEY GAZE ACROSS A LAKE-STREWN WILDERNESS

Most accessible of all the higher summits in the Empire State is this commanding, hoary-headed peak northeast of Lake Placid. The spectacular Whiteface Mountain Memorial Highway winds almost to its top, and soon an elevator—in a shaft driven through solid rock—will lift visitors the last 270 feet (Plates II and VI). With his glasses this hiker may see Canada, about forty-five miles away. Far off to the right lie Lake Champlain and the Green and White Mountains of New England.

Dufaycolor Photograph by Harrison Howell Walker

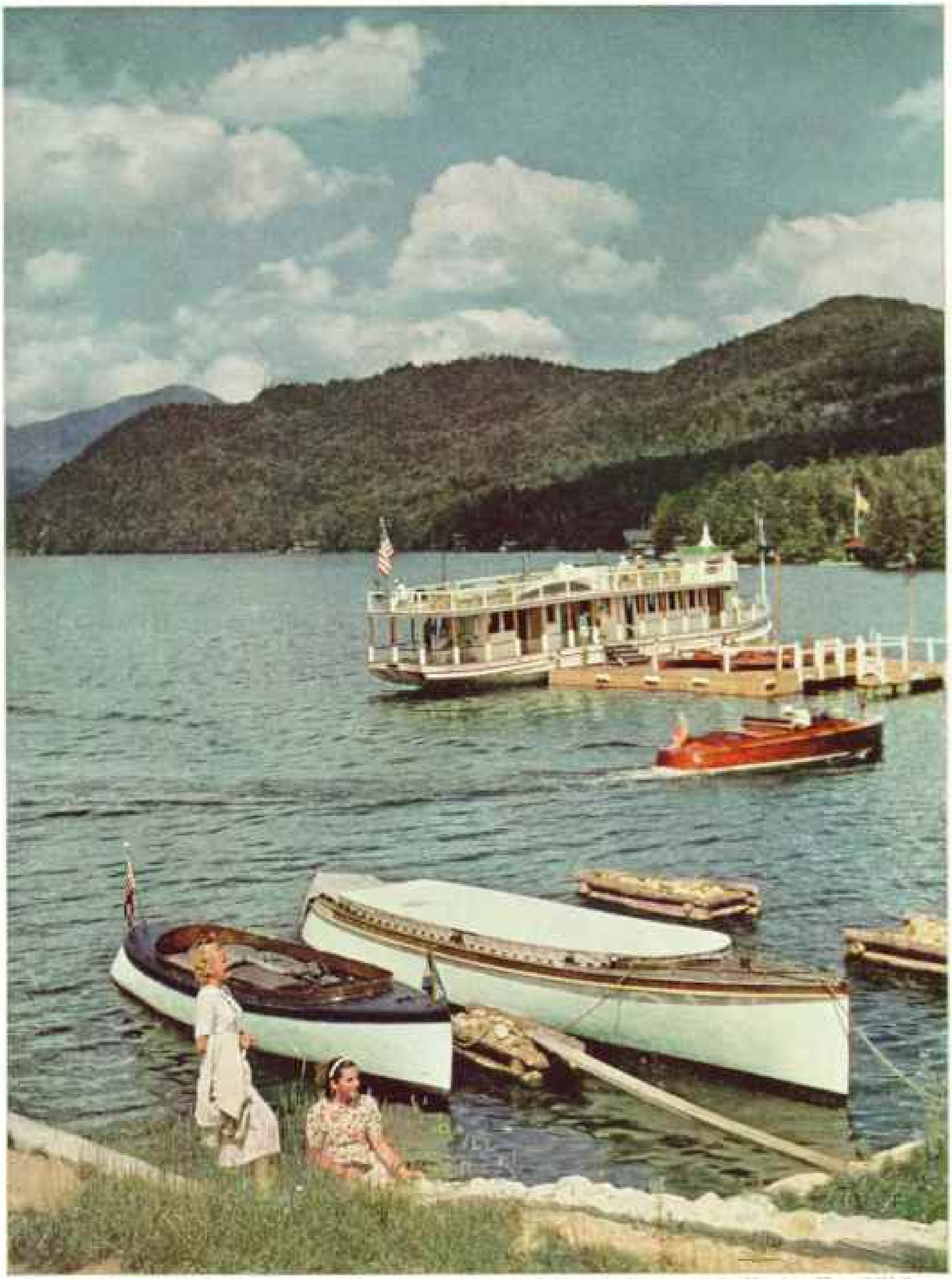
BEYOND LAKE PLACID'S AZURE WATERS, MOUNT WHITEFACE, LIKE A MASSIVE GULLIVER, LOOKS DOWN AT LILLIPUTIAN PUTTERS

Glaring white appear the avalanche-formed scars from which the mountain takes its name. Lake Placid is also aptly named, for surrounding wooded mountain slopes shield it from stormy winds. Rarely is its surface ruffled, except by speeding motorboats.

Dufaycolor Photograph by Harrison Howell Walker

BEFORE AN OVERSIZED VERSION OF THE "ADIRONDACK LEAN-TO" CAMPERS THROW A BIRCH LOG ON THE FIRE

In a boys' camp between Tupper and Saranac Lakes, the three-sided log shelter serves as an informal "town hall." Old-timers tell stories in the evenings or everyone sings, and sometimes a few stage a show for the audience in the lean-to. On woodland trails throughout the mountains are found similar, but smaller, "open-face" shelters where hikers sleep on fragrant balsam boughs, with a fire before the open side.



 Dufaycolor Photograph by Harrison Howell Walker

ALL-YEAR PLAYGROUND IS LAKE PLACID—BOATING AND SWIMMING IN SUMMER, SKIING AND SKATING WHEN WINTER COMES

The bustling double-decker at the pier takes visitors around the lake, past rustic camps half hidden among the evergreens and birches. When in 1882 the region's first engine-driven boat was brought overland from Lake Champlain she met a hot reception. Oarsmen, fearing competition, burned her at her moorings one dark night. Today the lake is dotted with power craft of all descriptions. In winter skates ring on its frozen surface—and in summer on the ice of the Olympic Arena.

A STRANGE CRAFT MAKES A COLORFUL SPLASH ON THE PALETTE OF UPPER SARANAC

Pedals, not paddles, propel this catamaran, a far cry from the birch-bark canoes of the Indians who once camped on these shores. Although they never settled permanently in the Adirondacks, both the Iroquois and the Algonquians often hunted or summered here.

 Dufaycolor Photographs by Harrison Howell Walker

FORTY-FOUR WHITESKINS, "ON THE MARK," PUSH FOR A PRIZE—PERHAPS A PUDDING

Often rival crews of boy campers wager their luncheon desserts on the outcome of a race over a 200-yard course on one of the Fish Creek Ponds, near Upper Saranac.

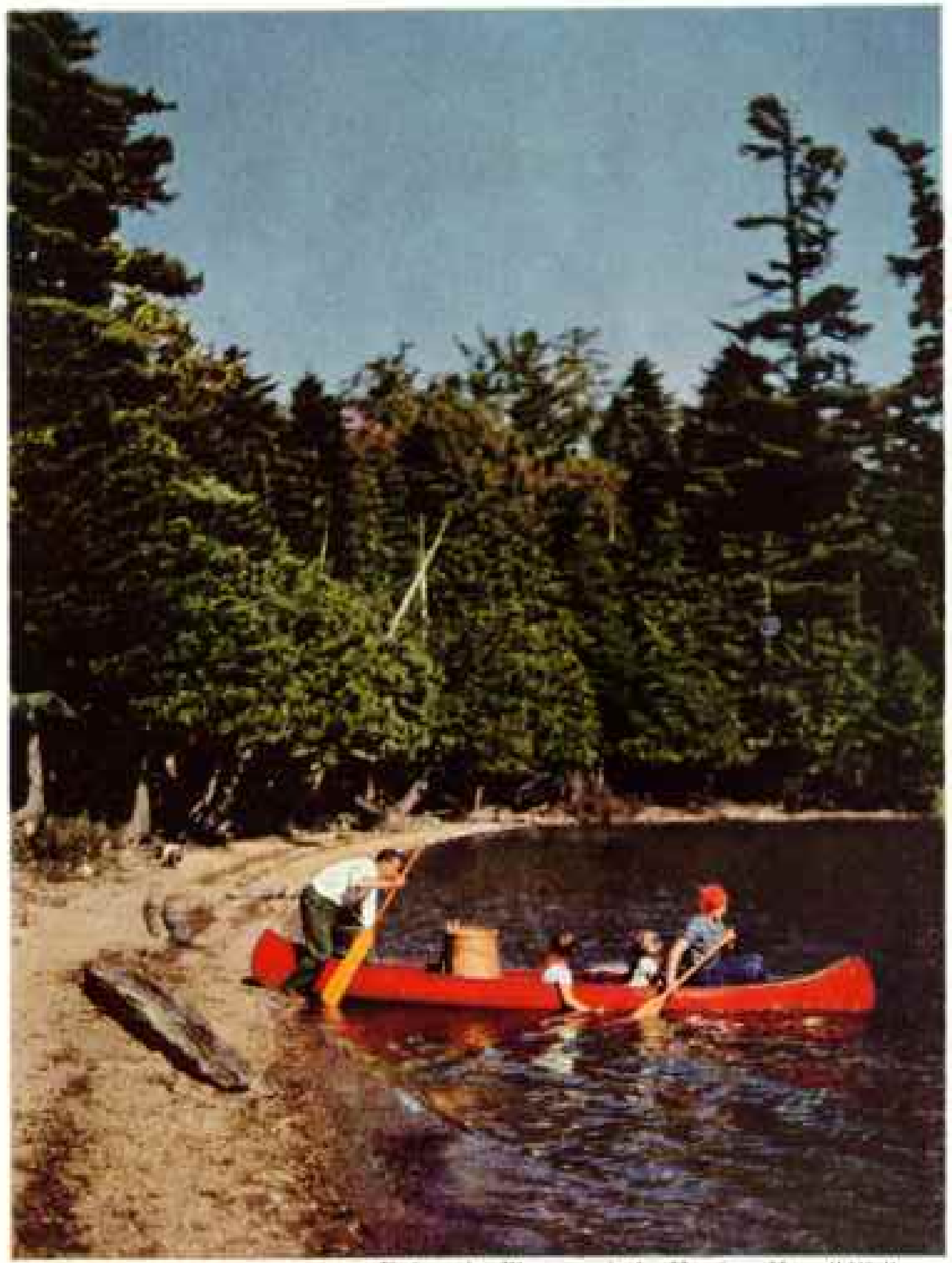
Dufaycolor Photograph by Harrison Howell Walker

ON THE BALD TOP OF WHITEFACE, EYES OF THE STATE FOREST SERVICE SEARCH FOR TELLTALE SMOKE

Early each morning from April to November a forest fire observer climbs to his watch in the wind-swept tower. While he scans the valleys or munches his lunch, he good-naturedly tries to answer the questions of hundreds of visitors. To the right of the tower the long, skyward-pointing derrick arm shows where an elevator shaft was being driven straight down through the solid granite rock to connect with the new Whiteface Mountain Memorial Highway. This summer "motor climbers" may conquer the peak without having struggled an upward step.

HE TOTES HIGH HOPES IN THE BASKET ON HIS BACK

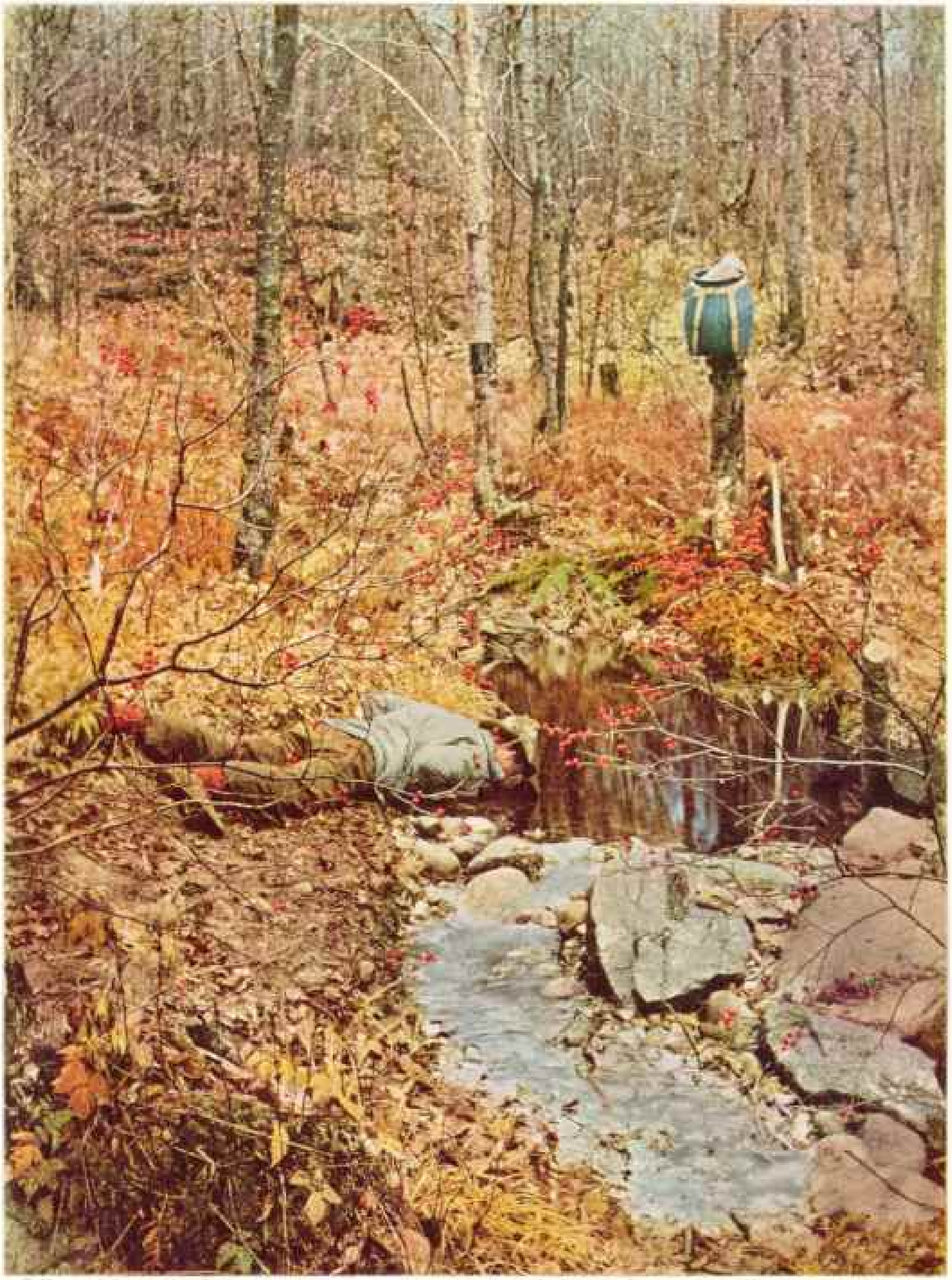
Hungry for a sizzling trout dinner, this canoeist reverted to his boyhood days and tried his luck in Bog River with an old-fashioned cherry pole. While patiently awaiting a strike, he watched humming birds flitting about the cardinal flowers.



Dufaycolor Photographs by Harrison Howell Walker

AS DID INDIANS, CAMPERS TRAVEL BY PADDLE ON AMPERSAND

Shores of many of the Adirondack lakes are as wild as they were in the days of the Iroquois. Perhaps the youngsters are imagining that scurrying squirrels in the woods or woodpeckers hammering at trees are redskins on the warpath.



 Dufaycolor Photograph by Harrison Howell Walker

NO NARCISSUS IS THIS LONE WOODSMAN, DRINKING DEEP FROM A CRYSTAL POOL.

With two days' growth of beard on his face, there's little danger of his falling in love with his own reflection, as did the youth in the Greek myth. It's crisp and cold in the autumn woods, but packing uphill and down is hot work. The pack basket, hanging on the tree, contains everything from an extra pair of boots to bread and bacon. Though the flaming foliage of early fall is gone, red berries cling to the black alder, or winterberry bush.

and probably the most attractive place ever given such a prosaic name (page 725).

Drawn up among the trees at the water's edge are all manner of roving homes, from sumptuous metal trailers with futuristic furniture and expensive rugs to humble home-made shacks on wheels and travel-stained old tents. Some week ends the population of this city-on-wheels climbs to around 2,000.

A Nature Exhibit identifies the common Adirondack plants and flowers.

In the bogs grow the insect-eating pitcher plant and sundew, the purplish sheep laurel, or lambkill, which poisons young stock, the bog rosemary, the scrubby Labrador tea, and that delicate little northern orchid, the pink lady's-slipper, or moccasin flower.

The very soil of these bogs is of vegetable matter—spongy sphagnum moss, sometimes many feet thick, which oozes water and soaks your feet. This moss has exceptional healing powers and large quantities were used for surgical dressings in the World War.

In the clearings flourish the bracken ferns, the fireweed (a striking crimson or pink), and the big yellow flowers of the evening primrose. Brilliant cardinal flowers hug the streams (Plate VII). There is plenty of color in the Adirondacks, even before the frost turns their slopes to sulphur and flame.

SARANAC LAKE, THE LIFE-GIVER

A busy little metropolis of the woods is the village of Saranac Lake today. But imagination conjures out of the past the picture of a rude, raw mountain hamlet—a collection of guides' houses and a store—past which an "old plush horse" is plodding, shaggy Kitty, Dr. Trudeau's mare.

In the buggy sits the intrepid Trudeau, a fur cap pulled down over his ears, an eager expression on his long-mustached, sensitive face, as he goes to visit a patient or returns to search in his laboratory for more ammunition with which to fight the enemy that eats away men's lungs.

It all began in 1873 when a guide carried young Edward L. Trudeau's frail form up two flights of steps in Paul Smith's hunting lodge a few miles to the north and laid him down on a bed, exclaiming:

"Why, doctor, you don't weigh no more than a dried lambskin."

The 24-year-old physician, just beginning a promising medical career in New York, had been stricken with tuberculosis—regarded as a death sentence then. He came to the Adirondacks purely by chance, and the climate helped him live a long and monumental life as one of the world's leading disease-fighters (page 738).

Lasting monuments to the beloved physician are the Trudeau Sanatorium, the Trudeau Research Laboratories, and the Trudeau School of Tuberculosis, which exports its learning to the world.

"HATBOX HOUSE" BECOMES A SHRINE

On the outskirts of the village stands a little white cottage where a tall and inexpressibly gaunt young man spent the winter of 1887-8, smoking innumerable cigarettes, huddling near the stove to keep warm, spending much of his time feebly but indomitably in bed, and littering counterpane and floor with scribbled sheets of paper.

Today, a steady procession of people comes here in quiet pilgrimage—children and grownups who have known the spell of *Treasure Island* and *Kidnapped*, the whimsical music of *A Child's Garden of Verses*, the clear-eyed courage of that self-written epitaph beginning "Under the wide and starry sky." For the young man in the velveteen jacket was the deathless "R.L.S."

In this "wind-beleaguered hatbox of a house" the consumption-racked Stevenson, here in search of health, did some of his finest work, for the climate agreed with him—though he never really learned to like the dour cold of an Adirondack winter, and soon left for the South Seas where he died. Still, there was something electric in the dry air of this wilderness (page 721).

On the porch of the little Stevenson Cottage is a bronze plaque by Gutzon Borglum. It shows Stevenson in his heavy dogskin coat and beside him is this quotation:

> "I was walking in the verandah of a small house outside the hamlet of Saranac. It was winter; the night was very dark; the air clear and cold, and sweet with the purity of forests. For the making of a story here were fine conditions.
>
> "'Come,' said I to my engine, 'let us make a tale.'"
>
> —"The Genesis of Ballantrae"

Most of *The Master of Ballantrae* was written here, and several of Stevenson's immortal essays, including *Pulvis et Umbra*.

About halfway between Saranac Lake and Placid is the State Hospital at Ray Brook. Like the Trudeau Sanatorium, it has the atmosphere more of a club than a hospital. Color is artfully used as an aid to health.

Photograph by Edward L. Gockeler

"LITTLE RED," FIRST HOUSE IN AMERICA USED AS A SANATORIUM IN FIGHTING THE GREAT WHITE PLAGUE

You saw its picture on the Christmas seal in 1934. Still standing, at Trudeau, near Saranac Lake, it symbolizes the war on tuberculosis, and the efforts of that intrepid disease-fighter, Dr. Edward L. Trudeau (page 737). On a hill where the doctor used to hunt foxes he built this one-room red cottage in 1884 and to it he brought his first tuberculous patients, two girls from a New York tenement house. Today tiny, unpretentious "Little Red" is surrounded by the numerous up-to-date buildings of the Trudeau Sanatorium, a "tuberculosis university."

"Certain shades of blue, green, and brown on the walls are depressing," an official explained. "White is irritating to some patients. Yellow, rose, and buff are cheerful and help counteract homesickness."

INNKEEPER EXTRAORDINARY

To hundreds of people all over the world the Adirondacks still mean Paul Smiths.

In an ideal setting on Lower St. Regis Lake this bearded, regal guide conducted the country's most famous hunting lodge. Its principal asset was his personality, for Paul (originally Apollos) had an endless fund of stories, a ready wit, and an utter freedom from awe of plutocrats or royalty.

"When Paul Smith first came to the Adirondacks," the saying goes, "the woods were full of Indians. When he died they were full of millionaires: among both old Paul was equally at home."

Shrewd old Paul died in 1912 a millionaire himself, for he bought not only land but waterfalls, and sold electric power over a wide area as the north country developed.

Today much of the Paul Smith empire remains, but its most conspicuous center and symbol is gone—the big hotel on Lower St. Regis Lake. It burned in 1930.

"SIRED BY A SNEEZE"

To Paul Smiths in 1893 came a dynamic and distinguished gentleman, Mr. Melvil Dewey, founder of—among other things—the American Library Association and the Spelling Reform Association. Mr. Dewey was persecuted by hay fever, his wife by that kindred allergy sometimes known as rose cold. They sought a site in the Adirondacks where they, and others like them, might find surcease from seasonal ills.

Photograph by Earl McGurk

LOOKING DOWN ON RED FURY AND BILLOWING SMOKE—A RAGING FOREST FIRE

Such a picture of destruction is seldom seen in the Adirondacks today, thanks to unrelenting vigilance. But on May 28, 1934, a combination of long-continued dry "fire weather" and a spark from somewhere—perhaps a cigarette—gave rise to the Bay Pond Fire, worst Adirondack blaze in more than a decade. The holocaust, seen here from a plane, burned 6,587 acres of Franklin County forest before an army of men, with fire trucks and pumps, finally brought it under control.

"Well, Dewey," said the sage of the St. Regis Lakes, "everybody knows there ain't a finer place in the hull woods than Placid."

When the Deweys looked down upon Lake Placid and noted that the air was comparatively sneezeless, they decided to establish their Eden here. Thus, as T. Morris Longstreth has playfully put it, the Lake Placid Club was "sired by a sneeze."

Through the years it grew in importance and dignity, assuming somewhat the stature of a university in the wilderness.

A reminder of Mr. Dewey and one of his major interests may be seen in the big clubhouse on Mirror Lake today—a posted plea for simplified spelling. And Adirondack Loj near by is officially and emphatically "Loj," not "Lodge."

At world-famed Lake Placid—and to a less extent elsewhere in the mountains—increasing thousands every year are discovering the appeal of the Adirondacks in winter: the thrill of ski trail, frozen lake, toboggan slide, or bobsled run, and the poetry of evergreens piled with snow (page 722).

WINTER SPORTS FLOURISH

Around this lively little village, scene of the Winter Olympic Games in 1932, spreads a network of skiing trails. They range from easy "nursery slopes" to the stiffest of grades high up on the mountain sides (page 747).

The lakes provide acres of perfect ice for skating and other sports. And up on Mount Van Hoevenberg is that terrific, breath-depriving plunge, the Olympic bobsled run.

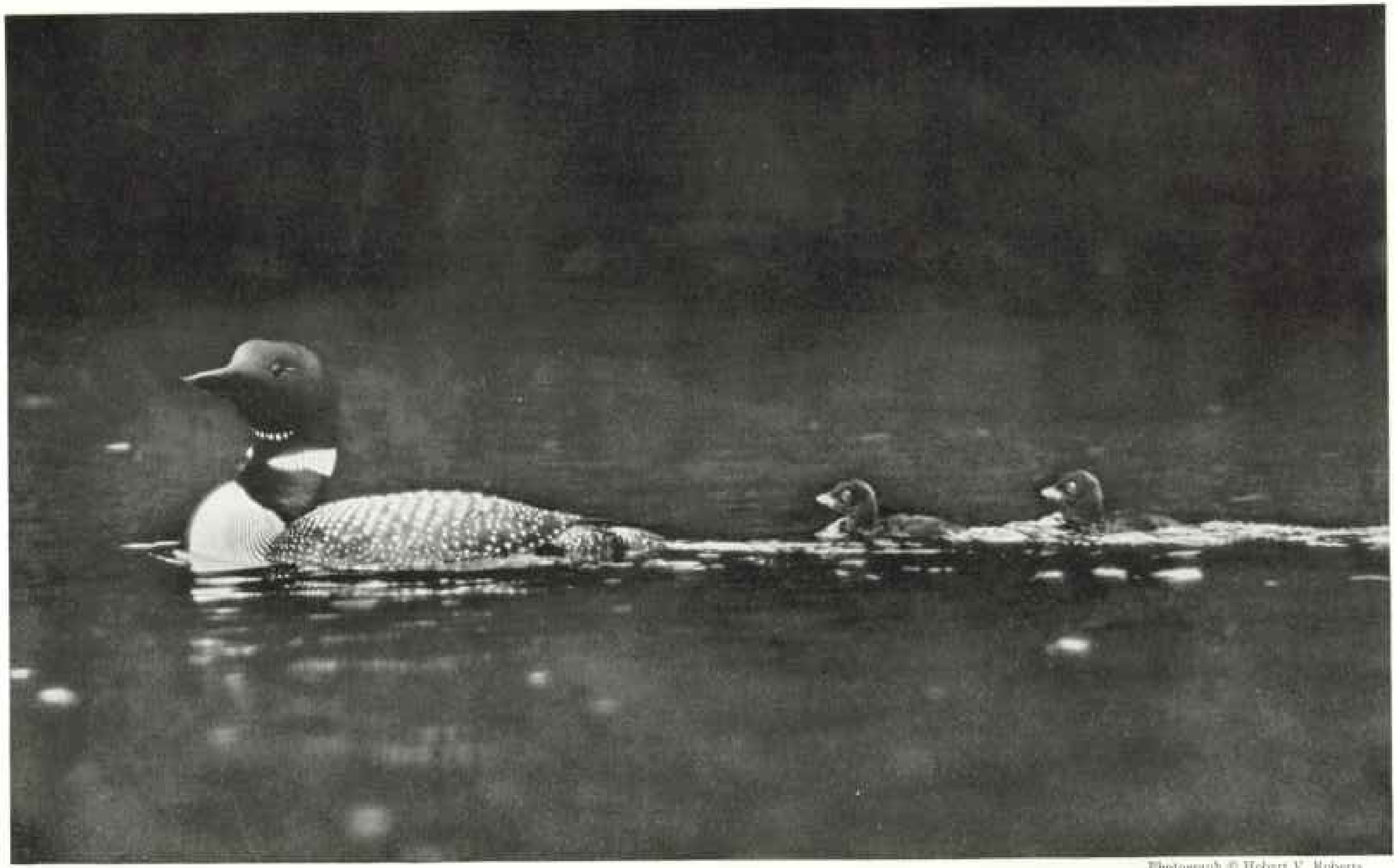
Thanks to the new Olympic Arena, with its artificially frozen surface, the visitor to Lake Placid may now go skating even on the hottest summer day—then cool off with a swim in Mirror Lake.

Above Lake Placid rises Whiteface, most conspicuous mountain for miles around, and one of the highest in the State (Color

Photograph by Aerial Explorations, Inc., N. Y. C.

"ROGERS' RANGERS" AND SIR WILLIAM JOHNSON'S MEN FOUGHT THE FRENCH AND INDIANS ON HISTORIC LAKE GEORGE

Here at the head of the lake, near the village of Lake George (left foreground), a monument marks the battlefield where Sir William and his Colonials defeated 1,400 red and white raiders from Canada in 1755. Down the lake, on the left, or western shore, a steep rocky slope called "Rogers Slide" commemorates a feat of the leader of Rogers' Rangers. Trailed by Indians, the Major climbed to the top of the mountain, rolled his heavy pack down the declivity, then, putting his snowshoes on backward, descended by an easier way. The Indians, seeing two tracks bound upward and none downward, thought Rogers had fought an adversary on top of the cliff and both had rolled over together. Later, when they saw him alive, they looked upon him with awe.



Photograph © Robert V. Roberts

"FOLLOW THE LEADER"—A LOONY PARADE

Two baby loons in their brownish-black down swim trustingly in the wake of their handsome parent on South Lake in the Adirondacks. They were hatched only about two days before in their nest in a beaver meadow. Come too close and the youngsters dive, swimming under water as best they can, while the parent flops about as if in distress to lure the intruder away. This is a daytime picture, though taken by flashlight. A characteristic sound of the Adirondacks is the weird haunting cry of a loon, like utterly brainless laughter.

Photograph by Harrison Howell Walker

"MUMPS," THIS PET CHIPMUNK WAS DUBBED, HE STUFFED HIS CHEEKS SO FULL

Shy at first, the little striped fellow soon learned to come at a whistle and eat rice from a cup. Any surplus was filed for future reference in handy pouches in his cheeks.

Plates I, II, and VI). Yet even a two-year-old or a centenarian can climb this 4,872-foot peak—in the family car and an elevator which is just being completed.

From Wilmington on the West Branch of the scenic Ausable River, an eight-mile highway, finished in 1935 and dedicated by President Roosevelt as a memorial to New York State's World War dead, lifts automobiles two-thirds of a mile to within 270 feet of the top.

Walls of rock stopped the road builders there. So a shaft was driven down through the granitic crown, and a 455-foot tunnel was blasted in from the road's end to connect with it. Now an elevator will whisk visitors up that last 270 feet—to behold a view that would be well worth climbing all the way on hands and knees to see.

Far to the north, where that smoke lies, is Montreal, beyond the St. Lawrence. There to the east is the glimmer of Lake Champlain; beyond are Vermont's Green Mountains, and remote in the distance, like the gauzy ghost of a range, float New Hampshire's faraway White Mountains.*

Those giants to the south are the highest peaks of the Adirondacks—Marcy and MacIntyre, with their clustering companions, Gothic, Haystack, Saddleback, and Colden.

At the foot of Whiteface rests Lake

* See "From Notch to Notch in the White Mountains," by Leonard Cornell Roy, in THE NATIONAL GEOGRAPHIC MAGAZINE for July, 1937.

Placid, serene and full of islands (p. 724). Off to the north loops the Saranac River. One could stand here all summer and still find new things to see in such a view.

REGAL MARCY STANDS ALOOF

Mount Marcy is different. There is no royal road to conquest over it. Aloof it stands, with no roads near its base. "Come under your own power," says New York's highest peak, "or do not come at all."

Just 100 years before, the first recorded ascent of 5,344-foot Mount Marcy had been made—on August 5, 1837, by Professor Emmons of Williams College and other scientists. Now New York State authorities and the Adirondack Mountain Club were planning a commemorative climb. Lithgow Osborne, State Conservation Commissioner, asked me to join his party.

Photograph by Douglas Finch

"TAKE YOUR MEDICINE LIKE A GOOD BOY"

Dr. Louis E. Wolf deftly lands a pill squarely in a live brook trout's stomach. He is pathologist at the State Fish Hatchery at Rome, New York, from which Adirondack waters are largely stocked. Studying fish diseases is his specialty. Here, to determine whether fatty degeneration of the liver is brought about by overfeeding, he administers a capsule containing phosphorus dissolved in olive oil.

Our route led through the rocky chaos of Avalanche Pass, choked with gigantic mossy bowlders which came cannonading down the mountain slopes above with fearsome force in some long-past yesterday.

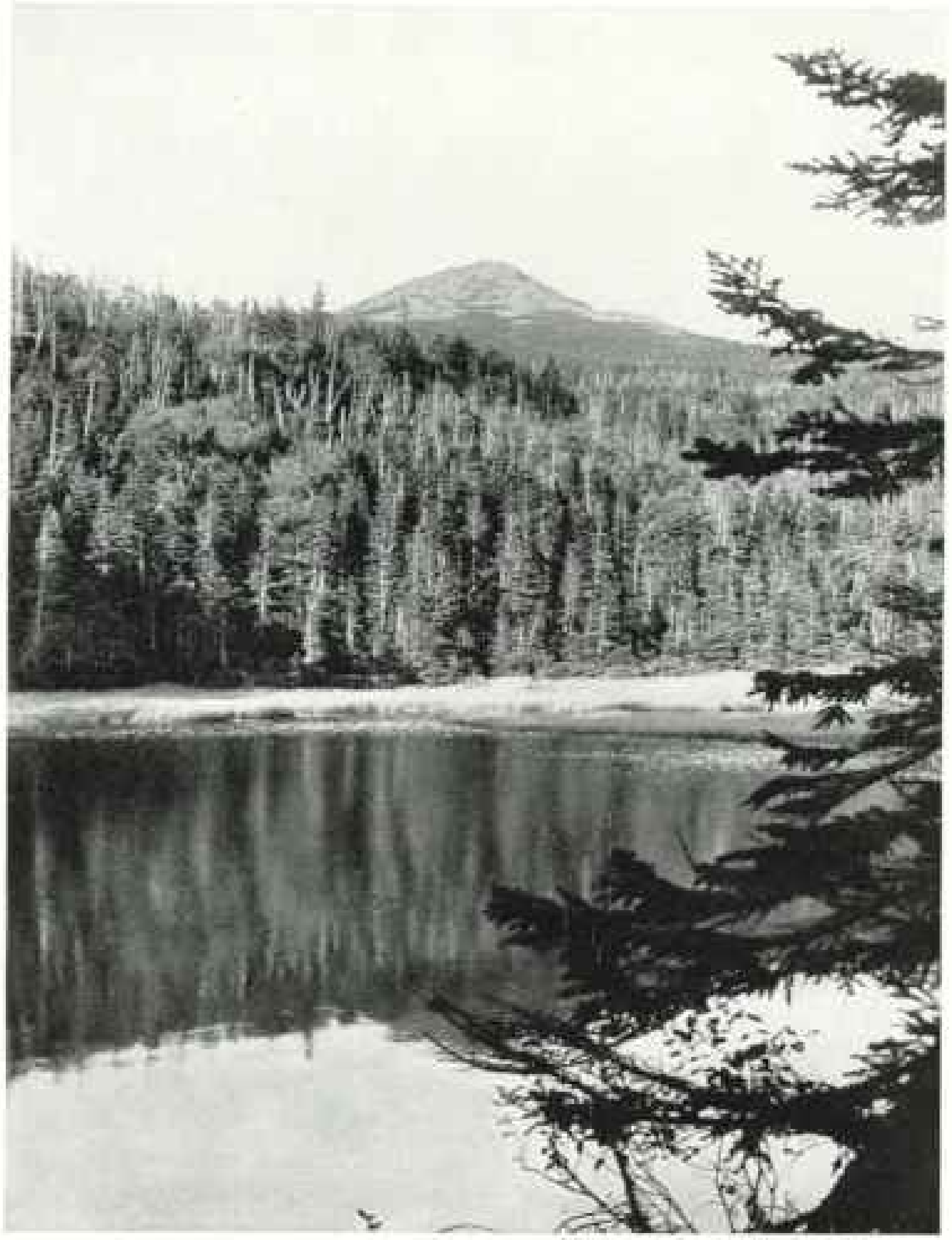
Dinner of brook trout from Lake Colden's icy waters, a few yarns before a blazing fire, then bed between woolen blankets.

Morning came with rain and haze. Would Marcy's top as usual be wrapped in rain? We hit the trail.

Up, up it climbed, along the Opalescent River, with glass-clear waters rippling over iridescent rocks; then Feldspar Brook, and finally its source, a shallow, peaceful pond called Lake Tear of the Clouds (page 744).

This tiny lake high on Marcy's slope may seem to have nothing in common with the full-grown river that sweeps past New York City more than two hundred miles away. Yet that wide stream has its humble beginnings here. Lake Tear is the highest pond source of the Hudson.

Near this lake, on the way down Mount Marcy on September 13, 1901, Vice President Theodore Roosevelt and his party stopped to rest. Up the trail came a breath-



Photograph from Philip D. Gendreau

IN LAKE TEAR OF THE CLOUDS, ON MARCY'S SLOPE, THE HUDSON RIVER IS BORN

Here in one picture are the State's loftiest peak and the highest pond source of its mighty river (page 743). The hoary top of Mount Marcy, the Indians believed, was the dwelling place of the Great Spirit.

less guide. President McKinley, shot at Buffalo, had taken a turn for the worse.

On the road between Aiden Lair and North Creek today a flag and a plaque on a bowlder mark the approximate spot where Theodore Roosevelt, careering through the night in a buckboard, automatically became President with McKinley's last breath.

Above Lake Tear the balsams grow more and more dwarfish, then finally disappear altogether. The last stage is a scramble up age-blackened, crumbling rock.

On the summit were some 200 others, including a four-year-old boy. Thus, on the one-hundredth anniversary of its first recorded ascent, Marcy the Cloud Cleaver played host to the largest assemblage in its history.

Yellow sunshine bathed the mountain top and only a few white wispy clouds cast shadows on the panorama. "Like standing on the biggest bubble in a boiling cauldron," wrote Longstreth of the view from Marcy.

Except for the plain where Lake Placid lies, the scene is unbroken wilderness. Below us now were all of New York State's thirteen million people—and not a one in sight!

On the way down the mountain, beside a brook, we found a neat box of sandwiches with a note attached:

"Too weary to carry further. We hope these are found by some hungry hiker. *They are clean.*"

Here indeed was a new high in the camaraderie of the trail!

Pausing only long enough to doff damp clothes and don trunks, we walked gratefully into the cold, electrifying waters of Heart Lake, which we had seen winking up at us when we stood on the top of Marcy three hours before. No water ever felt better than the bracing coldness of an Adirondack lake at the end of a weary trail.

Shadows were lengthening, but there was time, if I hurried, to visit the old home of John Brown, the Abolitionist, at North

Elba before night fell. Somehow appropriate was this twilight setting—the mountains purpling in the sun's last rays, the shadows curling about the rough-hewn rock where "John Brown's body lies a-mould'ring in the grave."

In imagination I could see the big, bearded man, rough-hewn as the rock that covers him, come rolling into these mountains from New England in a creaking ox-cart with wooden wheels five feet across; I could see him laying his plans to make this a depot on the Underground Railroad for escaped slaves being smuggled to Canada, and a homeland for any negro who wished to settle here.

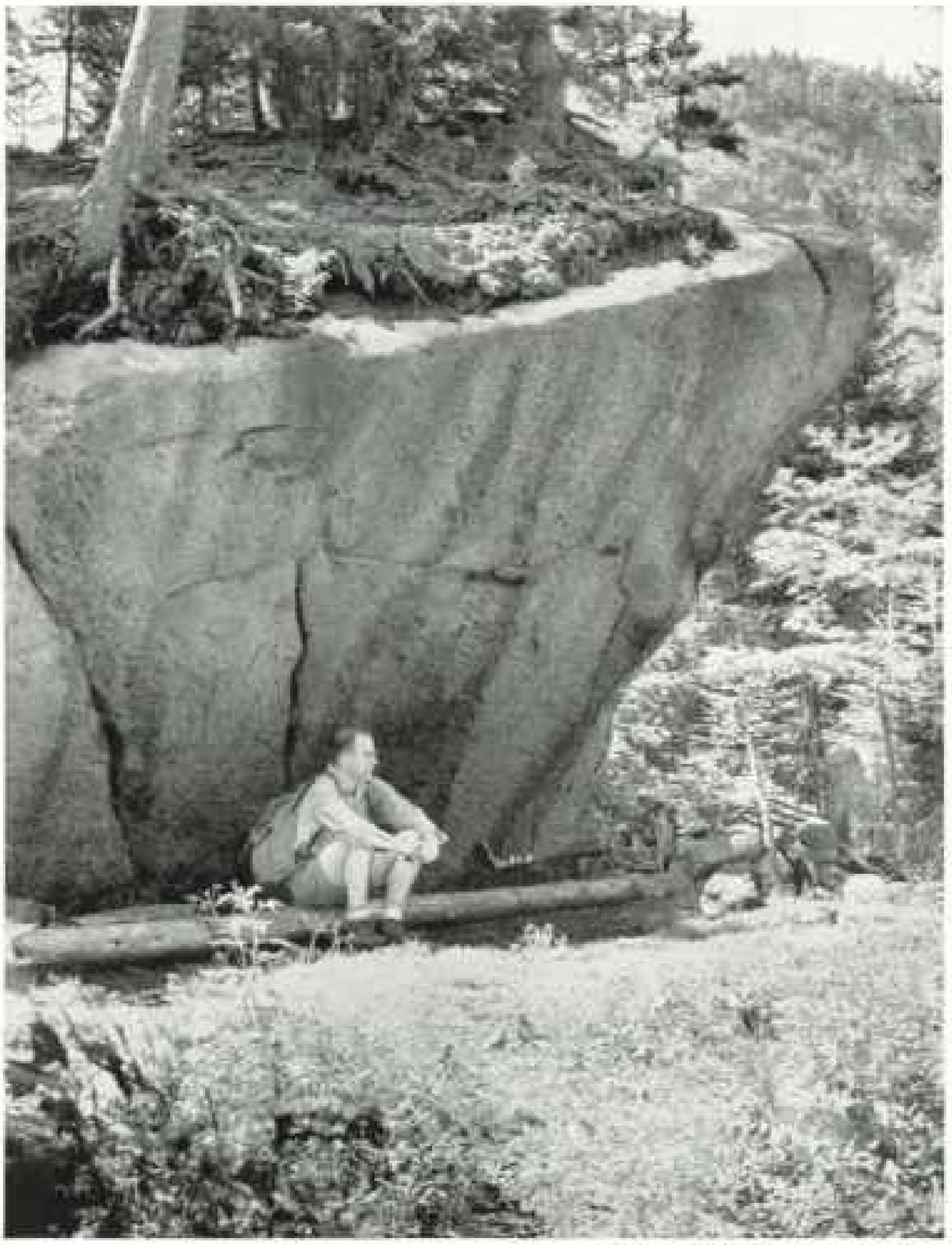
I could see him making his own tombstone by carving his initials in this rock before he started off on that utterly crazy, forlorn hope at Harpers Ferry. I could see John Brown, with a wild, fanatic light in his eyes, the eyes of a zealot——

Then, a few minutes later, on the outskirts of Lake Placid, I talked with an 86-year-old negro who had actually known John Brown.

"Yes, I sang at his funeral," said Lyman Eppes. "My whole family sang at his funeral: 'Blow Ye the Trumpet, Blow!'

"Mr. Brown used to hold me on his knee and talk to me. He was a kind man, was Mr. John Brown."

Maybe there were two John Browns—the hot-eyed fanatic his foemen knew and the gentle, fatherly friend a pickaninny of long ago will remember to his grave.



Photograph by W. A. Camelman

NATURE'S OWN SHELTER FOR THE WOODS WANDERER

This is Slant Rock, on the trail of that name between Keene Valley and Mount Marcy. With the help of man-made improvements, there is room here for several persons to sleep snug and dry—if not warm.

There is endless appeal in this north country—in the tumbled terrain of the Chateaugay region up toward Malone, in the water-sculptured witchery of Ausable Chasm (page 726), in the mountain-surrounded sequestration of Keene Valley and Elizabethtown.

But the remaining days of my odyssey were running short. Eastward now, then south along Lakes Champlain and George, old watery "Warpath of the Nations."*

*See "New York—An Empire Within a Republic," by William Joseph Showalter, NATIONAL GEOGRAPHIC MAGAZINE, November, 1933.

Photograph by Frederick G. Vosburgh

NICK STONER, ADIRONDACK PIONEER, STANDS IN BRONZE ON A HILLTOP AT WHEELERVILLE BETWEEN CAROGA AND CANADA LAKES

His antipathy for Indians was fired by the memory of a massacre in which his father was slain. In near-by Johnstown still stands the old jail in which he was locked up—for one night only—for braining an Indian with a red-hot andiron in a tavern fight. At Canada Lake people point out the island, a fifth of a mile offshore, to which he is supposed to have swum under water to escape braves after his scalp. Feats of another early Adirondack woodsman, Nat Foster of the Fulton Chain, may have helped inspire Cooper to create "Natty Bumppo," in the *Leatherstocking Tales*.

At Fort Ticonderoga, on the Lake George outlet, that homespun strategist, Ethan Allen, backed by his Green Mountain boys, demanded—and received—the surrender of the sleepy and astounded British garrison "in the name of the great Jehovah and the Continental Congress."

But even if it had no history, 32-mile-long Lake George would still command attention. It is the largest of all the Adirondack lakes (Champlain is not really in the mountains) and one of the most appealing (p. 740). Many of its scores of islands are State-owned, with camp and picnic grounds. At Conklingville a dam has transformed the valley of the Sacandaga River into the second largest lake in the mountains, 27 miles long.

In August, a dry month, when I went through, they were turning the Sacandaga River on every morning and off every night, when the factories downstream would not be needing it for power. A nonchalant attendant shut off a river running 4,800 cubic feet a second about as easily as you turn a faucet in the kitchen sink.

On up the Sacandaga River we drove, to Northville, and finally to tiny Speculator,

Photograph by AP

WING-FOOTED VICTORY AT LAKE PLACID! BIRGER RUUD OF NORWAY WINS THE 1932 OLYMPIC SKI JUMP WITH A LEAP OF 220 FEET

When the world's crack skaters and skiers came to this famed Adirondack resort for the Olympic championship events in February, 1932, winter seemed to be on strike. Ordinarily at that time of year the mountains are blanketed deep in snow, but on this occasion the elements balked and tons of it had to be gathered, with shovels and trucks, to make a take-off and adequate landing place.

known the world over as a sports page dateline. The seeds of its fame were really sown on a day in 1919 when two marines who had been in France together landed at Hampton Roads. One was a big, soft-spoken chap who had won the light heavyweight boxing championship of the American Expeditionary Force. The other was Bill Osborne, whose family ran an inn at Speculator on Lake Pleasant in the Adirondacks.

"Gene," said the little fellow, "when I see you again you'll be fighting for the heavyweight championship of the world."

"Well, Bill," said Gene Tunney, "when I do, I'll come to Speculator to train."

Seven years later Bill Osborne got a telegram from his friend. He was going to meet Jack Dempsey for the heavyweight championship of the world and he was coming to Speculator to train.

Tex Rickard, the promotor, had other places in mind, but Tunney refused to consider them. "No," he said, "I made a promise to a friend."

Tunney prepared here for all three of his title bouts, after which he hung up his gloves and retired as undefeated champion. Two other heavyweight champions, Max Schmeling and Max Baer, trained here.

On Cedar River, near Indian Lake, I

Photograph © Hobart V. Roberts

A GREAT BLUE HERON GRABS A MINNOW—AND TAKES HIS OWN PICTURE

The live fish looked like a made-to-order meal—but there was a string attached! Result: one astonished heron, and a perfect self-portrait of that spindle-legged fisherman. The place: South Lake, about thirty miles north of Utica. This striking bird, with a wingspread of as much as six feet, is often seen in the Adirondacks, either in flight or standing in the shallows, patiently fishing. Big fish it first stabs and disables; little ones it tosses in the air and swallows headforemost.

spent the night in a logging camp where spruce is cut and peeled for paper pulp. Meals are enormous—the teacup is a handleless tin bowl as big as a child's head. Most of the men are French Canadians.

"Zees companee he drive hees pulp down reevaire hondred miles," one explained.

The big pulp drive is in the spring. The four-foot lengths of spruce, peeled white, are boomed down the river by a rush of water released from a dam. Men follow the drive, picking up the heavy lengths where the freshet casts them on shore or shoals, sloshing through the icy water.

Far down the "reevaire"—at Glens Falls on the Hudson—I saw these pulpwood lengths turned into paper. The mill at the water's edge was running twenty-four hours a day. Ceaselessly the big machines chewed spruce wood into a pulpy mass, rolled the pulp into sheets, and reeled off miles of paper. Spruce trunks which stood not long ago in Adirondack solitude will find their destiny in busy cities, bearing in black ink the news of unpredictable tomorrows.

Southward we went, toward Albany, with the Adirondacks melting into the blue of August sky. But everybody else seemed bound in the opposite direction. In steady procession came the cars, many with trailer, tent, or canoe. "East Simmers in Record Heat," headlines howled. Ahead of them stretched the Adirondacks, cool, vast, and inviting.

Millions strong every year they come, a host of the city-weary finding new life in the old hunting grounds of "Tree-eaters" and Iroquois.

CRUSOES OF CANTON ISLAND

Life on a Tiny Pacific Atoll That Has Flashed Into World Importance

By Irvine C. Gardner

EVERY MAN has a secret yearning to be a Robinson Crusoe. To us opportunity to satisfy this desire came when we landed on Canton Island to observe an eclipse.*

Our adventure began as soon as the National Geographic Society-U. S. Navy Eclipse Expedition of 1937 left Honolulu. Our ship, the Navy seaplane tender *Avocet*, was traveling southward, and the heavens began the change which was to continue until we reached our destination.

BLAZING SUN BUT NO SHADOWS

At noon of the second day out, the sun was neither north nor south of us, but exactly in the zenith. Several of us left our noon meal to check this unusual spectacle. The dictionary has a name for us, ascians; that is, beings who cast no shadows.

During the remainder of our voyage the sun each day was farther and farther north of us.

The pole star sank toward the horizon until it finally remained quite out of sight, and Alpha Centauri, one of our nearest fixed stars (distant 4.3 light years, a little more than 25 million million miles), first appeared above the southern horizon and finally attained considerable height. The Southern Crosses, both the true and the false, replaced our familiar but now invisible constellations of the northern sky.

On the morning of the seventh day, after sailing a course 27° west of south, we reached Enderbury, a coral island approximately three miles long and one mile wide (page 750). This was the spot originally selected for our eclipse observations, but unfortunately it afforded no anchorage.

Balked by these unfavorable conditions, we were obliged to proceed 43 miles farther to Canton, another island of the same group (page 751). We anchored at Canton in the early afternoon and a landing party went ashore.

Those of us who remained on the *Avocet* enjoyed the most remarkable angling of our lives. The water was literally alive with fish. Schools of them could be detected by modifications of the ocean surface a half mile away, and when they approached the ship we saw that they were all of a size and packed together like sardines.

Possibly the fact that the ones in the center are safest from enemies accounts for this crowding. In the aquarian world the law of survival is ruthless, creatures of each size serving as food for the next larger.

Projecting above the surface of the water were the dorsal fins of many sharks. We had been told that the sharks were not particularly dangerous to a living person and that if one came too near us while we were in swimming, our proper procedure was to kick it in the nose. Authority for this can be found in print.

However, after about 30 minutes of sport that first afternoon, Dr. Paul A. McNally pulled out the head of a large fish which he had just hooked. A shark had bitten off 20 or more inches of the catch while it was being landed. Enthusiasm for kicking sharks in the nose was greatly dampened. The nose and mouth are too close together. When in swimming, everyone immediately compromised with any shark that appeared by giving the shark the water and taking the land.

FISH THAT STRAIGHTEN HEAVY HOOKS

Even more dangerous than the shark was the sting ray, also called the stingaree. We saw this large, flat creature swimming horizontally, with its body, perhaps six feet long and four feet wide, just below the surface, suggesting a floating blanket. Several were hooked at Canton but none was pulled ashore. They swam very rapidly and could dispose their bodies to offer vigorous resistance when caught on a hook. Heavy hooks, specially forged on the ship, were used, but they always straightened out and released the fish.

Canton Island is an atoll, a coral island with a lagoon in the center. It is shaped, as George Hicks described it in a broadcast,

*See "Nature's Most Dramatic Spectacle," by S. A. Mitchell, and "Eclipse Adventures on a Desert Isle," by J. F. Hellweg, in The National Geographic Magazine for September, 1937, and Color Plates IV and V, accompanying this article.

Photograph from U. S. Department of the Interior

TWENTIETH-CENTURY PIONEERS RAISE THE STARS AND STRIPES ON ENDERBURY

A contingent under direction of the Department of the Interior touched at this South Sea atoll in the Coast Guard cutter *Taney* on March 6, 1938, and left behind four Hawaiians as permanent residents. Their dwelling, erected close to the flagpole, was built of material unloaded from the cutter. A tall signal tower, however, will be constructed of coral rock.

like a hollow pork chop. The strip of land is from 50 yards to a third of a mile in width. The distance around the lagoon, which is some nine miles long and three miles wide, is about 27 miles. The quiet stretch of water is almost encircled by the coral strip.

The Pan American Airways has surveyed Canton Island, which promises to be an important commercial airplane base in the South Pacific.

On the island are two beaches. The one inside is a smooth stretch of sand sloping rather steeply to the lagoon floor. That facing the ocean is a narrow sand strip sloping downward to the fringing reef, which extends perhaps 200 feet from the shore and upward to a sea wall of jagged pieces of coral, each larger than a football.

Walking along this strip of sand, one could find large numbers of small cowrie shells and the larger scalloped clamshells. In places the beach was broken by projecting ridges of dark-colored rock which I at first thought were parts of the original mountain or island rising from the bottom of the sea and upon which the coral island had grown.

Later I learned that this could not be the case, because borings on similar islands have shown that the coral rock extends as far as a thousand feet below the water. Since reef-building corals do not live more than 200 feet beneath the surface, that found at greater depths must have once been much nearer the surface.

The building of a coral island above the water requires the action of waves, and consequently the land seldom rises more than 30 feet above sea level.

This flatness of the island presents a peculiar appearance from a distance. Canton

Photograph from U. S. Department of the Interior

PERMANENT U. S. SETTLERS ARRIVE ON CANTON ISLAND

Boats from the Coast Guard cutter *Taney* pushed into the lagoon March 7, 1938, with seven colonists, supplies, and building materials. A radio station, residences, and a lighthouse of coral rock, similar to those recently completed on Howland, Baker, and Jarvis Islands, are being constructed.

appears as three narrow horizontal lines—the lowermost the bright sand; next, a dark line corresponding to the broken fragments of coral; and above that the beautiful blue of the quiet water in the lagoon. Much of the lagoon was very shallow and contained coral ridges which extended to within a few inches of the surface.

Only a few coconut palms have been hardy enough to survive the small rainfall. These formed a small cluster near where we camped and, under each tree, there was the debris of fallen coconuts and broken-off leaves that had accumulated, almost undisturbed, over a period of years. The sparse grass is poorly rooted, and has a dusty, bedraggled look such as is characteristic of the vegetation on mountains just at the timber line.

The remaining prominent plant is a large kou tree, pyramidally shaped, with a base perhaps 30 by 15 feet that serves as an apartment house for birds. On parts of the island there are low-lying bushes that also serve as nesting places, although the majority of the birds are content to rest on the bare ground.

About our camp, the most ubiquitous, entertaining, and persistent animal was the hermit crab (page 763). This queer creature furnished the comic relief. He is shaped like our fresh-water crawfish, about five or six inches long, but, unlike the crawfish, he lives in an appropriated shell which he constantly drags along with him. The hermit crab may be said to be the original trailer inhabitant, and he formed the habit long before we had automobiles.

Each tiny hermit crab, shortly after being hatched, instinctively searches for a particular kind of spiral shell shaped like our snail shells and backs into it. It does this to protect its hind body, which, unlike its armored fore body and exposed appendages, is soft and vulnerable.

The tail is curled into the spiral so that the shell becomes a part of the crab and is dragged along with it, trailer fashion, wherever it goes. As the crab grows, the shell is traded for a new and larger one. The full-grown crabs have shells about as large as the closed fist.

I saw a few large piles of these shells, unoccupied, and imagined that they might

be trade-in places where the crabs assemble each season to barter their old shells for new ones.

One day I saw such a trade take place. One crab had apparently abstracted the shell from another by force. The successful crab was wearing one shell and carefully examining the other to see if it offered any improvement. He balanced it in his pincers and carefully examined it from all sides, turning it, feeling it with his claws, and inserting his head into the interior.

After a most painstaking examination of several minutes the crab decided to make no change and moved on, leaving the extra shell. I placed it in front of the despoiled crab. A cursory examination apparently convinced him that it was the shell of which he had been dispossessed, or at least that it was much better than no shell at all. He quickly turned, backed into it, and went off rejoicing.

The portion of the crab that normally projects from the shell is a bright red similar to that of a boiled lobster, but the portion that is shielded from the sun by the shell appears anemic, lacking in color and strength.

The action of the crab indicates that he realizes his vulnerability when deprived of his shell. When frightened, he retreats into the shell and folds his large pincers across the opening, so that he is well protected. To clear the shell, his legs grow forward from their point of attachment to the body and then down, giving him a curious underslung appearance when traveling.

To us the marked characteristic of the hermit crab was his persistency. He was harmless, but the continuous scraping of his shell on the coral sand as he dragged it after him on his endless peregrinations through the tents was most annoying, particularly when we were trying to sleep. The remedy was to pick him up and throw him out, but he, or one of his colleagues, was again present in a surprisingly short time.

UNWELCOME BEDFELLOWS

The crabs are instinctive climbers and, like experienced mountaineers, they carefully reach upward with one claw and secure a firm hold which they test before they let go with the first. A blanket hanging down from an army cot to the tent floor presented a cordial invitation to the crab to climb up into the bed, and the invitation was always accepted!

Soap had to be placed out of reach or the crabs would gnaw it to pieces or carry it away. At evening they gathered in large compact masses at the water's edge as if holding a convention and, when the sun rose in the morning, they advanced up the beach to our tents, to seek shelter in the shade of the tent walls. Usually as many as a dozen could be found lying closely in a row on the shady side of the tent walls.

Mr. Charles Bittinger, the artist of our expedition, began marking the crabs on their shells with prominent numbers in India ink. This was soon discontinued, for it was evident that he would need a crew of file clerks to record the visitors to his tent alone. The tracks left by the crabs on the sand gave evidence of their large numbers and untiring activity (page 762).

NEEDED, A PIED PIPER

The rats on the island were less amusing, although probably more plentiful than the hermit crabs. When we first arrived, they did not seem particularly numerous. As they became familar with our refuse pile that accumulated near the mess tent, they increased in number until it appeared that they might have sent emissaries to summon all their fellows on the island.

These rats were not like the native species of our country, but of a smaller variety found on many of the South Sea islands. They were unbelievably tame and showed no hesitation in taking food from a wash-pan held in the hand.

I never saw more than two rats in my tent at once, although one member of the expedition insisted that there was a well-attended reunion in his tent each night. Some of the men awakened to find them on their cots. At any time after dark hundreds could be seen at the garbage pile.

Captain J. F. Hellweg had been forewarned about rats and had brought a shotgun with 500 shells. Few were shot, however. With only 500 shells one could do little more than fire a salute in the creatures' honor.

Several cans of rat poison had been brought by one member of the party and this, mixed with crackers, was fed to them for several successive nights. The rats partook willingly, and hundreds should have died, but the number returning each evening increased instead of diminishing.

At evening a powerful flashlight would show hordes of rats approaching from all

UNFURLING OLD GLORY ON CANTON ISLAND

STARS AND STRIPES REFLECT SUNRISE AND SUNSET ON CANTON ISLAND

Capt. J. F. Hellweg, U. S. N., and Dr. S. A. Mitchell hear George Hicks broadcast the ceremonies of unveiling the marker on Memorial Day, 1937. President Roosevelt placed Canton and Enderbury Islands under the Department of the Interior on March 3, 1938. Colonists landed and found intact this monument erected by the National Geographic Society-U. S. Navy Eclipse expedition.

Finlay Photographs by Richard H. Stewart

ON THE ASTRONOMER'S FRONT LINE, "MICHELANGELO" PLIES HIS BRUSH

Charles Rittinger, member of the National Academy of Design, the expedition artist, sets up his easel between Dr. Irvine C. Gardner's corona camera (left) and Dr. F. K. Richtmyer's clock tower.

 Finlay Photograph by Richard H. Stewart

UNDER A BLAZING TROPICAL SUN, THE EXPEDITION UNVEILS A STAR-SPANGLED MARKER ON MEMORIAL DAY

Captain Hellweg, in uniform, is about to remove the National Geographic Society flag from the concrete block. The flags, of porcelain enamel on steel, embedded on opposite sides, were presented to the expedition by Representative Virginia Jenckes, of Indiana (Plate I). Canton Island, on the route from Hawaii to New Zealand, is a potential mid-Pacific base for seaplanes. A coral ring encloses a quiet lagoon, natural berth for flying boats.

PAINTING IN THE LEE OF CANTON ISLAND'S "CANNON"

Mr. Bittinger portrays on canvas Dr. Richtmyer's driving clock nicknamed by his colleagues the "oil derrick." The structure houses equipment for studying the polarization of corona light. In the background stands Dr. Gardner's corona camera.

Finlay Photographs by Richard H. Stewart

SUCH RED QUILLS GRACED GIRLS' HATS OF THE GAY NINETIES

Polynesian chiefs also decked their headdresses with the long, wiry feathers which distinguish the red-tailed tropic- or boatswain-bird. To snatch the scarlet median tail quills, the purloiner waves one hand to attract the bird's attention, and quickly plucks them with his other.

Kodachrome Photograph by Dr. Irvine C. Gardy

ONLY WHEN THE SUN IS HIDDEN DOES THE MYSTERIOUS CORONA APPEAR

As the elusive mantle came into view, this natural-color photograph of the solar corona was made by the same camera that caught the 1936 eclipse in Russia (See "Observing an Eclipse in Asiatic Russia," National Geographic Magazine, February, 1937). The large black disk is the unilluminated face of the moon, which has come between the earth and sun. The red projections, termed prominences, are tongues of glowing hydrogen reaching tens of thousands of miles from the sun's surface. The greenish glow extending beyond the prominences comes from matter which is reflecting sunlight. To the eye the corona appears pearly white, but its spectrum has a prominent green line which may account for the tint shown. Because this photograph was made by a series of intermittent exposures equivalent to about 1/15 of a second in all, the brilliant prominences stand out clearly, but the extensions of the corona are not so long as those shown in the painting on the opposite page. A longer exposure would have recorded the streamers, but the brighter prominences would have lost their detail.

Painting by Charles Bittinger

LIKE A FLOWER BURSTING INTO BLOOM, THE CORONA BECOMES VISIBLE AT TOTALITY

As the sun was blotted out on June 8, 1937, Mr. Bittinger, artist with the expedition on Canton Island, recorded his impressions on canvas. Through high-powered binoculars, shafts of white streamers, some extending as far as 5,000,000 miles, were seen. Streamers are of a mysterious composition, still undetermined, and their activity may be likened to the violent eruptions of a volcano. Rose-colored prominences close to the edge of the moon are hydrogen. The duration of the eclipse on the island was 5 minutes and 33 seconds. Twelve hundred miles out to sea, maximum duration was 7 minutes 4 seconds, the longest since 699 A. D. The artist, to capture as much as possible of the detail in this short space of time, prepared in advance half a dozen backgrounds. The only variations in these sketches were in the sky. Some were blue, some violet, and others greenish, corresponding to the actual variations which were likely to occur. When the moon started across the face of the sun, he could devote his time to capturing the effect of the streamers, prominences, and similar phenomena.

Finlay Photograph by Richard H. Stewart

OLD GLORY AND THE GEOGRAPHIC FLAG FLEW ABOVE AMERICA'S NEWEST COLONY DURING THE SOCIETY'S ECLIPSE EXPEDITION

Four Americans, including a radio operator and three Hawaiians, settled on Canton Island under Department of the Interior instructions on March 7, 1938. A group of four Hawaiians was placed on Enderbury Island, 32 miles away, the day before the U. S. colonists landed at Canton. American officials visited the two islands in October and November, 1937, to prepare for the arrival of the permanent residents.

Kodachrome Photograph by Dr. Paul A. McNally

SEA AND SKY MINGLE IN A GLORIOUS COLOR RHAPSODY AS THE SUN SETS IN THE PACIFIC

Just as Kipling's dawn "comes up like thunder," so does the sun go down on Canton. Because the island is near the Equator, the sun's descent is rapid and almost vertical. As a result, twilight is short. On these waters American whaling vessels sailed more than a century ago. Canton Island was named for the sailing ship *Canton*, out of New Bedford, Massachusetts, which was wrecked there in March, 1854. In the manner of Captain Bligh of the *Bounty*, the crew of 31 rowed in open boats northwestward for 49 days, finally reaching Guam.

Kodachrome Photograph by Dr. Irvine C. Gardner

LIKE WHITE GLIDERS AGAINST AN AZURE SKY, LOVE TERNS SOAR OVERHEAD

Fluttering within arm's reach, the curious birds would peer under the brims of men's hats to inspect their eyes. Several members of the expedition tried to entice the coy visitors with bits of food.

© National Geographic Society — Philos Photograph by Richard H. Stewart

ALL PUFFED UP WITH PRIDE, ANGER, AND LOVE IS A MAN-O'-WAR-BIRD

Enormously inflated is the blood-red throat sac of the male during the breeding season. Despite the size of the balloon, expanded by a gas of strong odor, its owner is not hampered in the air. Mr. O. E. Sanders spreads the bird's wings, which measure about seven feet from tip to tip.

directions as far as the ray could be followed. Perhaps the rats lived on bird eggs. If so, this would explain why the bird population on Canton is less dense than on Enderbury.

BIRDS OBSERVE THE INTRUDERS

As soon as we set foot upon Canton, the beautiful white terns came in pairs and poised in the air just out of reach, watching us curiously to see what we might be planning. After a few days the terns near our camp ceased to find us interesting and returned to their usual occupations, but as soon as we wandered away from the camp to seldom visited parts of the island the less sophisticated terns would repeat the investigation.

It is a curious sensation to be followed by a pair of terns that remain not more than four feet distant. I unsuccessfully tried to induce them to alight on my outstretched hand. Their curiosity, however, enabled me to obtain the colored picture shown on Plate VIII. This was not taken with a telephoto lens, but with one of 50-mm. focal length on a 35-mm. film, and the entire picture, without trimming, is reproduced. These white terns are considered the most beautiful of the terns and are sometimes called "love birds" because they usually fly in pairs.

The boobies are very numerous, but are not dramatic in action or manner. They resemble domestic ducks in general appearance and exist on Canton in two species, the blue-faced and the red-footed. They are industrious, hard-working birds that devote their time to caring for their young. One evening a school of flying fish entered the lagoon, and the boobies busily swooped down upon them as they emerged from the water.

NATURE'S MAJESTIC AIRPLANES

The hermit crab may have been the most amusing, but the most kingly of the animals was the frigate bird, sometimes called the man-o'-war bird (Plate VIII). The male is characterized by a large red pouch on the throat which can be inflated to nearly the size of a football to project even beyond the powerful hooked beak of the bird. This pouch is a secondary sexual characteristic and the bird can fly with it inflated or with it half inflated and flapping from side to side.

In its construction the frigate bird has prior claim to many of the features of our most recent airplanes. His wings are narrow and very long, a wing span of seven feet being attained in one species. The body is small and streamlined. In flight his feet are pressed to his body like the retractable landing gear of a plane. The frigate bird is a marvelous flyer, one of the best in the world.

When this bird has a fish, he does not carry it in his bill, because that would produce extra wind resistance. Instead, the fish is swallowed; that is, stored in the fuselage, and regurgitated to feed the young at the nest. This practice is also followed by the booby and other water birds.

Curiously enough, these birds, although they nest on small islands and fly over the water, do not take off from it. Consequently, a frigate bird must catch its fish, if it secures them honestly, by swooping down to the surface of the water without making a landing.

By nature also it is a hijacker and obtains many of its fish by attacking the booby and other birds in the air and frightening them until they drop their prize. The frigate bird then deftly catches the falling fish and returns with it to its own nest.

Canton also has the red-tailed tropic-bird, or bos'n-bird. These birds are white with a tinge of pink and from the white tail project two long, narrow, red feathers.

So ardently were these feathers sought as souvenirs by the sailors that probably most of the tropic-birds on the island are now flying without them, awaiting the new feathers which will grow the following year (Plate III).

Sooty terns, upper parts dull black in color, plover, and bristle-thighed curlew were also seen, but not in large numbers. All of the larger birds were relatively tame and would remain on their nests while one approached as close as three or four feet. They could be caught with considerably less difficulty than a chicken loose on the average American farm. These birds do not rise from the ground readily and are more easily captured on a still day or when chased down the wind.

Contrary to my expectations, Canton was not unduly hot when one had shelter from the sun. We were there in June, which is midwinter for points south of the Equator, and at that time the sun was actually nearer the zenith at Washington

Photograph by Dr. Irvine C. Gardner

NOT TRACTOR TRACKS—JUST THE TRAIL OF AN ARMY OF HERMIT CRABS!

Soon after they are hatched, the scarlet creatures seek a small, spiral shell for a home. As they grow, they discard the old houses for larger ones. Captain J. F. Hellweg was amused one afternoon by one Canton Island veteran which took 35 minutes to make up its mind which of two shells it wanted. It inspected them carefully. Finally the crab made a choice, walking off with the new dwelling and leaving the old behind.

(sun about 16° south of the zenith) than at Canton (sun 26° north of the zenith). The air temperature was approximately 85 degrees in the daytime, and the trade winds provided a decidedly strong breeze at all hours. The sky was a deep blue with beautiful white cumulus clouds that show in most of our photographs.

The coral sand reflected light almost as well as the water, with the result that a photographic exposure meter registered higher illumination when directed at the sand than when pointed at the blue sky. Because of the bright sand, one was exposed to radiation from all directions, and it was very uncomfortable in the sun; but, with an overhead shelter for shade, one even felt chilly at times.

A pleasant feature was the absence of flies, mosquitoes, and similar pests. The trade wind made it impossible for them to remain on the island. The nights were delightful and we could sit outside in the evening and read by the light from our portable electric light plant in perfect comfort.

One aspect of Canton that appeals strongly to the Crusoe instinct is its relation to man in the past and the evidence remaining of earlier visitors.

ISLANDS KNOWN TO NEW BEDFORD WHALERS

Canton and Enderbury Islands are not shown on maps published in London in 1791 and were presumably undiscovered at that time.

The American whaling ships captured most of the whales in the neighborhood of the Equator, and the islands were certainly known to the whalers prior to 1828, for they are listed in a report to the Secretary of the Navy, prepared by Captain J. N. Reynolds in that year.

Captain Reynolds, who served several terms in Congress as a Representative from Ohio, partly based his report on conversations with New Bedford whaling captains.

At that time Canton was known as Mary Balcout's Island, and it has also borne other names, such as Swallow, Mary, Balcout, and Bulcot Island.

Photograph by Richard H. Stewart

HERMIT CRABS ENJOY SUN-BROILED SNAPPER FOR BREAKFAST

Carefully dragging their shells with them, the scarlet creatures find a fish that has been washed ashore on Canton Island during the night. The constant scraping of their "houses" as they pulled them along the beach was annoying (page 751). Snappers (Lutianidae) are common in the South Pacific and are closely allied to the red snappers of the Atlantic coast.

The New Bedford whaling ship *Canton* was wrecked on the island in 1854. Interesting details regarding the wreck are set forth in a letter from Horace Guild, of Boston, Massachusetts, who writes: "The information has been largely derived by word of mouth from Captain Wing and others of the crew to my mother (Mrs. Clara Wing Guild, of Medford, Massachusetts) and various members of her family.

THE "CANTON'S" EPIC VOYAGE

"The whaling ship *Canton*, of New Bedford, Massachusetts, sailed from that port on August 12, 1852," continues the grandson of Captain Wing. "Her clearance papers indicated that she was to fish for whales in the Atlantic and North Pacific Oceans.

"The captain of the vessel was Andrew Johnson Wing, of what was then Fairhaven and now Acushnet, Massachusetts. (The town of Acushnet was set off from the town of Fairhaven at a later date.) At that time he was 32 years of age and had been at sea in the whaling industry on several voyages. He was an experienced navigator and familiar with conditions in and on Pacific equatorial waters.

"The vessel was reported at Tahiti on January 27, 1854.

"On March 4, 1854, the vessel was struck by a severe equatorial storm. Her position at that time was supposed to be 2° 04′ south latitude, 172° west. The charts which they had indicated nothing of danger within 90 miles, but at 1:30 a. m., March 5, 1854, the vessel struck. At 6 a. m. the ship bilged, the larboard quarter washed away, and she began to go to pieces.

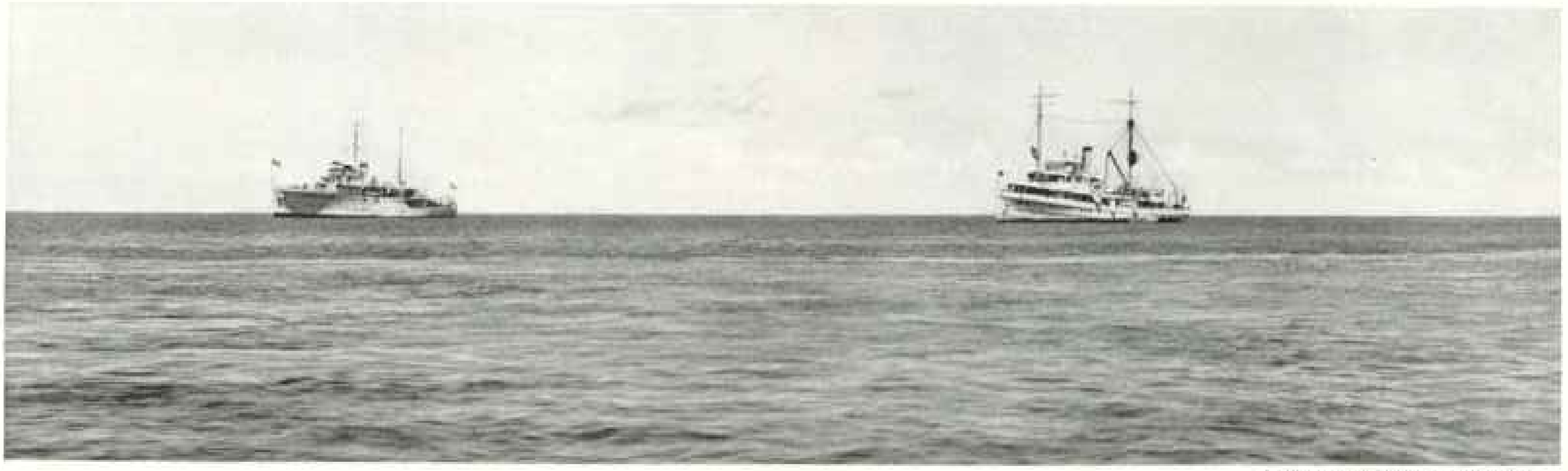
"William B. Carrol of New Bedford, first mate, volunteered to go through the surf to the sand bar, which had become visible, with a line, which he succeeded in doing with great difficulty.

"By the help of this line and the four small boats which the *Canton* carried, all 32 men reached the sandbank in safety, and later they were able to bring off a quantity of water and provisions.

"The place was a small uninhabited island. The men remained there until March 30, 1854, by which time their pro-

PERHAPS SOME DAY THIS BIT OF QUIET LAGOON WILL BECOME A BUSY MID-PACIFIC HAVEN FOR FLYING CLIPPERS

A city of tents has mushroomed overnight to house the Eclipse Expedition's scientific apparatus and personnel. The Stars and Stripes and the National Geographic Society flag flutter from the same pole.



Photographs by Richard H. Stewart

ANCHORED BEYOND THE SURF, MOTHER SHIPS OF TWO EXPEDITIONS STAND BY OFF CANTON ISLAND

U. S. S. *Avocet*, right, carried the National Geographic Society-Navy eclipse party to the coral isle in May, 1937. H. M. S. *Wellington* brought New Zealand scientists.

Photograph by Richard H. Stewart

MAROONED ON BARREN ENDERBURY ISLAND, A HORSE AND MULE SUSTAINED THEMSELVES FOR SEVERAL YEARS

Captain J. F. Hellweg and the eclipse group mascot, Jerry, inspect a cut on the island where guano was dug for export. In the latter half of the nineteenth century an American company gave up operations here and left the animals behind. When another firm renewed the work some years later, they found both alive and well. The mule was caught and used to pull trucks. Enderbury is 43 miles southeast of Canton.

visions and water had begun to run low.

"On the latter date, the 32 men set out in the small boats, intending to make the Kingsmill Group of islands in the hope of being rescued from that point, as it was often frequented by whaling vessels at that time.

45 DAYS WITHOUT A LANDFALL

"Having insufficient navigating instruments, they missed their destination entirely and found no land until they reached the island of Tinian, 45 days later. This is one of the Ladrones, or Marianas Islands, and at that time was Spanish territory. The representative of the Spanish Government on that island would not believe the story of their voyage, but, after permitting them to take on board some coconuts and fresh water, forced them to leave.

"Four days later, on May 19, 1854, they arrived at Guam. All four boats made the entire trip safely. No lives were lost, but great hardships of hunger and thirst endured.

"The four small boats in which this remarkable journey was made were 30 feet long, 6 feet beam, with the gunwale 22 inches above the water amidships. They were propelled by 5 oars and each had a small spritsail which could be used in favorable weather.

"Captain Wing, the first and second officers, and two seamen reached Hong Kong August 22, 1854, from which port notice of the loss was sent to the owners, which notice included a location of the island upon which the *Canton* was cast away.*

"No logbook of the *Canton* is extant. Such a thing was not preserved through so difficult an experience.

"Captain Andrew J. Wing has been dead for many years. I do not believe any of the crew are still alive. The youngest man on the boat at the time of the wreck probably was Thomas E. Braley. He would be close to 100 years of age if still living."

In commemoration of this epic adventure, the island was renamed Canton by Commander Richard W. Meade of the U.S.S. *Narragansett*, who tells of it in his report of 1872-73.

Enderbury Island was worked for guano by an American group in 1858 or shortly thereafter. At this time guano apparently was not taken from Canton Island, possibly because the deposit was not considered rich enough to justify the expense and labor. In the eighties John J. Arundel and Company of London reworked the guano deposits at Enderbury and also collected guano from Canton.

Sailing vessels were used to transport the guano. They anchored in the lee of the island, necessarily close to shore, and, on the relatively rare occasions when the wind changed its direction, the sailing boats were quite helpless and unable to keep off the reef. On Canton the guano vessel *Howard de Troop* went ashore in this manner in 1884-85.

Today, when one approaches Canton, the most prominent object seen on the beach is the steam winch from this ship. At the place where the ship struck, not much remains except a large number of iron spikes approximately two feet long which lie in profusion on the reef.

The hollow metal mast lies near the shore of the lagoon and has been rolled across the island by waves or been carried into the lagoon with driftwood and washed ashore. With it there are many long, heavy timbers, some still sufficiently firm to be used in constructing the wharf where our apparatus was unloaded.

The metal parts from a large number of old sheaves were on the island and were used by Dr. Richtmyer to supply additional weight to drive the clock that operated his camera (Plate III). The huts used by the guano collectors are entirely flattened, only the corrugated roofing remaining.

A lonely grave, protected by coral slabs turned on edge in the ground, tells of the death of one of the natives employed in the collection of guano.

These islands that have been lightly touched by history at long intervals in the past now apparently have an interesting future. Formerly of value only for the deposits of guano which have been exhausted, they may become important as steppingstones for the flying Clipper ships which navigate the South Pacific Ocean (page 764).

The United States Government has recently reasserted its claim to Canton and Enderbury, and colonists have been sent to occupy the two islands (Plates I and II and pages 750-51).

* Captain Bligh and 18 men went from Tofua, Friendly Islands, to Timor, in an open boat, 23 feet long, in 42 days. The distance was 3,618 nautical miles. The crew of the *Canton*, 31 men, went from Canton to Guam, in open boats, in 49 days—distance 2,900 nautical miles.

FLYING AROUND THE BALTIC

By Douglas Chandler

"AND in your Baltic rambles did you not take in Greece?" inquired the Sweet Young Stranger.

In a compartment in the Berlin-Paris express I was discoursing on my summer's adventures in that northern European region whose waters the Vikings once plowed with their rugged long-boats; whose barbaric people the Teutonic Knights chastened into Christianity; and whose reaches the vast Hanseatic League regarded for several centuries as its own private fish-and-amber preserve.

"Is it possible," I asked, "that you have been confusing the Baltic with the Balkans?"

Blushingly she admitted it.

The Baltic is a baffling body of water. Hopping from stone to stone around its shores cleared many fogs of uncertainty in my own mind.

Roughly a thousand miles long, including the Gulf of Bothnia, and varying from 50 to 200 miles in width, it slants obliquely north-northeast from the midriff of Germany's coast to the point where Finland and Sweden meet (map, page 770).*

This tideless ocean, called by German-speaking nations the Ost See (East Sea), measures, in its entirety, more than three times the size of the Adriatic; the Mediterranean proper is, however, five and a quarter times as large.

"Fresh water!" ejaculates the swimmer in rising from his first Baltic plunge. But no; real ocean it is, though at its bitterest the surface salinity attains only 8 per cent compared with the Atlantic's average 35 per cent and (in the region of Cyprus) 39 per cent for the Mediterranean.

In the upper reaches of its bays, where the eternal rivers bring down their melted snows, the water of the Baltic can be, and sometimes is, used for drinking purposes.

TO HANSA-LAND IN A HANSA PLANE

Between 6 and 6:30 o'clock on summer afternoons, huge trimotored aircraft with corrugated metal wings take off at five-minute intervals from Berlin's Tempelhof Airdrome.

The loud-speaker barks, "Passengers for Essen will please take their places. Passengers for Frankfurt, Breslau, Dresden, Copenhagen, Danzig." With daylight assured until after 9 o'clock, there is time to wing safely to one's destination.

Our route lay along the line of the Hohenzollern Canal.† After Stettin the golden June evening curdled suddenly into low-lying black mists. The daylight failed by perceptible degrees. A mere five minutes before Danzig's airport, fog obligingly melted into nothingness.

Zoppot lies halfway between Danzig, formerly "The Empress of the Vistula," and that lusty Polish infant metropolis, Gdynia, which in twelve years has grown to a population of 110,000 (pages 774-5).†

A CITY OF GAMING AND OPERA

Gracious forests come down close enough to Zoppot's broad beach to enable the trees to look in at the windows of the Casino where Polish vacationists pay tribute to the god of chance.

The Casino's director, a former professor at Königsberg University, commented on the naïve philosophy of the gambler. "They, with their systems and superstitions, their assumption of being smarter than the law of averages, have built the luxurious hotel where you are lodging."

Zoppot is proud of its long pier. The flags of all the world bedeck its sides; and upon its broad promenade one hears the speech of Babel. I arrived too early for the International Horse Race Meeting, but tennis, swimming, and surfboard riding were in full swing.

To the melodious war waged between Bayreuth and Salzburg,‡ Zoppot brings a valiant challenge—its Forest Opera. Wagner is presented by a picked cast of German singers. The dimensions of the scenic background are suited to the composer's grandiose conceptions.

Russian and Roman baths offer renewed vitality to those who weaken under the rigors of sport, gaming, and Wagner.

* See the New Map of Europe, issued as a supplement to The National Geographic Magazine for April, 1938.

† See, in The National Geographic Magazine, "Changing Berlin," by Douglas Chandler, February, 1937; "Poland of the Present," by Maynard Owen Williams, March, 1933, and "Land of the White Eagle," by Melville Bell Grosvenor, April, 1932.

‡ See "The Salzkammergut, a Playground of Austria," by Florence Polk Holding, in The National Geographic Magazine, April, 1937.

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FOR SIX CENTURIES MARIENBURG CASTLE HAS FROWNED ACROSS THE NOGAT

The footbridge, surmounted by a high barbed-wire barricade, separates Polish soil from East Prussia. The sign warns against carrying goods across the boundary. Once the fortress was the headquarters of the Knights of the Teutonic Order (page 769), which had undertaken the conquest and conversion of the pagan Prussians. Late in the fourteenth century the Knights attained great power, but their influence declined after the Poles defeated them in 1410 at the Battle of Tannenberg.

Aside from the two municipalities of Zoppot and Danzig, the territory of the Free City of Danzig includes two other sizable towns and 254 villages and hamlets—a total population of 407,000.

FRONT PORCH AN INDEX OF WEALTH

The farmhouses of Danzig and East Prussia, constructed with the barn as an integral part, have columns at the front, their number giving a clue to the owner's acreage.

Danzig, once among the wealthiest of the Hansa cities, still is a place of unspoiled medieval beauty (page 773).

The Stock Exchange meets daily in the Artushof, a magnificent 15th-century building. Within the great chamber of the Bourse are mural paintings used in the olden days as a test for wandering apprentices.

To prove "back home" that he had really worked at his trade in Danzig, an apprentice had to be able to mention certain phenomena among these murals, such as the maiden with the glass globe encircling her lovely head. The newcomer was required to measure with his arms the base of the huge white-tile stove which rises 20 feet toward the ceiling.

Like the medieval apprentices, I stooped and spread out my arms to measure. Above my head a bell clanged as of old, to signal that I had unwittingly performed an act of obeisance before the rear end of Till Eulenspiegel, a whimsical, moon-struck fellow of ancient German folk stories!

BIRTHPLACE OF SCHOPENHAUER AND FAHRENHEIT

During one of the interminable Hansa wars, a ship was captured and brought into Danzig. One item of its rich cargo was "The Last Judgment," painted by Memling in Brugge (Bruges) and destined for Florence.

Except for the years 1807 to 1815 when Napoleon "borrowed" it and installed it in the Louvre, this canvas has remained, the greatest treasure of the Free City, in Danzig's Church of St. Mary.

I roamed the city's cobbled streets,

searching out such spots as the house in which Fahrenheit, of thermometer fame, was born. Intrigued by the turtle which adorns the gable of Schopenhauer's mother's house, I took a pot shot with my camera.

In her memoirs, Johanna Schopenhauer records that in rainy weather the turtle used to move his legs and head. To my eyes he appeared a very solid, phlegmatic, stone citizen.

I was taken to see the monastery strongholds of Marienburg and Marienwerder, built in the 13th century by the Teutonic Knights, and admirably restored (p. 768).

A detour from the high road brought us to a point by the Wista River where three frontiers meet—Danzig, Poland, and East Prussia—the intersection marked with a three-cornered stone inscribed, "Versailles Treaty, 1919" (page 787).

One of Germany's leader schools, in which promising youth are being trained to fill government posts, is housed in a wing of mammoth Marienwerder Castle.

We pushed on because we were expected for tea at Schloss Finckenstein (page 797), one of the oldest inhabited private castles in Germany, and I wanted to inspect the "Schiefe Ebene" before pushing on to Königsberg for the night.

WHERE SHIPS CLIMB HILLS

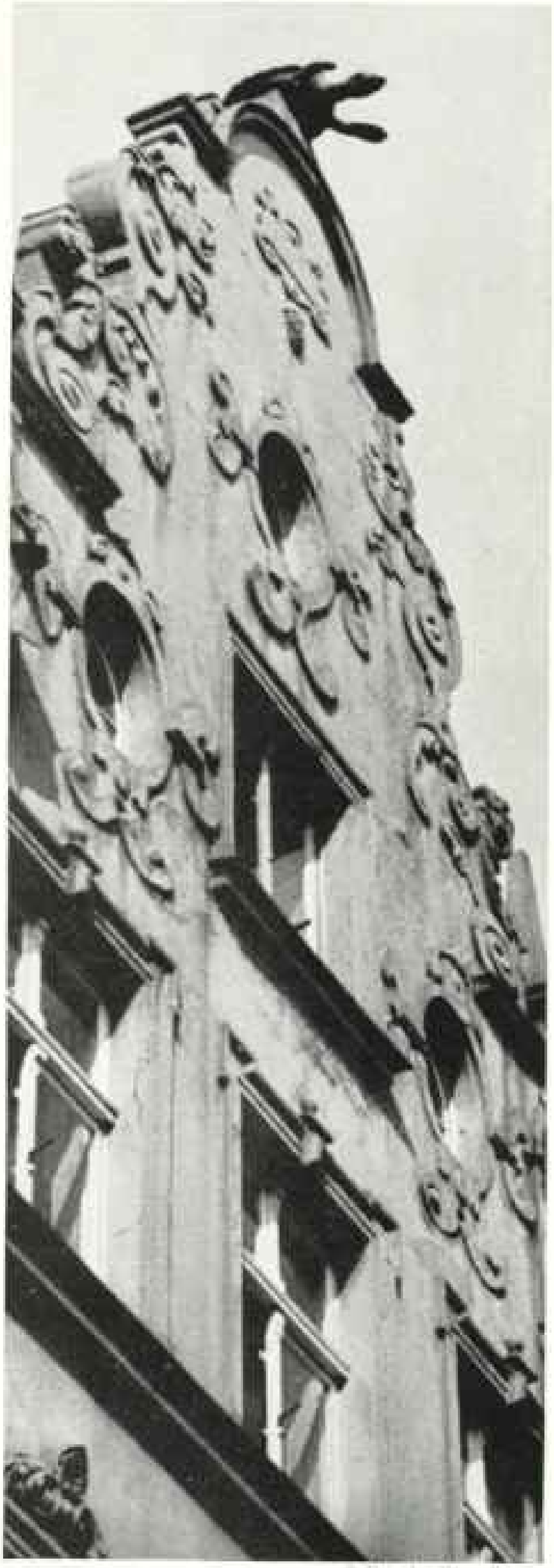
"Schiefe Ebene" means literally "slanting level," which is the paradoxical name for those places in East Prussia's artificial waterways where the canal ends in a hill, and then continues on another level. The slender canal steamer enters a sunken metal cradle; the cradle grips a moving endless-chain and lumbers shudderingly up (or down) the hill with its burden.

Königsberg (page 795) was the birthplace of Immanuel Kant. I browsed leisurely through the Kant Museum, enjoying its comprehensive collection of Kantiana.

"Once a year, on April 22, his birthday, the Königsberg Kantophiles get together for an evening of tribute to the master," I was told by the curator.

Then admirers of the philosopher partake of a cake. In the cake is baked a large bean. The Kantophile who draws the bean is obligated to prepare an address on the city's world-renowned son for the following year's anniversary.

Especially for its amber, "Baltic gold," I shall always remember Königsberg (page 786). The center of amber production is located at Palmnicken, on the coast 25



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LEGS AND HEAD OF THE TURTLE MOVE WHEN RAIN FALLS, LEGEND TELLS

Johanna Schopenhauer, mother of the pessimistic philosopher, and a novelist herself, was born in this house in Danzig. She records the reputed behavior of the stone tortoise in her memoirs.

Drawn by Ralph E. McAlest

EYES OF THE WORLD TURN TO CROWDED WINDOWS ON THE BALTIC

Klaipéda (Memel) in Lithuania, the Free City of Danzig, and the narrow Polish Corridor, extending northward to the infant seaport of Gdynia and severing East Prussia from Germany, continue to be turbulent spots in Europe. Before the World War all were part of the German Empire. Territory south and east of East Prussia, now portions of Poland and Lithuania, belonged to the Russian Empire. Wilno, once capital of Lithuania, has been a part of Poland since October, 1920 (pp. 777–784).

miles from Königsberg. The petrified resin is "mined," scraped up with steam shovels from a layer embedded in the bluff which lies a couple of hundred yards back from the water (page 772).

This so-called "blue-earth" stratum (argillaceous and micaceous glauconite) is then put through a gigantic sluicing apparatus which washes the amber chunks out from the surrounding mass (about two pounds to the ton) and sorts them according to size.

The other method of procuring amber is by "fishing." Sturdy fellows with nets wade shoulder deep through the low surf. The nets pick up from the sea floor quantities of blackish, excelsiorlike seaweed which carries smaller crumbs and nuggets of the precious material.

From Palmnicken the sorted amber is shipped to a factory in Königsberg where, by abrasive wheels, it is trimmed and fashioned into a fantastic array of trinkets, ornaments, and various objects. It is thence distributed to the markets of the world: girdles for the ebony hips of Sudanese beauties—chains formed of rounded chunks like doughnuts—a low-grade, yellow-white amber being preferred; prayer chains for the nimble fingers of Mohammedans; reddish-tinted pendants for the hats of Indian and Korean merchants; more useful wares for the Western World.

The factory director presented us with a polished morsel, in the translucent heart of which two delicate flies were imprisoned. Scientists have estimated the age of such prehistoric amber-embalmed insects at 30 or 40 million years; some say almost twice that number.

A SAHARA OF ELKS, NOT CAMELS

That slender ribbon on the map, running from Königsberg's coast across to Klaipéda (Memel) is the Kurische Nehrung—an enchanted, incredible strip of sandy Paradise (page 794). It encloses a shallow body of more or less fresh water called the

Photograph by Gustav Heurlin

17,000 RAISE THEIR VOICES IN THE NATIONAL SINGING FESTIVAL OF ESTONIA

Eighty-five bands lead the district groups, garbed in native costumes. This year the annual event in Tallinn (Reval), to be held June 24-6, will celebrate the twentieth anniversary of independence. Such songfests kept alive national spirit when the little Nation was a part of the Russian Empire. Works of Estonian composers and old folk songs are heard. Picked choirs sing cantatas and a symphony orchestra accompanies the massed chorus.

Kurisches Haff. These names derive from the Dukes of Kurland to whom the entire region once belonged.

Automobiles are not permitted on the Nehrung, but I breathed the word *Vatgeosoc* (a very potent incantation) and lo, special permission was granted, and a purring motorcar appeared. Over the highway to Kranz we sped. Then the hard road ended and we found ourselves on a sandy dirt road piercing a jungle of small trees.

"Watch for the elk now," said our guide. Since time immemorial this sandspit has been the habitat of herds of these wild creatures, not otherwise known in Europe except in Norway and Sweden.

Neither on the way to Rossitten, nor in two succeeding days on the Nehrung, did we catch a glimpse of an elk.

But at Rossitten, where the towering, naked dunes begin, came a double reward for our disappointment—the gliders at their practice, and a close-up of the famous bird observatory.

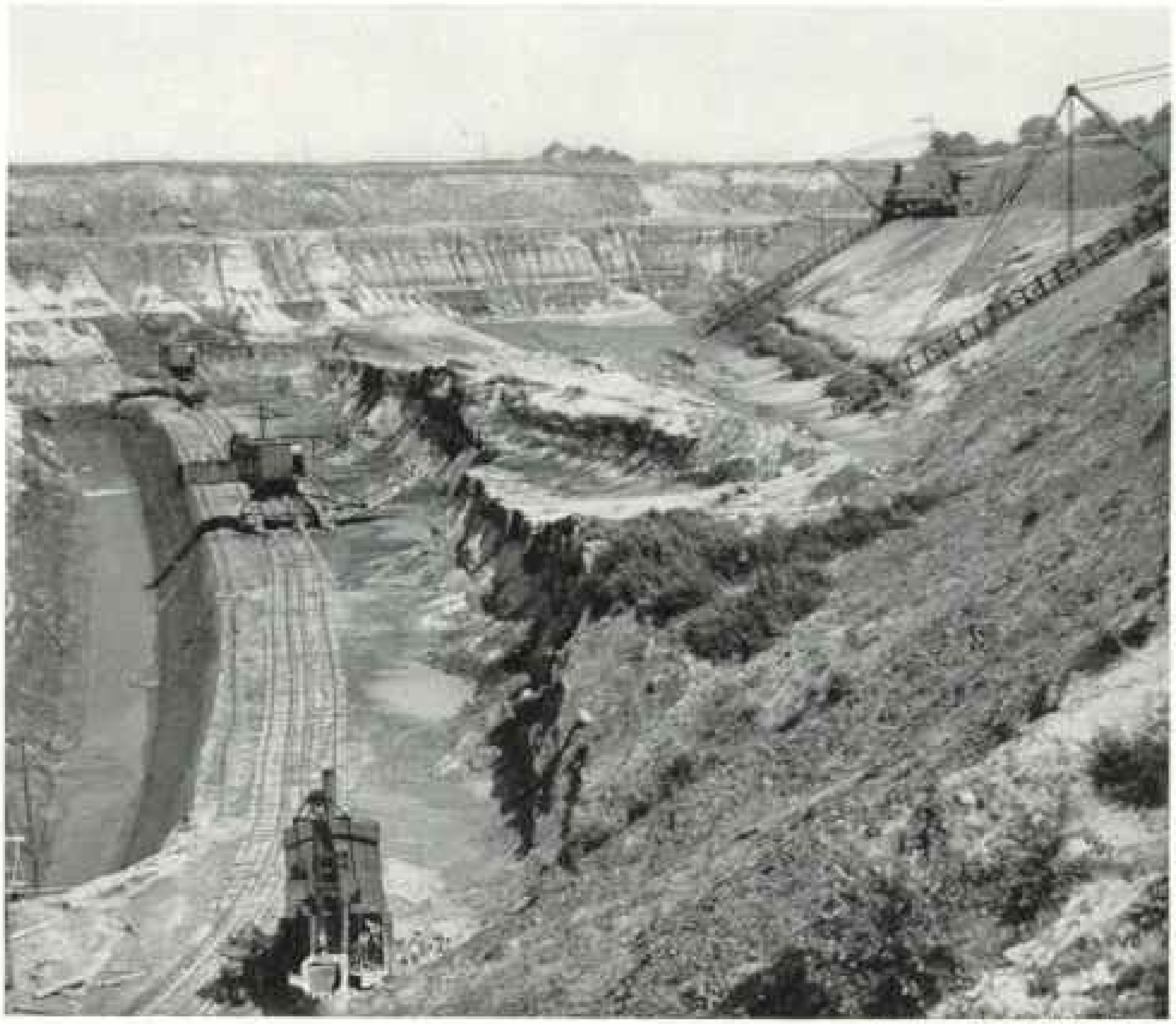
The glider students come in relays of 120; a course lasts thirty days. Singing lustily, the neophytes, stripped to the waist, haul the dainty winged craft up to the summit of the dune 200 feet above the sea.

Turn and turn about, each student, in his motorless craft, is snapped by recoil of a taut rubber rope into the shimmering blue air for a blissful gull flight to the plain below.*

The mascot, a little long-haired dachshund, regards himself as the official starter. When the summer sun turns its burning glass on the white sands, he cools himself under the shadow of a wing until the command is given, then rushes with delirious barking down from the dune's crest.

Very smart the young commanding officer looked in his pale-blue uniform; cordial his invitation to lunch. And of specially grateful memory is that ice-cold apple juice

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



Photograph by Wilhelm Tobien

DREDGES SCOOP UP "MELLOWED SUNLIGHT" STORED BY NATURE IN REMOTE AGES

Raw amber appears in light-colored strata, called "blue earth," on East Prussia's Samland promontory (p. 770). Ancient trade routes have been traced by the finding of "Baltic gold" in far-away places. This fossilized resin of prehistoric northern pine trees was even discovered in the tomb of Tutankhamen, Mycenaean burial places, and Phoenician cities. Pliny called it a "tear of resin."

after the hot hours we spent on the blistering dunes.

A PATHWAY FOR MIGRATORY BIRDS

The Rossitten bird observatory was founded in 1901 by Dr. J. Thienemann, and in 1923 endowed under the Kaiser Wilhelm Society.

A staff of ornithologists and trained observers studies the movements of the birds of passage and bands hundreds of young of all available species. Especially valuable is this station's study of the mating habits and migrations of the white stork along two distinct routes (page 789).

On the wall of the recently built bird museum hangs a framed letter. Its simple text bespeaks a tale of stork tragedy and of simple native faith:

Dist. Commissioner's Office,
Northern Darfur District,
Kutum, A. E. Sudan.
6 December, 1932

Messrs. Vogelwarte, Rossitten.

DEAR SIRS:

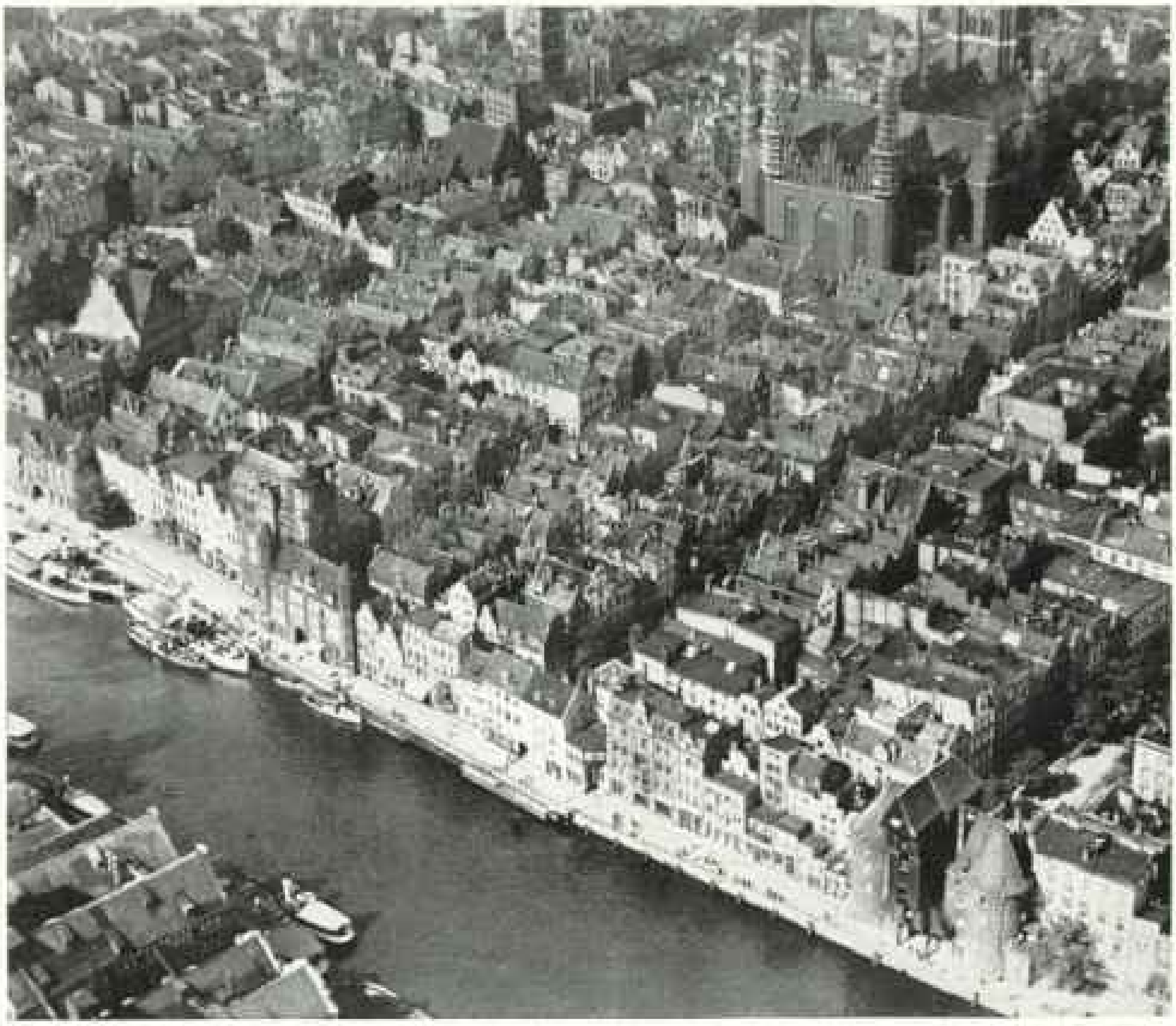
I have the honor to report that a dead stork was retrieved from the Malma (coaster), lat. 15 deg. 9 min., long. 26 deg. 10 min., having attached to its leg an aluminium ring bearing the inscription, "VOGELWARTE, ROSSITTEN, GERMANIA."

The ring has been retained by the chief of the Meidob tribe in whose territory it was found, as his people felt it was a visible symbol of the Deity's interest and encouragement.

Should you require the ring to be returned, I will arrange to do so, but I would be grateful if you would agree to leave it as a divine gift to a remote African tribe.

I have the honor to be your obdt. servant,

(Signed) District Commissioner.



Photograph from Douglas Chandler

OLD "WHEN KNIGHTHOOD WAS IN FLOWER," CROWDED MEDIEVAL DANZIG STOUTLY RESISTS CHANGE (PAGE 768)

In the heart of the city, split by the waters of the Mottlau, gabled buildings cluster along narrow streets. St. Mary's, one of the world's largest Protestant churches, begun in 1343, towers in the background. On the river bank, right, stands the Crane Tower, a landmark when the port was a granary for old Poland. Outside the ancient city walls, now torn down, modern building has made headway.

A strange phenomenon of stork migration is the fact that the River Weser in Germany forms a frontier. Storks that nest east of it travel around the east end of the Mediterranean more than 6,000 miles to eastern South Africa; those from west of this river make their course to Africa over southern France and Spain. Their course after crossing the Strait of Gibraltar and the Mediterranean is little known; beyond their entrance into the desert few studies have as yet been possible.

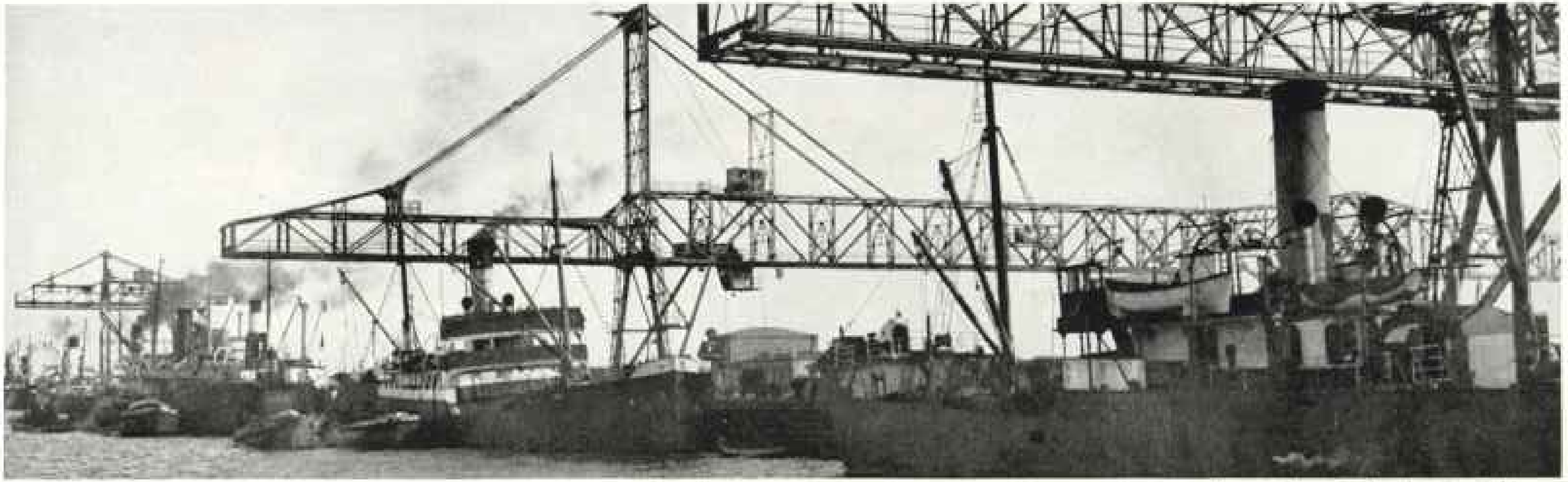
MOUNTAINS MOVED BY THE WIND

Wandering dunes, inexorably pushed about, surfaces corrugated by the wind; black-hulled boats with narrow, rectangular sails and bizarrely painted wooden pennants (page 789); small, tough horses and herds of meager cows nourished by fodder brought across the Haff in the wimpled boats from the mainland; a warmhearted, hospitable people, undismayed by the relentless hardship in their struggle for existence—such are the impressions after visiting the Nehrung.

One receives a faint hint of the meaning of the word "infinity" through the myriad non-biting flies which lie hidden in the shrubs and trees. At the approach of the trespasser, they swarm out in passionate anger, harmless but repulsive, their pulpy, transparent bodies belying the aggressive force of their flight. Throughout the night they hum like Jove's orchestra. The natives aver that in August this pest disappears.

AT THE TIP OF HER "CORRIDOR," POLAND LOOKS OUT ON THE BALTIC THROUGH THE INFANT SEAPORT OF GDYNIA

Passengers from the motorship *Piłsudski*, of the Gdynia-America Line, may pass directly from the ship's deck across a bridge to the station to take their trains to Warsaw, Kraków, and Poznań. This strip of land, which cuts off East Prussia from the rest of Germany, was given to Poland to provide that Nation with an outlet to the sea. One huge warehouse handles cotton from the United States exclusively (pages 767 and 773).



Photograph courtesy American Scantic Line

GDYNIA'S GIANT CRANES CAN PICK UP AND DUMP 15-TON COAL CARS OVER A SHIP'S HOLD IN THREE MINUTES

Photograph by Parikas

IVANGOROD, BUILT BY IVAN THE TERRIBLE IN NARVA, BECAME ESTONIA'S "VERDUN" AGAINST THE BOLSHEVIKI

So thick are the old walls, erected about the time when Columbus was exploring the New World, that they withstood 22 consecutive assaults in 1919.

Perhaps the many thousands of bird travelers aid in that riddance.

From Pillkoppen, a beguiling fishing hamlet, we drove by horse and wagon through the rain across the Lithuanian border. It did not require the customhouse and Lithuania's crest of plumed knight on prancing steed to tell us that we had passed into another land. Immediately the architecture of the homes attests a Slavic influence, and notices are printed in a strange language as well as in German (page 802).

In the lowering dusk we arrived at Klaipėda, after a three-hour boat ride from the Nehrung.

Inspection of the harbor the following morning revealed an unexpected activity. Coal, coke, cement, herrings, petroleum products, fertilizers, limestone, phosphates, sugar—multifarious were the forms of merchandise rumbling in and out of the holds of ships.

THE "MEMEL LAND" COUNTRYSIDE

The "Memel Land" countryside smilingly divulged to us its ripe June miracle: bachelor-buttons clustering like rings of fallen sky in the burgeoning wheat; giant buttercups; daisies, daring the sun to a game of he-loves-me-loves-me-not; goldenrod, hopefully trying to sell three shades of yellow metal fringe to the bucolic shopper. Cattle, oblivious of time, stood with slippery noses glued to the greensward.

It was Sunday. In the village of Kretinga a rural congregation was attending Mass before an artificially constructed grotto of smooth, round stones lining a cave in an earth-brown hillock. The priests, in satin and lace, were ringing bells and chanting, while swallows held an acrobatic circus overhead. The church, which stood on a high hill above, was undergoing repairs, necessitating devotions in the open.

Each farmstead has its stork family, parents conversing solemnly upon their fagot nests set in wagon wheels mushrooming from the angles of house roofs.

We crossed over the narrow outlet from which the water of the Haff flows out to marry itself to the sea. The equivalent of four cents in *lits* (the Lithuanian franc) provided round-trip fare on a tubby ferryboat jammed with Slav-faced swim seekers, bathing suits in watertight bags. For lunch: fried eel, chicken, ice cream, vodka, bitter beer, and a sweetish cordial distilled from berries.

Rowing races with four-oared shells were taking place in the harbor to the accompaniment of shrill cheering. On the Klaipėda side soared the brick chimneys of the wood-pulp mills. In the river floated fallen forests of neat, small logs, for the fabrication of newsprint.

From Klaipėda regular passenger-boat connection with the farther Baltic ports is nonexistent. Therefore, we took the "train de luxe" and connected with the Deutsche Lufthansa for Rīga and points northeast.

The night express to the capital, Kaunas, formerly Kovno (page 790), provided clean sheets, cramped privacy, and an alcove buffet with two samovars steamily asserting that both tea and coffee were on tap. The porter was a wide-faced, sympathetic slave to your wish, whose German sounded French, whose French sounded Russian, and whose attempts at English resembled the vaporous hissings of the samovars.

My special goal in Kaunas was the tower of the new museum, in which is installed the set of carillon bells transported from the foundry of Michiels in Tournai.* My springtime inspection of their birthplace gave me a sort of avuncular interest in hearing the voices of these silver-bronze-throated youngsters (page 796).

I lingered so long in the tower that I nearly missed the plane to Rīga.

RĪGA HAS WON ITS SPURS

Not long after the take-off at Kaunas, we were circling over the spires, parks, and log-crammed waterways of the Latvian capital on the Daugava (Dvina) River.

No land for weaklings is the Republic of Latvia, formerly Russian territory like its cousin States, Lithuania and Estonia, which secured independence in 1918 after passing through the tempering fires of centuries of struggle. Its sagas sing of epic battles of Lāčplēsis the Bear Slayer, and to wear the emblem of this traditional hero is a coveted distinction of today's generation.

Latvia's original tribes, the Letts and the Livs, became fused into one through reaction to the crusading efforts of the Brothers of the Sword and the Teutonic Knights.

* See, in THE NATIONAL GEOGRAPHIC MAGAZINE, "Belgium—Europe in Miniature," by Douglas Chandler, April, 1938; and "Singing Towers of Holland and Belgium," by William Gorham Rice, March, 1925.

Photograph from Ernest Peterffy

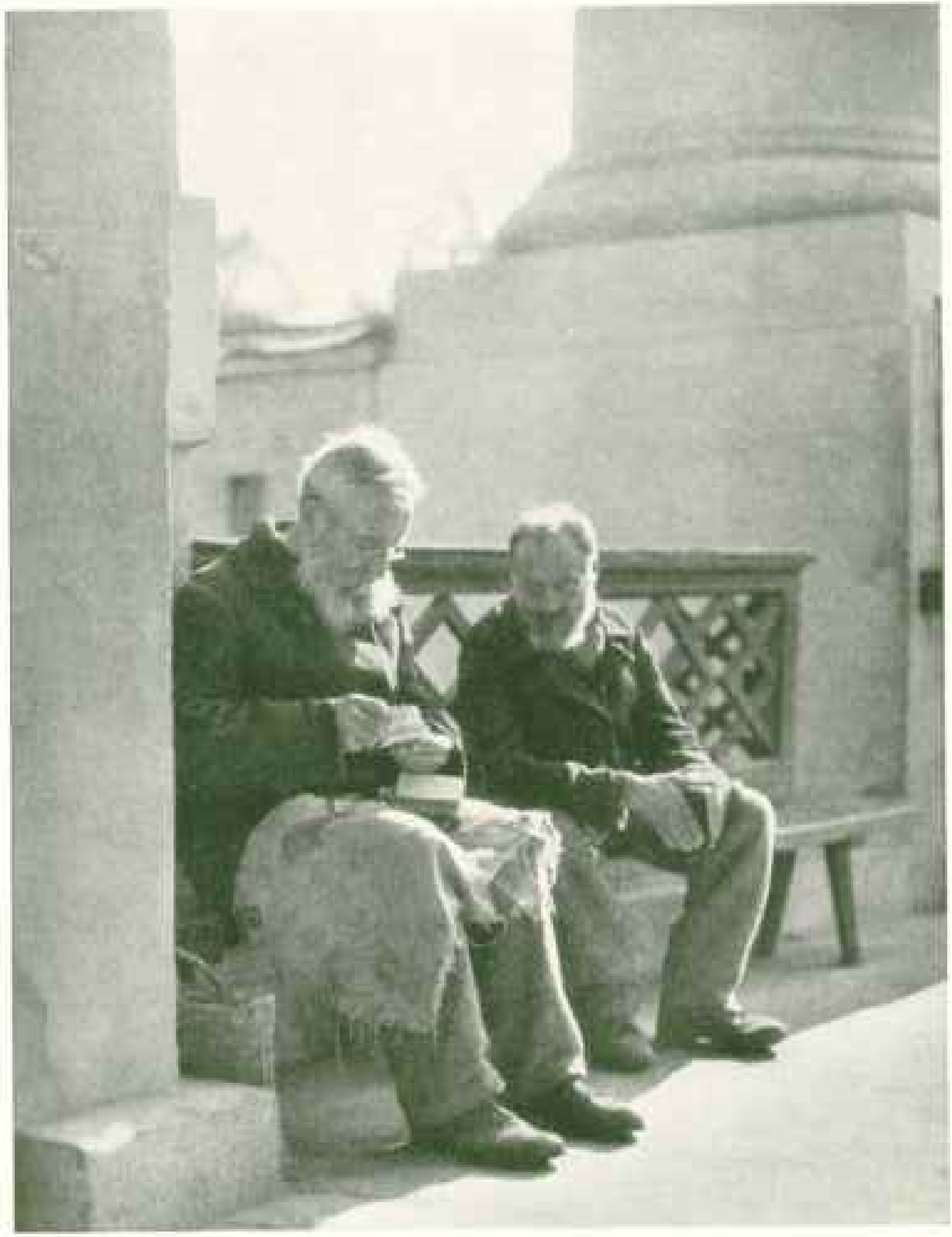
ACROSS TIME-WORN COBBLESTONES, WILNO SCHOOL CHILDREN WEND TO AN OUTDOOR ALTAR

Smock and kerchief garb the worshipers in a Trinity Week processional. Long a shuttlecock for warring nations, Wilno Province, sandwiched between Lithuania and White Russia, was taken by Poland in 1920 from the Bolsheviki. Lithuania, whose historic capital was the deeply religious city of Wilno, protested Polish occupation and severed diplomatic relations. Recently Poland massed troops and airplanes along the frontier and Lithuania agreed to renew normal intercourse. So intense was the feeling during the 18 years of disagreement that all communication across the border was suspended, even postal service.

© Jan Bulhak

GLASSY WATERS OF LAKE GLEBOKIE MIRROR THE CHURCH AND CONVENT OF BEREZWECZ

Poland's Lake District lies in the northern half of Wilno Province, a pleasant countryside of ridges and little hills. It is a favorite haunt of fishermen.



DEVOTIONS BEFORE A CATHEDRAL DOORWAY

Seated outside the Church of Saint Stanislaus, two elderly Poles read their prayer books. On the site of this old edifice, erected a century before America was discovered, a shrine to a pagan god of light once stood.

Photographs by Maynard Owen Williams

WILNO READS IN MANY LANGUAGES

Newspapers in Polish, Russian, Yiddish, Lithuanian, and German are offered by the shawl-bedecked vender. English and French journals are rare. Poland's national emblem, the White Eagle, ornaments the cigarette stand.

AGAINST A WINTER SKY RISE THE SPIRES OF POLAND'S "CITY OF CHURCHES"

Wilno once was a center for pagan worship. Jagiello introduced Christianity after he became king in 1386. The city is built on a group of sand and clay hills at the confluence of the Wilja and Wilejka Rivers.

Photographs © Jan Bulhak

BUYERS AND SELLERS ALIKE WEAR SHAWLS IN THE FAIR OF SAINT CASIMIR

Cloaks hide the other inevitable Polish feminine garment, the apron. Cobblestones are display counters and seats for venders of flowers and herbs in this old Wilno marketplace.

© Jan Bulhak

WOOD CARVINGS GLORIFY KING CASIMIR'S CONQUEST OF THE RUSSIANS

Poland's patron saint, thus honored in the Church of Saint Peter and Saint Paul in Wilno, ascended the throne in 1333. Remembered as the Nation's first lawgiver, he extended refuge to oppressed Jews from other countries.

Photograph from Ernest Peteffy

"WATER'S FINE" IN THE WILJA WHEN IT'S SUMMERTIME

Heat waves never bother Wilno. June, July, and August are the only good months for swimming. Cold weather descends early in the fall and lasts until late spring.

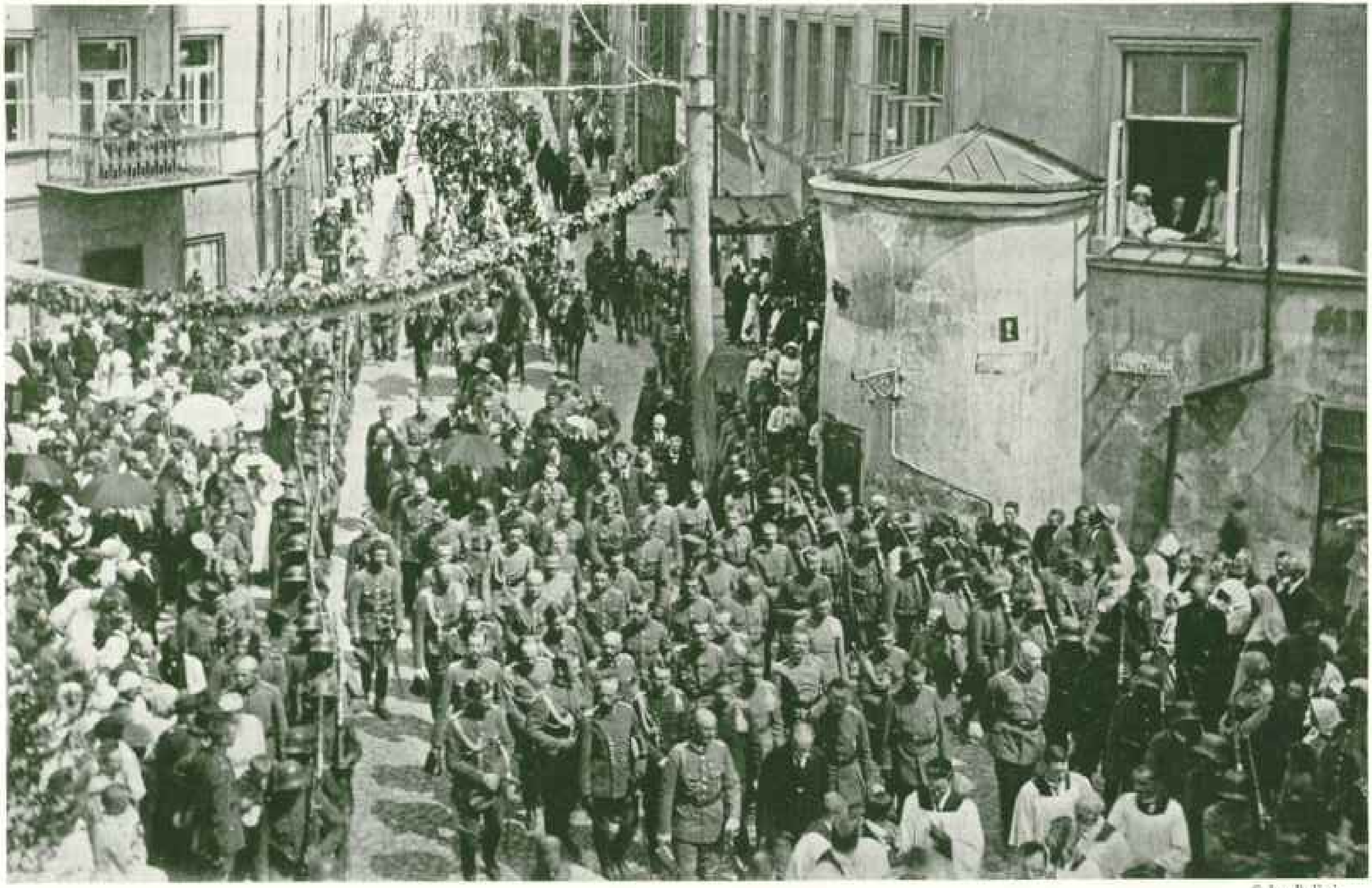
"SIMPLE BEAUTY AND RUSTIC HEALTH"

Only the scarf about the head of the Polish country maiden fails to fit Whittier's description of Maud Muller. On a summer's day she "raked the meadow sweet with hay" on a farm near Wilno. If she is selected as the queen of the village at the fall harvest festival, a wreath of flowers will replace the kerchief.

Photographs © Jan Bulhak

ANOTHER COPERNICUS OR PADEREWSKI?

Laughing eyes, freckled face, and a heritage of a thousand years of culture belong to this boy. If he cares little for astronomy or music, he may turn to Kosciuszko or Pilsudski for military heroes; Joseph Conrad or Sienkiewicz, author of *Quo Vadis*, for literary models, and Madame Marie Curie for science.



© Jan Bulhak

AS A DIVISION COMMANDER, EDWARD SMIGLY-RYDZ LEADS HIS TROOPS IN THE WILNO CORPUS CHRISTI CELEBRATION OF 17 YEARS AGO

Today the Field Marshal (center foreground, military cap in right hand), successor to the great Pilsudski, yields precedence only to the President of the Republic, Ignace Moscicki. Directly behind their leader are two officers garbed in the now obsolete uniforms of the famous Polish Legion, organized during the World War.

Photograph by Maynard Owen Williams

"DON'T WORRY, LITTLE MAN; COSTLY HOBBYHORSES CAN'T GALLOP, EITHER"

After the World War, when the American Red Cross helped to supply food to thousands of children in Poland, so wistful an expression might have had a tragic meaning.

© Jan Bulhak

"LIFE IS REAL; LIFE IS EARNEST!"

Although many Polish children in Wilno would likely agree with Longfellow, a happier side is evident. Playgrounds, with slides, seesaws, basketball courts, and welfare stations, are springing up in all the cities.

My suggestion for a national motto would be "Liv and Lett Live."

While Rīga has its old section with crooked, narrow streets and buildings that were young when knighthood was in flower, the major impression is that of a bustling, modern metropolis (page 792). It has its "Wall Street," Valnu Iela, on which are the principal shops.

Business and diplomatic entertaining still center in the venerable Hotel di Roma, with its rathskeller and its series of small private dining rooms. An official luncheon starts at three o'clock or later and seldom terminates before six.

Opposite the Roma stands the State Opera House, set in a lovely flowering park. Wagner once led the orchestra here for many months. Riga asserts its ballet is the best in Europe. Shakespeare is very popular in Rīga theaters.

As one emerges from the central European countries, one leaves behind that instrument of torture (for the tall man) known as the *Keil*, a wedge-shaped extra dividend of mattress at the upper part of the bed, and says farewell to the feather-bed comforter. In Baltic-land I slept, if not the sleep of the just, at least the slumber of the adjusted.

Rīga's traffic is strictly regulated. No tooting of motor horns, except in cases of dire emergency. Milk cans must be silenced by sacking or straw. No spitting on the pavements; if this ordinance is disobeyed fines are summarily exacted.

A trilingual city is this beehive of the Daugava. Even the maidservant you employ is more than likely to command Lettish, German, and English. The latter has become the compulsory language of the schools. The center of English studies is the Institute of English, founded in 1920 by the Ministry of Education.

Rīga has its Animal Protection Society, in close touch with the British S. P. C. A. A special branch, the Reverend Arthur Harrison Memorial Fund, has been instituted to commemorate Riga's former chaplain of the English Church, who died of pneumonia contracted while befriending neglected horses on bitter winter nights.

I visited the zoo. Rather shamefacedly the custodian showed me around the meager exhibit.

"During the five terrible months of the Communist invasion in 1919, when 5,000 of our inhabitants were murdered, 8,500 died of starvation, and 30,000 were imprisoned, we were forced to eat the menagerie," he explained.

Seeing my shocked expression, he continued in lighter vein, "The elephant fed a crowd of hungering people for weeks. It was the porcupines and armadillos that yielded the least nourishment—there was a shortage of gloves and can openers at that time!"

PERILS OF THE RĪGA STRAND

Rīga's Coney Island, the Strand, 20 minutes by railway from the city, presents unexcelled facilities for sea bathing, and hazards that would dismay a Johnny Weismuller.

Seeing a heavy concentration of splash traffic at a distant point along the beach, I seized my camera and headed in its direction, wrapped in journalistic preoccupation. "There's something wrong with this picture," faintly registered my optic reflex as I neared the scene—but, unapprehending, my feet trudged on to within fifty yards of the throng.

A voice at my side gave warning, "Don't you know that it is ladies' hour?"

I turned and ran as if pursued by demons. Not a bathing suit had there been among the multitude! From eight to ten o'clock, nude bathing for men is permitted on that area of the beach; from ten to twelve the women own it. There is no screening from other pleasure seekers.

CHESS CHAMPIONS AND MUD BATHS

Rīga has become an important cross roads of Baltic air travel. At the beginning of June, 1937, the Latvian Government established its own line from Rīga to Liepāja (Libau), the country's second port in importance. Two daintily efficient, six-seating Havilland biplanes give service twice daily in each direction. The run is made in an hour.

We flew low along the coast at first, beneath us the blue Baltic, throwing white ruffles of foam upon yellow sand. The huge new cure hotel of Kemeri shone imposing, white, spick and span in its pine-woods setting (map, page 770).

I knew that the convention of International Chess Champions was domiciled there. One could picture the contestants sprawling in the mud baths, frowning as they mapped out Machiavellian strategies for the conflict.

Photograph from Douglas Chandler

FISHERMEN CAST NETS IN THE SURF FOR AMBER—NOT FISH!

Blackish seaweed yields nuggets of "Baltic gold" at Palmnicken in East Prussia (page 769). After a storm the "catch" is considerable. On the Lithuanian and Latvian coast, crumbs of the petrified resin also are washed up. In medieval days this region often was called "Amberland."

Photograph by Wilhelm Tobien

KÖNIGSBERG CARVES "BALTIC GOLD" FOR ALL THE WORLD

Amber necklaces, cigarette holders, and brooches, clouded or clear, sometimes in shades of rose and saffron, are cut in East Prussia shops. In earlier times craftsmen produced a variety of pieces, ranging from altars to sets of dishes and cabinets. In their summer palace at Czarskoe Selo, now called Detskoe Selo, or Children's Village, the Russian Tsars had built an "amber hall." Half a century was required to complete this room, constructed entirely of fossilized resin.

© Douglas Chandler

GERMANY, POLAND, AND DANZIG MEET AT A TRICORNERED FRONTIER MARKER

"Versailles Treaty, June 28, 1919," reads the stone. The border is a few miles from Marienburg, once the seat of the grand master of the old Knights of the Teutonic Order (page 769).

We passed over vast areas of peat bog, checkerboards of brown suede and black; light where no peat had been cut, dark in the worked patches, flanked by drying clods of Nature's cheap fuel.

HOW MUCH ICE WOULD AN ICEBREAKER BREAK?

A rectangular sea mole with three entrances forms Liepāja's harbor. The city has two huge dry docks built by the Russians before the war.

In one stood the *Krišjānis Valdemars*, Latvia's modern, powerful icebreaker (page 793). I learned about icebreakers from her. Two sets of engines; two propellers—rear one to drive the ship, forward one to create a vacuumlike displacement of the water ahead of the ship beneath the ice.

Upon this unsupported surface crashes the overhanging bow, creating a splintered havoc. Thus, with its 5,200-horsepower thrust, does the armor-plated hull wedge its way through three feet or more of ice at a rate of from three to seven miles an hour.

Icebreakers convoy singles, or doubles, or strings of cargo-carrying bottoms into frozen Baltic ports. Some recent winters in this area have been so mild that the harbors have remained practically open.

An immense state-owned factory, which dominates Liepāja's water front, was fabricating such items as refrigerating cars for meat transport; road-making machines, 20 for Latvia; agricultural machines and tractors; windmills of the American type, and a new kind of Latvian invention, with airplane-type propellers; and gas-tight doors for safety cellars.

We visited a plant, situated beside a peat bog a few miles from the city. Here was being manufactured from the crude earth substance an insulating material in sheets and a baled product for use on stable floors and in chicken houses.

Low labor costs enabled Latvia in 1937 to export profitably 1,414 tons of peat moss to the United States, a country which itself has "peat to burn."

A FASHION PARADE OF NATIONAL COSTUMES

Our objective on the second day of my stay was to find the Lett peasant in his Sunday-go-to-meeting best. This is the only district I found in the Baltic area

Photograph from Douglas Chandler

AMBER NECKLACES IMPART THE FINAL TOUCH TO LITHUANIAN NATIONAL COSTUME

The photographer had to persuade the girls to don their native dress so he could make such a picture. They no longer wear such attire except on festive and ceremonial occasions.

where national costumes are still commonly seen. Rich was our reward: family groups driving along the country roads, neighborly gossip in the churchyards, a fashion parade of flame-colored, hand-woven skirts after service.

Before permitting my narrative to make its air-line jump from Latvia to Estonia, I must list a few leftovers from my notebook: language, akin to Lithuanian, Old Prussian, Sanskrit, Slavic, Latin, and Greek; Bible translated into Latvian in 1689; a folklorist has collected in book form more than 218,000 folk songs. Signs observed with distorted words from other languages: motociklets, for motorcycle; Francu vafeles, French waffles; futbola, football (very popular, Budapest playing Liepāja during my visit); tualete—what would you suppose?

"NIGHTCAP TOWN" WITH TOWERS

I must confess a partiality for the walled delectability that is Tallinn (Reval). I class it in my affections with Rothenburg, Nürnberg, Korčula, and Carcassonne. Old towns need walls as a picture needs a frame.

Three-fourths of a mile of the medieval wall of Tallinn is still preserved, and along its span stand 17 mural towers, four gate towers, and two bastion towers. I suppose it must be for the towers that this is spoken of as the "Nightcap Town." With their pointed tops they *do* resemble bedward-going figures.

Wotan be praised, this town of 143,000 inhabitants will never be "finished"; traditional edict forbids it. Legend says that every New Year's Eve a little gray man rises out of the depths of Lake Ulemiste, comes down into the town, and asks the watchman whether or not the city is at last completed.

"No," answers the watchman, for he knows that if he were to say yes, the little old man would send down the waters of the lake and submerge poor Tallinn.

Those ubiquitous Teutonic Knights, whose course we have been following along the Baltic, bought Tallinn in 1346 from the Danes for 19,000 silver marks. A pretty high price compared with what New York once sold for! The name Tallinn, changed from Reval, comes from *Taani linn*, meaning "Danish castle" (page 791).

When the Hansa plane put me down at Tallinn's outskirts, I felt at home, for I had

Photograph by Gustav Heurlin

WAITING WIVES IDENTIFY HOMEBOUND BOATS BY THE FAMILY PENNONS

Atop the masts, weather vanes of ingeniously carved wood, painted in red, gold, and black, record the ancestral heritage of Nida, Lithuania, fishermen.

Photograph by Dr. Schüz

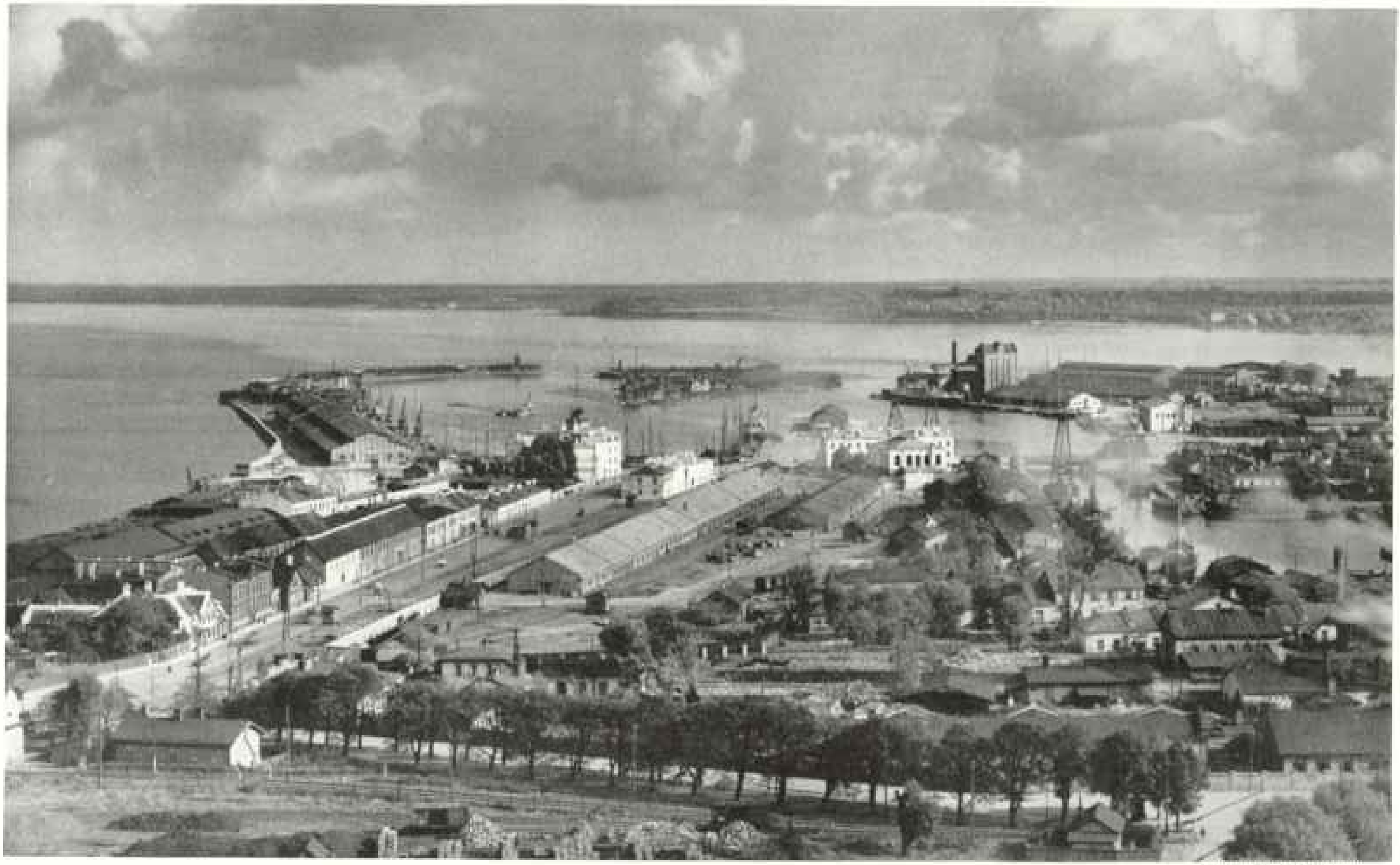
BANDED IN PRUSSIA, THIS YOUNG WHITE STORK MAY BE CAUGHT IN SOUTH AFRICA

Migratory habits of these birds are studied at the Rossitten sanctuary on the Kurische Nehrung, a narrow sandspit along the Baltic coast. Curiously, white storks follow two distinct routes southward (page 772).

Photograph by Gustav Heurlin

NAPOLEON'S ARMY CROSSED THE NEMUNAS ON PONTOONS; TODAY LITHUANIA'S CAPITAL BOASTS A STEEL-AND-CONCRETE SPAN

The red brick Lutheran Church (left center) in which the "Little Corporal" stabled his army's horses as he paused here on the way to Moscow stands on the river bank of the Old Town in Kaunas (Kovno). Between the twin spires of Trinity Catholic Church, beyond, rises the tower of the Town Hall. At right is the old Basilica (pages 776 and 796).



Photograph by Nylander

ELECTRIC CRANES LINE THE QUAYS IN TALLINN HARBOR, KEPT OPEN BY ICEBREAKERS IN SEVERE WINTERS

Since Estonia gained her independence, in 1918, the seaport has doubled its working and storage capacity. A new basin has been built alongside the old one; grain elevators and refrigeration plants have been erected. The name of the capital recalls the invasion of the Danes in the eleventh century, for it is derived from *Taani linn*, Estonian for "Danish castle." The conquerors themselves named the city Reval (page 785).

FOR SIX CENTURIES BACHELORS HAVE REIGNED IN RĪGA'S HALL OF BLACKHEADS

Each month unmarried business men banquet with their friends in the ancient clubhouse (right). Duchess Anna, who later became the wife of Tsar Peter II of Russia, danced gaily until 5 o'clock one morning in 1736 at such a revel. Cinderellalike, as she departed she left a dainty slipper, proudly preserved in a glass case ever since. The commercial building left of the Hall conforms in design to its older neighbor. In the plaza stands a statue of Roland, the legendary knight (page 776).

Photographs by Gustav Heurlin

BY FLATBOAT COMES PRODUCE FROM THE HINTERLAND TO RĪGA'S MARKET QUAY

Where once the ramparts of the Old Town stood, droshkies and farmers' carts now roll on smooth concrete pavements. The ancient moat, encircling the Old Town of Latvia's capital, now is a canal.

pleasant acquaintances here from my visit nine years before. Change and growth in the Lower Town I found, but not of a nature to mar the perfection of the Old World setting.

That fat, round tower, called "Peek in the Kitchen," from its place halfway up the "Dome" hill, does not today concern itself with spying down the flues to see what the abbot is having for supper. Instead, it gazes upon the very modern EKA office building with its fashionable Corso Café, and chaperones the famously pretty Tallinn women as they sip coffee.

EDITING STREET SIGNS IN TALLINN

Tallinn recently changed all its street signs. Formerly the word "Tän.," abbreviation for "street," appeared after each name, as "Pikk Tän.," or "Voidujooksu Tän." Now the "Tän." has been eliminated. After all, one doesn't need to be informed that a street is a street. Figure the saving in metal, enamel, and labor if all large cities followed suit!

The ancient moats have been, with time's miracle-performing power, turned into idyllic parks which encircle half the city. The houses are roofed with huge red-brick tiles, ever freshly whitewashed at the

© Douglas Chandler

DON'T LET THE PROPELLER FOOL YOU!—THIS IS THE BOW!

In the dry dock at Liepāja, the overhanging prow of a Latvian icebreaker is revealed with its thick metal plates, heavily reinforced by steel (page 787). As the vessel charges at the frozen pack, its forward propeller revolves furiously, sucking water from beneath the ice. The ram then crushes and splinters the floe. The Government-owned vessel of 5,200 horsepower was built in Scotland.

ridges and other surface junctures, giving a perennial Christmas-card effect.

Who can resist a city where the Chamber of Commerce meets in the house of King Canute's Guild, built in 1410; where the staid business man and his cronies, as well as the younger bloods and their wives or sweethearts, gather in a social club which has existed continuously for six centuries?

The club is domiciled in the House of

© Douglas Chandler

DWARF TREES AND SHRUBS ANCHOR WANDERING DUNES

Over the 60-mile sandspit stretching from Kranz to Memel on the Baltic coast strong winds drive the fine, shifting sand. To prevent East Prussia fishing villages from being engulfed, stakes are driven deep, in a checkerboard pattern. In the center of the squares thus formed, hardy shrubs are planted. Sandwort thrives here. Its diverging stalks, and long runners sent out below the surface, hold the wind-sifted sand firm (page 770).

the Blackheads, named, as is the one in Rīga (page 792), for the Moorish Saint Mauritius. A frieze which adorns the façade above the first story bears the coat of arms of the four Hansa centers, Brugge, London, Bergen, and Novgorod, exemplifying the close-knit character of that organization of trade monopolists.

LAND OF BERRIES AND ORCHESTRAS

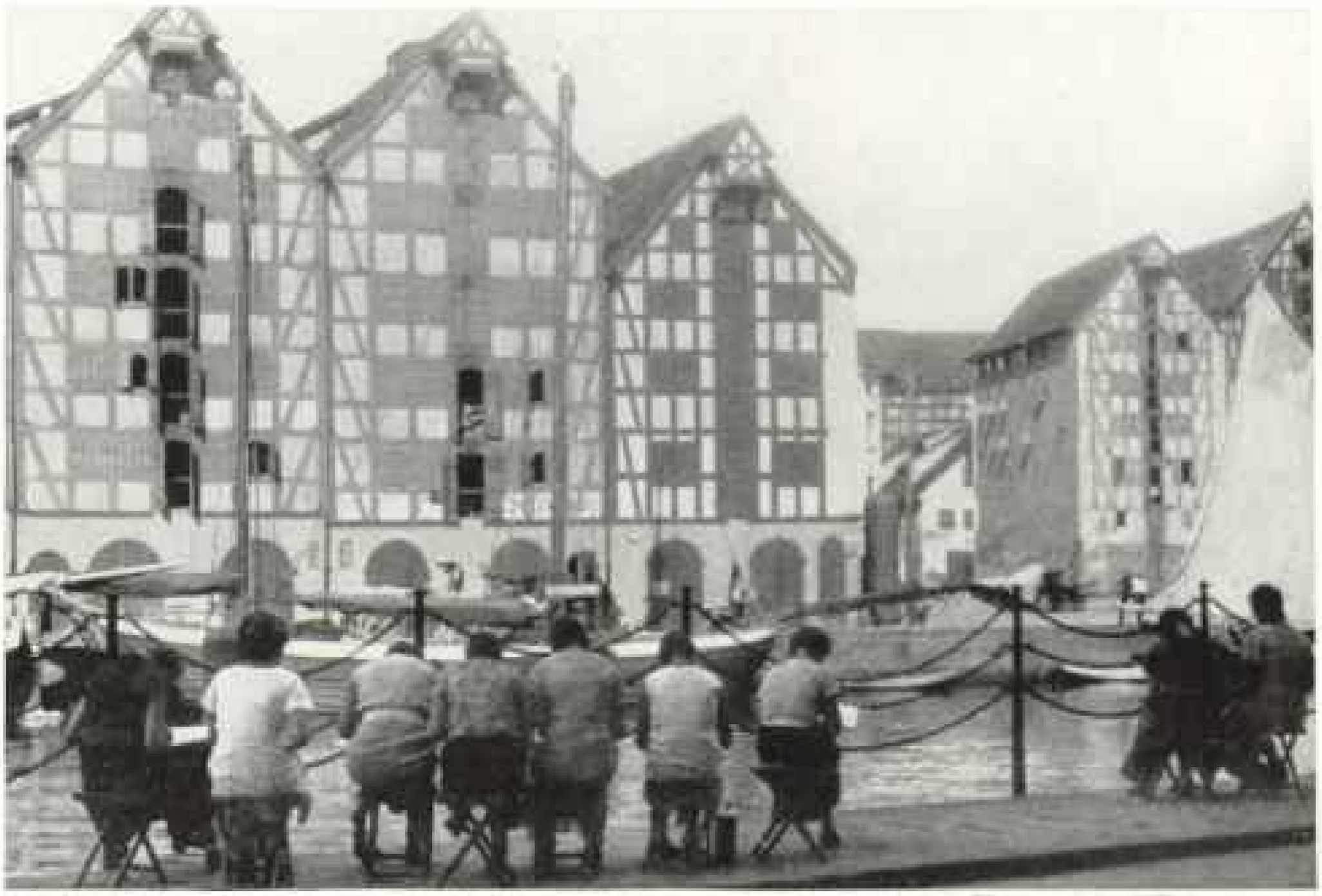
I found Tallinn's markets overflowing with strawberries, raspberries (red, white, and a large, unfamiliar yellow variety), blackberries, gooseberries as large as birds' eggs, currants, and some berry species which I had never before seen. All the Baltic countries are rich in milk, cream, and butter, and vegetables spring from the earth like lush weeds.

If you don't like music with your meals, stay away from Latvia and Estonia. Every restaurant, however proletarian, boasts its orchestra—three, four, five, or six warriors who battle among themselves with braying brass, thumping wire, wood and gut.

"Our language, related to Finnish and Hungarian, is supposed to be one of the most musical of all Europe," I was told. "It took second place in an international euphony contest a few years ago. Italian was first. The Estonian sentence which most pleased the judges was *Sõida tasa üle silla*, meaning 'Drive slowly over the bridge.'"

On a par with Estonia's melodious speech is the elegance of its bank notes. In such esthetic (may we say Est-thetic?) pastel colors and with such classical designs are they engraved that a miser might well designate himself an "art collector."

For the 30-minute hop across that narrow neck of the Gulf of Finland from Tallinn to Suomi, there are four airline options, German, Polish, Finnish, or Swedish.



Photograph by Wilhelm Tobien

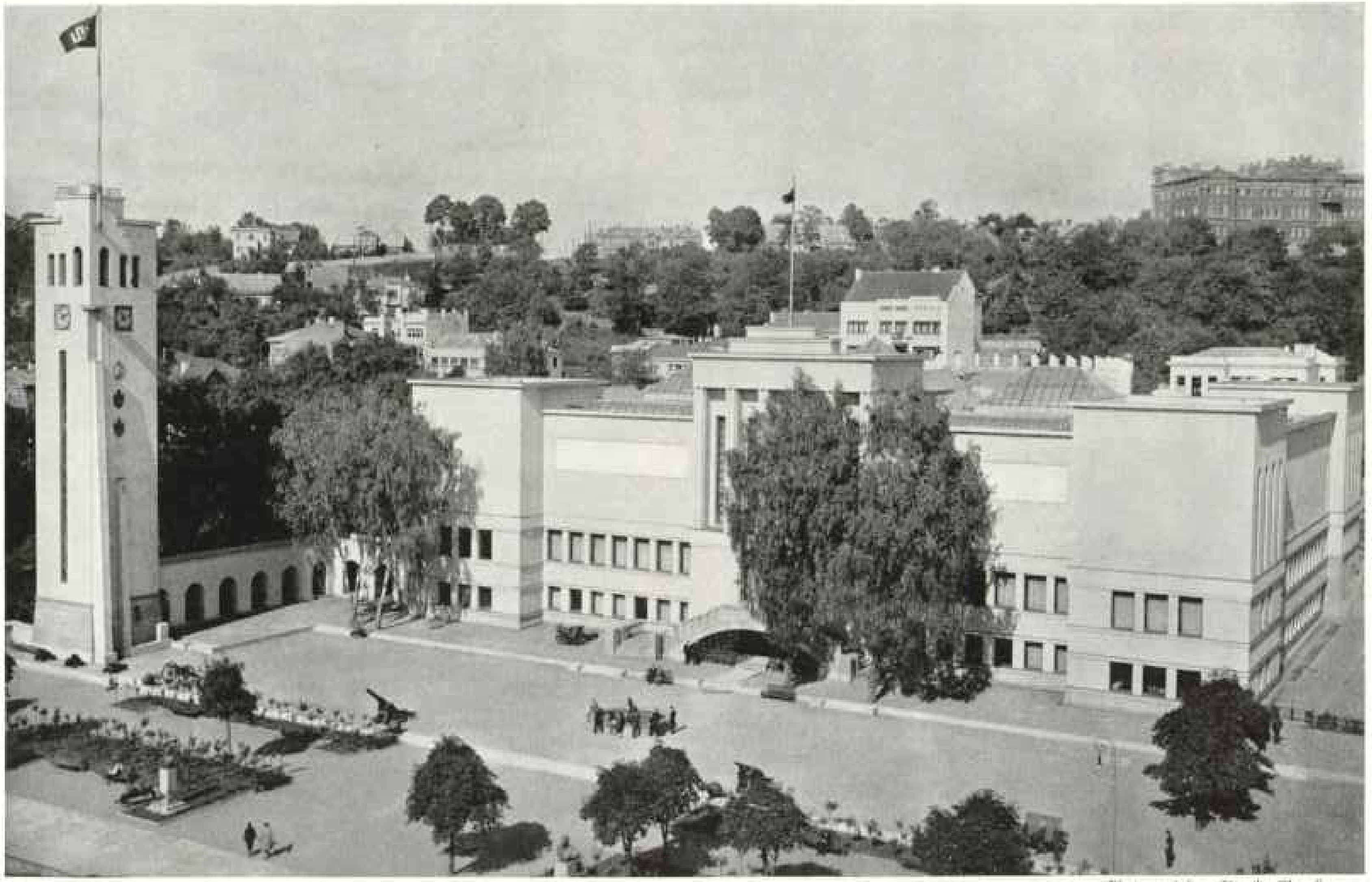
OLD KÖNIGSBERG STOREHOUSES INSPIRE YOUNG ARTISTS

Along the banks of the Pregel River these venerable buildings still house goods brought to the city by water from the East Prussian hinterland. Boats dock alongside the quay, and block and tackle beneath the gables hoist cargoes to storage floors (page 769).

© Douglas Chandler

A BILATERAL BALTIC PACT

Standing in the doorway on the paternal farm, a Latvian couple poses before going to a rustic church near Liepāja. Delicately woven is the bridal gown, made in the village. Correct in every detail, to white gloves and white tie, the groom's attire was tailored especially for the occasion.



Photograph from Douglas Chandler

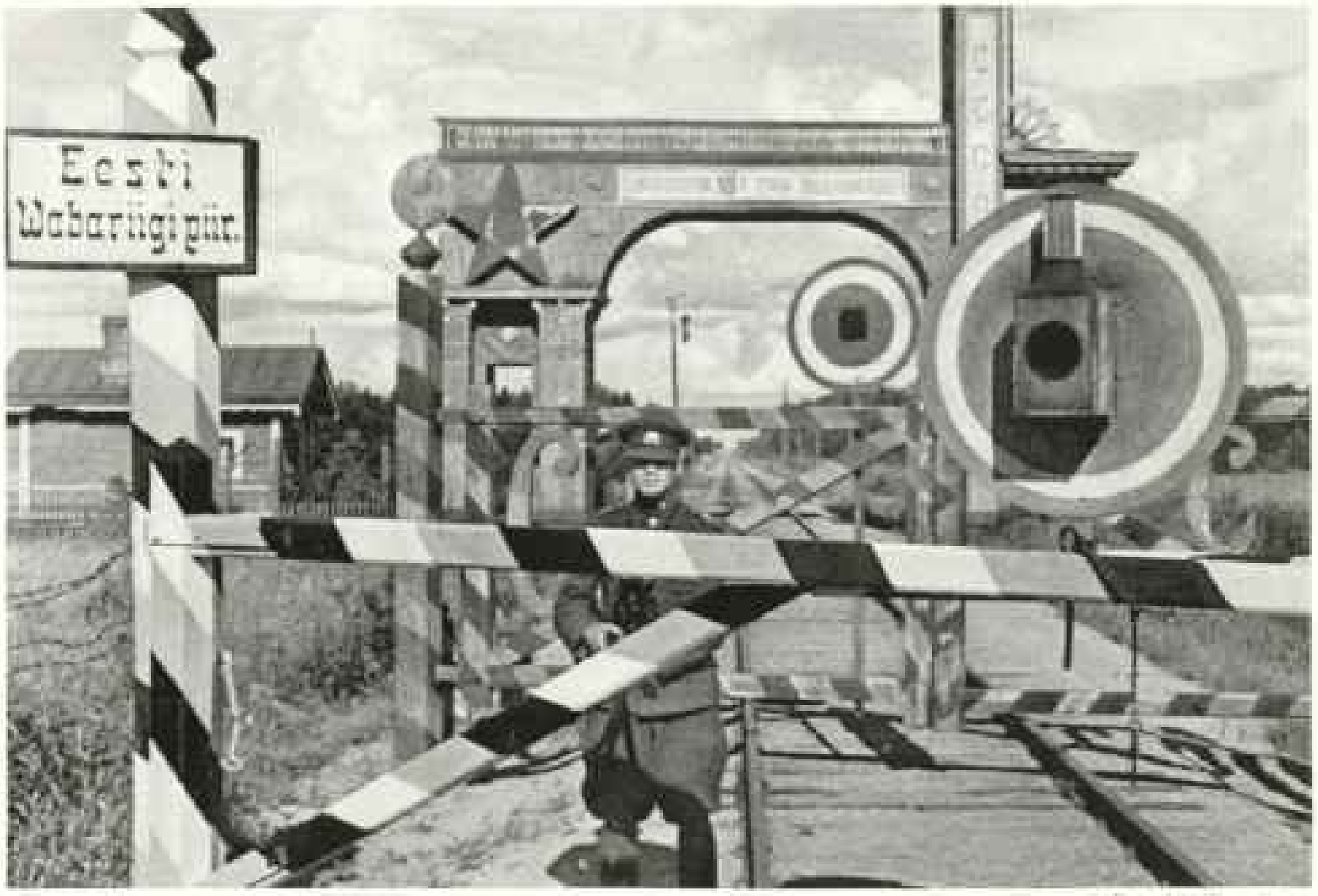
THE WAR MUSEUM IN KAUNAS, CAPITAL OF LITHUANIA, HOUSES A LIBERTY BELL SENT BY FRIENDS IN THE UNITED STATES

America's gift shares the tower with a carillon from Belgium (page 776). On solemn occasions the Lithuanian national anthem is played on the chimes to the accompaniment of a military orchestra and the large bell. Erection of the building was begun in 1921 on the third anniversary of independence.

© Douglas Chandler

FOLLOWING THE TRAILS OF KNIGHTS IN SHINING ARMOR, GIRL CYCLISTS OF EAST PRUSSIA VISIT OLD FINCKENSTEIN CASTLE

Bicycle pilgrimages to historic spots are popular throughout Germany. Pushing their wheels to the crest of the hill, the girls are bunched together now, but when they resume pedaling they will string out in single file. Then the leader will become a lookout. When something appears to impede progress, she will call out, "Obstruction ahead," and word will be passed down the line. A watcher also is posted at the end. When a car overtakes the group, she shouts "Car coming," and that warning is passed in reverse direction to the head of the procession. Finckenstein is one of the oldest inhabited castles in Germany.



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AN ESTONIAN GUARD STANDS BETWEEN DOUBLE GATES AT THE RUSSIAN FRONTIER

The Tallinn-Leningrad railroad crosses the boundary line here, near Narva (page 775). From the Gulf of Finland to the Black Sea stretches a continuous barbed-wire fence, interrupted only by guarded crossings, rivers, and impassable terrain.

Tallinn was indulging in a fit of midsummer sulks because of a gray pall of cloud that had been pressing down on her chimney pots for two days. But scarcely had we cleared the large, flat island which guards her harbor before our plane emerged into clear, radiant air.

Twenty minutes later we were over the first of that galaxy of small granite islands which swarm against the Finnish coast like hungry gray and green parasites. The total archipelago comprises the incredible number of 80,000 islands; and more than 60,000 lakes lie scattered over this land of the admirable Finn.

"Happy that you've come to visit us again," boomed the voice of a Helsinki industrialist whom I had pleasantly known on my previous visit. As his guest I had traveled, a decade before, to his pulp mills, sawmills, plywood plants, and bobbin factories at Lappeenranta (Villmanstrand), in the eastern forest region of the land.

Seated in his office on Alexander Street, I observed the same handsome blue walls, fabricated of Finnish spruce and tapestry colored with Finnish dyes, that he had proudly shown me in the long ago.

Dining with him later at the Kämp Hotel, we recalled that, in the same spot, we had lunched to the accompaniment of a string quartet playing original compositions of my host.

"Are you still finding new symphonic motifs among the noises of your industries?" I asked.

"Ah, yes," he answered. "My sawmills and bobbin works speak ever with new voices. There is just one department which fails to inspire me. As yet I have been unable to find a musical theme in the glueing room of the plywood plant!"

Northerly Helsinki (Swedish form: Helsingfors), population 285,000, is young compared with Viipuri, Tallinn, Danzig, Visby, Lübeck, and such cities of the Hansa era, having been founded a short distance from its present site in 1550 and transferred to its triple-harbor location in 1640.

SOME FIGURES ABOUT WORDS

The percentage of literate Finns is 99.1. Over 3,000 new books are published each year, and a half million dollars' worth of books imported from other countries.

Helsinki University has 500,000 volumes,

© Douglas Chandler

HEROIC FIGURES FLANK THE ENTRANCE TO HELSINKI'S MASSIVE RAILROAD STATION

Strength is the keynote of modern architecture in Finland (page 803). This imposing granite structure was designed by Eliel Saarinen, a native son, who for more than a decade has lived in the United States. He is now head of Cranbrook Academy, Bloomfield Hills, Michigan, an architectural school. Another notable structure in the capital city, formerly known as Helsingfors, is the Kallio Church, also of gray granite (page 798).

© Douglas Chandler

STOCKHOLM SOLVES A TRAFFIC BOTTLENECK WITH "THREE-LEAF-CLOVER" CONTROL

Congestion at the "Slussen," or sluice, which connects Lake Mälaren with the Baltic, thus splitting old and new parts of the city by a narrow waterway, was eased by this modern triple-loop road system. The upper level is natural, for south Stockholm rises steeply here. The picture was taken from the Katerina elevator, which carries passengers to the hill overlooking the Old Town (page 804).

Photograph by Jonals Company

CYCLERS OUTNUMBER MOTORISTS AND STREETCAR PASSENGERS IN COPENHAGEN'S EVENING RUSH HOUR

Workers slow up automobiles and trolleys as they pedal across Queen Louise Bridge, on their way from the old town to Nörrebro, modern residential center. Every third man, woman, and child in Denmark owns a bicycle—1,250,000 "bikes" are in daily use! Apartment houses flank the Sortedams Lake drive in the background.

BREAD, SHAPED LIKE DOUGHNUTS, GOES WELL WITH ROASTED EELS IN LATVIA

Tied in bunches are the delicacies called *klingeri*, in many sizes. About 50 varieties of bread and rolls are sold in Rīga markets. The salesgirl enjoys a customary mid-morning cup of coffee.

Photographs © Douglas Chandler

AT THE SIGN OF THE PLUMED KNIGHT ON THE KURISCHE NEHRUNG

The author, pausing opposite the customhouse on the East Prussian-Lithuanian border, takes a picture of Mrs. Chandler and their driver, Herr Schmidt. The wagon trip was a brief one, from Pillkoppen, East Prussia, to Nida. The sign bears the national crest of Lithuania.

of which 37 per cent are fiction and 20 per cent religious literature. From the 2,100 libraries throughout the country, 2,500,000 books are borrowed each year—a high figure for a country with a population of 3,807,000.

The evening of my arrival I sat in the warm late daylight at that charming café at the foot of the esplanade. At my request the 40-instrument orchestra played Sibelius' *Finlandia*. Never had its power so gripped me as here on its native soil.

Nine years before I had remarked the beauty of the world-famed Helsinki railroad station (page 799), the architect of which, Eliel Saarinen, has now for more than a decade been practicing his profession in the United States. But new to me was the rose-gray granite Parliament Building, completed in 1931; architect, J. S. Siren.

WOMEN'S RIGHT TO VOTE—AND WORK

From the balcony of the HOK co-operative restaurant, where one lunches well for 30 cents, I noticed across the street the steel framework of a tall building under construction, and on a scaffolding at the eighth story the figures of many women working with the bricklayers.

Later, armed with official permission and an interpreter, I mounted to the scaffolding and interviewed the feminine masons' assistants at work. I found them ruddy-cheeked, smiling, and apparently content with their airy occupation.

Finland was the first country to give equal and universal suffrage to women, and today they enjoy in practically every phase of life the same status as men. Finnish women gain their livelihood as factory managers, engineers, tram and omnibus conductors, bricklayers' assistants, dock laborers, stationmasters, and railway clerks. Posts in the Ministry of Defense, Police, and Customs are open to women. Women gainfully employed number over 700,000. The new marriage law of 1929 is based on absolute equality between husband and wife.

To build a skyscraper in Helsinki you have to "buy air" per story. It was discovered here that the tower of the Hotel Torni exceeded the sky limit by five stories. The Finnish authorities did not demand removal of the offending excess; it remained, and there today one dines in the Torni restaurant at the vertiginous altitude of 13 stories.

I counted 13 flags flying on their individual poles above the door of the Hotel Kämp; 13 nations were represented among the guests. It is the custom of hotels here to honor their visitors thus.

On the day of my departure two new world running records were marked up by one of Finland's Olympic champions, Ilmari Salminen lowering the 10,000-meter and 6-mile records.

I was curious to have a glimpse of Paavo Nurmi, the "flying phantom." I found him in his present capacity of necktie merchant, scowling behind the counter, surrounded by misanthropy and the world's most remarkable collection of unbecoming cravats.

Around the corner from his shop I visited another retired runner and former Olympic champion, Hannes Kolehmainen, now a popular purveyor of sports goods. He was starting next day on his vacation, to drive over the "Great Arctic Highway" to Petsamo, 205 miles above the Arctic Circle.

TO EUROPE'S LARGEST LAKE

I capped off my Helsinki survey by a flight to Viipuri—again an hour's trip—by a recently added line of the Finnish airways, and from there by rail and boat to the Russian Orthodox monastery of Valamo, founded in 992 on an island in Lake Ladoga, Europe's largest lake.

After the return flight from Viipuri to Helsinki, we took the comfortable night express to north Finland, breaking the journey at Oulu and continuing by the next train to Rovaniemi, end of the railroad line. Thence we proceeded by autobus over a magnificent highway recently constructed by the Finns—the world's only motor road to the Arctic Ocean.

Space forbids an account of this dash through Lapland, and a one-day stopover on Vardö, a Norwegian island near North Cape; of crystal skies and a broiling sun, swims in lakes and rivers above the Arctic Circle; eating whale meat that was designed for silver-fox dinners; of drying cod, reindeer skins, and fjords.

Eight days later we were in Stockholm, having rounded North Cape by steamer from Kirkenes to Trondheim, rail to Oslo, and on to Sweden's capital.

"You've arrived just in time to help us open up my Viking grave," said the U. S. Consul General as I entered his office, suitcase in hand. "No, our Viking relics won't wait another minute for the light

of day; we shall find you lodgings later."

It was an auto ride of only ten minutes to the excavations, where we found an archeologist waiting to remove the first treasures of the find.

Here, within shouting distance of Stockholm's roofs and spires, I saw the unearthing of weapons, jewelry, and other personal belongings of some Nordic warrior who had fought his final battle a thousand years or so ago.

I roamed the streets of this captivating 13-island metropolis, seeking out the landmarks of its development in the last decade.*

The new Swedish architects — Ragnar Östberg, Carl Westman, Ivar Tengbom, Ferdinand Boberg, E. Lallerstedt — have wrought plastic miracles in brick, mortar, and granite. But in spite of the modern Town Hall, the Polytechnic School, the Mayoralty House, the Engelbrekt Church, or the fashionable villas of the diplomatic quarter, I found the city's old, intimate appeal as strong as ever.

DOOR TO DOOR DELIVERY—BY WATER

Bustling activity of harbor life still is spread out along the main arteries of the city's heart instead of being restricted to a water-front area. Freighters make fast before the doors of dwellings, hotels, and government buildings, disgorging their cargoes upon the landings.

So close beside the Palace that the chatter of hoisting machinery must have been audible to royal ears, I observed the unloading of a vast array of commodities assembled from the antipodes.

I noted the arrival of an American-made steam shovel; building materials of sundry sorts being packed into freight cars behind Gustavus Adolphus's august bronze back; a thoroughbred horse, trembling and snorting with terror, taking an aerial ride in a portable stall, and disappearing into the formidable depths of a ship's hold (p. 805).

The summoning of a Stockholm taxi seems an act of legerdemain. One dials a certain number and says "Droskstation." Within one to three minutes at most, in the central sections, a grinding of brakes proclaims that your chariot is at the door. I visited the main telephone office and saw how simply this miracle is performed by relaying the call to multiple taxi stands.

I saw the phonograph records which automatically announce the weather reports to an average of 3,000 questioners daily. Weather curiosity is greater than time curiosity in this town; only 2,000 people each day dial the "What-time-is-it?" number.

The latest mechanical achievement is the three-leaf-clover design of over-and-under-pass which has solved the traffic problem at that narrow outlet of Lake Mälaren between the Old City and the main portion of the town (page 800).

DON'T BE A "LAURA"!

The Director of Traffic showed me a new series of posters to combat jaywalking. They portray a hen, precariously and with absence of dignity, scuttling across a road. The caption reads, "Don't Cross Streets Like a *Laura!*" As to the significance of "Laura" applied to hen technique in street crossing, the director admitted he had arbitrarily selected the name.

The efficiency of Swedish traffic control is attested by the casualty statistics for the country: 1 person killed, 40 injured per day; only 365 dead in a year.

The number of automobiles upon Sweden's roads is small compared with the water traffic on a summer's week-end. Like a plague of waterbugs, launches skim briskly over the complicated maze of seaways. It is the exceptionally ill-to-do family that lacks a motor craft of some variety. Where, for economy's sake, a choice must be made between owning an automobile or a motorboat, the water vehicle is almost invariably preferred.

I was shown colonies of standardized houses—the prefabricated "magic" homes.

In the long, bright August evenings I saw families working on putting together these maisonettes. Through the beautifying of their gardens they seek to disguise the rather terrible monotony of standard design and color. Many government officials, including the Prime Minister and the Minister of Finance, are living in simple houses of this type.

There are vast blocks of standard apartments. In these settlements the buildings are named for well-known novels and the streets for authors.

EIGHTY KINDS OF APPETIZERS

Within the last two years scores of sidewalk cafés and restaurants have made their appearance on Stockholm's streets. They seem always to be filled. Late breakfast-

* See "Granite City of the North," by Ralph A. Graves, in THE NATIONAL GEOGRAPHIC MAGAZINE, October, 1928.

ers rub elbows with early lunchers, and from twelve to two obtaining a table is a feat of agility.

A bright and shining date on my Stockholm calendar was a Sunday's "Bummeln-tour." At the park restaurant Bellmansro, named for a beloved composer-singer, 80 kinds of tempting "smörgåsbord" (hors d'oeuvres) lure the novice to his undoing.

We spent the afternoon at Skansen, Stockholm's open-air museum. A tour through the authentic examples of peasant architecture and ethnographical objects assembled here is almost equal to a round trip through the length and breadth of Sweden.

© Douglas Chandler

DOBBIN TAKES A BIRD'S-EYE VIEW OF STOCKHOLM

A thoroughbred's portable stall is about to be lowered into the hold of a ship. In the background, at right, stands the National Museum. Gustavus Adolphus III began the collection of exhibits which it houses.

A 14-seating Junkers pontoon plane made every morning the 45-minute hop to that densely clustering little archipelago of 6,000 Åland Islands, so delightfully portrayed for GEOGRAPHIC readers by Mr. Villiers.* At noon the plane returned to Stockholm, and in the afternoon did the round-trip journey to Gotland.

"I have sold the *Pomape*," Captain Gustaf Erikson informed me, "and *L'Avenir* is also sold. She's to be used as a training ship by the Hamburg-American Line. We lost the *Herzogin Cecilie*, too; she went ashore in a gale off the Devon coast in 1936."

The latest addition to the Erikson fleet was the *Moshulu*, a four-masted bark of 3,117 gross tons. "She's the last windjammer in the world to be had; there are no more," said the captain. "How long will the twenty-odd ships of our fleet remain serviceable? Oh, another 25 years, with luck!"

Gotland, on a large-scale map, looks like a South Sea monster turtle lost in the middle of the Baltic and headed for home. From the village of Burgsvik the head sticks anxiously out of the shell.

The Ice Age acted as a flatiron to level out Gotland's surface for the benefit of future bicyclers. Youth groups, labor groups, and other holiday groups throng to this playground. There are many youth

* See "Where the Sailing Ship Survives," by A. J. Villiers, NATIONAL GEOGRAPHIC MAGAZINE, January, 1935.

hostels and other provisions for inexpensive lodging. Week-end boats from Stockholm and Nynäshamn bristle with the spokes of bike wheels. And in the summer season come legions of visitors from other lands.

As guest of two cultured Gotlanders, I reverently gazed upon the antiquities of Visby, a city which provides abundant evidence of having been inhabited 4,000 years ago. Weeks would not suffice to acquaint oneself thoroughly with its treasures taken from Stone Age graves, its picture stones carved with symbols of the sun cult, its vast collection of coins excavated from the island —coins from lands as distant as Arabia and China.

A PEOPLE OUTGREW THEIR ISLAND

Together, we visited Thor's Stronghold, a high, steep-sided plateau surrounded by a mile-long wall of unhewn boulders.

Archeologists have not yet been able to agree on the true origin of this giant stronghold, which consists of hundreds of thousands of cubic yards of stone and is estimated to have required some million days of labor to construct.

There is a cobwebby Gotland legend recorded in the *Guta Saga*, from the 13th century, which tells of a time when the island's population grew to a point where there was not room for all; that lots were drawn to solve the problem by banishing one-third from the country.

The saga continues: "Then were these loath to go, but went they in to Thor's Stronghold and lived there. Then would the land not suffer them, but drove them thence. Then went they forth to an island by Estonia called Dagö (now Hiiu) and lived there and made a stronghold for themselves, which is still seen. Also there could they not subsist, but went by the water called Duna (Daugava) up through Russia. So far they went that they came to Greece. So lived they there and live yet, and still have they somewhat of our tongue."

At a time when Stockholm was an inconsequential, struggling village, Visby was world-famous as ruling city of the Hanseatic League. Though down the ages it was ravaged by war, fire, and pestilence, its vessels, carrying the pennant with the Lamb of God, still brought in from trade with Novgorod, Riga, Lübeck, Brugge, London, Bergen, riches enough to perpetuate its phoenixlike grandeur.

Conquered in 1361 by the Danish king Valdemar Atterdag, the humbled city had to pay heavy tribute, and finally the rapacious Vitalian Brotherhood in 1390 broke its spirit.*

Lunching at Snäckgärdsbaden Restaurant, which stands on the bluff above a crescent-shaped sandy bathing beach, thronged in summer by lovely blond daughters of the Nordic pioneers, I sampled Gotland's epicurean specialties: a fattish, succulent species of flounder, and a much-prized sort of asparagus, its distinctive flavor imparted by the iodine from seaweed used to cover the plants for blanching.

That night I saw an operatic spectacle, "Petrus de Dacia," played by local talent supplemented by voices from the Stockholm Royal Opera, in the Gothic-arched skeleton of the St. Nicolai Church.

My last hours in Stockholm—before taking the plane to Copenhagen (page 801), which completed the final leg of my round-the-Baltic flight—were spent with the Swedish geologist, Gerard De Geer. Against the wall of his high-ceilinged study was a huge circular section of a California redwood.

"A present from my valued colleague, Dr. Andrew Ellicott Douglass, of the University of Arizona," he explained.†

"The tree in its prime was taller than our twin skyscrapers put together," he continued, pointing to Stockholm's two tallest buildings, visible from his window. "As a jest, I sent him in return a *Salix polaris*, an arctic willow, one of the world's smallest trees, just four inches high, which I brought down from Spitsbergen."

BORINGS REVEAL HISTORY

In graphic phraseology he told me of the geologic annals of northwestern Europe revealed by his reading of clay borings.

"Portions of Finland and Sweden are rising as much as a yard and a quarter per hundred years," said Professor De Geer. "In the upper Gulf of Bothnia they have to rebuild the towns twice a century to keep them at the water's edge."

So casually did he gossip of geologic movements in terms of X-millions of years that I momentarily lost my time sense, and felt that I must rush forth and snap the scene once more before it changed.

* See "Sweden, Land of White Birch and White Coal," by Alma Luise Olson, in THE NATIONAL GEOGRAPHIC MAGAZINE, October, 1928.

† See "Secret of the Southwest Solved by Talkative Tree Rings," by Andrew Ellicott Douglass, NATIONAL GEOGRAPHIC MAGAZINE, December, 1929.

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The Society cooperated with Dr. William Beebe in a deep-sea exploration of undersea life off Bermuda, during which a world record depth of 3,028 feet was attained August 15, 1934, enabling observations of hitherto unknown submarine creatures.

The Society also had the honor of subscribing a substantial sum to the expedition of Admiral Peary, who discovered the North Pole, and contributed $100,000 to Admiral Byrd's Antarctic Expeditions.

The Society granted $25,000, and in addition $75,000 was given by individual members, to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees in the Giant Forest of Sequoia National Park of California were thereby saved for the American people.

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

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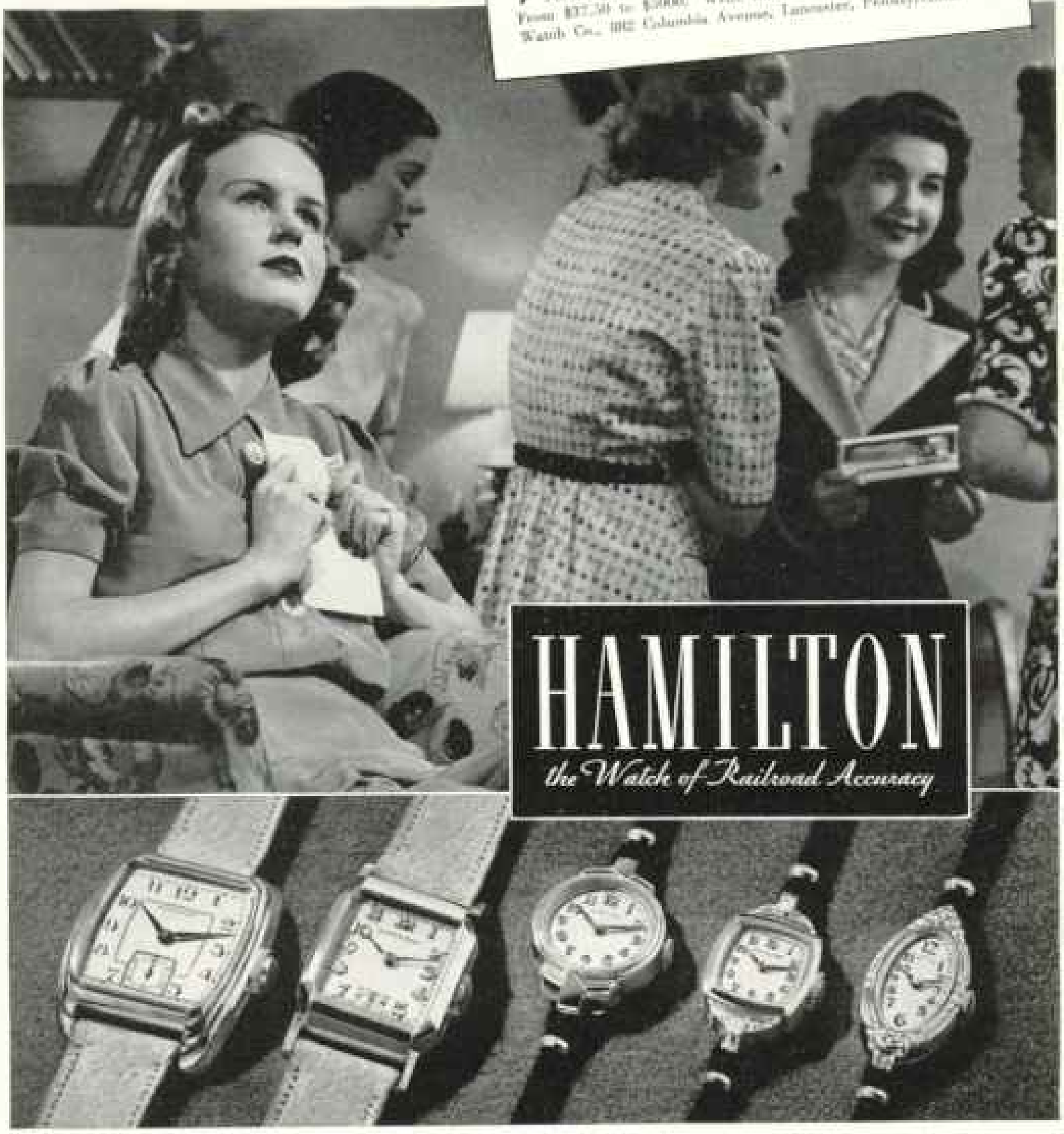

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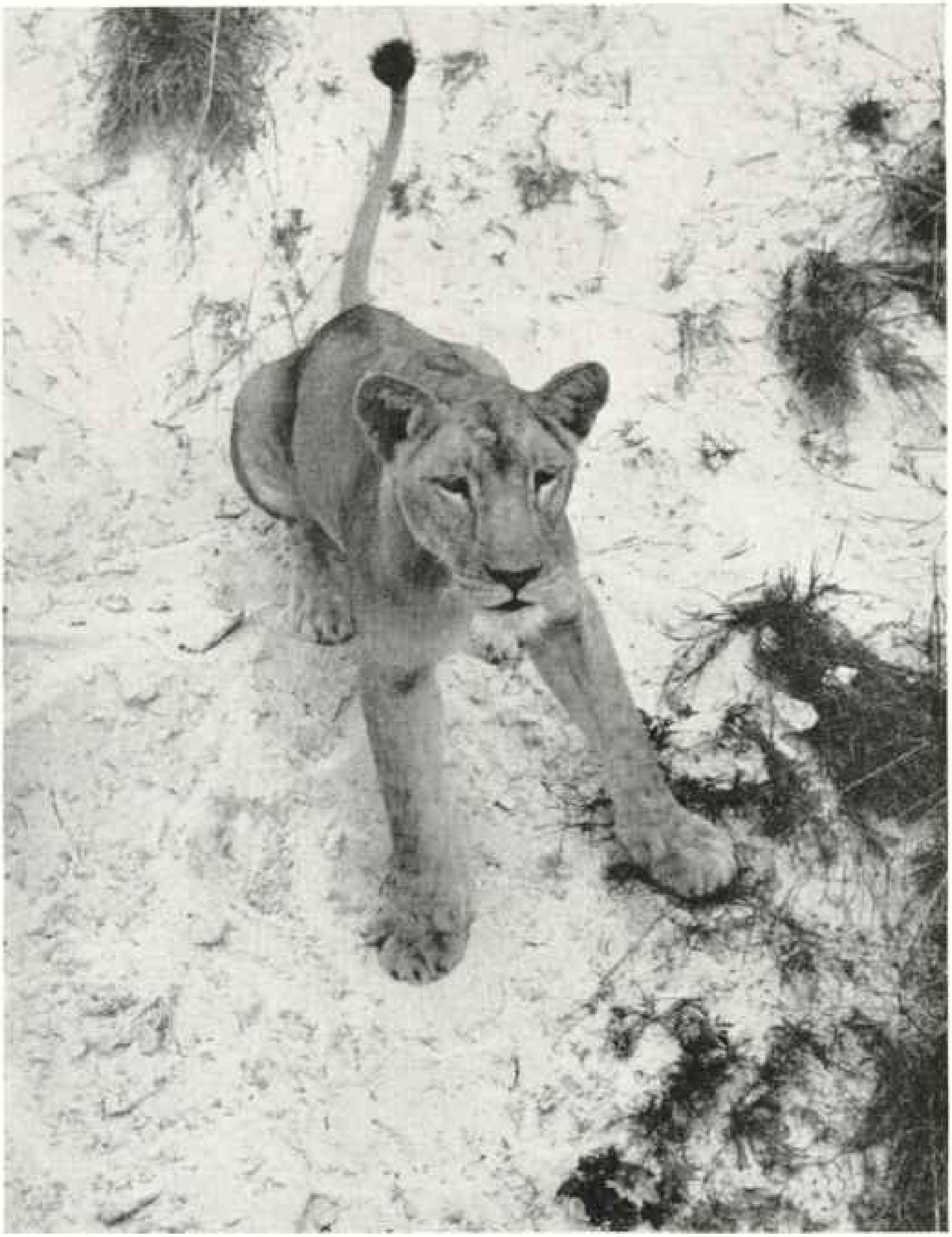

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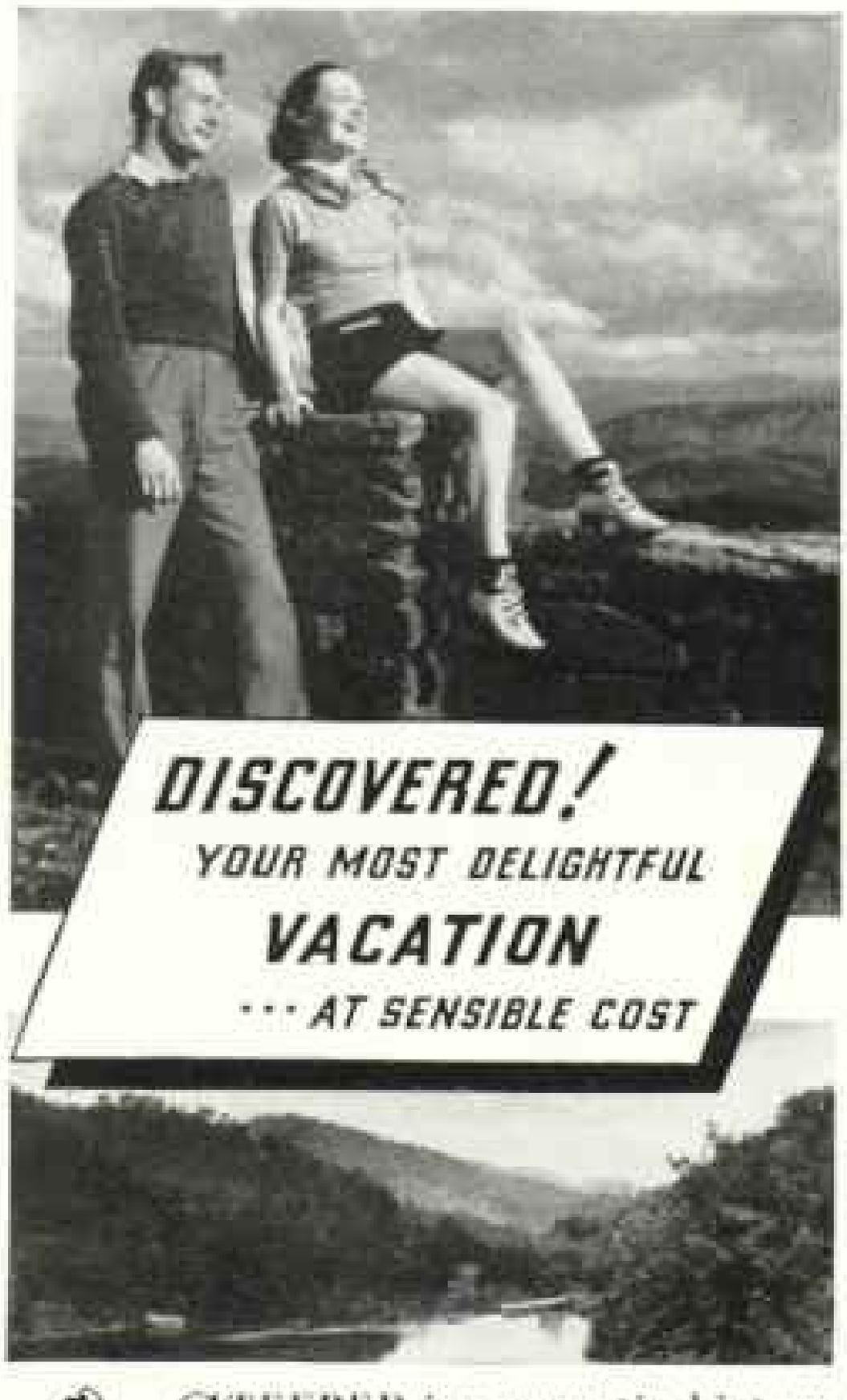

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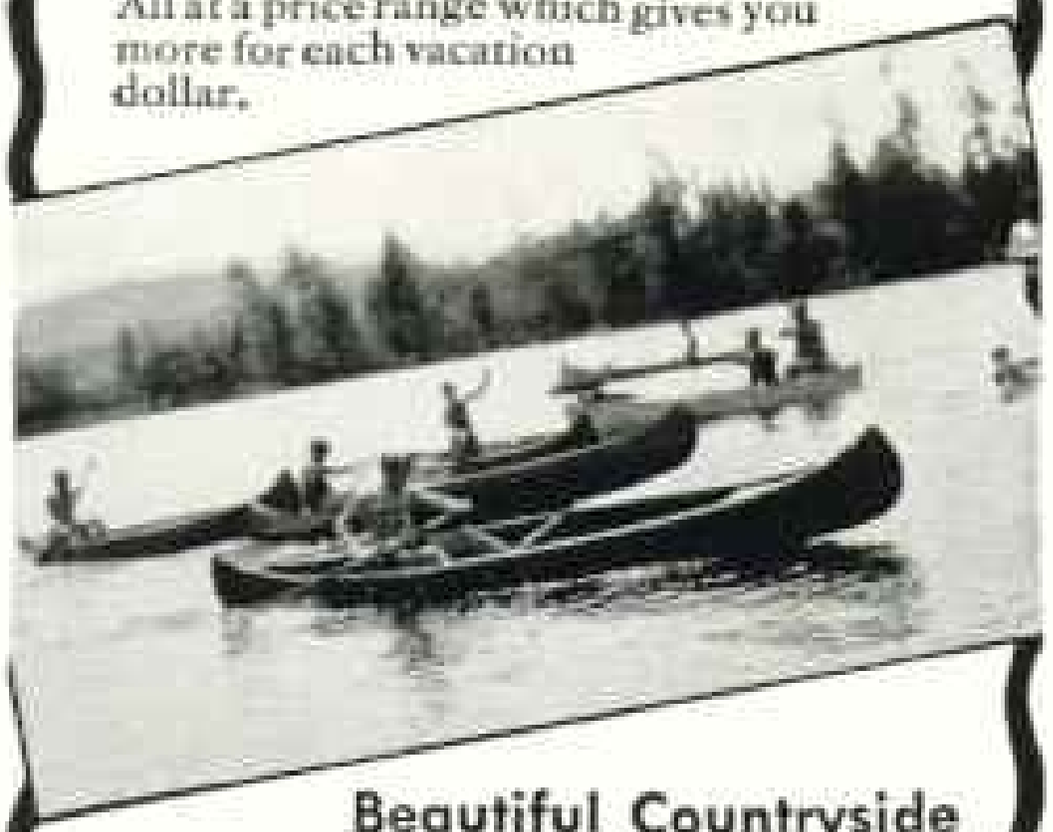

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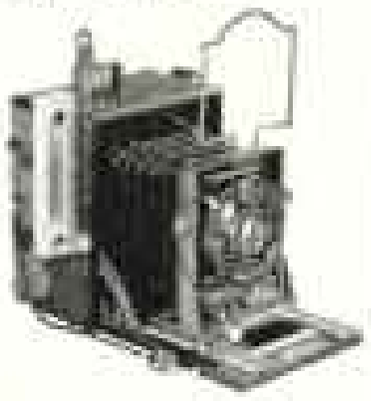

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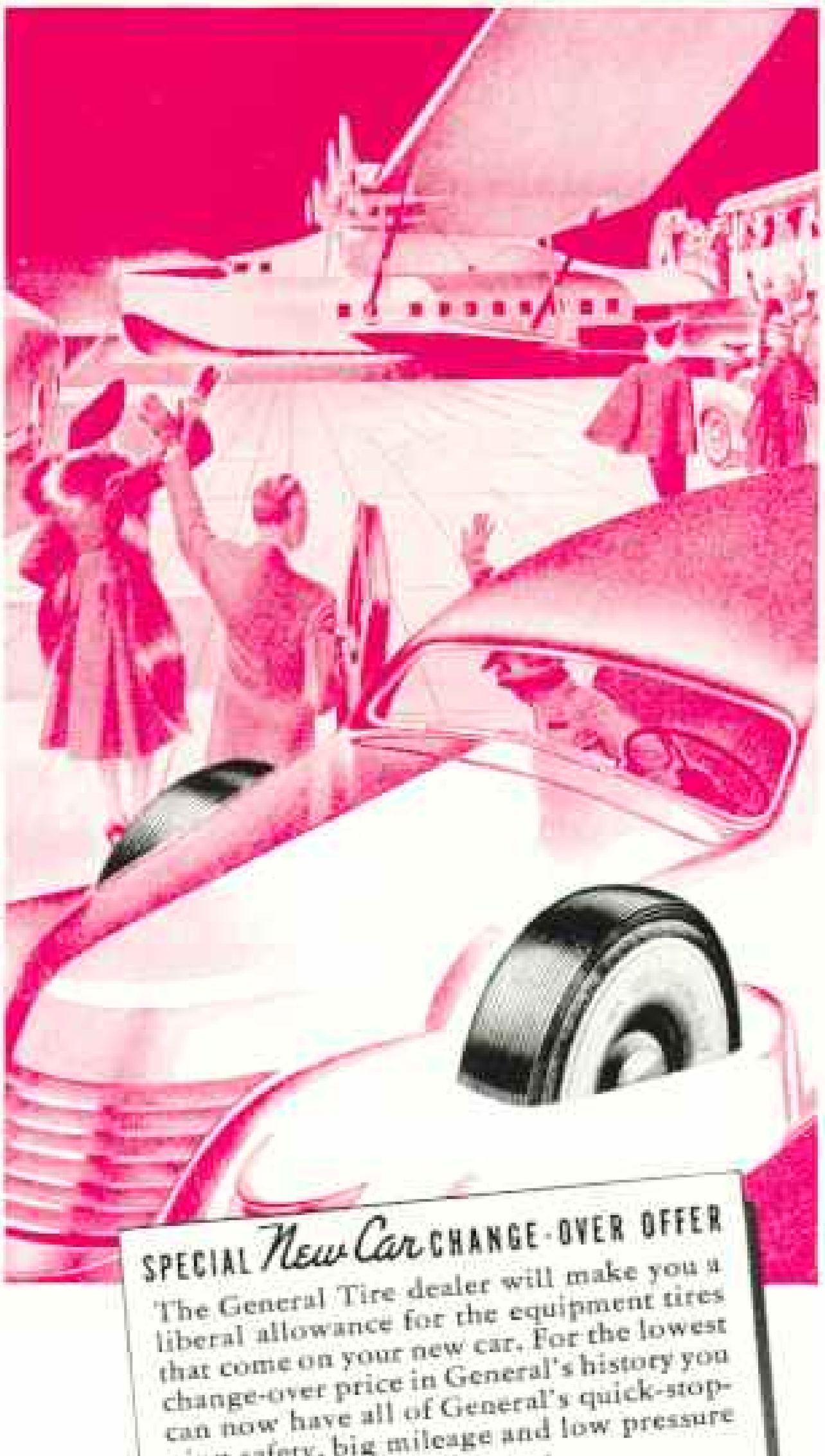
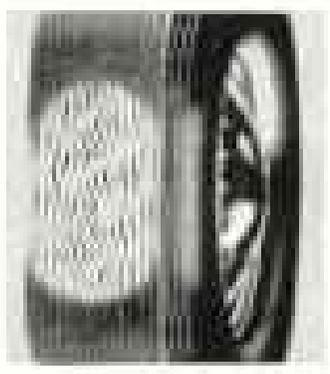


Yes, for less than a dollar more per tire than you would pay for ordinary first line tires you can now enjoy the super safety of the Top-Quality General Dual 8 on your Ford, Chevrolet, Plymouth and other popular-priced cars. In addition to General's famous big mileage and low pressure comfort you get in the new General Dual 8 a tire of remarkable stopping ability. On wet, slippery roads you will have a new feeling of security — the knowledge that you can always stop *in time* when the emergency arises. The Dual 8 is a stronger tire, too — it has a blow-out resistance of 8 times normal air pressure. Safety — long wear — low pressure comfort — smart style — you can have *all* these famous General Tire features at amazingly low cost. See your General Tire dealer. Liberal allowance for the unused tire mileage.

GENERAL TIRE & RUBBER CO., AKRON O.

SPECIAL *New Car* CHANGE-OVER OFFER

The General Tire dealer will make you a liberal allowance for the equipment tires that come on your new car. For the lowest change-over price in General's history you can now have all of General's quick-stopping safety, big mileage and low pressure comfort right from the start.



No Other Tire Will Produce this *Wrinkle*

Entirely new and different. When you apply the brakes it wrinkles into squeegee action. Clings with super-soft grip. Stops straight in its tracks without side swerve or tail spin.

The new Dual 8 is available with smartly styled white sidewalls at slight additional cost. They add the final touch of distinction to your car.

THE NEW GENERAL *Dual 8*

THE *FEEL* OF REFRESHMENT
MAKES TRAVEL MORE PLEASANT

"Take off . . . refreshed"

You're off to a flying start when you start refreshed. So no wonder you find people enjoying *the pause that refreshes* with ice-cold Coca-Cola at airport soda fountains. Thirst asks nothing more.

FROM A KODACHROME ORIGINAL

Beyond price . . .

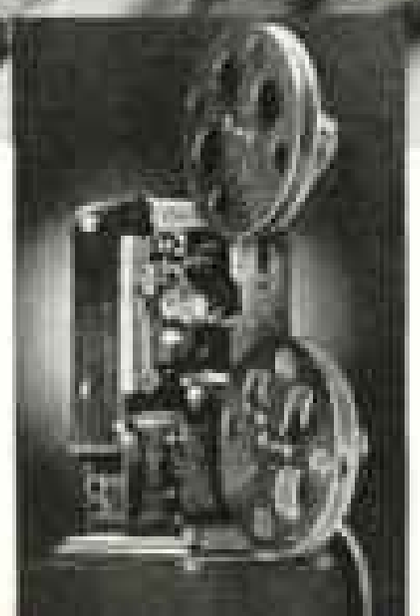
Great moments in life that will never come again . . . thousands are keeping them with a movie camera

MAGAZINE CINÉ-KODAK loads in three seconds. You don't touch the film. It comes in a magazine. Just slip the magazine into place, close the camera cover and shoot. Effortless loading is only one of six new features in this remarkable pocket-size movie camera. With fast *f*.1.9 lens, $125; including combination carrying case, $137.50.

CINÉ-KODAK "K" is the most widely used 16 mm. home movie camera—it's so simple, yet so fine. You get clear, brilliant movies at the touch of a lever. Loads with full 100 feet of 16 mm. film. With *f*.1.9 lens, $88.50; including case, $100.

. . . AND FOR PROJECTION

For clearer, more brilliant projection, use Kodascope, the Eastman-made projector which teams up beautifully with Ciné-Kodak and shows your pictures at their best.



• Some days shine out all through the years—days of special meaning, special importance in our lives.

A girl and boy get married . . . the young folks graduate . . . a family gathers around a new baby . . .

Think how wonderful . . . long afterwards . . . to be able to bring back the scene, just as it was.

Thousands today are finding out the priceless value of movie records. With Eastman's finer home movie cameras—Magazine Ciné-Kodak and Ciné-Kodak "K"—even the novice can get splendid movies. These are the two most popular of all 16 mm. home movie cameras.

FULL-COLOR KODACHROME—And simply by changing your film—loading your Ciné-Kodak with Kodachrome instead of black-and-white—your movies will be flooded with gorgeous full color. Drop in at your dealer's—let him show you these 16 mm. Ciné-Kodaks. And some sample reels, both in black-and-white and full color . . . Eastman Kodak Company, Rochester, N.Y.

Ciné-Kodak

EASTMAN'S FINER HOME MOVIE CAMERAS

Make this year your GREAT LAKES YEAR

If you haven't traveled in the Great Lakes region, you've missed one of the most attractive parts of America. Make this year your Great Lakes Year! These great bodies of fresh water offer a multitude of vacation opportunities. There are many charming places to visit in this historic country to the north. Over these waters sail D & C liners—the finest ships on the Great Lakes. These big boats are as fully equipped as ocean liners . . . wide decks . . . spacious salons and staterooms . . . unexcelled service.

Plan now to include the Great Lakes in your vacation plans. *If you're driving across country, put your car on a D & C liner. Enjoy a refreshing interlude on the water. Rates for passenger cars are low.* See your local travel agent for information about low-cost cruises.

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• D & C liners sail between Detroit and Cleveland, Detroit and Buffalo (Niagara Falls). Also to Chicago, Mackinac Island and St. Ignace. Embark at any port.

Passenger Department N-9
D & C Navigation Company, Detroit, Michigan
Please send me illustrated folder containing fares and schedules.

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70th Anniversary year

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THE GREAT LAKES WAY

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128-DAY WORLD CRUISE

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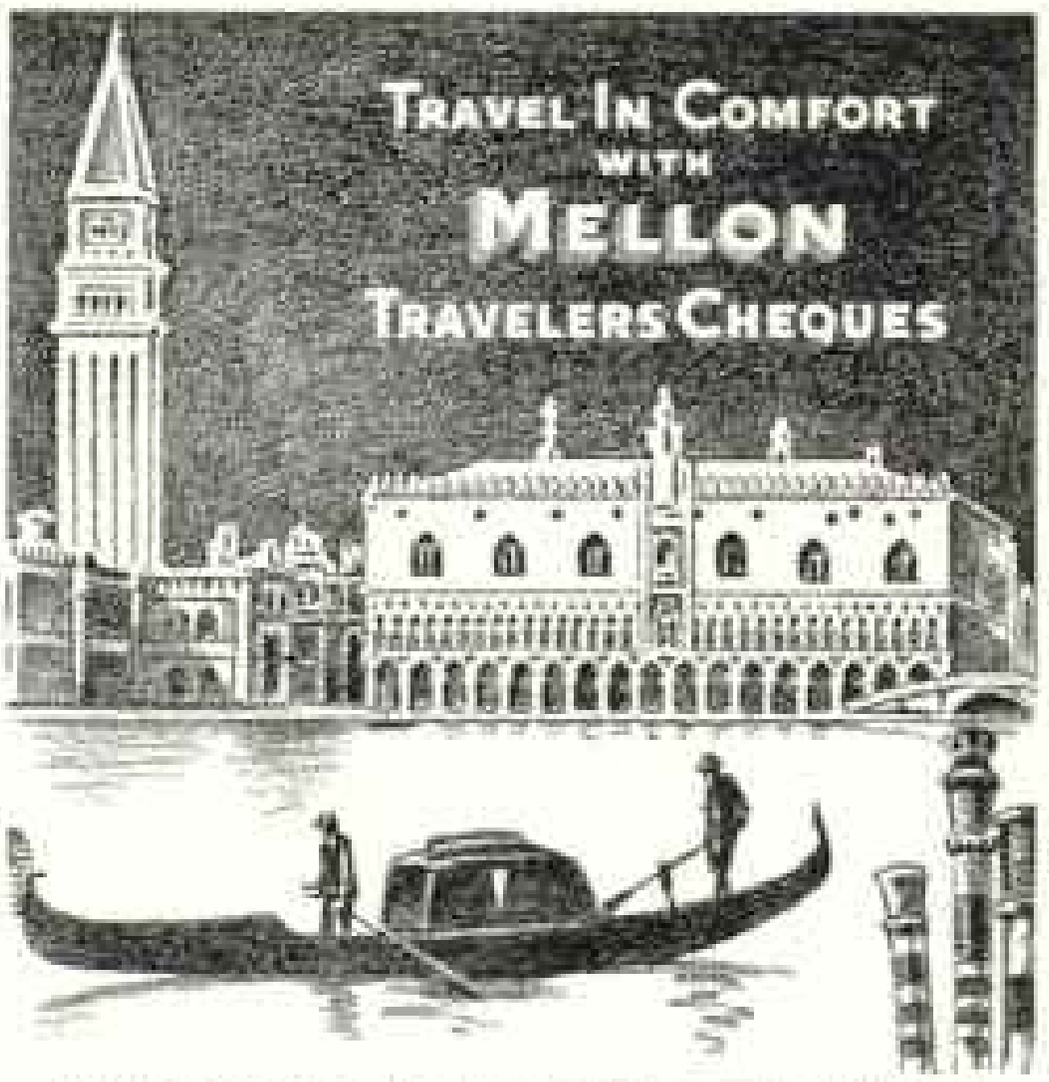
Canadian Pacific



Mellon Travelers Cheques provide a convenient and safe medium for your travel funds. Accepted everywhere, they may be used directly in payment of travel expenses, or may be changed into cash. Before your departure convert your expense money into Mellon Travelers Cheques. Ask for them at your bank.

MELLON NATIONAL BANK
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Discovered! A cure for "CREASLES"

When you travel, are you badgered by "Creasles"—those creases and wrinkles that ordinary luggage puts in your wardrobe? They're unnecessary!

Banish "Creasles"—travel with Val-A-Pak, the luxurious luggage that actually "air-cushions" clothes against wrinkling and mussing, eliminates pressing costs.

Many advantages! Hangers for suits and separate compartments for complete wardrobe. Val-A-Pak hangs up conveniently on any hook, stows away easily; lays flat on auto seat or Pullman berth. Lightweight and easy to carry, moisture-proof, dust-proof. Made in a wide range of leathers and fabrics. Prices to please every pocketbook. On sale at men's wear or luggage shops.

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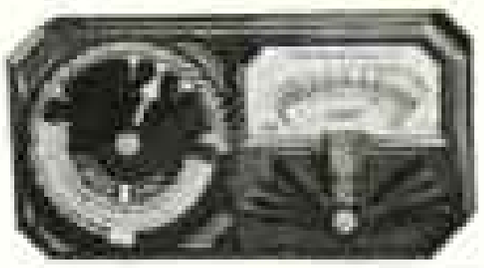
HAVE YOUR HOME MOVIES *Look* PROFESSIONAL

You can have every frame and every scene sharp and full of detail . . . correctly exposed . . . if you use a WESTON Exposure Meter. Simply point it at the scene or subject, and it tells the exact F. stop to use with any type of movie camera . . . with all still cameras as well. Insures perfect exposures, eliminates wasted film. Compact, inexpensive; ideal for color and fast film. See it at all dealers, or write for literature. Weston Electrical Instrument Corp., 584 Frelinghuysen Ave., Newark, N. J.



WESTON *Exposure Meter*

LEICA PHOTO BY HANS KLOSS

You can catch the "fleeting moment" with your LEICA

It is the microscopic precision of the scientifically constructed Leica Camera that permits you to get the sharp, clear pictures you want, indoors or out, in black and white or full color. Leica has automatic focusing and shutter speeds from one full second to 1/1000th, enabling you to "stop" the fastest action. Ask your dealer about the Leica Time-Payment Plan or write for full information and sample copy of Leica Photography.

THE ORIGINAL MINIATURE CANDID CAMERA

MODEL G WITH LEITZ SUMMAR F:2 EXPOSURE LENS AND RAPID WINDER

E. LEITZ, Inc., 730 Fifth Ave., N. Y., Dept. 74

THE FIRST Comprehensive Work Ever Published with All Major Species of Birds of the United States and Canada Shown in **FULL COLOR**

OSPREY BRINGS HOME A FISH

NEW BOOK OF BIRDS

Especially now that summer is here, sportsmen, Nature students, and all outdoor enthusiasts will find boundless delight in the National Geographic Society's 738-page Book of Birds—a magnificent work *in two volumes* portraying many aspects of beauty, mystery, and entertaining fact from the far-flung kingdom of birds.

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Enclosed please find $_____ for which send me _____ sets of the new Book of Birds in two volumes.

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"Best possible tribute to these books was paid by a friend of the reviewer who, when shown them, offered double their price on the spot for them."—*Photography* (London, England)

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Photograph by A. A. Allen
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DETACH HERE—OR NOMINATE BY LETTER IF YOU PREFER NOT TO CUT THIS PAGE

Secretary, National Geographic Society,
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Name of Nominating Member_____

Address_____

6-38

"Where shall we stay?"

NATIONAL GEOGRAPHIC MAGAZINE'S HOTEL SECTION

The New England States

MAINE

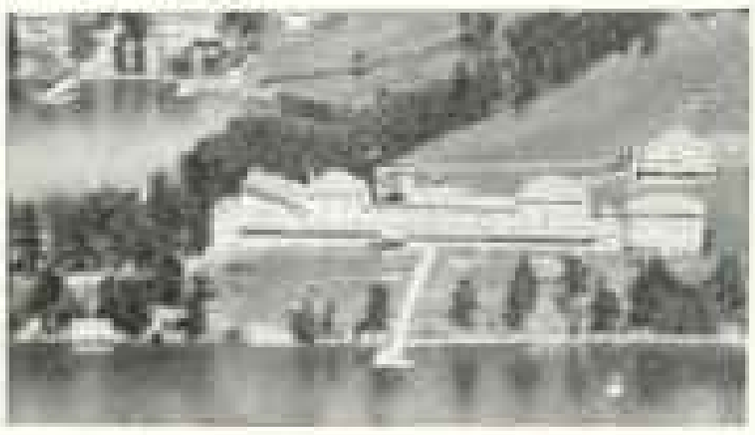
Moosehead Lake—Greenville Junction

Squaw Mountain Inn. Private, sporty golf course. Fishing, swimming, boating. Tennis, archery, hiking. Select clientele. No Hay Fever. Phil Sheridan, Mgr.

Poland Spring

Poland Spring House and Mansion House. 18-hole private golf course, 1000 acres—finest cuisine. Booklet G on request. Poland Spring, Me.

Rangeley Lake



Rangeley Lake Hotel and Cottages

Mountain and lake paradise for your memorable vacation in Maine! Golf, bathing, water sports at the door. Dancing—theatre—riding—tennis—full entertainment and social program. Fine room for three-quarters, unsurpassed food. July golf "on the house." No hay fever. Booklet and rates from Charles H. Day, Managing Director, P. O. Box 10-F, Rangeley Lakes, Maine.

York Harbor

The Marshall House, York Harbor, Maine. Beautiful location; superlative cuisine; modern brick construction. Write Gilman L. Moulton, Manager.

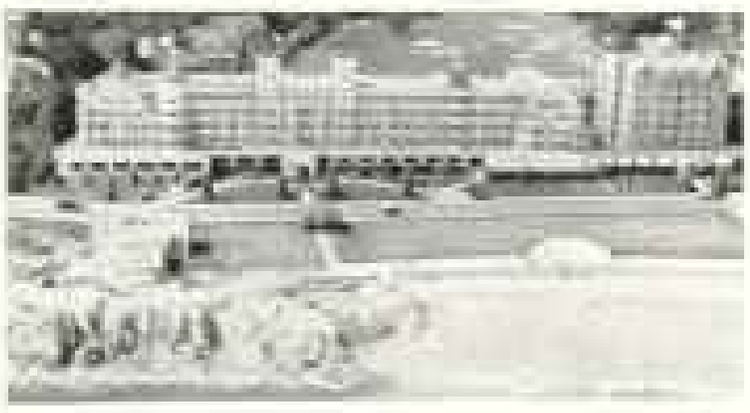
MASSACHUSETTS

Boston

The Copley-Plaza

Situated in historic Copley Square which provides a hotel setting as distinguished as any in the world. Nearest hotel to Back Bay and Huntington Avenue Railroad Stations. Easily accessible to the shops and theatres. This hotel is convenient to the residential and business sections. Rooms with bath $4 single—$6 double. Illustrated folder on request. Arthur L. Race, Mng. Dir.

Swampscott



New Ocean House

On the delightful and historic North Shore. Ideal seaside and country environment. All recreational features, including golf, tennis, fishing, riding, and yachting. Private bathing beach. Comfortable and spacious accommodations. Best patronage. Select cuisine with many sea food specialties. Rates considerate. Booklet, Clement Kennedy, President.

MASSACHUSETTS

Magnolia

Oceanside and Cottages. Most beautiful spot on Atlantic. Select clientele. Unsurpassed cuisine. All Sports. Theatre. Geo. C. Emerson, Jr., Pres.

NEW HAMPSHIRE

Hanover

Hanover Inn, on Campus of Dartmouth, offers intellectual and recreational opportunities. Golf, tennis, riding, canoeing. Discriminating service.

Lake Sunapee

Grandview Hotel. Private beach, golf course, fishing, all sports, dance orchestra. American plan. Moderate weekly rates. Select clientele. G. E. Bliss, Mgr.

Portsmouth

The Wentworth by-the-Sea

A delightful summer home late June to early September. Old in its hospitable charm; modern in its appointments. Privately owned facilities for entertaining relaxation. Golf—Tennis—Ocean swimming pool; etc. Write for new illustrated folder and rate quotations.

Rye Beach

The Farragut. American plan. Thoroughly modernized and refurnished. All popular sports. Seashore and country. Write for booklet and rates.

White Mountains—Crawford Notch

Crawford House. Famous for its atmosphere and charm as distinctly its own. Discriminating people return each summer. All sports. Write for rates.

White Mountains—Jefferson

The Waumbek Hotel. In the White Mountains. American plan. 2,000-acre estate. 18-hole golf course. Booklet. Soreno Land, Jr., Manager.

VERMONT

Lake Morey—Fairlee

Bonnie Oaks Inn and Bungalows. All sports. 75 rooms with baths and fireplaces. Baby Oaks, with supervised play. May to Oct. Folders. E. H. Page.

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CANADA

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The Ritz Carlton . . . . Famed for its service, cuisine and distinctive clientele. Location unsurpassed.

Murray Bay

Manoir Richelieu

One of America's most distinguished hotels provides everything for your pleasure at Murray Bay! Championship golf, salt water pool, archery, tennis, social program. $8 up per day, room with bath and meals. Open June to September. Apply to John O. Evans, Manager, Murray Bay, Quebec, or consult your local agent.

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Chalfonte-Haddon Hall. On the Atlantic City Boardwalk. 300 rooms. Ocean Decks. Modern health baths. American and European plans.

Hotel Dennis. On boardwalk, facing pier. Sun decks over Garden Terrace. Surf bathing. Beach chairs. Health baths. Both Plans. Walter J. Buetz, Inc.

Atlantic City

The Traymore

You'll find people with a talent for living at the Traymore. It's the "continental air" with a dash of the sea that they especially enjoy. Located on the boardwalk. Large outside sleeping rooms. Sun-washed decks at the Ocean's edge. Delightful cuisine with French and American cooking. Music. Dancing. Cocktail lounges. Golf. Bicycling on the boardwalk. American or European plan.

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Located on the beachfront in America's Greatest Family Resort. Offers genuine hospitality and the companionship of a delightful clientele. Distinctive cuisine and service. Three open air sea water swimming pools, with constantly circulating filtered water. Kiddies' pool. Open June twenty-fifth to September twelfth. American plan. J. Howard Sloane, Manager.

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The Princeton Inn. Facing golf course and Graduate College. Amer. plan. 100 rms. Fireproof. "Hospitality as in days of old." J. Howard Sloane, Mgr.

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Enjoy the Cool of the Sea at this outstanding seashore resort. Less than two hours from New York. As exclusive as your own club—Private Bathing Beach. Two excellent Golf Courses—Tennis—Riding. Famed for food and service. Excellent music—ideal for children. Selected clientele. Booklet on request. C. S. Ervin, Mgr. Phone Spring Lake 900, N. Y. Office, 11 W. 42nd St., Tel. Longacre 5-4500.

"Where shall we stay?"

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CALIFORNIA

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The Ambassador. Twenty-two acres Playground in heart of City. All Sports. Plunge. Beach. Lido. Cocoanut Grove for Dancing. European, $5.00 up.

Yosemite National Park

The Ahwahnee. California's most distinctive resort hotel in a scenic wonderland. Open all year. All seasonal sports. American plan, $10 upward.

COLORADO

Colorado Springs

The Broadmoor at the foot of Pikes Peak. Aristocrat of resort hotels — center of social and sports activities in the West. Brochure on request.

DISTRICT OF COLUMBIA

Washington

Wardman Park Hotel. Washington's largest. Surrounded by parks. Tennis, swimming; dancing nightly. 30c taxi from Union Station. Rates from $4.

MARYLAND

Baltimore

The Belvedere. A really fine and modern hotel. Rooms, cuisine and service in keeping with the highest standards of living. Rates begin at $4.00.

MISSISSIPPI

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Inn By The Sea and Cottages. Pass Christian, Miss. Always open. On private bathing beach. All sports. Paved roads. Climate ideal. Near New Orleans.

NEVADA

Lake Tahoe—Glenbrook

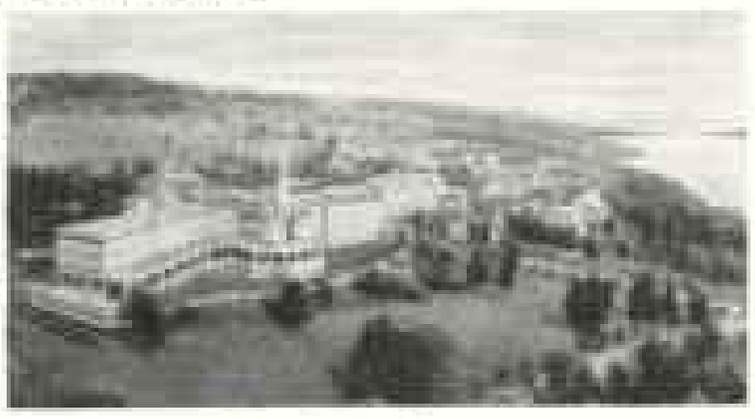
Glenbrook Inn and Ranch. On most famous lake in West. Excellent golf, motoring, lake and mountain sports. One hour from Reno. Elevation 6230 feet.

NEW YORK

Lake Placid

Whiteface Inn. Only hotel directly on the lake. All sports. Private 18 hole golf. Orchestra. Accommodates 200. Fine cuisine. $7 up with meals. Booklet.

Watkins Glen



The Glen Springs

The Nauheim Baths are world famous. The cuisine . . . the golf . . . the magnificent setting high among the Finger Lakes . . . are alike memorable. All the advantages of European Spas—just overnight from New York. Illustrated booklets and rates from Wm. M. Leffingwell, Pres., Watkins Glen, N. Y., or phone our New York office, 500 Fifth Ave., MEdallion 3-6286.

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The Barbizon, Lexington Ave. 63rd St. New York's most exclusive hotel for young women. Cultural environment. Weekly $12 up, daily $2.50. Bklt. "G".

Barbizon-Plaza. New skyscraper hotel overlooking Central Park at 6th Ave. Rooms from $3 single, $5 double. Continental breakfast included. Bklt. G.

The Gotham. Discover for yourself the gracious hospitality, spacious rooms and excellent service. 5th Ave. at 55th St. Max A. Hoering, Res. Mgr.

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World renowned among those who demand truly superior accommodations. In New York's most exclusive social section. Single rooms or elaborate suites by the day or longer. Fifth Avenue at 61st Street, New York.

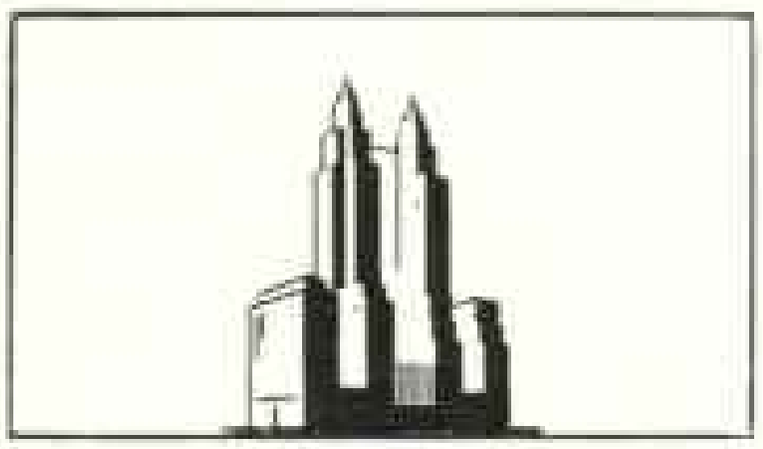
The Plaza. New York. Facing Central Park. Perfection marks every detail of appointments, service and cuisine. Henry A. Rost, President.

The Ritz-Carlton. Madison at 46th. World-famous service, comfort, cuisine, convenience. Redecorated rooms. Single from $7; Double from $9.

Savoy-Plaza. A distinguished hotel where hospitality reigns. Spacious rooms overlooking Central Park provide every harmony for enjoyable living.

Hotel Seymour, 50 W. 45th St. Near Fifth Ave., theatres, shops, art galleries, Radio City. Quiet, refined surroundings. Single, $2.50 up; double $3.50 up.

New York City



The Waldorf-Astoria

The greatest achievement of The Waldorf-Astoria is that so much luxury and magnificence should still be subordinate to that sense of serenity which the world calls home. Park Avenue, 49th to 50th, New York.

George Washington. 23rd St. & Lexington Ave. All rooms with bath, from $2.50 single, $3.50 double. Write for Bklt. 'G' and supervue map of New York.

NORTH CAROLINA

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The Manor and Cottages — in beautiful Albemarle Park. 2 famed golf courses, 6 minutes. Write for booklet. Albert Rhoose, Proprietor.

PENNSYLVANIA

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Crestmont Inn, superbly situated on Lake at Eagles Mere (2250 ft. alt.). Golf, tennis, water sports. Distinguished clientele. Folder A.G. Wm. Woods, Prop.

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Bellevue-Stratford—"One of the Few World Famous Hotels in America." Rates begin at $3.85. Claude H. Bennett, General Manager.

The Warwick. Famous Lenape Cuisine. Centrally located. From $4.50 single, $7 double. George Lemmé, Exec. Vice Pres., Gerald R. Trimble, Manager.

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The Inn. 5,000 acre estate, utmost in sports, delightfully informal atmosphere—Selected Clientele. N.Y. Office, 500 Fifth Ave., LAckawanna 4-4558.

Pocono Mountains—Skytop

Skytop Club. Socially restricted 5000-acre estate. Golf, riding, two lakes. Three hours from New York. Non-members may address Skytop Club, Skytop, Pa.

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The Jefferson. Richmond's distinctive hotel, recently refurbished. 30 mi. to Colonial Williamsburg. Historic Richmond Folder gratis. Wm. C. Roger, Mgr.

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Cavalier Hotel and Beach Club. Surf bathing, golf, tennis, riding, fishing, swimming pool. Roland Eaton, Managing Director. Write for folder G.

WEST VIRGINIA

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The Greenbrier and Cottages. America's world-famous spa and resort . . . 100th Anniversary. For rates and information apply to L. H. Johnston.

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BERMUDA

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Inverurie. Directly on the water; bathing, sailing, fishing. Attractive rates. Consult travel agent or Bermuda Hotels, Inc., Dept. N, 500 5th Ave., N. Y. C.

HOTEL SECTION,
NATIONAL GEOGRAPHIC MAGAZINE
16th and M Sts., Washington, D. C.

Please have booklet and rate information sent to me at once by the following hotel(s)

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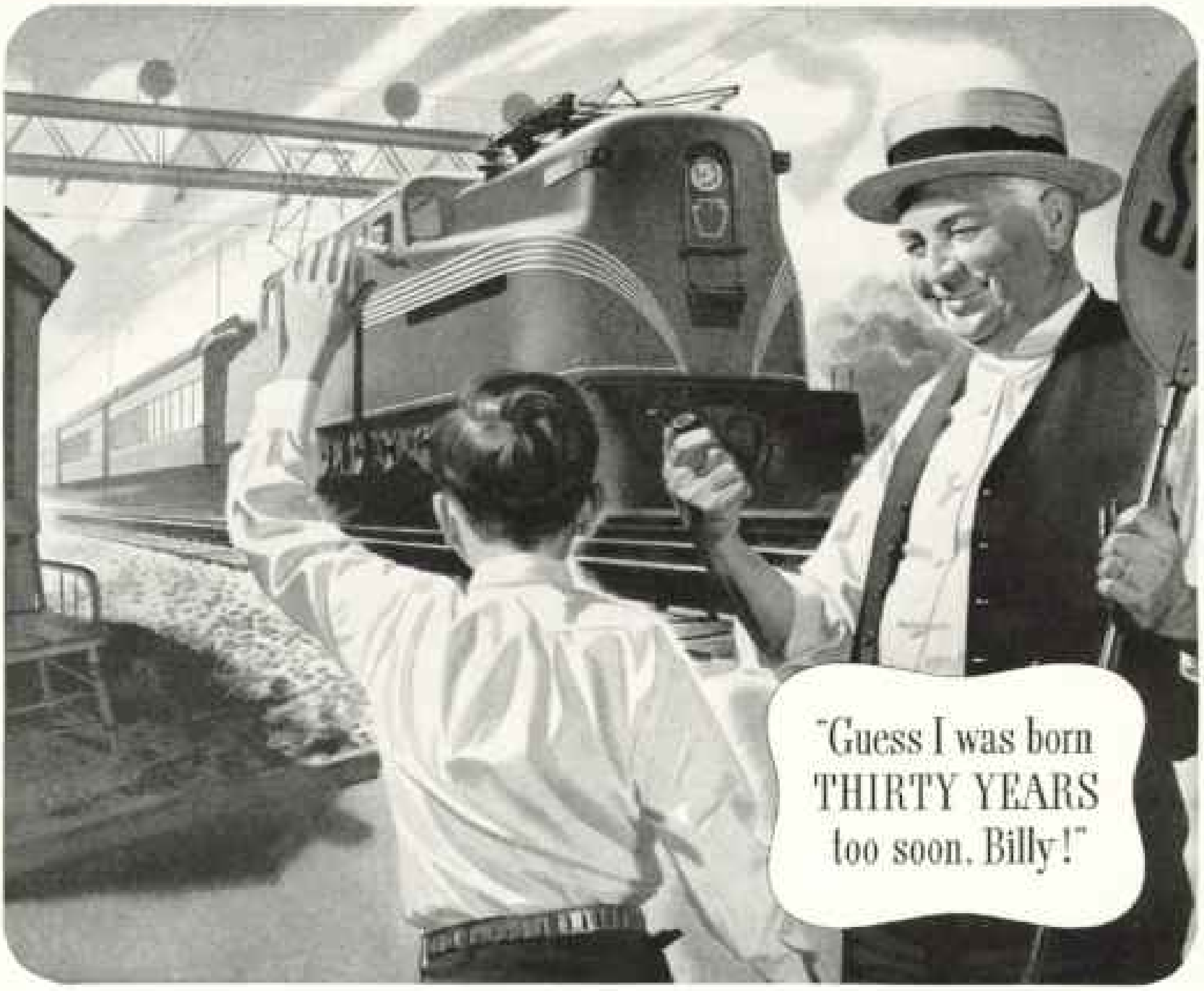
NAME_____

ADDRESS_____



Doing things electrically turns toilers into operators

"WHEN I was firing on this division, we sure had to shovel between here and Middletown. It took muscle then to run an engine. Look at those fellows — just enjoying the breeze. If you want to be an engineer, you're a lucky boy to be growing up now."

On railroads, as in all industry, electricity is taking heavy loads from tired backs. More traffic is handled more easily. Electric travel is faster, cleaner and quieter. The new electrified lines and Diesel-electrics are bringing back the old thrill of going places.

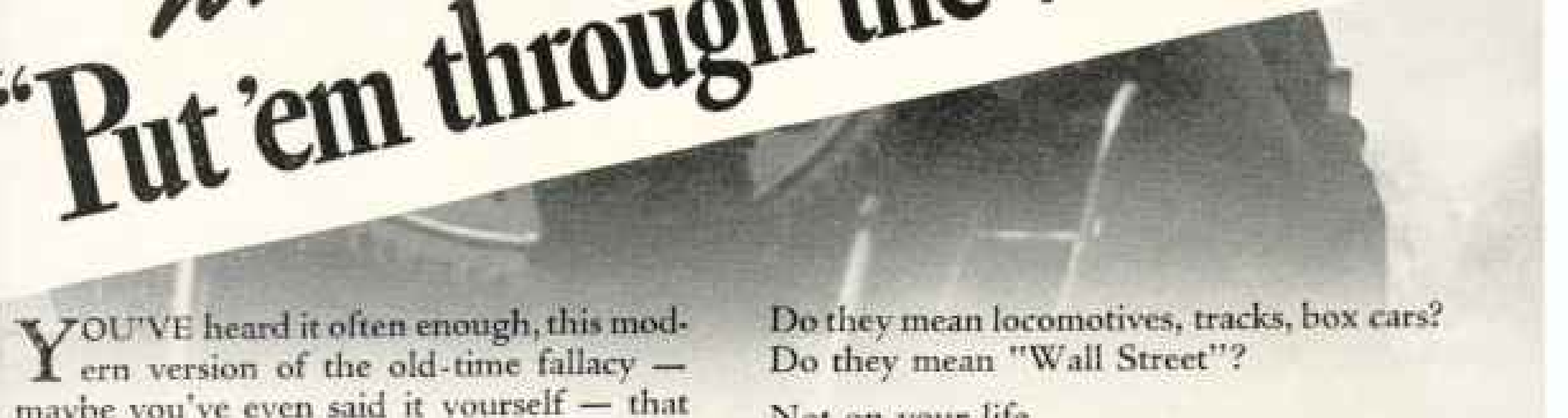
In production jobs of every kind, modern motor-driven machinery lets workers use their heads instead of their backs and arms. Electricity does the heavy hauling and lifting. With its tireless help, men produce more and earn more in fewer hours.

Westinghouse has spent its entire fifty-two years in helping to electrify America. Nearly every job in America's industries and homes has become easier as a result. Electricity, through many Westinghouse applications, has multiplied man's power to produce wealth — and to enjoy it.

Westinghouse

The name that means everything in electricity

What do you mean— "Put 'em through the wringer"?



YOU'VE heard it often enough, this modern version of the old-time fallacy — maybe you've even said it yourself — that railroad troubles are caused by "watered stock," too much debt, excessive fixed charges.

Let's see how this checks with facts:

First — according to every valuation ever made, the railroads are worth *billions more* than the total amount for which they are capitalized.

Second — railroad debt, in proportion to total investment, is *lower* today than it was years ago when railroads were prosperous.

Third — the Interstate Commerce Commission, in its latest rate decision, said "This evidence tends strongly to show that the major cause of unsatisfactory financial condition of the applicants [the railroads] as a whole is *not to be found in excessive fixed charges.*"

But all this covers only the arithmetic of the story.

When folks talk about putting "the railroads" through the wringer, what do these words really mean?

Do they mean locomotives, tracks, box cars? Do they mean "Wall Street"?

Not on your life.

They mean people — millions of them — people who live in every state in the Union — people who put their savings in railroad stocks and bonds — people who have life insurance policies and money in savings banks.

In the absence of "water" to squeeze out of our railroad system — this "wringer" business will squeeze out all hope that these people will ever get back what they have invested.

Isn't it better to have confidence in America — confidence in the fact that this country of ours has a greater future ahead of it than anything in its brilliant past?

Isn't it better to keep the American railroads going ahead, as the finest, most economical transportation system in the world, built to serve the most favored nation in the world?

SAFETY FIRST — *friendliness too!*

ASSOCIATION OF

AMERICAN RAILROADS

WASHINGTON, D. C.