VOLUME LXXX NUMBER FIVE

THE NATIONAL GEOGRAPHIC MAGAZINE

NOVEMBER, 1941

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
WASHINGTON, D.C.

$3.50 A YEAR 50c THE COPY

VOL. LXXX, No. 5 WASHINGTON NOVEMBER, 1941

THE NATIONAL GEOGRAPHIC MAGAZINE

Canada's War Effort

A Canadian Pictures the Swift and Sweeping Transformation from a Peaceful Dominion to a Nation Geared for War

By BRUCE HUTCHISON

CANADA, the only American nation at war, has been completely melted and recast in eighteen months.

Canadian skies are now dotted with planes, and a hundred new flying fields have sprung up, from the Atlantic to the Pacific. Here centers the vast air-training program for the whole British Commonwealth of Nations.

When war was declared, the regular army had fewer than 5,000 men. Today Canadian army troops on active service number more than 230,000. Three fully equipped Canadian divisions help form the spearhead of the forces guarding Britain against invasion.

Starting from scratch, the Dominion is building a modern navy.

At Canadian ports hundreds of merchant ships of every size and registry gather in convoys to set out for Britain with vital supplies.

From the shores of the Maritime Provinces to the prairies and mountains of the west, the map is spotted with new industries and new industrial towns.

What is the dramatic story behind this sweeping transformation?

Real Effort Began with France's Fall

On an afternoon in May, 1940, a coded cable from London brought to the "East Block" on Ottawa's Parliament Hill the terrible news that France was going under. The careful war plans of Britain and Canada were in ruins.

Two hours later, dark, craggy C. D. Howe, Minister of Munitions and Supply, was flying to New York on a desperate mission (p. 560). Canada's own war program and the air plan of the whole British Empire depended upon the supplies he could get in the United States.

Most of all, and immediately, Mr. Howe needed planes for the Commonwealth Air Training Plan which had to produce Britain's aviators. Britain had cabled that it could not then go through with its share of the bargain, could not supply the training planes. Even as Mr. Howe flew south, a consignment of planes shipped from Britain to Canada was turned back in mid-Atlantic to help in the Battle of London.

Mr. Howe also needed rifles to replace those Canada had stripped from its little army and was sending to Britain. He needed field guns, ammunition—anything he could get.

United States to the Rescue

Where Mr. Howe went, whom he saw, we shall not know until after the war. But he got enough to avoid disaster—training planes and odds and ends of small machines collected from many places with the aid of the friendly American Government; the promise of more when they were available; and the guarantee of all the engines he could use to power Canadian-built planes. He got American rifles and the assurance of future supplies.

On that day the air-training plan, without which Britain could never hope for supremacy or even equality in the air, was saved by Canada, with the aid of its good neighbor. On that day Canada threw away all its old calculations, all its dependence on Britain for supplies, and undertook the largest task of war ever attempted in so short a time by a nation of its size.

"Adieus"—Troops Leave Fort Frontenac for Halifax and Service Overseas

England may be the destination of these Canadian soldiers, about to leave their Ontario post, but they may go elsewhere. Troops from the Dominion are stationed in Newfoundland, the West Indies, and on the Rock of Gibraltar. Some rub shoulders with the armed forces of the United States in Iceland.

Neither the people of Canada nor their American friends had any idea of the seriousness of the situation. Prime Minister Mackenzie King, on whom the supreme responsibility rested, could not tell the public.

The people knew only that France was crumbling, Britain threatened. They did not know that for nine months Britain had assumed that it could make all the heavy equipment needed for the fighting forces of the whole Commonwealth; that British industrialists would not send designs and blueprints to Canada and let Canadian industry make the complicated weapons of modern war; that the Canadian Government had decided overnight to launch an industrial and economic revolution regardless of cost in money, manpower, sacrifice, and confusion. Canada was on its own.

Even the Government, in the desperation of those May days, could hardly foresee that within a year nearly half of every dollar earned by Canadians would go into the war, that the nation's expenditures would increase fivefold, that the whole future of Canada, politically and economically, would be drastically changed.

The new war program was based on two sound assumptions: first, that Canada must depend upon its own resources, its own ingenuity, its own judgment, plus any help it could get from its neighbor; second, that the only limit would be her physical power to produce.

So urgent was the need for every kind of weapon in Britain that the program sprawled in all directions, attempted too much too quickly. Canada attempted so much, indeed, that experts declared nothing would be done properly. There are still many Canadians who say things have been done badly. Only a few understand fully what has been achieved thus far.

Canada Takes a Leap in the Dark

Early in the war decision had been made to train most of the British Commonwealth's flyers in Canada—a project to cost 824 million dollars for three years, Canada paying 531 millions, Britain paying in planes. Now Britain needed all its planes at home.

In the United States Mr. Howe got enough small planes to serve the young aviators already enrolled, but that was not enough. Told by Britain to do what it could, Canada now took a wild leap in the dark alone. At the

Every Canadian Soldier Bound Overseas Is a Volunteer

Seven thousand men a month now are being taken into the Canadian Army for overseas service, and more will go if needed. One recent call for 32,000 recruits was answered by 46,000. Under Dominion law, conscripted soldiers cannot be sent abroad (page 569).

very moment when the training plan seemed to be in ruins, Canada undertook to enlarge it!

Canadians loved the air and felt at home in it, and the air held proud memories for them. It was a Nova Scotian, J. A. D. McCurdy, who first flew an airplane in the British Empire, when he took off in the *Silver Dart* from the ice of Baddeck Bay in 1909. Had not Canadians of the last war proved among the greatest pilots in the Royal Air Force of Britain, of which they supplied a third of the flyers by 1918?

Did Canada forget that half of the first 20 aces of the R. A. F. were Canadians? Did not the legendary Air Marshal Billy Bishop, V.C., still live in Canada, a World War hero who had shot down 72 German planes, five in one day?

With these memories and little else, Canada took over the air training of all the British nations. The plan had become a Canadian adventure. No one knew then how it would turn out.

Twenty to twenty-five thousand new aviators a year Britain had expected from the original plan. Canada would supply them, not on schedule but ahead of schedule, and it would supply even larger numbers. That was the incredible answer cabled to London in the days of May.

How could it be done? Lacking were even landing fields, hangars, and barracks. The original schedule called for these by the spring of 1942. Canada determined to finish them by freeze-up in 1940, a bare six months. Contractors were unanimous in the belief that it could not be done.

Major C. G. Power—the genial "Chubby" who had once been a gallant soldier and then an easygoing member of Parliament and now had the job of saving the air program—assembled and pooled all the contracting machinery in Canada and set it to work (page 559). On the Atlantic coast, in Quebec and Ontario, out on the hot prairies and by the Pacific coast, bulldozers ripped into the soil. Paving was hurriedly laid, hangars suddenly soared out of the ground, regiments of carpenters thrust up barracks.

It Could Not Be Done—But They Did It

By the time of the freeze-up Major Power had four manning depots complete, two initial training schools, 16 elementary schools, eight advanced schools, a navigation school, two wireless schools, four observers' schools,

Canada's Flag Waves Above a New Link in Her Chain of Air Schools

Prime Minister W. L. Mackenzie King officially opens the Cecil Rhodes Flying School at Boundary Bay, British Columbia. Here pilots learn actual flying after a five-week preliminary course elsewhere in mathematics, mechanics, and air armament (page 561). The school's fleet of training planes is lined up along the runway.

three bombing schools—altogether, twice what the plan had called for at that date. The first graduates were fighting in the skies of England by November.

It was one of the most remarkable accomplishments in Canadian history, but no one seemed to notice it at the time. Things were moving too fast.

Eight months later Major Power announced that the original planned output of flyers had been raised by 30 per cent; then that the output was twice that originally expected in the autumn of 1941. Canada, he said, was ready to supply a third or even a half of the British Empire's flying men.

Since Britain is training 10,000 aviators of its own in Canada, in schools supplied by the Canadian Government, something like 40,000 flyers a year (the exact figures are secret) are now being turned out in Canada. If the United States, with its population of almost 132,000,000 to Canada's 11,500,000, attempted a comparable scheme, it would train about 460,000 airmen annually.

Many Canadian boys had not waited for this program, but had joined the Royal Air Force in Britain before the war or in its early months. Among them were Air Commodore Raymond Collishaw, D.S.O., second Canadian ace of the last war, who was now in command of the R. A. F. bomber group in the Middle East, and the famous legless Wing Commander Douglas Bader of the All-Canadian Squadron formed in the autumn of 1939.

Not long ago Bader bailed out over France and was taken prisoner, his artificial legs broken. His mates later flew over in force and dropped a new pair by parachute.

Early in 1940, before the air-training plan was under way, more Canadian aviators, who had joined the Royal Canadian Air Force before the war, were ready for combat. In Britain they formed their own squadrons, and participated in the last aerial battles over Dunkirk. They fought over London in the first blitz of September, 1940, and in six fights the first All-Canadian Squadron destroyed 55 planes with a loss of only two pilots.

One Canadian pilot, walking into a distant air center on leave just to see his pals, found them taking off on a raid. Without authority he grabbed a spare machine, crossed the English Channel, shot down a German plane, machine-gunned a company of German soldiers, and came home for dinner. Young Pilot Officer Carman Sutcliffe, of Ottawa, started to drop a bomb into the crater of Mount Vesuvius on a raid over Naples, but changed his mind because "I thought it might start erupting and take me with it." He dropped the bomb on a Naples objective instead.

Pilot Officer Donald Dougall, of Montreal, saw a sergeant pilot, with radio smashed, turn back from France. Then Dougall noticed in the distance three German planes swooping down on the sergeant, who hadn't seen them. In another minute he would have been downed.

Dougall, unable to signal his friend by wireless, raced up beside him, banked steeply, forced the sergeant to turn suddenly just as the Germans' tracer bullets started to streak by. The sergeant, thus warned, quickly escaped, but Dougall was shot down. He landed by parachute and was taken prisoner.

Casualty Lists Bring Sorrow to Canada

No day passes without some Canadian home losing its son in the air, and every day these losses will increase.

"I can promise no relief from that grim circumstance," says Major Power.

By September, 1941, the R. C. A. F. listed 457 killed, 217 missing, 36 who died of wounds, and 139 wounded. This is only a small beginning. The whole air program is based on the assumption of heavy casualties. Still, compared with the last war, total losses to Canada have been almost insignificant—up to September, 1941, about 1,400 dead or missing in all services. From 1914 to 1918 the average loss in killed alone was about 1,200 a month.

This is a different kind of war. In the words of Winston Churchill, "Never in the field of human conflict was so much owed by so many to so few."

There was no trouble to get recruits to the manning pools, where they came to be drilled, hardened, taught discipline. All the youth of Canada seemed to be clamoring for a chance to fly. Soon around the mess tables could be heard the accents of Americans mixed with the quicker speech of Canadians, the unmistakable voice of cockneys, and the twang of Australia and New Zealand. We have it on written authority from the Air Force that the following conversation was heard in a messroom the other day:

"Ow many dies till pie die?"

"Ah don't know, suh, but ah sho' could stan' it."

"Ay, some brass'd be a bit of all reight."

Boys keep pouring in from all over the United States. Soon 600 tough American flyers were instructing in the Canadian air schools.

Eighty per cent of the recruits, however, are Canadians, about eight per cent Americans, the remainder Britons, Australians, New

Symbol of the Times: Canadian Air Cadets March to Classes While Others Roar Overhead

Air fields are springing up almost overnight in Canada, from Nova Scotia to British Columbia. Thousands of fighter pilots, navigators, gunners, radiomen, and observers are being turned out in the hundred training schools already established. The Royal Canadian Air Force now numbers more than 80,000 men (page 567).

A Maple Leaf Air Force Unit Escorts Canada's Victory Torch in Ottawa

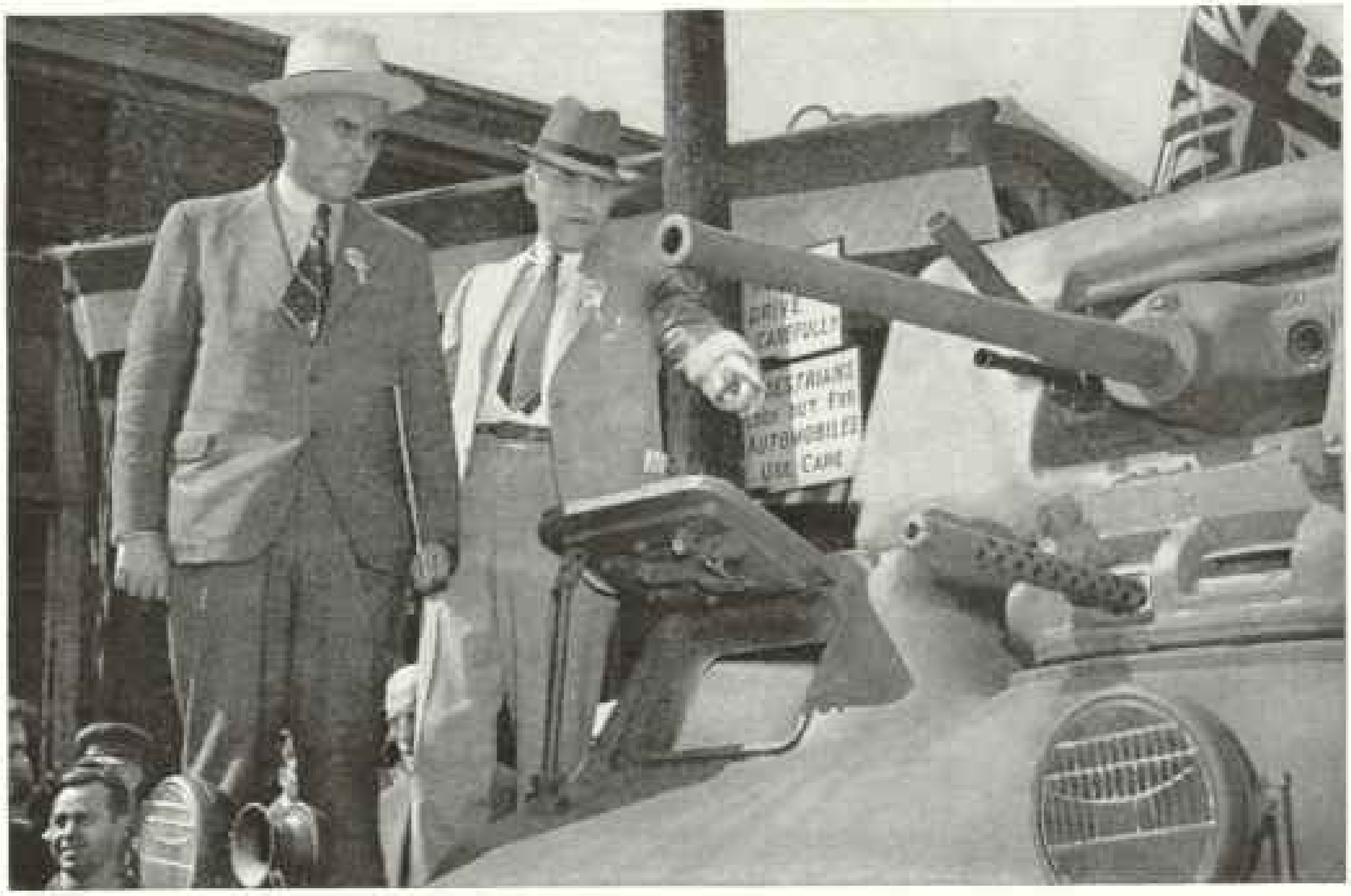
With swinging stride, they take the symbol to the House of Commons. The torch was exhibited in Canadian cities to stimulate a war loan drive, then flown 7,000 miles by bomber from Vancouver to London.

Britain's Prime Minister Receives the Canadian Victory Torch

Ian Mackenzie, Canada's Minister of Pensions and National Health (right), presented the torch to Mr. Churchill at a simple ceremony in London. In civilian attire, at left, are C. G. Power, Canada's Minister of National Defense for Air (page 555), and Vincent Massey, Canadian High Commissioner.

To Bomb-torn Plymouth Comes a Mobile Kitchen from Saskatchewan

Food for citizens made homeless by the devastating Nazi air raids of March 21 and 22, 1941, was served from this fully equipped trailer, parked in front of a ruined church.



Canadian Officials Point with Pride to the "Anglo-American" Tank

Product of Canadian design and U. S. engineering skill, the new cruiser-tank, of cast steel construction, is built in Canada. Here Clarence D. Howe, Massachusetts-born Minister of Munitions and Supply (left), and Col. J. L. Ralston, Minister of National Defense, inspect a new model (pages 553, 569).

Zealanders, and others from all corners of the Commonwealth.

How Air Force Recruits Are Trained

A hundred airdromes, 1,860 buildings, runways equivalent to 800 miles of highway, train every kind of expert needed in an air force. At the manning pools the cream is selected for "air crew"—pilots, observers, wireless operators. The pilots and observers put in five weeks in an initial school where they learn mathematics, mechanics, air armament.

They are tested in oxygen chambers to determine their reactions to high altitudes. A few, but not many, are told that they can never fly. Experts study the others and decide whether they should be pilots or observers.

The pilot now moves on to the elementary school where he starts to fly—25 hours with an instructor, 25 alone. Then he has 10 weeks in a service school, where he flies for a hundred hours and learns aerobatics, night flying, and everything else the veterans can teach him. There also he finds out whether he should man a fighting plane or a bomber.

Now Canadian Boys Must Add Flying to the Three R's

Here a senior cadet of Jean-de-Brebeuf College, Montreal, gives technical instruction to juniors of the No. 2 Squadron. Throughout the Dominion, youngsters from 12 to 18, members of the Air Cadet League of Canada, are learning at school to be pilots.

Meanwhile, the observer has taken a separate course of 12 weeks, learning navigation, photography, and reconnaissance. After that he has six weeks in a gunnery school, learning to handle guns and bombs. Finally he studies navigation in another school for four weeks.

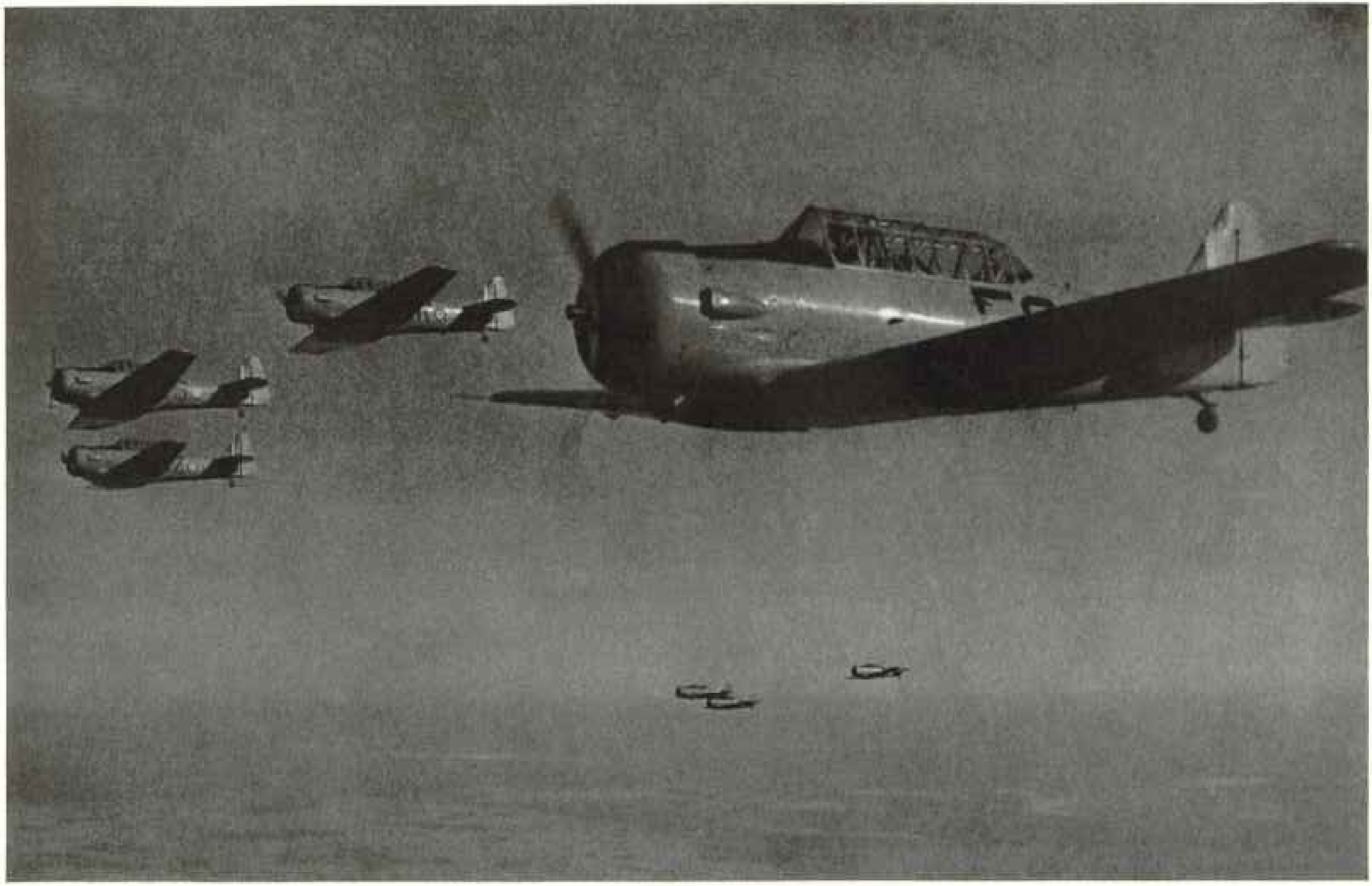
The wireless operator goes first to a wireless school for 20 weeks, for it is his job to keep the plane in touch with its base. He studies gunnery for a month because he must man the rear guns of a bomber (page 564).

Thus pilots take 22 weeks to train, observers 27 weeks, wireless operators 24 weeks; and when they come together again they form a complete air crew. Pilots and observers are paid $3.70 a day, wireless operators $3.20. The ablest graduates are given commissions, the rest become sergeants. In Britain they will get their final polishing-up course under actual fighting conditions, with veterans of the Royal Air Force.

Accent on Youth in Air Training Schools

If a man is not good enough to make the air crew, he can go to the wireless and mechanics schools and join that little-known but vital force of ground men who keep the planes in the air.

A Canadian air training school is a



Over Peaceful Ottawa Valley, Novice Pilots Learn to Stick Together

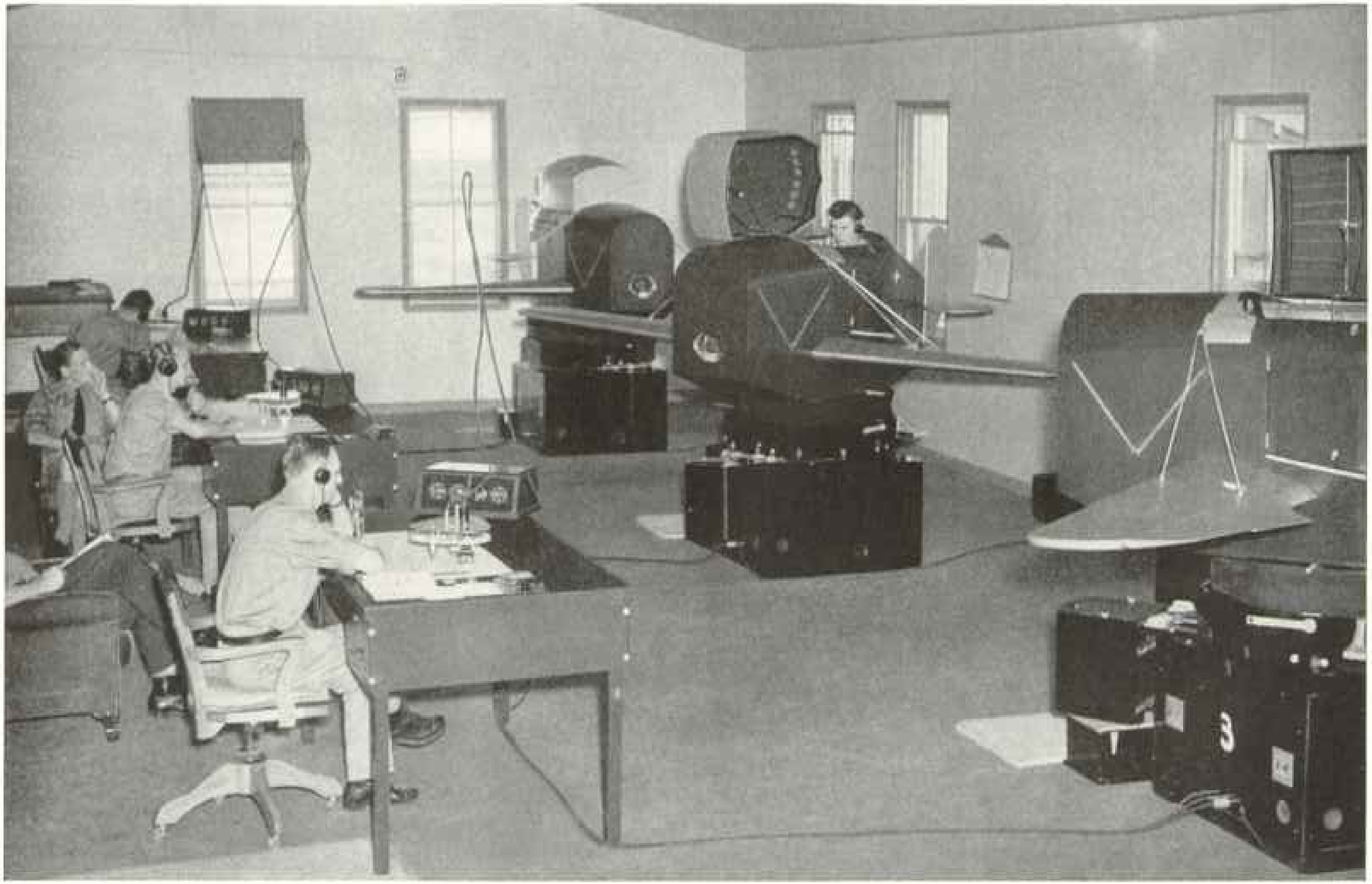
The training planes, in tight formation, are North American Harvards. Here at the busy Uplands Service Flying Training School, more than 1,000 take-offs and landings are made daily. Ablest graduates receive commissions, the rest become sergeants. Pilots and observers are paid $3.70 a day, radio operators $3.20 (page 561).

Each Week Fifteen Hurricane Fighters Roll Off This Assembly Line and Soar into the Air for Test Flights

As soon as they have proved their fitness, these fast, hard-hitting planes go to England. This large plant at Fort William, Ontario, was converted to produce British-designed Hurricanes. Their maximum speed is officially listed as 335 miles per hour, but improved models are much faster.

Air Force Radio Students Learn to Talk in Dots and Dashes at a Montreal Flying School

They attend classes for 20 weeks to learn how to keep a plane in touch with its base. Then they take a four-weeks course in gunnery, for radio operators must man the rear turrets of big bombers. In Great Britain they receive a final polishing-up course under R. A. F. veterans (page 561).



"You Just Dived 400 Feet into the Ground, Fella!"

A Canadian rookie pilot in a dummy plane learns to fly blind without leaving the ground. When the head covering is closed down, he cannot see, but must circle, dive, and bank with only the instruments to guide him. Every time he "maneuvers" his model plane, his actions are automatically recorded on the chart before the instructor.

Piapot Braves Smoke the Pipe of Peace with Prime Minister Mackenzie King

In World War I, Chief Harry Ball (left) lost a leg at Vimy Ridge and Chief Abel Watetch (right) was gassed at Hill 70 in 1917. Behind the Prime Minister, who is breaking his nonsmoking habits to share a pipeful of "tabac canadien," are two new recruits of the all-Indian platoon of a Regina regiment.

heartening sight. Everyone around is young, except, perhaps, the commander, who will likely be a middle-aged ace of the last war, but he never talks about that. The new war, he has found, is infinitely more complicated, requires more training in skills that he never heard of in the old days.

In a long, bare room the young pilots are locked into the dummy planes, the Link trainers, where they cannot see out, listening with earphones to the orders of the instructors at the tables near by. They try hard in this blind "flying" to guide their toy planes, circling and banking and diving. All their mistakes are traced instantly on the paper in front of the instructor (page 565).

"You just dived 400 feet into the ground, fella," the instructor tells the red-faced rookie as he emerges from the closed cockpit, "but we never had an accident in this room yet that you couldn't walk away from."

Quietly the instructor is sizing up his man. The lad may yet make a fighter pilot, or perhaps a bomber, or he may prove more useful in navigation.

An American-built passenger liner waddles down the runway and soars away with a dozen youngsters packed aboard, each with map, log-book, and compass. The man at the controls is a veteran navigator. He flies the course plotted by each of the students in turn (but keeps a skeptical eye on his own private map). When someone plots a line toward the South Polar ice cap instead of Medicine Hat, the instructor smiles to himself and hawls the fellow out.

One student seemed unable to recognize any town in the Ottawa Valley, and the instructor, in despair, took him over the sprawling mass of Montreal, population more than a million.

"What's that town down there?"

The student looked down and studied his map desperately.

"I'm sorry, sir, but there's no place that big around here!"

Soon they learn enough to take short trips by themselves. Then they have to find their own way home, even if they have to dive and read the names on the railway stations. The pilot's average flying time is six hours a day, with perhaps 35 minutes rest between flights—this on top of all his ground study. His leisure is devoted mostly to talk about airplanes.

In the hangars the student mechanics are servicing the little trainer planes, taking apart

The Duke of Kent Calls on Canada's Governor General and Princess Alice at Ottawa

The 39-year-old Duke, youngest brother of King George VI, wears the uniform of Air Commodore in the Royal Air Force. In the summer of 1941 he made a coast-to-coast inspection of the gigantic British Commonwealth Air Training Plan in Canada. Here he relaxes in the garden of Rideau Hall, the Governor's Mansion, with the Earl of Athlone, Governor General of Canada, and his wife, Princess Alice, granddaughter of Queen Victoria.

engines, tinkering, learning. Out on the flying field the instructor is taking off with his pupil or perhaps giving last-minute instructions to a fellow who is starting on his first solo, then standing back to watch him anxiously as he races down the runway.

Training Planes Dot Canadian Skies

Dozens of planes are in the air as far as one can see, but they land one by one without confusion as they get their signals from the ground. All over Canada conditions are the same, until people in the cities have stopped looking up at the training planes.

A few miles from the flying field we watched the young bombers learning their trade. They swooped down again and again over a tiny island in a lake and dropped their dummy bombs with a puff of black smoke. Most of them missed the island.

"They'll learn," the ace of the last war said. "It's their first time out."

On the shooting range a group of boys under a grizzled noncom were hammering away with machine guns, spraying a distant wall with bullets.

"And remember," the noncom growled, "you'll have no time to monkey up there. Why, those Jerries'll pass you so fast a bat out of hell'll look like a model T in reverse."

Most of Canada's energy in the air is concentrated in the training scheme, but it is building up also an air force for its own protection.

When the war started, there were fewer than 5,000 in this force. Now there are 60,000, apart from a Canadian division sent overseas to join the Royal Air Force (page 558).

For its own air force and for the use of Americans, Canada is completing a string of giant airports in the northern wilderness of British Columbia and the Yukon, to keep the airways open to Alaska. When the war is over, Canada, for its size, will be the best-equipped flying country in the world, with airports everywhere and with men who know how to use them.

An Army Starts from Scratch

Canada has gone into this war in the belief that the big overseas infantry army of the last war would not be necessary again. But this, like every other plan, was destroyed in the Battle of France. Canada began to

Canada's Challenge to Enemy Sky Raiders

An antiaircraft gun crew drills while a Vickers Stranraer flying boat soars overhead (page 584). When war broke out, Canada had virtually no modern defense equipment. Today, at vital points along the Dominion's Atlantic seaboard, modern "ack-ack" guns like this are stationed to guard against any invasion from the skies.

build a substantial army, not knowing when or where it would be used, but sure it would be needed sooner or later.

It had little to build on except tradition. The regular army at the beginning of the war consisted of 4,169 men. The militia, corresponding to the U. S. National Guard, had 55,000. Modern artillery, antiaircraft guns, tanks, Bren guns, and carriers were wanting. In terms of modern war, there was no equipment at all and no means of making it.

The Canadian army of the first World War—628,964 men in a nation of eight millions—had left 60,000 dead overseas, and the survivors were now in civilian life and middle age.

Their sons poured into the new army. They drilled in any uniform obtainable or in overalls (page 585).

They lacked field guns and used dummies. They lacked machine guns, and a whole regiment might practice on one out-of-date model. Sometimes they had no rifles. Canada had sent all it owned to Britain after the fall of France, replacing them with any it could get, second-hand, from the United States.

There were plenty of skilled officers of the last war to make soldiers out of the recruits. In Ottawa, managing the Government's research laboratories, was Andy McNaughton, who had become one of the greatest British artillerymen in the World War. He had played with military science as a hobby ever since—a lean, shaggy man with a bristle of wild hair and deep, wistful eyes.

Every Canadian soldier of the last war knew Andy McNaughton. No nonsense about him. When they used to show him their polished fieldpieces in France, he would retort, "Yes, but how are they inside? How do they shoot?"

There was also J. L. Ralston, a fighting colonel of the last war, a leading counsel at law, a statesman and a driving executive, with a chin outthrust like the sea rocks of his native Nova Scotia and an insistent habit of working until 2 a. m. (page 560). He as Minister of National Defense and McNaughton in the field would make a great team.

McNaughton, then a Major General, took the First Canadian Division overseas in 1939, became a Lieutenant General, and finally took command of all Canadian troops in Britain.

When the British armies retreated from Dunkirk, all their heavy equipment lost, the Canadians became the spearhead of Britain's infantry defense.

The Canadians waited on the English coast, but the Germans did not come. At one point the Canadians had been ordered to Norway, but the failure of that campaign had kept them still in England. They chafed at the months of waiting and, at this writing, they are waiting still.

There are three divisions in Britain now and a tank brigade, forming, with their ancillary troops, a force of about 100,000 men. This force is growing all the time. In equipment, training, and character they are recognized as the equal of any British troops anywhere.

The prosaic job in Britain, so different from the battles of the last war, has been widely misunderstood. Even in the Canadian Parliament men have complained because the Canadians have not been in action—as if every last mother's son of them hadn't been praying for a fight these last 18 months.

Lately Canadians have been training in landing and assault along the English coast from invasion barges. Perhaps their real job will not be in Britain after all. The bloodless landing of Canadian, British, and Norwegian troops on the Arctic islands of Spitsbergen last September was led by a Canadian brigadier.

Canada's total army on active service in the fall of 1941 was 230,000 with three infantry divisions in Britain, one in Canada. The fifth division, trained but not fully equipped, will be entirely armored. It will be in Britain and ready to fight before the year's end. A sixth infantry division was ordered mobilized in August when the situation on the Pacific grew threatening. Apparently Canada is keeping two divisions constantly on duty at home.

Six divisions may seem like small change in a larger nation, but the Canadian Army is today equivalent to an American army of 2,640,000 in terms of relative population. In addition, Canada has a reserve army of 170,000, consisting of volunteers and drafttees.

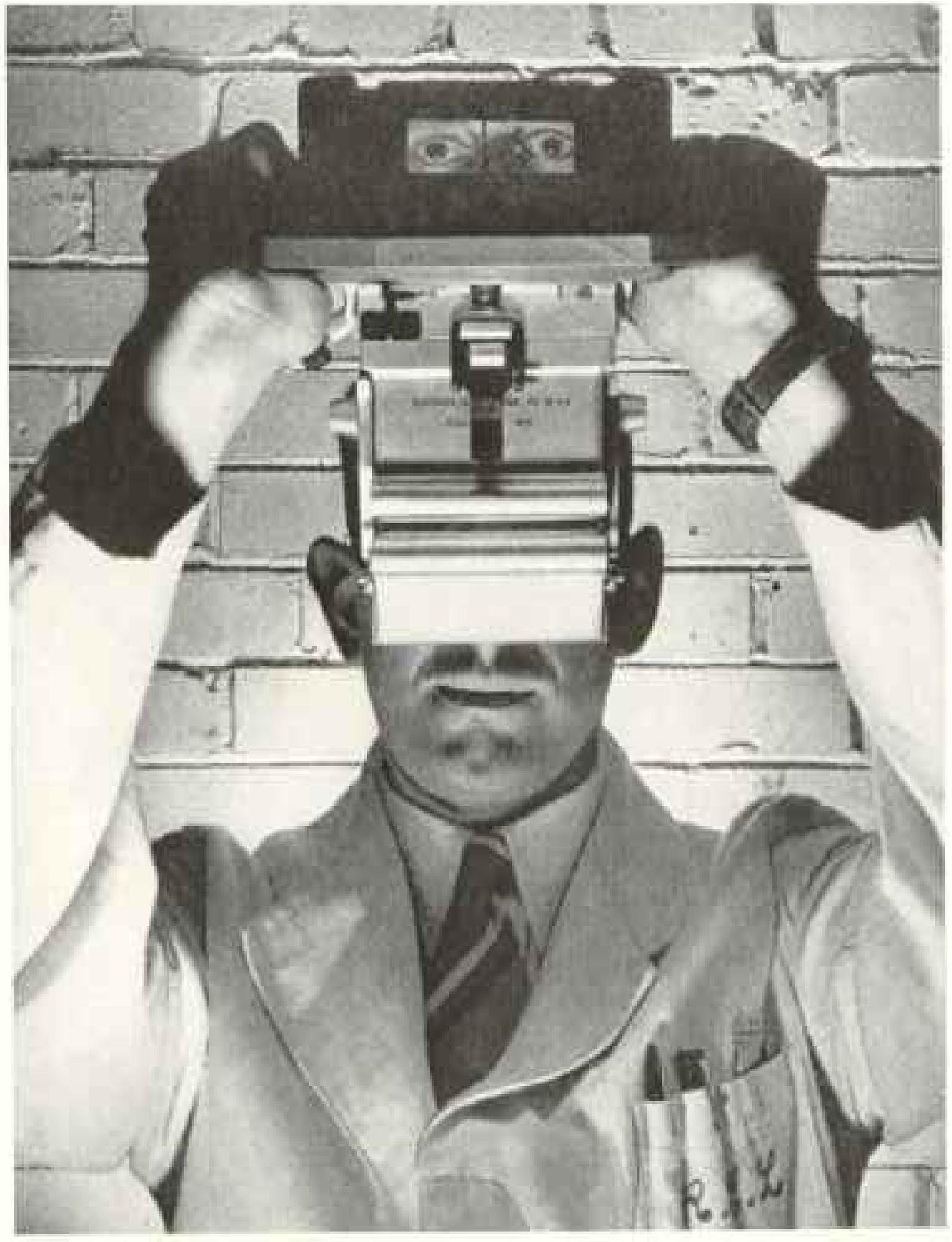
Enlistment for Overseas Is Voluntary

Canada's policy of voluntary enlistment has been the subject of wide argument among Canadians and wide misunderstanding among Americans. Canada has a conscription law. Under it the Government can conscript any man or any property, but it cannot draft a soldier for overseas battle. It is conscripting single men between the ages of 21 and 24 (the age limit can be raised as more men are needed), giving them four months' intensive training and then retaining them on home-defense duty for the duration. A large proportion of them prefer to join the active army and go overseas.

Up to now the Government has secured through voluntary enlistment all the men needed for its proposed army establishment.

The "Gasoline Cowboy" Must Learn to Steer Without a Wheel

With the two levers he controls separately the speeds of the treads on each side of the tank. By slowing down one tread, he causes the tank to turn. This cross section of the driver's compartment is part of the equipment of a Canadian tank school.



Baleful Eyes of an Unborn Tank Glare from This Periscope

Here a worker looks through a new instrument, his eyes being reflected in the upper mirror. This device, since it projects up through the tank's armor, allows the operator to see out without exposing his eyes to shell splinters in an eye slit (page 583).

Canadian-built Tanks Thunder Past the Earl of Athlone, Who Stands Before a V-for-Victory Sign

Accompanied by his wife, the Princess Alice, Canada's Governor General inspects the armed monsters as they rumble by. The demonstration is in the yards of the Angus Shops of the Canadian Pacific Railway. This locomotive plant, in Montreal, has become one of the Dominion's largest tank factories.

Snow Men on Maneuvers—Camp Borden Ski Troops Glide Noiselessly Over the White Wastes of Northern Ontario

The Physical Map of Canada Is Reflected in the Faces of These Soldiers, Watching a Regimental Boxing Tourney

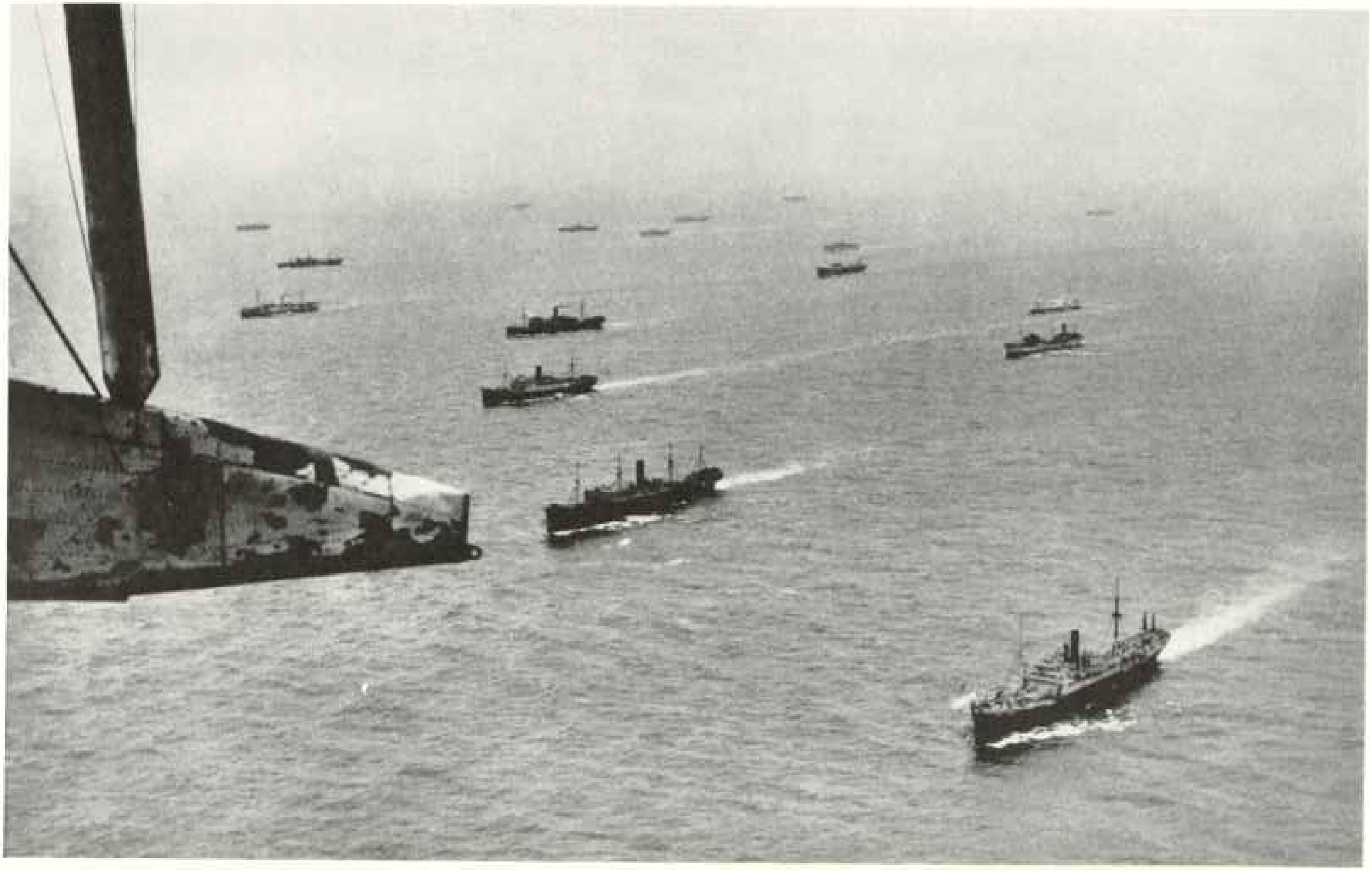
French Canadians from Quebec; lumberjacks from the Northwest; farmers from the wheat belt; office workers from the cities—all are represented. They are stationed at Connaught Ranges, west of Ottawa. Topees are regular-issue summer headgear.

Not Cookies, but Igniter Caps for Smoke Cartridges

Girls by the thousand have turned from household and office tasks to jobs in Canada's new munitions factories (pp. 585, 588). Canadian officials say one plant turns out more machine guns than any other factory in the world.

A French-Canadian Draftee Reports for Service

Emile Pharand presents his credentials to a camp adjutant. The Province of Quebec, French stronghold in Canada, has easily filled every draft quota assigned to it since the outbreak of the war (page 569).



Herded by Destroyers and Bombers, a Big Convoy Sails Steadily Toward England Along Britain's Life Line

Eastern Canadian ports are the rendezvous for hundreds of heavily loaded ships carrying supplies across the North Atlantic. In one port, just before a convoy sails natives say they "can walk across the harbor from ship to ship without getting wet," so tightly are the vessels packed in. Many secret devices developed recently are aiding in the protection of the convoys and making it more and more difficult for packs of submarines, roving bombers, and surface raiders to attack (page 581).

"The Canadians Are Coming!"—Troops Board a Transport Bound for England

Three fully equipped divisions already are in Great Britain and a fourth will be there by January, 1942. Two more are on duty at home. Canada's army numbers 230,000 in active service.

and is pledged not to adopt conscription for overseas service.

Where the army will ultimately fight, the Canadian people do not know. Canadians moved into Iceland in the summer of 1940. They garrisoned Newfoundland. They were stationed in the West Indies and dug tunnels through the Rock of Gibraltar.

Bags of Flour as Practice Bombs

At old Camp Borden, north of Toronto, and at Petawawa on the Ottawa River, where their fathers had trained, we watched the new army training in the early days, handicapped by an appalling lack of equipment. They had no antiaircraft guns; but as toy balloons were released down the wind, the machine gunners ripped the rubber globules as if they had been clay pigeons.

Then the "jeeps" trundled up and in a minute the old-fashioned field guns were knocking a dummy village to pieces a mile away and blasting a moving tank made of canvas. Overhead, little training planes swooped, dropping bags of flour on an advancing line of skirmishers. There were no bombers then, or bombs.

Nearby, the boys were charging through smoke in gas masks to get used to wearing them, and in the woods they had rigged up a shower bath and stood naked under it, in a cold wind, letting the water remove imaginary mustard gas from their bodies. A major of engineers was building a steel bridge with a company of rookies.

"These boys," he said, "are better material than we were—bigger, huskier."

We looked at them, stripped to the waist. Most of them looked six feet tall. All were athletes, trained hard, and they worked as if they were playing a game—the same stuff that took Vimy Ridge and met the first gas attack at Ypres. Soon they would be going overseas without notice, without farewell, landing in Britain, singing "Roll out the Barrel" and itching for a fight. Smaller, but just as tough,

English Schoolboys Ignore Signs to Welcome a Canadian Visitor

Sergeant Anderson, of Sault Sainte Marie, Ontario, forgets army "paperwork" for a moment to greet the youthful delegation. His traveling office, headquarters for the camp commandant of a Canadian Expeditionary Force unit, is an army truck "somewhere in England."

were the French Canadians down at Valcartier who sang "Alouette" in their mess with the original accent.

The Canadian Army has not received ideal training in Canada and lacks the large divisional maneuvers undertaken by the United States. These have been impossible because the trained divisions have been hurried overseas in case of need, and finally trained there.

Canada Is Building a Navy

Since the days of Wolfe and Montcalm, Canadians have been soldiers, but to the sea most of Canada has been a stranger. The nation entered this war with exactly 13 naval ships, the largest a half dozen destroyers, and with 3,600 seamen. Canada undertook to build a navy from scratch.

It had no ships, but it had a nucleus of middle-aged officers who had joined the Navy years before and waited for it to grow up. Given their chance, they went grimly to work. They soon found something that hardly anyone had suspected: Canadians, confirmed landlubbers, loved the sea without knowing it.

No recruiting drive was needed. The Canadian boys streamed into the Navy until there was a waiting list and, curiously enough, the most enthusiastic came from inland. Deep in the Canadian character, the old British tradition of seafaring still lived among the offices of Winnipeg, the grainfields of Saskatchewan, the woods of British Columbia.

Angus Macdonald, a handsome, sad-faced Scot who loves to talk Gaelic and who proved his valor in the last war, found himself, as Minister of National Defense for Naval Affairs, confronted by a staggering task. He had not only to make a navy, but he had to provide the services of a navy before there was one.

Out of Halifax the convoys must move under protection. The coast must be patrolled, mine fields laid. Some men and vessels must be spared to Britain. At the same time, somehow,

Canada Keeps Nazi War Prisoners from Abroad Behind Barbed Wire

From his chilly lookout tower the sentry has an unobstructed view of the entire camp. The few Germans who have escaped from these isolated prisons in the wilderness of northern Canada have been recaptured. One Nazi flyer, Baron Franz von Werra, did escape by jumping from a train and succeeded in reaching the United States.

"Look Out for That Other Blister"

University of Montreal student officers give attention to their feet after a tough march in army boots.

Germans in a Canadian Internment Camp Grow Their Own Sauerkraut

Civilian prisoners at work in a large cabbage patch turn their faces from the camera. They are guarded day and night by Canadian soldiers and will be kept in confinement for the duration of the war.

ships must be obtained and sailors trained.

The commander of the navy, Rear Admiral Percy Nelles, who, at 48, had been in the Canadian Navy since he was 16, had built the skeleton of a fleet in the prewar years, learned the name and dimensions of every steamboat, yacht, and barge in the country, marked down any that could be of use to him. Now he started to flesh the skeleton.

He set each of his veteran officers to do ten men's work. He took over any vessel that he thought useful, from ferry ships to cabin cruisers. He trained new officers in a few months, sweated them, rammed them through their courses, and set them afloat under older men almost before they had learned the smell of the sea.

At the Naval Station on the harbor's edge at Halifax the other day I saw the officers' class loading guns, sighting them and firing them (with dummy ammunition), obedient to the commands of a grizzled petty officer. Months of work they were cramming into weeks—drill all day, lectures on navigation in the evening, reading far into the night. Never were naval officers turned out so fast.

With the officers the veterans trained their crews, conducting signaling and seamanship classes in any old barn that could be found. Everywhere I saw boys in sailor uniform who, a month before, had been wearing farmers' overalls, loggers' breeches, and business suits.

In a pitch-dark room in the basement of a warehouse an old British tar barked at the kids while they tried to distinguish the shape of little model ships that were pushed across a table 25 yards away. We could see nothing, but the boys picked out the small dim shapes of cruisers, battleships, destroyers, and their nationality, too (page 580).

"This 'ere," said the old salt, "is hin horder to distinguish from the henemy wot kind of ships they may be of hany nation."

Out at Esquimalt on the Pacific coast the same sort of drill was under way, but the naval stations were not large enough yet to

Sailors Must Be Able to Distinguish Foe from Friend, So They Study Silhouettes

Here a Navy rating is touching up a profile of the *Deutschland* (renamed *Lützow*). At left are three angle views of the battleships *Gneisenau* and *Scharnhorst*, repeatedly bombed by the R. A. F. at Brest. Under his elbow are the *Admiral Scheer* and the destroyed *Admiral Graf von Spee* (name crossed out).

Canadian Gullivers Inspect a Lilliput Destroyer

Canada's infant navy has grown to huge proportions. Starting with only 13 naval ships and 3,600 men, it has increased to a fleet of 230 ships and 25,000 officers and sailors. Many recruits are trained in barns and armories in the prairie Provinces (page 577).

Day and Night, in Fair Weather or Foul, Sleek Greyhounds of the Sea Guard Their Charges

Zigzagging on the flanks of the convoy and cutting in and out between the ships, the speedy destroyers are ever on the alert for a suspicious periscope or surface raider. Depth charges, or mines exploded by water pressure, are the destroyer's chief weapon against submarines. Convoys must travel at the rate of the slowest vessel. The ships are usually divided into groups according to their cruising speeds. Most torpedoed victims now are "lame ducks," or ships which have dropped behind the convoy because of engine failure (page 582).

handle the recruits. In inland cities the Navy took over old buildings, solemnly christened them H.M.S. *This* or *That*, treated them as ships, and began to drill the boys, harden them, and teach them the rudiments of sea life until they could be moved to the coast.

Thus Canada has taken to the sea. The force of 3,600 men of the prewar navy has grown to 23,000 and by March, 1942, will reach 27,000.

Though Canada in the days of sail and wooden ships was one of the world's largest shipbuilders, she now finds the building of big steel vessels a difficult problem. When this war began, only 1,500 men worked in shipyards. Today 20,000 are busily engaged riveting and welding new hulls.

Already a fleet of 65 corvettes, baby destroyers easily and cheaply made but deadly to submarines, have been launched on order for Canada and Britain. Now the keels of two destroyers, the first to be built in Canada, are being laid with the aid of British experts. Shipbuilders hope to launch 100 merchant ships of 9,300 tons by the end of 1942, besides hundreds of smaller craft.

The 13 naval ships of prewar days have increased to a fleet of 250, and there will be 400 next spring. The largest are the merchant cruisers, the destroyers, and corvettes, but they are suited to the work they have to do. Their purpose is not to fight naval battles, of course, but to fight submarines, to convoy merchantmen, and to patrol coasts.

Convoys Move Out on Desperate Duty

As navies go, the Canadian fleet is still infantile in size. But go down to Halifax some day and you will see that it knows its job.

In the vast, calm sweep of Bedford Basin the convoys gather, ship on ship of every imaginable size and registry, loaded with supplies to keep Britain alive. In a long room, its doors guarded by sentries, a little group of senior naval officers talks with the hard-faced merchant skippers.

A commander of the Royal Canadian Navy tells them what is going to happen at dawn tomorrow, tells each merchant skipper where his ship must be at a given moment, tells him when he may open his secret orders, how to use them, how and when to dispose of them.

Then an old sea dog, who retired as a rear admiral to grow roses down in Kent and stormed back to the doors of the Admiralty on the day war was declared, rises to give the skippers further instructions. The rear admiral will ride in the lead of the convoy to Britain, and the responsibility of getting it there safely will be his.

At daylight next day, from the control tower at the water's edge, you can see the first distant ship crawl out to the harbor exit. Another follows and another, exactly spaced. Every ship must weigh anchor at the dictated moment. Each must pass the harbor buoys at stipulated, synchronized minutes. Each must keep its distance from those ahead and astern. All other shipping is halted. The submarine gates at the harbor mouth open. The convoy leader, with the rear admiral on board, steams through (page 575).

Destroyers Busy as Sheep Dogs of the Sea

With the grimy merchantmen move the Canadian destroyers, dashing here and there like sheep dogs herding a flock. How far they go to sea, and just where, are still secrets after two years of war. Halifax only knows that they come back, these Canadian sailors who had never seen the sea two years ago, hollow-eyed from lack of sleep, slithering on icy decks, but never with anything to report.

Canadian destroyers average 20 to 25 days a month at sea, a terrible grind. On occasion they may stay out for much longer periods.

Some of them are serving in Britain and have sunk their share of submarines. Two of them have been sunk, with heavy loss of life, one on convoy duty, one in a French harbor where it had gone on rescue work after the French debacle. The *St. Laurent* rescued 850 survivors of the *Arandora Star* in two hours. Up to the autumn of 1941 Atlantic shipping to the amount of more than 30,000,000 tons has been convoyed by the Canadian ships in co-operation with the British Navy.

It is a hard, monotonous life. Even to ride out of Halifax on a destroyer for a few miles makes one realize what it must be like fighting snow and ice in the North Atlantic.

I found as second officer of one destroyer a youngster who had cashed my cheques at a bank in Victoria less than a year ago. The first officer, who had been in the Navy before the war, looked hardly old enough to shave.

Some of the crew, I noticed, wore full beards, nice black ones. On inquiring, I was shown the official regulation which says: "The captain is to permit all officers and men to wear beards and mustaches, if they so desire. When the permission is taken advantage of, the use of the razor is to be discontinued entirely, as no mustaches are to be worn without the beard, nor the beard without mustaches."

Such are the three fighting services of Canada. They add up to half a million in the

Canada's New Optical Glass Industry Is a "War Baby"

His head protected from flying splinters, the workman chops away the clay pot, then removes large chunks of the rapidly cooled glass. These lumps will be broken into smaller pieces, annealed, and then ground and polished into lenses for range finders, gun sights, and periscopes for submarines and tanks (page 570). To supply the war demand, Research Enterprises, Ltd., backed by the Dominion, set up workshops and laboratories to make optical glass, never before manufactured in Canada.

early autumn of 1941 in the active Army, the Air Force, the Navy, and the Reserve Army.

The end is not in sight yet. Every force is expanding rapidly. Every plan is fluid and can be increased, and every plan increases so fast that figures published now will certainly be out of date in three months.

Soon around 1,100,000 men and women, or roughly a tenth of the nation, will be directly engaged in the war.

Supporting them is an incalculable body of workers in factories, farms, mines, woods. Since war costs absorb some 40 per cent of the national income, it is fair to say that Canadians on the average devote three and a half hours in an eight-hour working day to maintaining the total war effort.

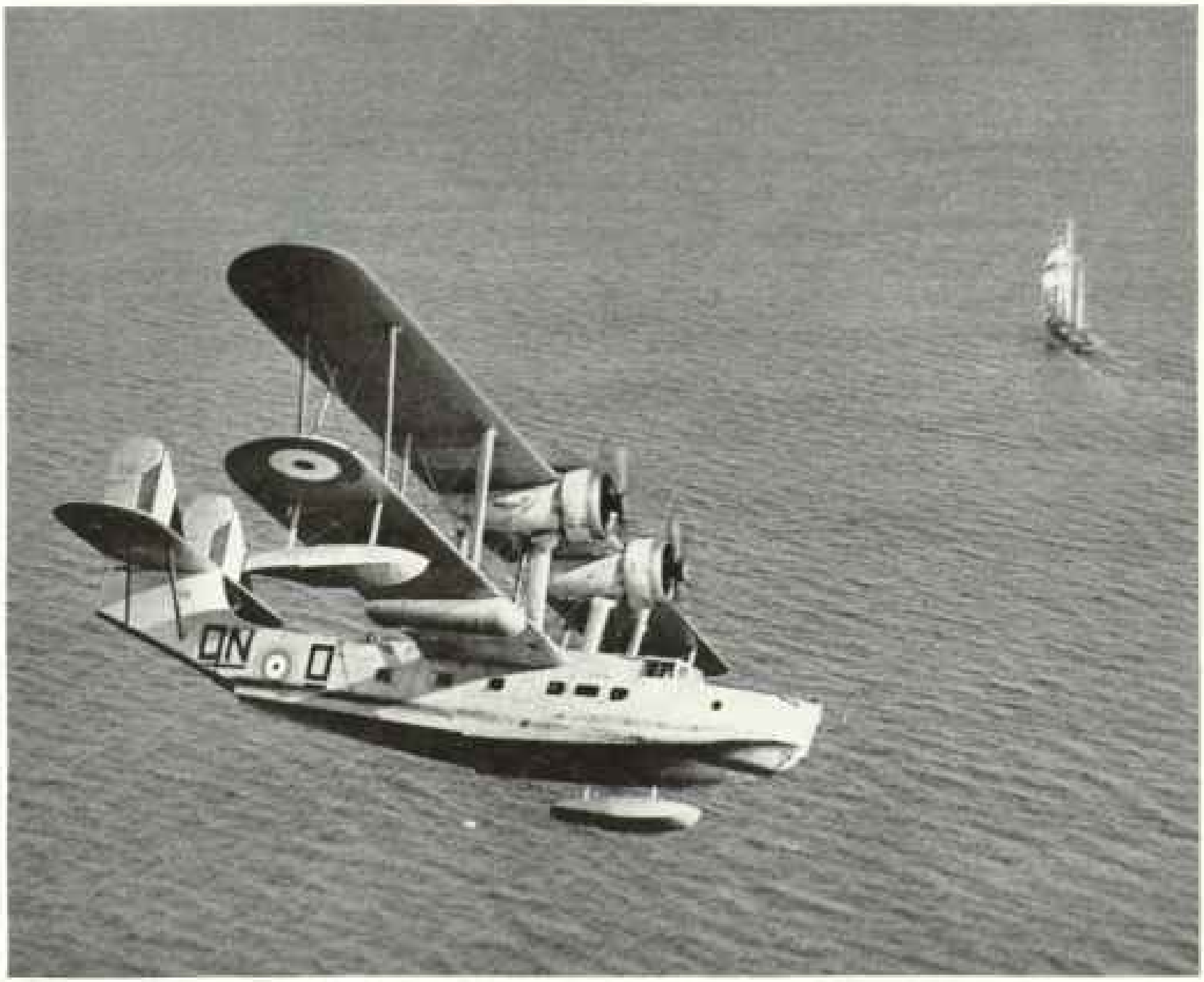
Canadian Women Always Help

Canada is heading into a grave labor shortage, but there is a reserve of workers in non-essential industries that can be closed, and the available number of women has not been seriously depleted. Women's auxiliaries to the three fighting services are being formed now, to do lighter work behind the lines. No "conspicuous" make-up, no earrings, no handbags, no jewelry but wedding and engagement rings, neat coiffures and choose your own undies—these are the regulations of the new women's army.

Already, of course, Canada has its women's nursing units, and all over the country housewives have been learning first aid and crawling through the grease at the corner garage to study the repair of army trucks.

When Mr. Howe flew to New York he had more in mind than planes. He was thinking also of machinery. Nine precious months had been wasted in the illusion that Canada would not or could not become a major producer of armaments. Now, in the early summer of 1940, the Government, perhaps hardly realizing itself what this involved, ordered the immediate construction of more new factories than the nation would normally build in 20 years.

The experience was new and unsettling.



A Vickers Stranraer, Largest Canadian-built Aircraft, Scans the Sea

Here the big flying boat, on Atlantic patrol, circles a barkentine off the Nova Scotia banks.

Canada had learned something of the armament industry in the last war, but mostly in the making of shells. It had never attempted the complicated processes now proposed and was still, despite its large manufacturing industries, basically a producer of relatively raw materials. It lacked machine tools. It lacked trained men. It lacked even plans and designs. But Canada could not wait. In a blind faith that somehow the essentials would be acquired when the factories were built, Mr. Howe started to build the factories.

Well over half a billion dollars has been invested in the war factories. The total investment in Canadian manufacturing has increased by a sixth in 18 months.

While most of this development is concentrated in the chief industrial region of central Ontario and Quebec, every part of the country feels a sudden new tempo. On the remote Nova Scotia coast the steel industry has been rebuilt; in the wilderness of Quebec the aluminum industry has been vastly expanded; on the barren shores of the Great Lakes a new steel industry has been established; on the prairies cordite plants, shell factories, an ammonia plant have risen; in the mountains of British Columbia the Trail smelter enlarged; on both coasts and on the Great Lakes shipyards established. Overnight there has been an industrial revolution.

Industry Goes All Out for Victory

Canada, which had never made such things before, is making 14 types of field and naval guns. Sixteen out of 23 gigantic new chemical factories are operating. One factory is making 100,000 bombs of 500-pound weight a year (page 587).

The automobile industry has become the chief producer of army transport in the British Commonwealth and has already built 135,000 trucks and gun carriers. British and Anzac troops moved across the African and Syrian deserts in army trucks made at Oshawa and Windsor, Ontario. After a year of heartbreaking difficulty, Canada is now turning out heavy infantry and cruiser tanks.

Socks *Must* Fit—Ask Any Infantryman!

Even these fine-looking Royal Canadian Air Force recruits soon learn that, for they do plenty of marching while learning to fly. When war first broke out and equipment was scarce, a standing question asked of rookies was, "Would you like your uniform too large or too small?" (page 569).

Lacking experience, trained men, and machine tools, Canada has not achieved anything like the airplane production Mr. Howe had expected. It is building some 40 airplanes a week now, but has to rely on the United States for engines; or it ships the frames to Britain to be engined there. Small as this program appears, it has been a life-saver for the air-training plan, assuring it of training planes, while a steady dribble of fighter planes has been shipped to Britain. Having built sufficient preliminary training craft, the industry is turning now to bombers and big flying boats.

Necessarily the Government is vague about production figures, but at this writing the output of war plants should reach something like a billion and a half dollars.

This program has meant shifting large populations from farms to cities, from cities to new towns that spring up in lonely places close to water power or raw materials. With half a million workers involved, nearly a twentieth of the whole population, the war has meant vast changes for many Canadian households—better wages, employment, girls abandoning household tasks to work in munitions factories, farmers unable to hire laborers, school children working in harvest fields to get in the crops.

Housing for the new industries alone has been a grave problem not yet solved, and such cities as Halifax and Ottawa, the centers of official administration, are unbearably crowded.

When Cost of Living Goes Up, Workers Get a "Raise"

What this sudden wave of industrialism will ultimately mean in human terms, what is going to happen after the war to all the Canadians who have been uprooted and become dependent on war industries, no one dares guess. Obviously, however, thousands

With Electric Cutters, Craftsmen Trim Metal Sheets for Planes

In peacetime these young men made model airplanes. Here, in a Canadian warplane factory, they have sliced off a large strip of metal with the automatic shear (background). Now they are cutting fuselage and wing sections from it on the pattern table.

have ceased for good to be unskilled laborers and have become experts who will want to use their new skills after the war.

The Government's main effort to meet the labor problem is a unique device called a cost-of-living bonus. For every five per cent advance in the cost of living since the beginning of the war, workers are entitled to a bonus of $1.25 a week. Thus wages are to be pegged at the average for the good years of 1926-29, and the worker is entitled, above that, to only enough to cover rises in actual living costs, not including luxuries.

Living costs having advanced about 13 per cent, one cost-of-living bonus has been granted already in industries under federal control, and industries under provincial control are expected to follow the same policy. Much more drastic controls of the price-and-wage structure will doubtless be necessary.

In the daily lives of the people the Canadian Government has almost unlimited power "for the duration." It can imprison any man without trial and without giving cause; and his only appeal is to a tribunal of judges whose report the Government can reject, and, in some cases, has rejected. Parliament has worried about this curtailment of basic human rights, but has not interfered with it, apparently believing that the Government is not abusing its powers and that it is rarely using the final right of imprisonment without trial.

No sabotage of any consequence has occurred, despite Canada's large alien populations.

In the wilds of Ontario and on the prairies Canada is policing camps of war prisoners sent over by Britain (pages 578, 579), and in old Fort Henry at Kingston we talked to German seamen captured on the high seas. Their leader, a cool customer, assured us that when the Germans won the war they would not take Canada. It was too cold!

Citizens Pay Till It Hurts

The cost of this national effort in money is utterly fantastic by prewar standards. Then Canada was spending about 500 million dollars a year and worrying because the budget did not balance. This year it will spend close to a billion and a half on the war alone, or twice as much as it spent on four years of the last war and a post-war year of demobilization.

In Parliament the back benches gasped when the last budget came down; but the people took it in their stride, perhaps not realizing what it meant. There has never been a single protest in Parliament and, so

Push a Button and Tons of Scrap Metal Are Dumped by This Big Electric Crane

With Canada's war industries humming in ever-increasing production, every bit of scrap iron is needed. Throughout the Dominion patriotic groups are collecting old pipe, car wheels, automobile bodies, or any kind of junk, to feed the hungry maws of the munitions plants. This pile will be transformed into 500-pound bombs.

For Delicate Welding Jobs, Women's Hands Are Equal to Men's

This girl, working on a cartridge magazine in a Bren gun plant, is one of hundreds who are holding skilled jobs in defense factories. Special classes for them are conducted at the Ottawa Technical School (page 574).

far as I know, in any newspaper, against the extent of government taxation. The only protest has been that the Government is not taxing enough, is borrowing too much.

John Citizen is just beginning to pay the piper. A married man without children, earning $1,500 a year, gross, paid no income tax in 1939. Now he pays $75. If he earns $3,000, he paid $56 before the war—now $400. If he earns $5,000, his tax has risen from $144 to $1,000. Included in these figures is the payroll tax of 7 per cent for single men and 5 per cent for married men, taken directly off wages.

The worker is comforted by the thought that business pays an excess profits tax of 75 per cent, and a minimum income tax on all profits of 40 per cent. Canada wants no such profiteers as it produced in the last war. A Canadian industrialist with an income of a million dollars told me he had $14,000 left for himself this year.

On top of all direct taxes, Canada has clamped down an enveloping system of luxury taxes simply to discourage consumption. In the early stages of the war the sudden upsurge of new wages sent working men rushing to the dealers to buy automobiles, housewives to the stores to buy new washing machines and furniture. Retail sales broke all records. Even now such sales are running high, though the new taxes are a grave discouragement.

Taxes are not all. Every worker is expected to buy war savings certificates (baby bonds) out of his monthly check. Last June the Government asked the people to lend 600 millions. It got 710 millions.

Loggers and miners gave up a year's spree and bought bonds instead. An Indian chief, who refused at first to have anything to do with the loan because he "could not afford to pay the interest," executed a war dance for the loan canvassers and bought a hundred-dollar bond when he was told the Government would pay *him* interest.

In the working-class district of Burnaby, outside Vancouver, a man and his wife, both over 80, had saved $200 for their funerals, but bought bonds instead, saying they hoped it would help provide a funeral for Hitler! In a Saskatchewan town a Chinese, having no money, offered payment in pigs. An old man working in a road gang on Vancouver Island produced $1,000 in cash out of his pocket and handed it over to the canvasser.

Living Standard Must Suffer

All this means that the living standard of Canada must be drastically reduced so that its productive machinery can turn more and more to war production. In general, the living

Checking Up on Those Home-knit Socks and Sweaters!

In every corner of Canada women sew and knit for soldiers in the Dominion camps and in England. The Red Cross and the Independent Order of Daughters of the Empire supervise most of this work, which corresponds to the "Bundles for Britain" movement in the United States.

standard has not yet suffered. The lower income groups are better off with new wages. The wheat farmers of the prairies, however, are almost ruined by the glut of unsalable grain, which the Government takes off their hands at a low price.

The family with a good or even a moderately good income is certainly poorer than it was and it begins to do without many of its old luxuries—a new car, a domestic servant, new clothes, private schooling for the children. It will have to give up much more when it starts to pay next year's income tax. Most Canadians pay the tax now in monthly installments, because few could meet the lump sum at one time.

Canada clings stubbornly to the principle of private initiative, but through controllers in leading industries, through direct price fixing in some cases, but mostly through advice to business—which could become an order if the advice were not accepted—the Government controls the entire economy of the country.

About 3 p.m. daily the Cabinet hurries out of the East Block—having missed its lunch, as usual—and walks over to the House of Commons. Within the hour its decisions have been flashed to the Army, Navy, and Air Force; to the government departments; to the innumerable committees and boards. These decisions emerge shortly in the daily habits of the Canadian people.

Nevertheless, this seeming totalitarian system is constantly under the people's control through Parliament. Mostly it works from the top, through the basic regulation of industry. The citizen and the visitor see surprisingly little of regimentation and no retail rationing thus far. A stranger might hardly realize Canada was at war if he did not see soldiers and sailors about.

"Loans" to Britain Cause No Worry

Canada will ship to Britain this year nearly one billion dollars worth of goods by what is cheerfully called "the accumulation of sterling balances," which means that Britain technically owes Canada for these imports, without any arrangement for future repayment. Few Canadians expect to see payment and no one has publicly inquired about it.

With the United States Canada's relations have been close. First came the military alliance of Ogdensburg (August, 1940) and then the economic alliance of Hyde Park (April, 1941), which prevented a disaster to the Canadian economy.

Canada was running such an unfavorable

Canadians Mass Before Their Parliament Building to Join in Prayer for Victory

This ceremony in September, 1941, in Ottawa, marked the second anniversary of Canada's war declaration.

trade balance with its neighbor that American dollars could not be found to cover it. After luncheon at Hyde Park, Mr. Roosevelt and Premier Mackenzie King announced that the United States would largely increase its purchases in Canada so that Canada could pay in goods for its enormous new purchases of American war materials. Thus Canada has been assured of American supplies.

The Canadian citizen, however, hardly sees an American dollar, and travel for pleasure in the United States is a luxury Canada simply cannot afford.

Now a joint economic board is trying to mesh the war production of Canada and its neighbor. Every thinking Canadian hopes that this is the beginning of a new era of enlarged trade between them.

Months ago, forecasting the present program and remembering that Canada had started the war worse prepared than any other nation, Premier King said it represented the most gigantic effort ever put forth by any people of comparable size in all history. Today it is in full stride. Canada is gladly paying its share of "blood, toil, tears, and sweat."

Panama, Bridge of the World

By Luis Marden

THE Panama Canal Zone, number one strategic point of the Western Hemisphere, is humming today with more activity than at any time since the great waterway was finished in 1914.

Men and machines are making the red earth fly as Uncle Sam hurries construction of a third set of locks designed to make this lifeline more proof against crippling attack and to speed the passage of his fighting fleet from one ocean to the other.

Through the Canal Zone and neighboring parts of Panama runs the fever of "third lock prosperity." Money flows freely and the area has the lusty color and movement of a frontier town.

The Canal Zone is largely a man's world. The 1940 census showed it had nearly five men to every woman, and this ratio has been increasing. More troops have been stationed here to guard against possible danger to the Canal, either from within or from without, and an army of laborers and technicians is at work on the third set of locks.

Because of the world emergency, the extra locks are being built many years ahead of time. Previously it had been estimated that to meet the ordinary needs of expanding commerce the new set would not be needed until about 1960.

The present locks, 1,000 feet long and 110 feet wide, will accommodate all but the three largest vessels in the world, the *Queen Elizabeth*, *Queen Mary*, and *Normandie*. The new ones, 200 feet longer and 30 feet wider, will handle any ship afloat or in prospect. Their construction will require an estimated six million barrels of cement.

One soon gets used to the sound of airplane motors in Panama. At night formations of low-flying pursuit planes thunder overhead. Their red and green running lights look like wandering constellations against the night sky. Restless white shafts of antiaircraft searchlights swing back and forth, searching for the high metal speck that is an airplane.

16-inch Guns and Poisoned Darts

Yet little more than an hour's flight from the Canal Zone, with its aerial defenses and heavy coast-defense batteries, Choco Indians deep in the rain forest of Darién paint their faces and repel unwanted intruders with blowguns and poisoned darts (Plates XII and XIII).

There are two Panamas. One, the Panama of the Canal, is the ten-mile-wide strip of United States territory seen by travelers crossing the Isthmus. The other, the Republic of Panama, is a country not so well known to the transients who hurry through the Canal.

Well have the Panamanians named their country "bridge of the world." For more than four centuries the narrow neck of land that links the Americas has been a busy route from one ocean to the other.

Panama's Geography Mixed

The geography of Panama is jumbled. The Isthmus is in the form of an S lying on its side; through the narrowest part of the loop that swings northward, the Panama Canal is cut. This places the Atlantic entrance of the Canal to the west of the Pacific terminal. In Panama the sun rises in the Pacific and sets in the Atlantic (see map, page 594).

New arrivals in the Isthmus, confused by this inversion, do not refer to the points of the compass when speaking of directions. Instead they say, "Toward South America," or "Toward Costa Rica."

I docked in Cristobal. Crossing the line into the Panamanian city of Colón, I walked along Front Street, with its scores of bazaars and arcaded sidewalks (page 599).

Although this was Panama proper, I heard little Spanish spoken on the principal streets. West Indian negroes from Jamaica, Barbados, and other islands, brought here originally to work in the Canal Zone, form the bulk of Colón's population.

They speak a dialect English that is an amusing mixture of Cockney, African, and the Oxford Dictionary. Broad a's are more common than in Boston; the word "man," for example, they pronounce "mahn."

The West Indians are known collectively as Bajuns (from Barbadians). Bajuns love to use "big" words. They tell of a Bajun houseboy sent by his employer to find something in the storeroom under the house. When he returned without the article, the man of the house insisted that he look again. For the second time the colored man returned empty-handed, saying sorrowfully, "Boss, I scrutinized, but I didn't discern."

Equally mixed are the other nationalities represented in Colón. Shops along Front Street are run by crafty Hindus from Hyderabad and the Punjab. Many of the "coachees" that drive the open hacks are Italian. The local industrial baron is a Greek, and a successful eating place is run by an Armenian.

I crossed from Colón to Panama City on the American-built Panama Railroad; the trip

Staff Photographer Luis Marden

True Panama Hats Are Braided, Not Woven

This Penonamé shop sells headgear made on the Isthmus to Panamanian customers. Indian hatters braid black and white palm fibers in the form of a ribbon. Then they wind the braiding around a wooden form and sew it together at the edges (see opposite and pages 610 and 615).

takes about an hour and 20 minutes. A ship going through the Canal—"transiting," in the jargon of the Zone—takes from eight to ten hours; an airplane flies across in 20 minutes.

When I got off the train at the Panama City terminus, it was on a Saturday night after a United States Army payday, and there was a bustle of khaki in the streets despite the sticky heat.

Red and blue neon signs over bars, cabarets, and other pleasure palaces glowed enticingly along the Avenida Central, which runs crookedly through the heart of the city (page 611). Dodging the left-hand traffic that dates from the days when all public vehicles were driven by negroes from the British West Indies, I mingled with the crowds on the narrow sidewalks.

From the open front of each *cantina*, or bar, nickelodeon music blared. Automatic phonographs used to play a preponderance of "gringo" dance music, but a recent government ruling stipulates that at least 75 per cent of all music played in public places, whether by "live" or "dead" talent, must be Panamanian or Latin-American.

Twin of the "juke box" is the omnipresent slot machine. *Traganiquel* they are called in Spanish: "nickel swallower." Bitter editorials periodically appear in the Panama newspapers on the amount of change put into these machines by the small wage earner.

About three-fourths of the population of Panama City (Panamá to its inhabitants) is composed of West Indian negroes and derivatives; in haunts of these folk the "calypso" music of Trinidad and Jamaica is heard from the juke boxes. Titles of these strangely accented tunes range from current events subjects to comic parodies.

Officers of the United States armed forces and members of the first families of Panama go to the Union Club to dance on Saturday nights; the general public goes to the so-called beer gardens.

One night I sat at dinner in the Balboa Garden with a refugee Viennese restaurateur, a Corsican hotel manager, an ex-Loyalist Spanish aviator, a White Russian, and René Belbenoit, escaped Devil's Island convict and author of *Dry Guillotine*.

Prices High and Labor Scarce

In the gardens high school youths from the Canal Zone "jitterbug" with bare legs and flat-heeled shoes, while more formal and sedate Panamanian couples trace the hip-

Staff Photographer Lyle Marlen

He Tries on a "Panama" Imported from Ecuador

Hand-woven by Indians from split and bleached leaves of the palmlike toquilla in Ecuador and Colombia, the hats are called "panamas" because they have been sold in the Isthmus for years (page 599). Panamanians seldom wear them. It takes about a week to weave a hat which sells for $10 in Panama and five or six months to make a $60 to $70 model.

weaving routines of Cuban bolero and rumba.

The Panamanian *balboa* is on a par with the U. S. dollar, and living is not cheap.

Panamanians complain that it is increasingly hard to get labor in the city, because of the higher wage offered in the Zone. Later, in the interior, I found that the lure of Canal work had nearly depopulated some agricultural regions of working-age males.

"People accept Zone jobs as much for the commissary privileges as for the wage," I was told. Commissaries are government-operated stores where workers and their families may buy foodstuffs and supplies of all kinds practically at cost. You can buy everything in a commissary from a safety-razor blade to Webster's Unabridged Dictionary.

I went into a "gold" commissary on Saturday afternoon. The designations "gold" and "silver" persist from construction days, when white employees were paid in gold currency and colored workers in silver. It was as thronged as the basement of a New York department store during a silk stocking sale.

People go to a wicket and buy a coupon book. As each purchase is made, coupons are torn out in the amount spent.

"Those casual-looking men you see over there are spotters," my friend said. "They watch for persons illegally using the commissary."

Since things cost so much more in the Republic than in the Zone, and since there are no customs or guarded borders between the two areas, the temptation to "crash the commissaries" is strong.

Zone a World Apart

In many ways the Canal Zone remains as "homey" as a strawberry festival on the lawn of a town church.

With its high-school plays, its lodge meetings, and its bridge clubs, social life within the Zone is completely self-contained. I talked with Americans who had lived in the Canal Zone for more than thirty years and yet could not speak Spanish.

In contrast to the thick-walled houses and narrow streets of Panama City, the Canal Zone has the aspect of a landscaped suburb. Houses are usually of wood, raised from the damp ground by concrete or wooden piles. Well-kept lawns are shaded by mango and breadfruit trees, coconut palms, and flowers.

Drawn by Barry Gardner, Jr.

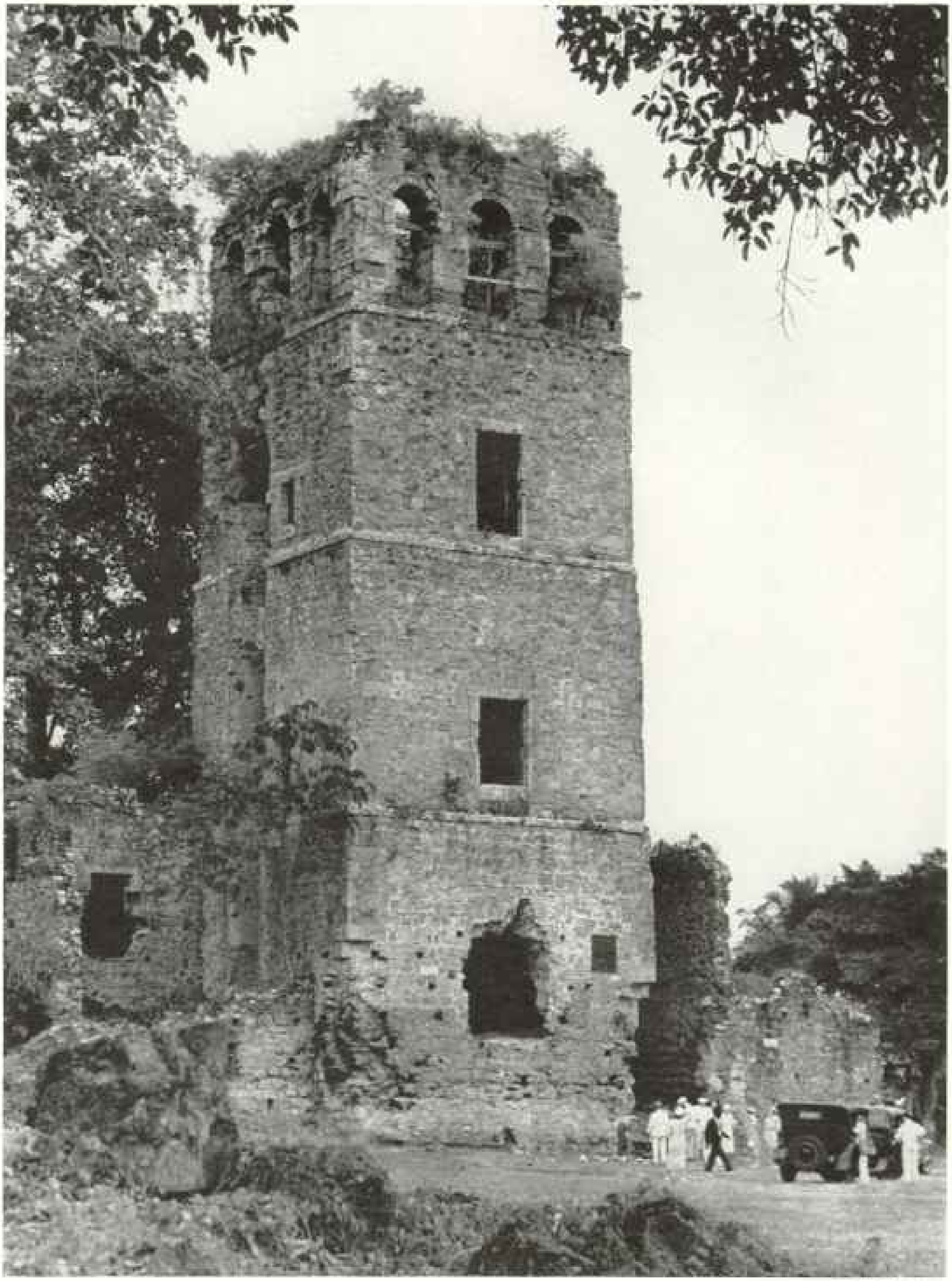
By Land, Panama Links the Americas; by Water, Two Mighty Oceans

Vital to the defense of the United States is the Panama Canal, which bisects the Isthmus at its narrowest point. A strip of land five miles wide on either side of the "big ditch" forms the Canal Zone and belongs to the United States. This area is heavily garrisoned. Modern fortifications and squadrons of planes guard the two entrances. For four centuries Panama has been a transfer point and clearinghouse for all parts of the New World.

United Fruit Co.

Bananas Move from Plantation to Shipping Center by Pack Mule

Other consignments are floated down rivers in dugout canoes. Annual exports of the fruit, the Republic's most important product, are valued at more than $2,500,000. The United States takes nearly the entire output. Coconuts, cocoa, hides, gum, and tortoise shell are other exports.



Phillip Hendrean

Remnant of Old Panama—the Vine-clad Shell of St. Anastasius Cathedral

Stone arches of two bridges and jungle-smothered walls near by are the only other visible evidences today of the original Spanish city. Sir Henry Morgan, Welsh sea hawk, and his men sacked and burned Old Panama 270 years ago, and the site was abandoned. The city was rebuilt six miles west of the ruins (page 609).

Scenic from Three Lions

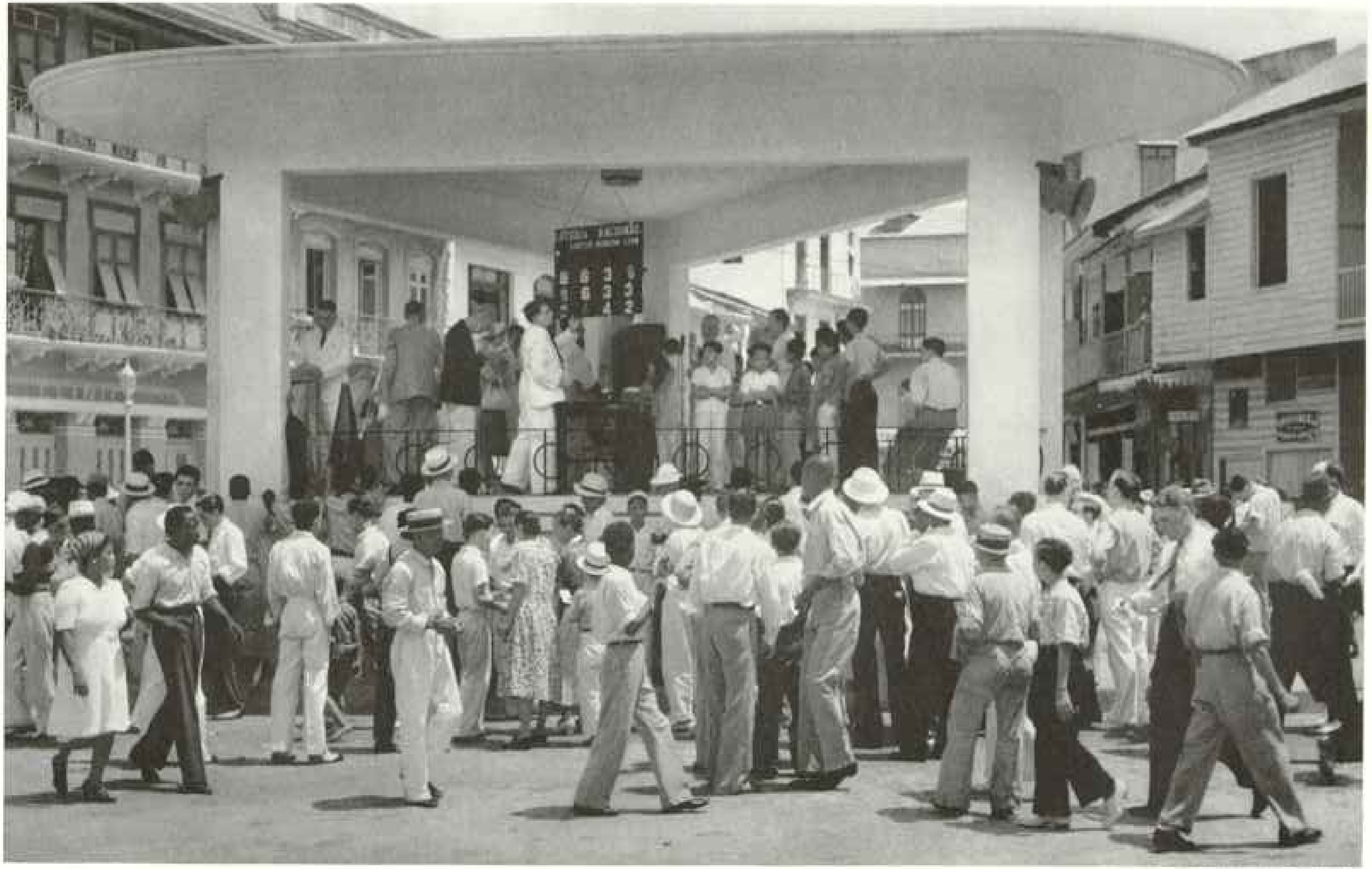
Surf Bathers Here at the Pacific Entrance to the Canal May, if They Wish, Swim in the Atlantic on the Same Day

Fortified Taboga Island rises nearly 1,000 feet above sea level in center background. Behind a breakwater along the horizon is the ship channel, leading to Miraflores Locks.

Staff Photographer Luis Marden

Fins Flapping Wildly, Three Startled Rays Leap Together from the Water off Panama

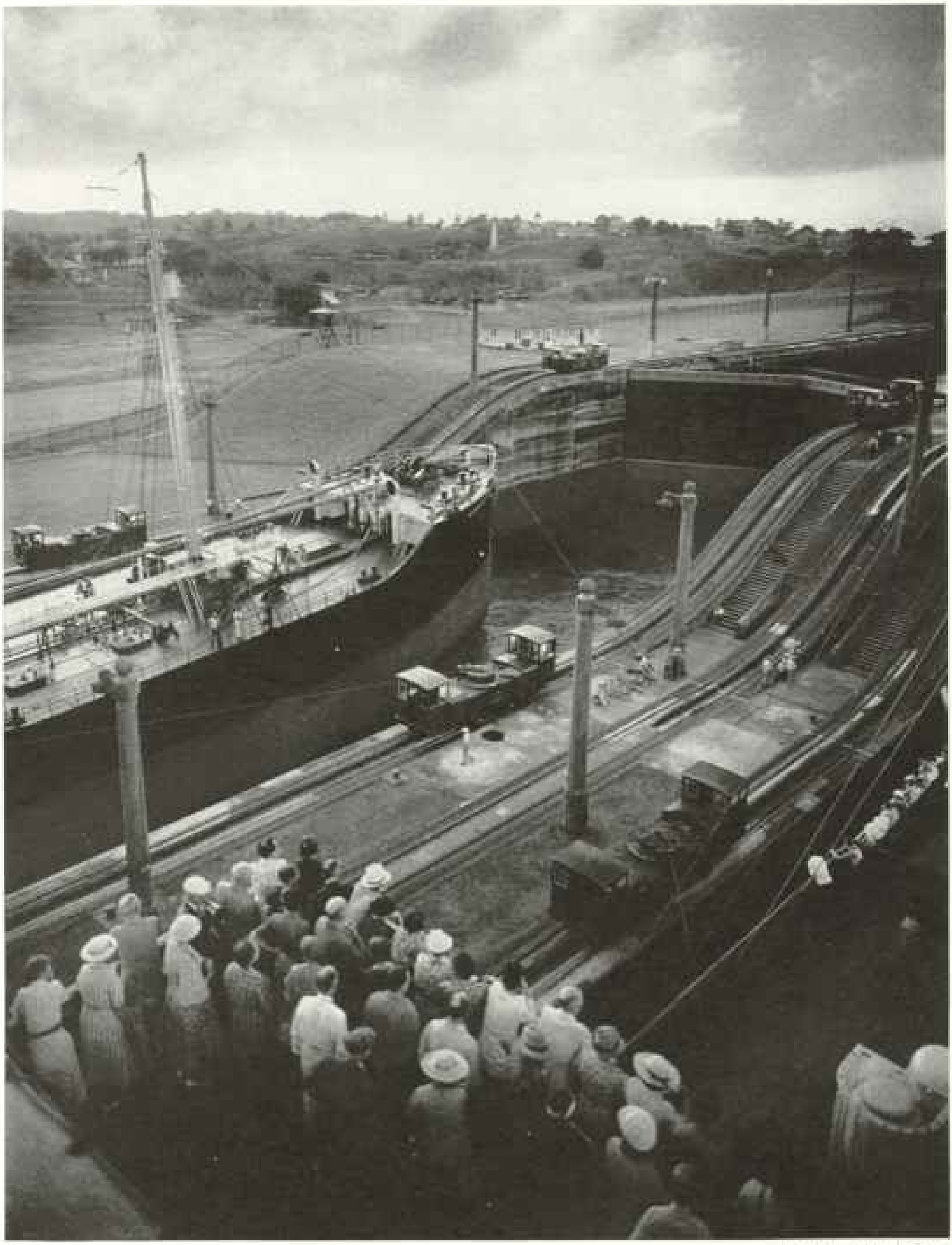
This unusual photograph was made by chance while the author was on a boat trip. Rays leap like this when frightened by some underwater creature.



Staff Photographer Lois Marden

Under the Eyes of Eager Ticket Holders, National Lottery Officials Draw the Lucky Numbers

Every Sunday morning at 11:30 o'clock the drawing takes place here in Panama City. Each $10 ticket is divided into 20 shares, at 50 cents a share. The fortunate holder of a winning 50-cent ticket may win $1,000, and there are other smaller prizes. No tax is levied by the Republic on lottery prizes. Profits from the sale of tickets go exclusively to hospitals and other charitable institutions.



Publishers' Photo Service

Two Ships Enter Gatun Locks at Daybreak to Begin the Isthmus Transit

The big steamers will be lifted bodily 28½ feet, within fifteen minutes after the gates are closed behind them and water rushes in through a vast system of culverts. As they pass into a second and then a third lock, the process will be repeated until the ships have been raised 85 feet from the level of the Atlantic to the level of Gatun Lake. Present locks, 1,000 feet long and 110 feet wide, can accommodate any ship afloat, excepting the *Queen Mary*, *Queen Elizabeth*, and *Normandie* (page 391).

Staff Photographer Luis Marden

Shoppers and Collectors the World Over Know Colón's Front Street

Hindus, Chinese, and merchants of other nationalities sell wares from many lands, in hundreds of arcade shops. Among the myriad items are found carved dolls from the Amazon; Oriental silks, satins, and perfumes; Turkish pottery; Siamese cloisonné vases, or handmade Bolivian silver. Signs are in Spanish and English. Sidewalk awnings protect patrons from the hot afternoon sun (page 591).

Wooden houses built by the French canal company some fifty years ago are still in use. I asked a botanist friend how the walls had been able to defy termites these many decades. "The walls stand," he laughed, "because the termites in them are holding hands."

"Panama Hats" Not Made in Panama

In Panama grows the toquilla, the palmlike plant from which "panama hats" are made. However, these hats are not made in Panama, but are imported from Ecuador and Colombia.

Some of the best panamas come from the Montecristi region in Ecuador. They are made of the split and bleached leaf of the toquilla (*Carludovica palmata*), and are called "panama hats" because they have been sold here for years. Almost everyone who passes through the Canal takes one or more home with him (page 593).

Ecuadoran hatmakers literally lead a "hat to mouth" existence. When they begin work on a hat, they bring the center of the crown to the dealer, who advances them so much against the completion of the hat. When the work is half finished, the weaver receives more money, and when the hat is completed the balance is paid.

It takes about a week to weave a hat that sells for $10 in Panama. A really fine hat—one that would cost from $60 to $70—takes five to six months to make.

Signs along the Avenida Central in Panama City are in both English and Spanish. The former used to predominate, but a recent ruling by the President of the Republic re-

quires all signs on public places to be in Spanish. There may be an English translation, but it must come second, and the Spanish lettering must be larger.

"Sloppy Joe's Bar," an untranslatable name if there ever was one, has become "Cantina José el Abandonado": Cantina Joseph the Abandoned One.

Law Regulates Folding Newspapers

Leading newspapers are printed in Spanish and English, with the number of pages devoted to each language about evenly divided. Each section has its complete staff; one part is not a literal translation of the other. Formerly the newspapers were folded with the English section outwards; now, by law, the Spanish part must appear outside.

One night I read of a speech made by a leading Chinese businessman of Panama in defense of his countrymen, who are rapidly being eased out of retail selling in the Republic. It was a good speech, but at its conclusion the Chinese was hotly attacked by a Panamanian deputy (congressman) present, because the speech had been delivered in English.

"That is the very thing we are fighting," the deputy said. "By your own admission, you have been here for 35 years, yet you do not speak our language."

"We like the Chinese," Panamanians told me, "but we simply cannot compete with them in small businesses. The average Chinese is content to live on a little rice and sleep behind his counter. With our higher living standard, we cannot compete with him."

Fish Symbolic of Panama

In the aboriginal language of the Isthmus, Panama means "abundance of fish." The waters of the Gulf of Panama swarm with food fish of all kinds, and also are noted for big-game fishing (Color Plate III).

I went on a two-day cruise to the Perlas Archipelago in quest of sailfish, with an acknowledged master in the big fish field, John T. Gorin of the Pacific Sailfish Club.

"It is a little early still," he warned me. "The sail do not come into these waters in numbers until June."

At the time of my visit, Gorin held the record for both the largest and the smallest black marlin (*Makaira marlina*) caught in Panama Bay. The largest weighed 600 pounds; the smallest 212½.

Since then, the record for the largest has gone to another angler, who caught one weighing 715 pounds.

As we returned to the Balboa Yacht Basin on the afternoon of the second day, I asked Gorin why it is that Panama, a small country, should have such a large merchant marine.

"I have always said that Panama is the Reno of shipowners," John replied. "Vessels of other nations change to Panamanian registry for several reasons. There are few legal restrictions, for one thing, and there are opportunities for various economies. And then, they have no zones of the seas closed to them."

That is why Panama, so small, ranks high among the maritime nations of the world in gross tonnage and holds second place among the American Republics.

Trout on a Volcano

Speaking of fish, Consul George Andrews had told me of a trout stream high up on Chiriqui Volcano, near the Costa Rican frontier. These cold-water fish were not here originally. In 1925, at the suggestion of the United States Minister, the Bureau of Fisheries introduced rainbow trout into the Chiriqui Viejo River, and they have thrived (page 615).

I went to see this and other attractions of the region on the Gelabert Airlines, a domestic air-transport system operated out of Paitilla National Airport, northeast of Panama City.

Commercial aircraft are allowed to cross the Canal only at a designated point—where Fort Amador lies on the east bank of the Pacific entrance to the Canal. As we flew over this place, I could look inland to where the channel of the Canal narrowed and the banks seemed pinched almost together at Miraflores and Pedro Miguel (Peter Magill, to Americans) Locks.

It was a hazy, cloudy day. Only once on the long flight to the west did we see the waters of the Atlantic across the cloud-covered ridge of the Continental Divide.

When we arrived over David, an hour and 40 minutes later, it was still too cloudy to see the 11,000-foot peak, highest in Panama, of the extinct Chiriqui Volcano to the northwest of the plain on which David spreads.

Until our ship was unloaded at David I did not realize the mixed cargo we carried. There were several live chickens, a fighting cock in a cloth bag, paper-wrapped cuts of meat, motion-picture films in cans, a guitar, and the mail.

"I'll call you from the field some day when we bring in a cadaver," cheerfully remarked the pilot, as I stepped into the Hamilton "tin goose" that flew me in eight minutes to Concepción at the foot of the volcano.

Waiting at Concepción to meet me was Kurt Hemmerling, who keeps cabins for vacationists up on the mountain. Though born in

 Kodachrome by Luis Marden

For Carnival This City Girl Wears a Country Costume Called a "Man-killer"

Wooden mortar and pestle for grinding corn are standard equipment of rural households in Panama.

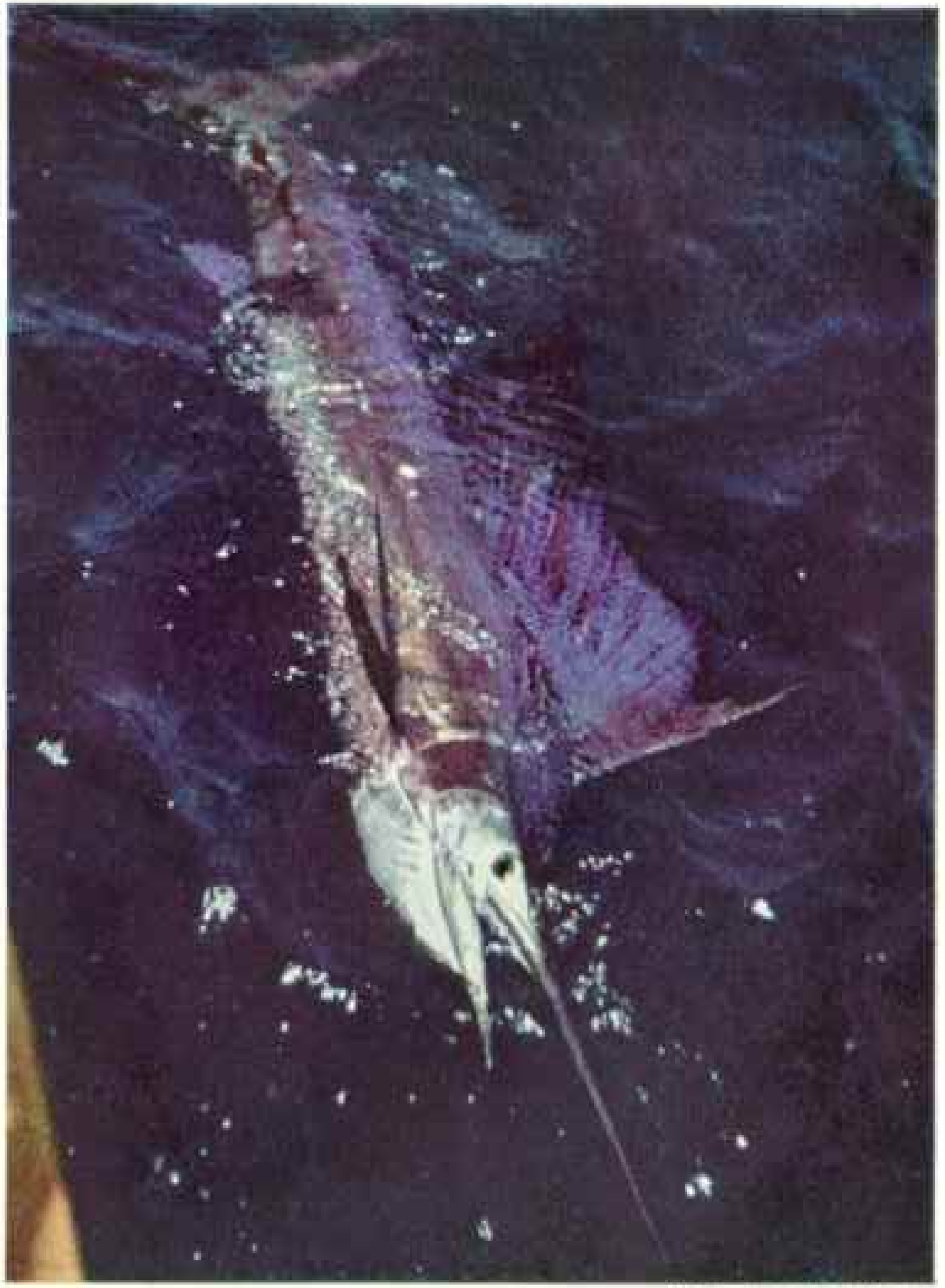
Kodachrome by Luis Marden

Panama City Extends a Beckoning Finger at the Pacific Entrance of the Canal

Sport planes may fly over city and Republic, but not the Canal Zone. This view of the Panamanian capital takes in also a part of the Zone—at extreme left, including the clump of trees and adjacent rise. Beneath the plane lie France Plaza and remains of sea walls that once enclosed the city (Plate VI).

Pacific Sailfish Run Larger Than Their Atlantic Cousins

For the Gulf of Panama this 90-pound specimen—first of the 1941 season—is small. It was hooked off the Perlas Islands.



Kodachromes by Lois Marden

Clear Waters Reveal the Sailfish's Streamlined Length

Peacock blue of the huge dorsal fin fades when the fish is removed from water. The Gulf of Panama teems with game and food fishes.

 Kodachrome by Luis Marden

You Have to Be Agile to Do the *Tamborito*, National Dance of the Republic

Onlookers clap hands in time to the rhythm of two slender "minor" drums and a fat, keglike "major." The girl is dressed in the traditional costume which originated in the flounced gowns of Spanish colonial dames. Her partner wears the braided hat and embroidered suit of the Panamanian countryman.

Beauty Attends Marcela I, 1941 Carnival Queen

Hair ornaments are fastened by tiny springs, so that the flowers and butterflies they represent tremble and quiver with movement of the head. The four-day Carnival culminates with the ceremony of throwing a fish into the sea.

Kodachromes by Luis Marden

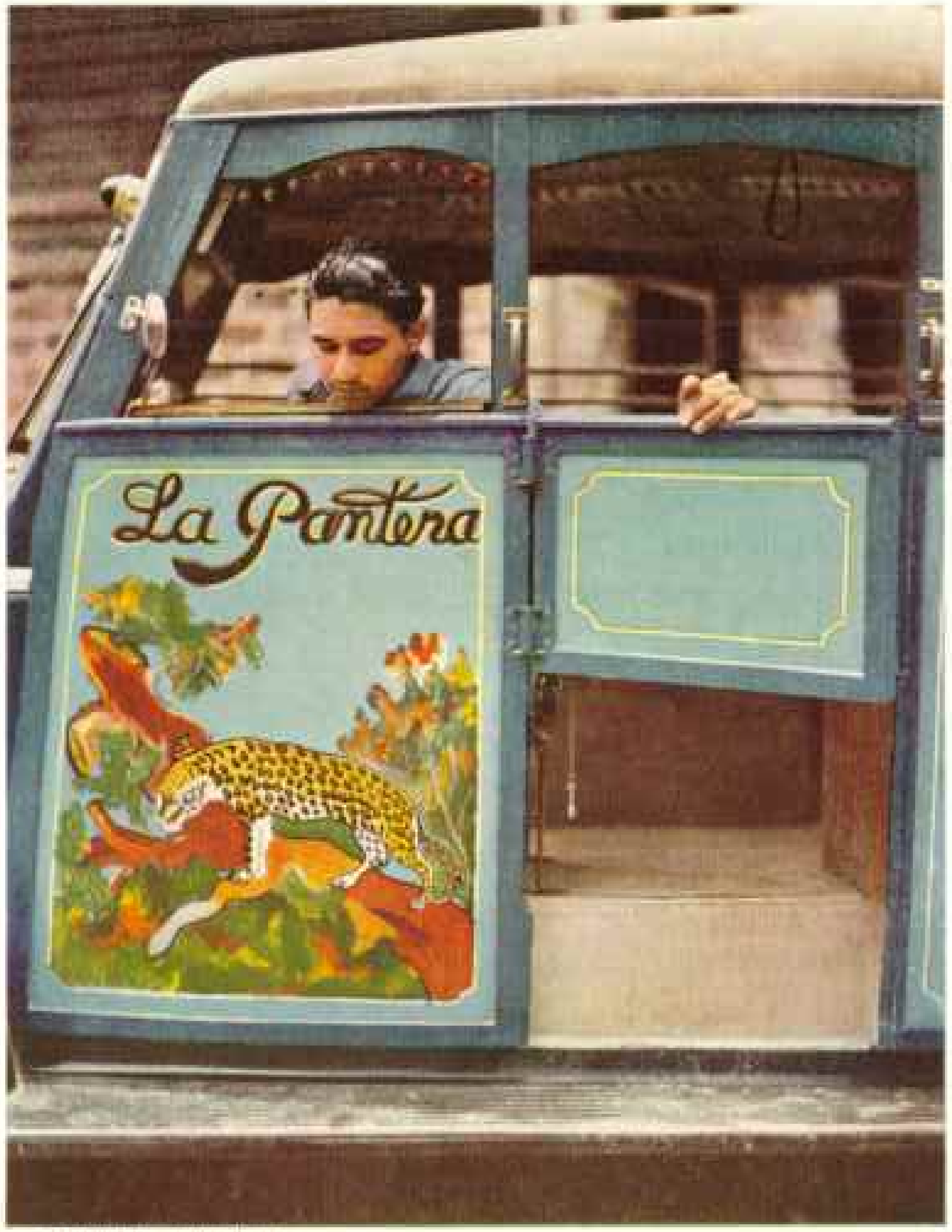
Flying Bobbins Fashion Openwork Lace for the *Pollera*

In Los Santos Province a woman over eighty still makes lace for her country's national costume. Twelve yards are used in the blouse (upper picture) and another dozen yards are worked into the skirt.

Reduction by Luis Marden

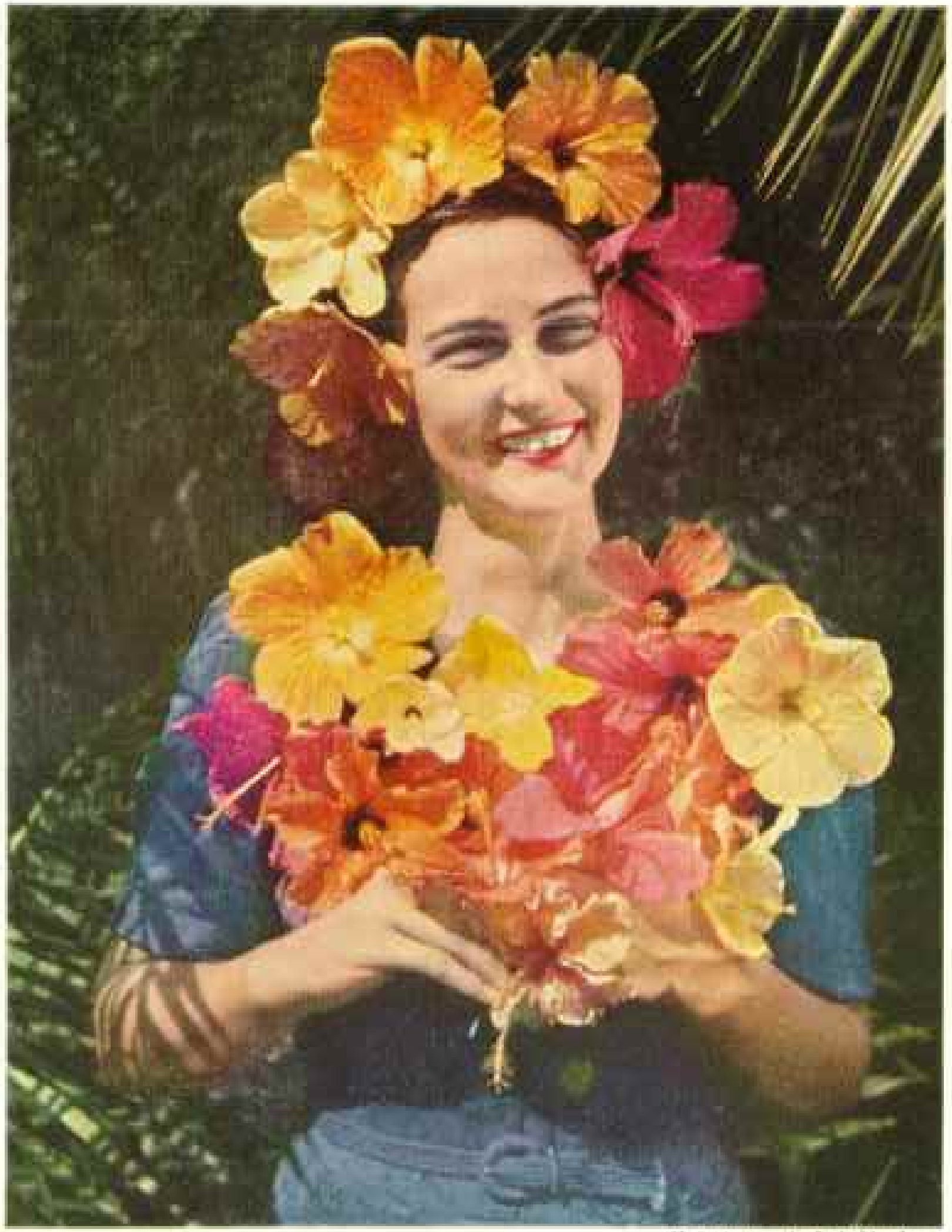
France Plaza Commemorates the French Effort to Dig a Panama Canal

Under the sea wall, tablets tell the Canal's history (Plate II). Beyond the causeway is the Pacific entrance. Larger islands in distance are Taboga and Taboguilla.



Panamanians Call This Free-lance Bus a "Nanny Goat"

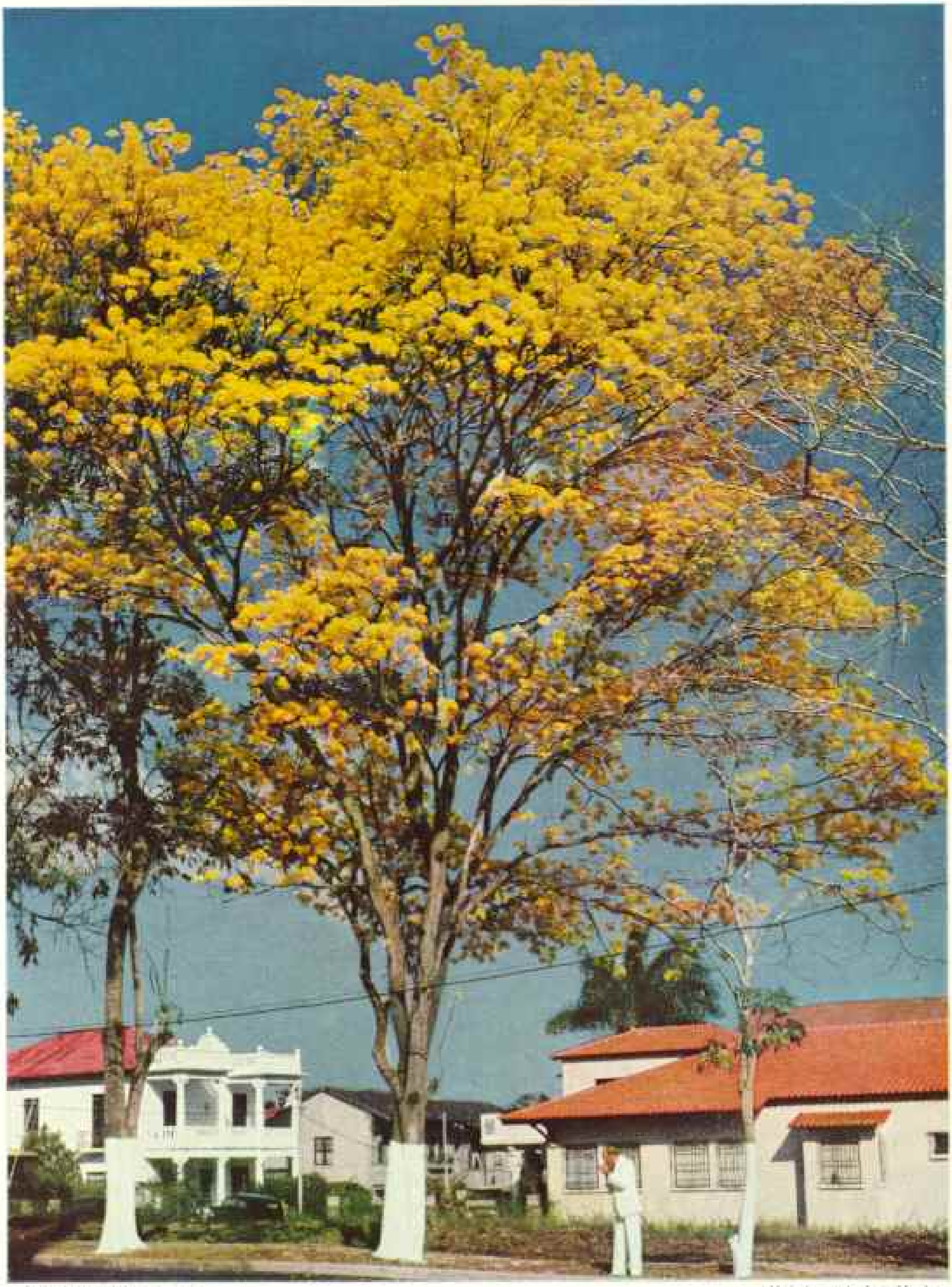
Hundreds of these roving carriers clutter Panama and Colón traffic. The graphic insignia of "The Panther" is the work of a popular automotive artist known in Panama as "The Wolf."



Kodachromes by Luis Marden

Here the Hibiscus Surpasses the Orchid in Color

From the thousands of tropical species at Summit Experiment Garden come plants for landscaping Zone areas. An exotic variety grown here is the "miraculous fruit," discovered in the Cameroons by Dr. David Fairchild.



 Kodachrome by Luis Marden

The Wood of Life Glows Yellow against Blue April Skies

Flowers of the *guayacán* are shed after a day or two. Later in the season, pink shower trees add color to Panama City streets. In the hot, moist climate, posts cut from the kapok and other trees sprout and continue to grow, turning fences of bare sticks into rows of young trees.

Germany, Kurt is a naturalized Panamanian who speaks English fluently and volubly, but with a stage German accent.

The cabins, at the end of a two-hour drive up the mountain, look like something out of the Black Forest or Switzerland. They have the projecting eaves, and the sets of stag antlers up under the peak of the roof. These and the main house are in a hollow called Bambito, 5,200 feet above sea level.

Coming here from the humid heat of the coastal plain was like walking out of a Turkish bath into a frosty autumn night. A hardwood forest clothes most of this area; it looks more like the Maine or Canada woods than a region less than nine degrees from the Equator. I slept under four blankets that night.

The Chiriqui Viejo is a brawling, fast mountain stream. We were on it early next morning. Surprisingly, though the river has its source high in the foothills of the volcano, its waters are not too cold for wading.

"The temperature is between forty and fifty degrees," said Kurt. "Ideal for trout breeding."

We fished some good pools, Kurt using the despised "ground hackle"—grubs and worms—and I wet flies. But Kurt took fish all day on the grubs, while I got nothing worth mentioning until the evening rise began at dusk. There was a sort of gray-blue fly on the water then, and I tied on a Silver Doctor, that being the nearest I had to the natural insect. An Iron Blue Dun would have been better, I think.

I hooked three fish and landed one. It was too dark to see much, but the arch of the rod and splash of several jumps told of good-sized fish. The one I netted was about 15 inches long, and beautifully marked on its purple sides with black spots.

Glimpse of a Quetzal, Sacred Bird

As we worked downstream during the day, I had seen many kinds of orchids growing on trees and rocks. There were white, yellow, and orange orchids; some were heavily scented. Anglers here photograph their catch not against a background of pine branches, but of orchids and red coffee berries.

Once, while fishing intently, I had been startled by Kurt's cry of "Quick, look there!" My eyes just caught the green and scarlet flash of a bird in flight. A quetzal, sacred bird of the ancient Maya and Aztec, had flown across the stream to a perch high in a dead tree. Quetzals are not uncommon on the mountain. The one I saw had lost its yard-long bronze-green tail feathers. Earlier in the season their plumage is at its best.

As we walked back to the house in the darkness, Kurt told me of the Germans who had settled years ago in this region. In 1848 fifteen families of political refugees had left Germany for Texas; later they migrated to the volcano region in Panama. One original settler was named Kant; the philosopher was his great-uncle. Descendants still live on the mountain.

No Trespassing in Air Above Canal

After flying from Concepción to David, I transferred to a Pan American Douglas airliner. Talking to the flight steward on the way back to Albrook Field at Ancon in the Canal Zone, I learned that private flying is not allowed in the Zone. But much amateur flying in United States-manufactured airplanes is done at Paitilla National Airport in the Republic.

Later that day at Paitilla, I met the youthful technical adviser for aviation to the Panamanian Government. When he learned that I held a United States private pilot's certificate, he took me to officials who waived examinations and issued me Panama Private Pilot Certificate No. 52.

Paitilla National Airport, like military flying fields in the Zone, has only one surfaced runway. No others are needed, for the prevailing winds in Panama come from two directions only: from the north during the rainy season, and from the south in the dry months.

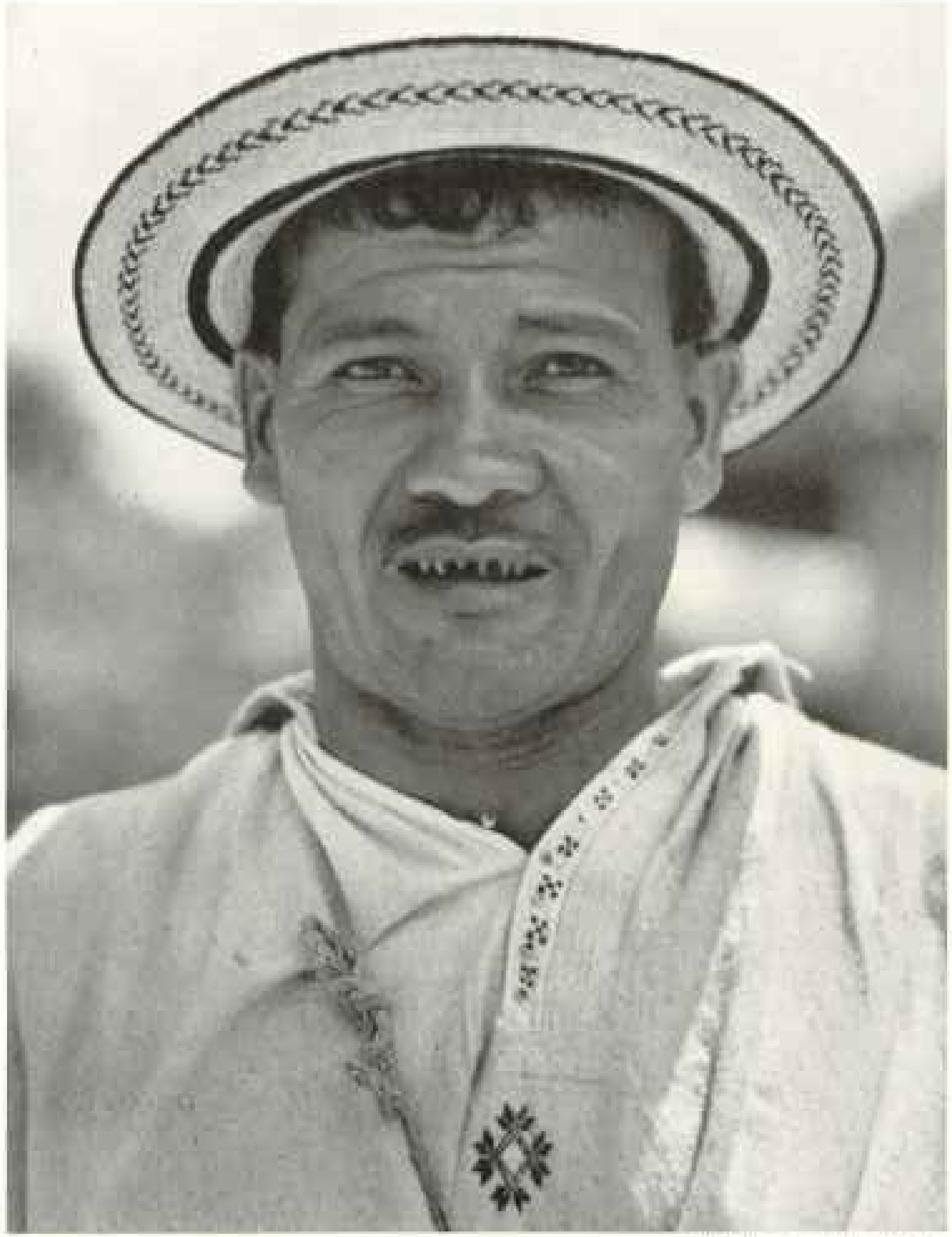
Borrowing a Piper cabin monoplane, I flew for the Easter week end to Santa Clara, base for a trip by car through the interior of Panama.

The concrete runway of the Paitilla National Airport points out into the muddy waters of Panama Bay. Lifting the buff-colored ship from the runway, I headed out over the bay until I had a thousand feet of altitude, then turned to the left for a look at Panama Vieja (Old Panama).

The original site of Panama City, founded in 1519, is only a short distance up the coast northeast from the present-day city. Flying over the government-cleared area, I could see the regular blocks of crumbling walls and cobbled paving that marked the pioneer city. From the center of the ruins the time-blurred remains of the tower of St. Anastasius gapes roofless to the sky (page 595).

Sir Henry Morgan, who certainly got around, sacked Old Panama in 1671. Most of the private houses were of cane and palm; they burned easily, and the Spanish city was razed.

Turning again to the west, I flew at 2,000 feet across the crooked terra-cotta finger of



Staff Photographer Luis Marden

An Interior Native's Smile Reveals Sharp-pointed Teeth

Dwellers near Ocú in Herrera Province have adopted this strange custom of tooth-filing or chipping (page 616 and Plate XV). One method is to place a dull knife behind the tooth, then chip off the edges with a rock. The natives say it improves their teeth and makes them last longer!

Staff Photographer Luis Marden

Something New in Costume Jewelry—Flashing Fire Beetles!

Cucuyos have tiny "headlights" which glow green, and "taillights" which diffuse a yellowish gleam. Panamanian girls pin them at night on their dresses or in their hair. The pins pass through a horny part of the insects. The girl holds a hollow sugar-cane "cage" in which they are kept in daytime (p. 615).

Philip Gendreau

The Flavor of Old Spain Lingers on in the Heart of Modern Panama City

Ornate benches filled with leisurely loungers, tiled sidewalks in mosaic design, and overhanging trees make the Plaza de Santa Ana a little European island facing bustling, cosmopolitan Avenida Central. This broad, well-paved thoroughfare, crowded with streetcars and automobiles, is Panama City's "Main Street" (page 592).

Philip Gendreau

Through the Engineering Miracle of Gaillard Cut a Ship Passes on Her Eight-hour Trip from the Atlantic to the Pacific

While the Canal was being dug, everyone heard of Culebra Cut, because of the repeated slides which held up its completion. Few realized that Col. David Du Bose Gaillard, in charge of excavation, was giving his life to accomplish the gigantic task. Just as he was about to witness the triumphal opening, he died under the strain, in December, 1913. President Woodrow Wilson changed the name of the vast nine-mile trench to Gaillard Cut in the army engineer's honor (pages 598, 616, 630).

Staff Photographer Lois Marden

A Connecticut Yankee Raises Four-leaf Clovers in Panama

The tiny symbols of good luck are grown as a side line by a telephone company official in the Canal Zone. They are planted in sterile sand to keep them free of fungus, and thrive on plant food sprayed over them. These leaves will be exported to greeting card and novelty makers in the United States.

U. S. Army Signal Corps, Official

Army Fails to Score

A private, first class, runs into difficulties with a bashful ring-nosed San Blas Indian baby. Canal Zone troops, nicknamed "Junglemen," publish their own newspaper, The Panama Coast Artillery News. With its profits they have built a radio station which broadcasts to the United States.

Ewing Galloway

"With Eagle Eyes He Stared at the Pacific"

The striking bronze figure of Balboa stands in the plaza of Santo Tomás Hospital, Panama City, overlooking the ocean he discovered. The explorer first saw the Pacific on September 25, 1513, after a 25-day journey across the Isthmus. Panama's dollar, the *balboa*, is named for him.

Panama City (Plate II) and then over the Pacific entrance to the Canal.

The air above the Canal is always full of military airplanes. As my slow, 85-mile-an-hour ship buzzed over the Canal, fast-climbing, stub-winged pursuit airplanes came up to look. They circled closely once; then, satisfied, "peeled off," diving for the field on the Canal bank. The downwash of turbulent air left in the wake of the faster ships made me bounce like a canoe in rough waters.

Flying along the coast, I could see how the country, flat near the coastline, wrinkles up inland into brown and green folds that are as ordered and stiff as those on a papier-mâché relief map.

I flew through light rain and squalls at 3,000 feet, then came out from the clouds and mountains near Chame into a vast plain of blazing white light. Just visible far up the sandy white shore was the small island that stands opposite Santa Clara on the mainland. Under me wound the automobile road from Panama City.

As I approached Santa Clara, I could see where the new concrete highway cut straight across country, slicing off many curves and digressions of the old road.

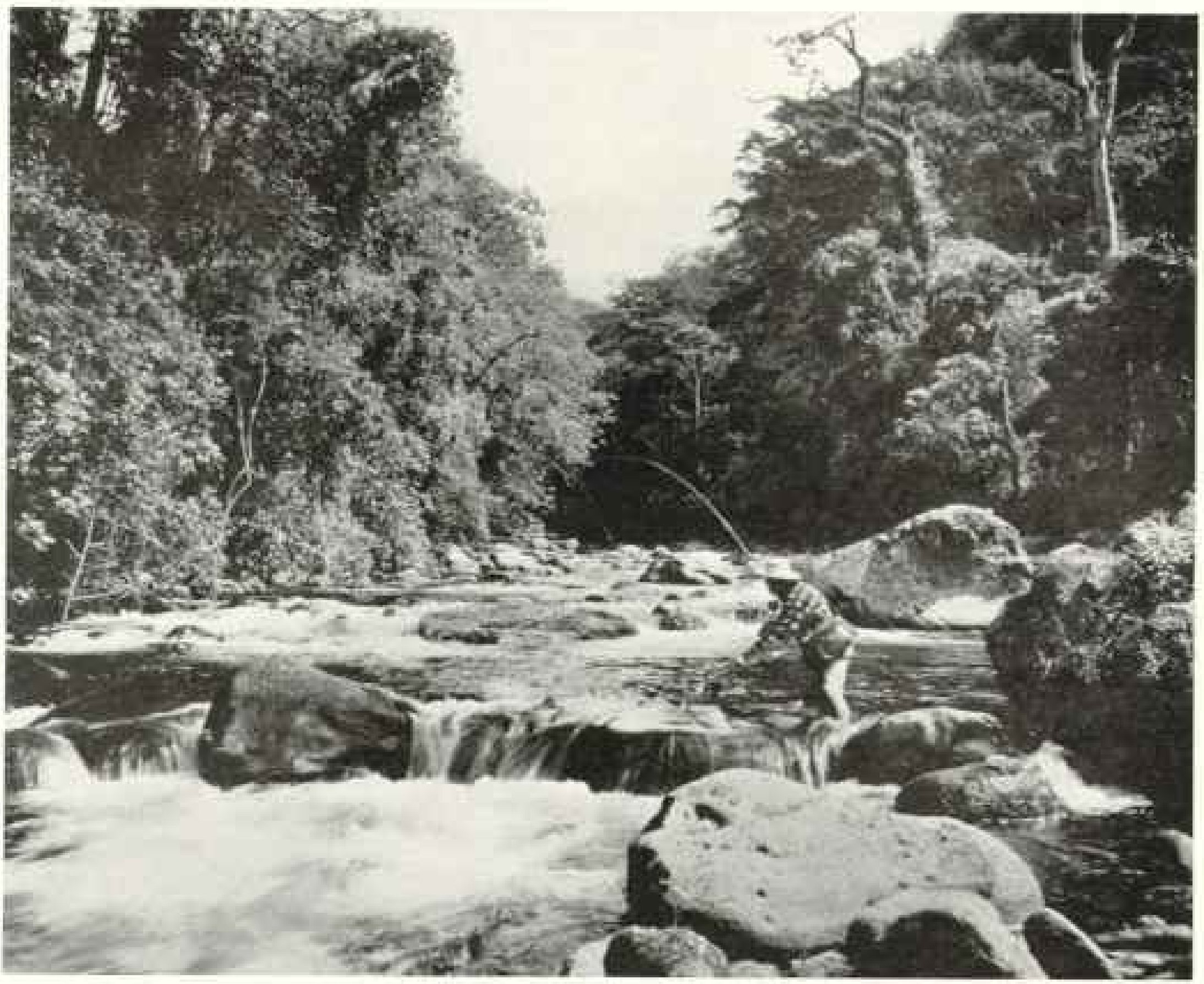
This is a part of the Inter-American Highway from the Texas border to Panama City, and is a link in the Pan-American Highway. Completion of this stretch enables United States military forces to transport men and materials swiftly to and from Panama and the Army air base at Rio Hato.

Antiaircraft Practice at Rio Hato

"Don't fly beyond Santa Clara," I had been told. "There is always antiaircraft practice going on at Rio Hato."

As I swung out to sea to come in for a landing on the sod flying field, I could see antiaircraft shells bursting beyond and above us, out at sea. The bursts looked like tufts of white cotton laid in rows against the blue of the sky.

That night I spent in residential Santa Clara. Around me was a garden of truly tropical variety, and a miniature zoo of birds and animals of the Republic. Among the latter was Cholo, a "wild" *saino* (*sahino*), or pig, that runs around like a house dog, begging crackers. One skeptical guest told me that Cholo was wild only when someone refused to scratch his back.



Staff Photographer Luis Marden

Rainbow Trout from the United States Lure an Angler in Panama

The fish were placed here in the Chiriqui Viejo River, on Chiriqui Volcano, in 1925. They were introduced through the efforts of John Glover South, then U. S. Minister to Panama, and have flourished ever since (page 600). The stream is near the Costa Rican frontier.

In the morning I drove to Penonomé, capital of Coclé Province. At a Chinese-operated general store we saw the true panama hat, so typical of this region that it is sometimes called the Penonomé hat (pages 592 and 610).

Unlike the better-known panamas from South America (pages 593, 599), this kind is made by a braiding process. Instead of being woven from crown to brim in one piece, these are formed of a half-inch braid of palm fiber, ustally of alternate or mixed white and black. The finished braid is wound round and round a wooden form and sewn together at the edges.

Thus a round-crowned, black-striped hat is made. This hat is as common in the interior of Panama as is the wide-brimmed sombrero in rural Mexico.

We sat in the dusk, waiting for the Good Friday procession to begin. People filled the streets and hunched on curbs in anticipation. Brooches and hairpins worn by passing girls gleamed with uncanny light in the darkness. When one slender figure appeared almost outlined in greenly glowing dots, I was sure it was not my imagination.

"Those are *cocuyos* (fire beetles)," my companion explained. "Women like to wear them in their hair or on their dress."

He beckoned to a boy in the street, who came forward and proffered a little tube tied with string. It was a section of sugar cane with a cleverly fashioned lid. He untied the string and removed the lid. Inside were three live black beetles a little over an inch long.

They live in the tube for days, eating the sugar, I learned. When I turned the insects over, two "headlights" on each side of the head gleamed with a bright-green light; on their underside a yellow "taillight" shone intermittently.

At the joint of the body is a natural hook of chitin, under which the girls pass a pin. It does the insect no harm (page 610).

Down the darkened street scores of glowing

points of green light bobbed and danced like fireflies on the wing.

When the religious procession passed with solemn and measured step a little later, I saw three United States soldiers with bugles at its head. These men had been invited by the municipality to furnish music for the procession.

"We didn't know what we should play," one said. Finally they chose—with a fine sense of the appropriate—"Church Call," "Call to Quarters," and "Taps."

The appreciative townspeople made much of the soldiers after the procession entered the church, and the three grinned with pleasure.

There is little for the average soldier to do while at liberty in the vicinity of Rio Hato base, and an occasion like this was welcomed by the buglers.

The Army private is resigned to his loneliness in Panama. "Nobody loves a dogface" (as they style themselves), he says.

At Last—"The Real Panama"

On the Saturday that was Easter eve, I was in the village of Ocú, in Herrera Province, several hours into the interior from Penonomé.

"Here is the real Panama," I was told. "You might call it an exhibit of the unspoiled Panama of the last four hundred years."

In Ocú I saw for the first time the original of the *pollera*, the national dress of Panama's women. Here it is in the simpler, less ornamented form called the *tumbahombre* (man-killer). Its voluminous, brightly colored skirts made the streets of Ocú festive (Plates I and XV).

Here, too, were men with filed teeth (page 610), and abandoned crosses of thornwood that had been carried as penance in the Good Friday procession of the night before. They wore short-trousered, embroidered suits, and rode small, well-groomed horses that bore their grinning riders at a drumming single-foot around and around the plaza.

That night we went to the corner cantina to see the dancing of the *tamborito* ("little drum"), national dance of the country.

A space barely ten feet square near the musicians had been left for the dancers. The "orchestra" played three drums: two slender small-headed ones, and a larger one shaped like a fat keg. The players sat as expressionless as the onlookers, and slapped and thumped irregular beats for bare dancing feet.

The air was blue in the cantina, for everyone, women included, smoked a down-curved "bulldog" pipe (15 cents; made in France) of locally grown shag.

The tamborito is an "open" dance, in which the man circles and stamps around the woman. Only one woman was dancing, pipe in mouth, as we entered; every now and then a man would push to the front and replace her male partner.

These people were of fair complexion, with gray or hazel eyes and aquiline features. Despite the teeth-filing and the drums, they reputedly have practically no Indian blood. Their descent is nearly pure Spanish; nor did I see here the negroid types of towns nearer Panama City.

Every so often during the dance, a performer or spectator would throw back his head and yelp and howl. It is a combination of yodeling and houndlike belling that would give joy to the heart of a huntsman.

Outside the cantina, people moved among the food counters and booths, or slept casually on curbs or against house walls. The short, full-skirted women and tall, bare-shanked men, their pipes exuding the fragrant aroma of home-grown tobacco, stood around in the soft night air, lighted redly on one side by the kerosene flares of the venders and silvered on the other by the light of the Easter moon.

Returning to Panama City, I flew to Colón on the Pan American airliner. We followed the line of the Canal. Through scattered clouds the waterway showed intermittently, broad and irregularly shaped near the entrance, then emerging straight and satisfyingly like a canal on the other side of Miraflores and Pedro Miguel Locks.

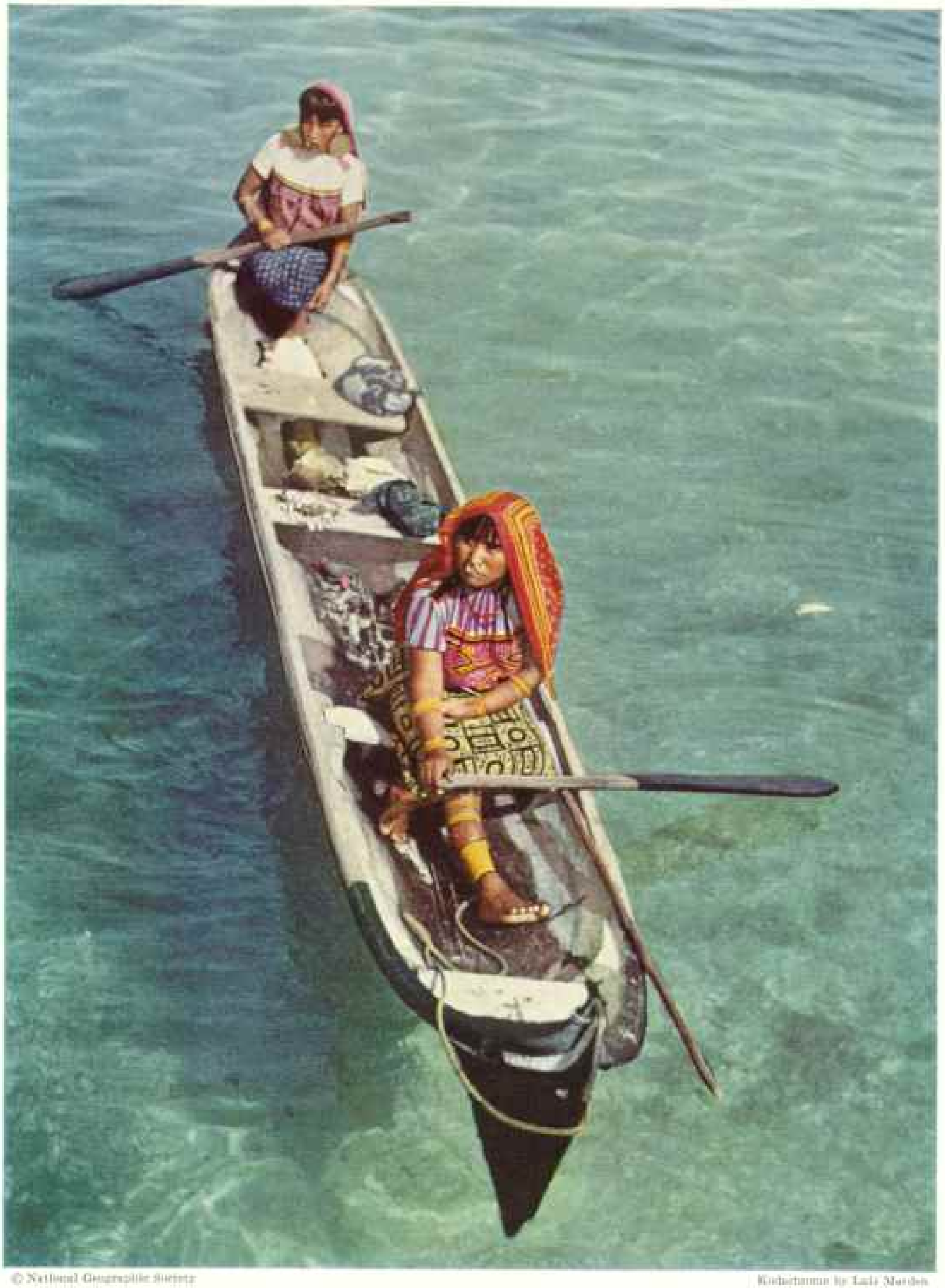
Why the Canal Has Locks

An engineer in the seat next to me explained why most of the water in the Canal is fresh.

"Since there is no appreciable difference in level between the two oceans," I said, "I am not sure that I understand why it was necessary to build a lock canal."

"The main reason is that it cost only half as much in time and money to build a lock canal as it would to have dug one at sea level. A lockless canal would have to be at the level of the oceans in its entire length. That would have meant much deeper excavating; so the idea of damming the Chagres River to create an artificial lake was conceived. This lake, Gatun, now furnishes the water for a great portion of the Canal route. However, since it is 85 feet above sea level, it is necessary to have locks to raise and lower ships to and from this height" (pages 598, 612).

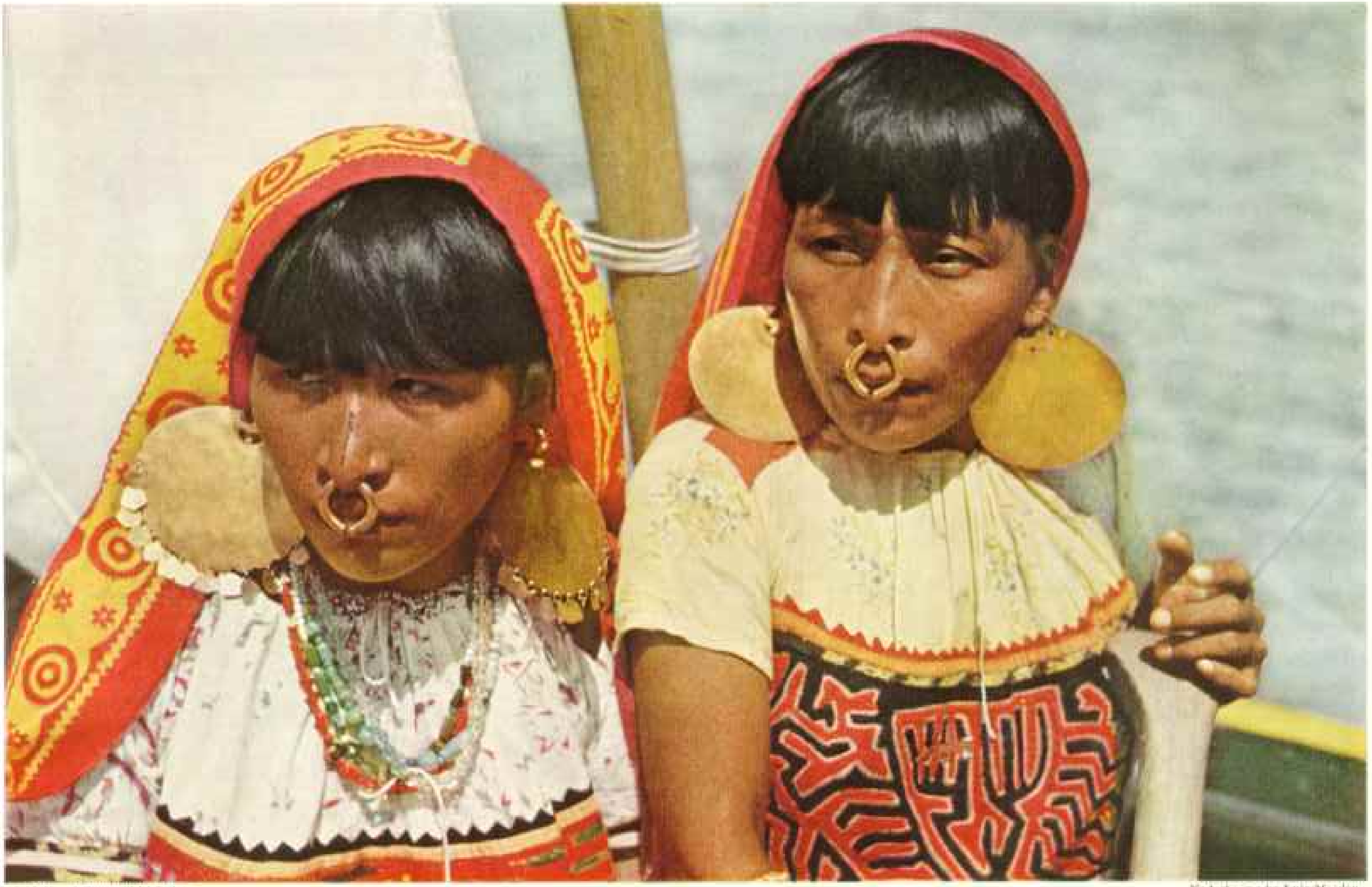
Even if there were no high central lake, a tidal lock would have been necessary because of the great difference in the height of the tides in the two oceans. The Atlantic tide rises and falls on an average of about one foot; that of the Pacific about 12½ feet.



 Kodachrome by Luis Marden

Feminine Traders of San Blas Paddle Their Wares over an Emerald Sea

They are on the way to El Porvenir, chief trading post of the Mulatas (San Blas) Islands. The island Indians belong to the Cuna tribe, branches of which live in Darién. Nose rings are of gold-copper alloy from Portobelo. See "Arch-isolationists, the San Blas Indians," NATIONAL GEOGRAPHIC MAGAZINE, February, 1941.



Kodachrome by Luis Marden

Present at a Civic Club Luncheon—If the Mulatas Archipelago Had One—Would Be Mostly Ring-nosed Women

Men count for little in the San Blas household. Women own the property and do buying and selling. From infancy each feminine member of the tribe wears a nose ring, which is increased in size as the wearer grows older. These Indians, never conquered, are governed nominally by the Republic of Panama.

Kodachrome by Luis Marden

Black-polled Indians Crack Coconuts for Copra, the Wealth of San Blas

Sun-dried pulp will be shipped to the United States, where oil it contains is used in making soap, cosmetics, hair dressings, and candles. Money literally grows on trees in the islands, where coconuts, used as currency, are worth a little less than a cent each. Green nuts are sent to Panama City and Colón for their milk.

© National Geographic Society

Shotguns Replace Blowguns in Yape

Peaceful Chocos along the Tuira River in Darién paint their faces for looks, not for war. The bow held by the brave at right is made of tough black palm. Interior Indians repel unwanted intruders with poison darts.

Kodachromes by Luis Marden

Plantains and Palm Nuts are Darién Staples

Oily nuts of the *corozo* palm are ground up in the wooden mortar. Bananas, chief export, go to Panama City by coastwise luggers. Some boats pass through the Canal to the Atlantic, where the fruit is unloaded for transshipment north.

Colombian Silver Coins That Antedate Panama's Independence Adorn Girls of the Choco Tribe on the Tuira River, Darién

Kodachrome by Luis Marden

Spanish Mackerel Makes up the Bulk of the Catch Hauled from the Pacific by La Venta Beach Fishermen

Panama Hat and Bulldog Pipe are Inseparable in Ocú

To make the round-crowned headgear, a ribbon is braided of palm fiber, and black and white strips are sewn to it on a wooden form. From the woman's simple costume grew the *polleras* of the cities (Plate V).

Kodachromes by Luis Marden

He Carries His Tobacco in a Lizard Skin

Paper money, too, is kept with the home-grown "smokes" in the iguana-skin pouch. Roll, pipe, and other small possessions are carried in a pouch sewn into the front of his short trousers, under the shirt.

On a Rich Fruit Diet the Toucan Keeps Body and Beak Together

The gaudy bill of this square-tailed tropical bird, almost as long as its body, is light and thin-walled. Toucans are found only in the Western Hemisphere and do not extend north of Mexico.

Kodachromes by Luis Marden

The Showy Brownia Resembles a Bomb Burst

Short-lived blossoms of this Isthmus tree may shoot forth from either trunk or branches. Green-feathered hummingbirds are attracted to the spectacular flowers.

Waters of the Atlantic coast, unlike those of the Pacific, are extraordinarily clear. High tides of the Pacific stir up mud, and the waters around Panama City are brown and opaque.

At Colón I boarded the *Rolling Stone* for a trip to the islands off the San Blas coast. On board I met a pioneer American in these parts.

"Great fortunes used to be taken out of the islands in coconuts," he told me. "I have shipped millions of them myself. We marketed quantities of tortoise shell, too."

Even today coconuts are the chief source of revenue for the Indians of San Blas.

Rolling down to San Blas

As we rolled down the coast to the Mulatas Archipelago, streamlined porpoises raced just under our bows. They were so close to the surface of the clear green water that we could see the mottled brown of their hide and the way the breathing spiracle on the snout opened as they pitched to the surface, with a great *whoosh* of air and spray.

After an all-day run down the coast we anchored off El Porvenir, island capital of the region. Flaming sunset skies lighted the flat, palm-feathered islands. In the warm light the dozen or so islands we could see set almost flush with the water's edge looked like a Hollywood conception of the South Sea.*

Hardly had we dropped anchor when dugout canoes paddled by Indian women approached with shell and bead trinkets to sell. When an old-timer talked to them in the Cuna language, their faces lighted up. They would laugh and slap him on the back at some sally (Plates IX, X, XI).

They are a volatile people, though. Next day, when some thought I had not paid them enough for having made their photographs, they pounded me with clenched fists.

Women rule the household here; the men, hardly seen or heard, stay in the background.

That night a dozen of us sat down to dinner in the governor's stilt-legged house. We had stewed green sea turtle, rice boiled in coconut milk, roast suckling pig, fried yams and yucca, and then started over again. Our host apologized for not having lobsters, because, he said, the moon was up and the crustaceans were in deep water.

Despite the bright moonlight, however, some of us went out after dinner in two rowboats to look for lobsters on the reef. The moon was behind a cloud at first, and we had to find the reef by the sound of the waves breaking over it.

When we pointed flashlights down into the shallow water, we saw round red brain corals, spiny sea urchins, and the waving fronds of submarine plants—but no lobsters.

After a half hour of fruitless search, a shout came from the other boat. We rowed over and looked where the white beam of the flashlight entered the water. About four feet down, we could see through the wavering depth an enormous lobster, fascinated by the light and gazing upward with its long-stalked eyes.

It was too deep to reach down and seize the shellfish (this species has no pincers); so, while we kept watch, the occupants of the other boat rowed to a near-by island to get a spear.

While we held the lobster motionless with the light, we talked of the way we would cook him: some said boiled, others baked. I wanted to broil him.

"Look!" one of the girls suddenly said. "He is going back under the coral." The lobster had slowly retreated until only the long antennae, waving with the surge of the current, showed.

We could see the light of the returning boat, but soon the lobster would disappear. Stepping over the side of the boat, I stood in water up to my chest, and, taking a deep breath, stooped and grabbed—nothing. Anyhow, it was a pleasant row back in the moonlight.

The next day I watched a dozen Indian women splitting open coconuts and putting them in the sun to dry into copra. Several of the women wore the golden disk earrings typical of their tribe; all had the gold nose ring.

All Is Not Gold—

Much has been printed about the mystery of where the San Blas Indians get their gold, and their reticence in discussing the metal; yet, when I asked these women through an interpreter—for they speak no Spanish—where their gold came from, they readily said, "From Portobelo."

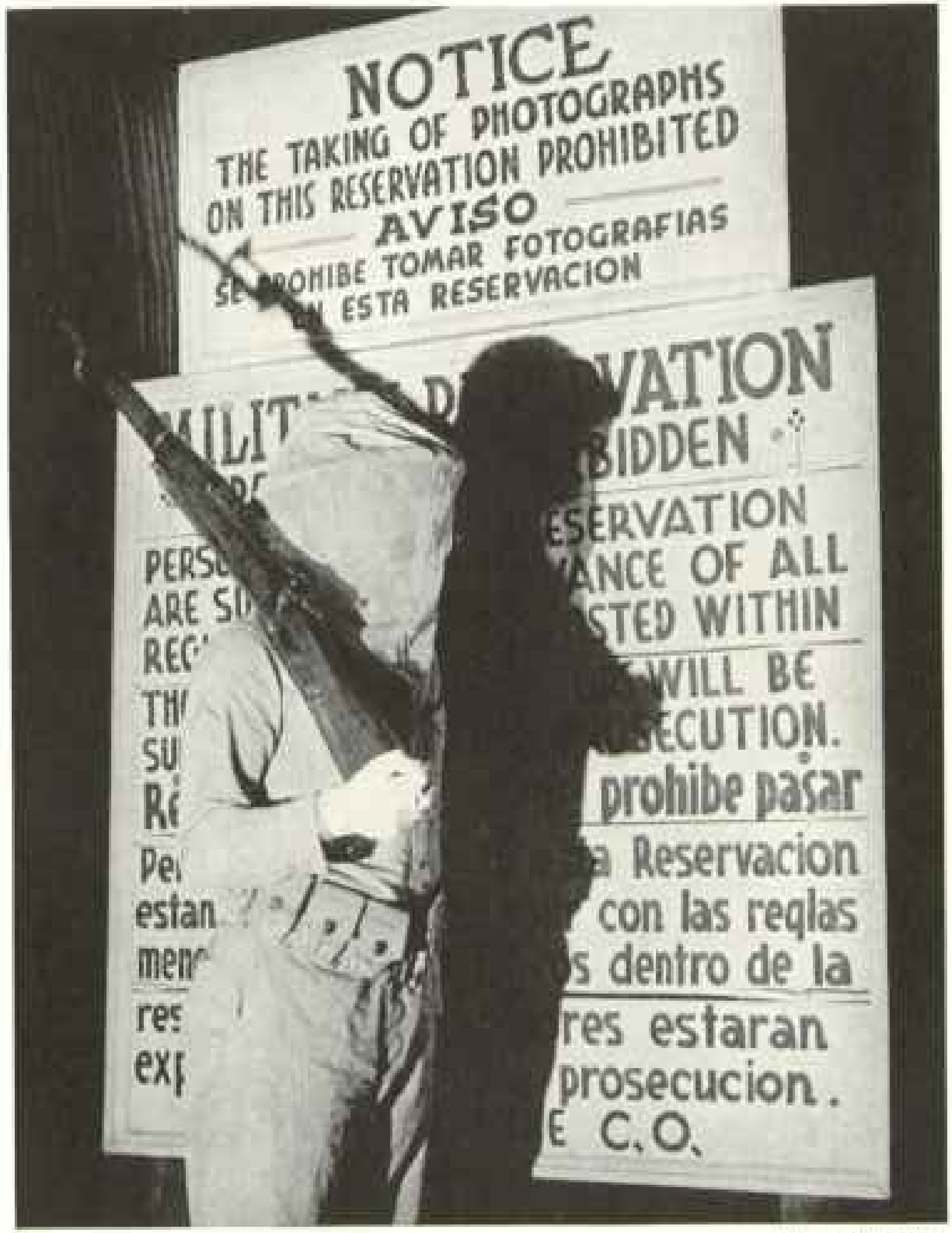
An appropriate place, since Portobelo, which we had passed on the way to the islands, and in whose harbor Sir Francis Drake is buried, is the old port that once was the chief Atlantic terminus of the Spanish Isthmian treasure route (page 628).

"Ever since I can remember," a long-time resident said, "the goldsmiths of Portobelo have made earrings and nose rings for San Blas women."

"How fine is the gold?" I asked.

"I don't know. But I do know that these women in years past used to complain that their 'gold' ornaments turned black. I have

* See "Arch-isolationists, the San Blas Indians," by Corinne B. Feeney, National Geographic Magazine, February, 1941.



International News

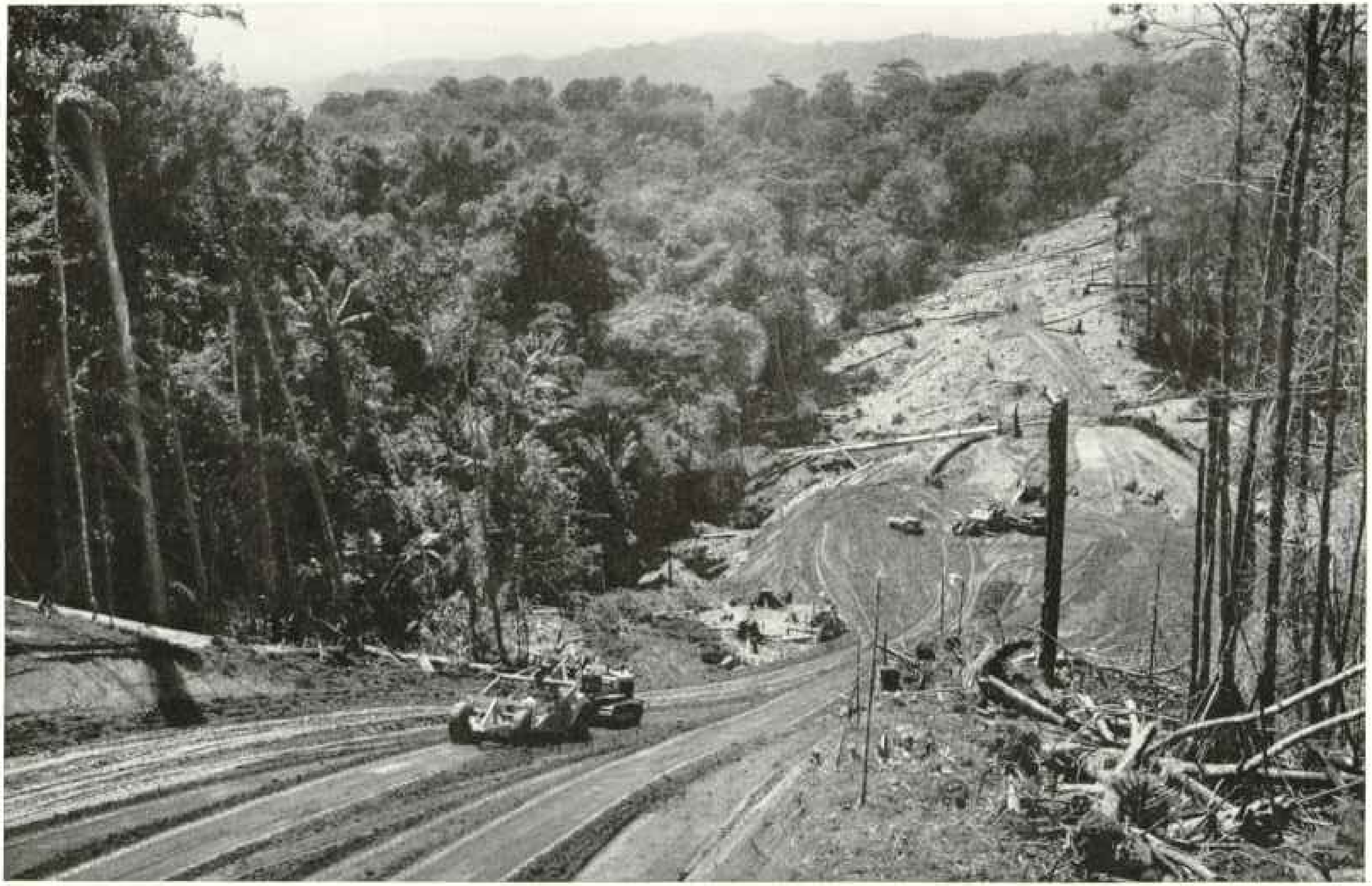
His Ghostly-looking Armor Foils Mosquitoes

This sentry, on guard duty in the Canal Zone, is equipped with a mosquito head net and cotton gloves to protect him from malaria and yellow fever. Both net and gloves are regulation equipment here.

Staff Photographer Lois Marden

On His Aeolian Harps the Wind Plays Soft Melodies

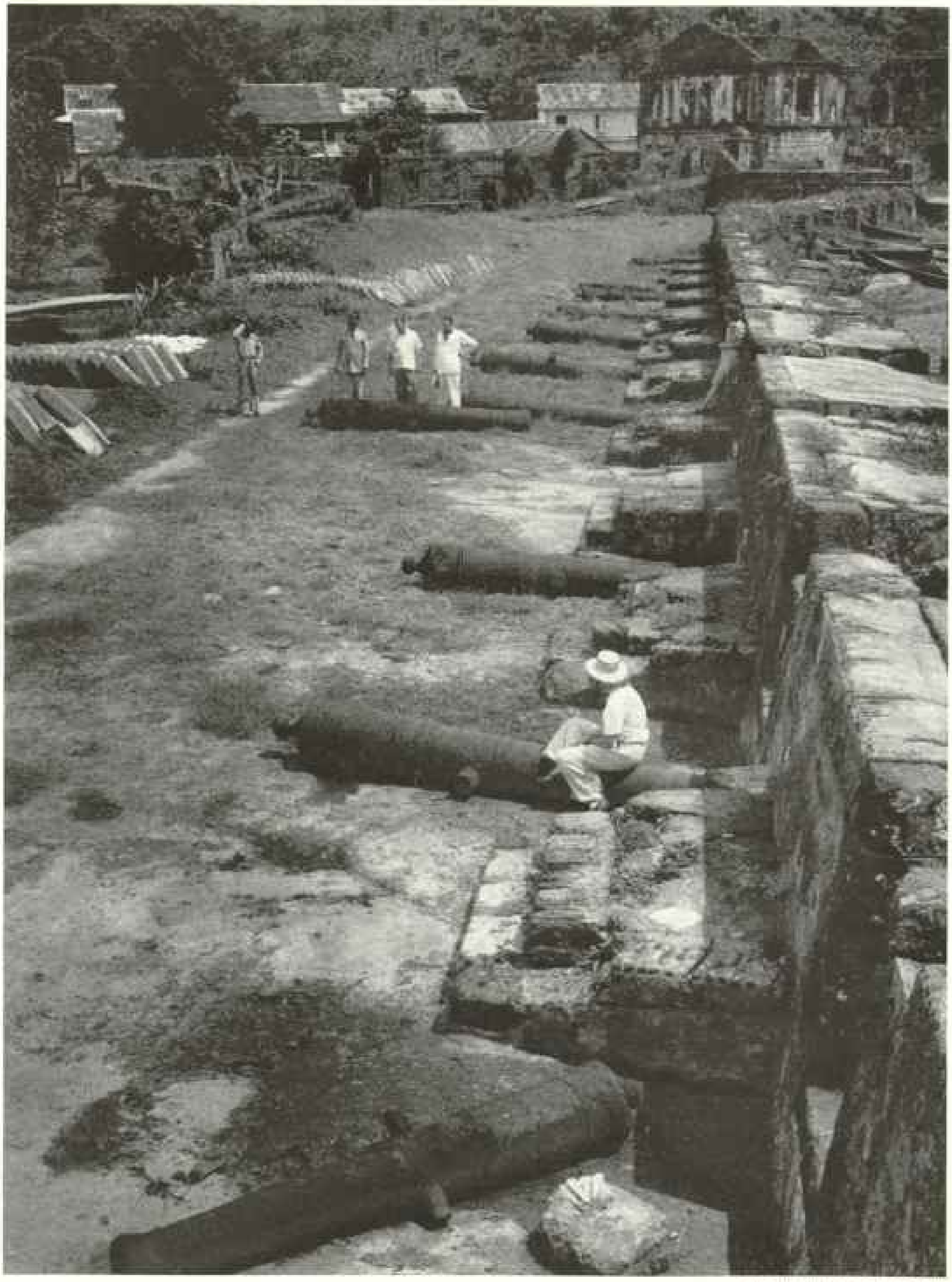
A Panamanian of Herrera Province made these instruments of gourds and sticks, using vines for strings, and mounted them on 15-foot poles. Even light breezes, humming through the strings, produce sweet, harmonious chords.



Courtesy Public Roads Administration

Uncle Sam Cuts a Trans-Isthmian Highway across the Republic of Panama

The United States Public Roads Administration is completing the road, which will supplement the Canal and a railroad, and facilitate troop movements across the Isthmus. This 24-mile section lies between Madden Dam and the Atlantic end of the Canal. The Pacific section was finished several years ago.



Staff Photographer Luis Marden

Perhaps These Guns Fired on Morgan's Men When They Sacked Portobelo in 1668

The fort protected the Atlantic terminus of a paved highway which stretched across the Isthmus in the days of the Conquistadors. Pack animals and slaves carried most of the treasure of Spain's South American provinces, and some from Manila, over this road from Panama City to Portobelo for shipment to Madrid.

Staff Photographer Luis Marden

Aroma of Roasting Plantain Intrigues Even a Woodpecker

The saucy pet perches on the left shoulder of its Choco mistress while she prepares the feast. These Indians live in a jungle town near the mouth of the Chucunaque River in isolated Darién (page 630). The only concession to modern life which the author noticed was an imported lipstick used by some of the Indians to color their arms and bodies (page 630).

seen jewelers in Portobelo empty several boxes of copper nails into the melting pot, then add enough United States five-dollar gold-pieces to give the alloy the right color and to keep it from tarnishing."

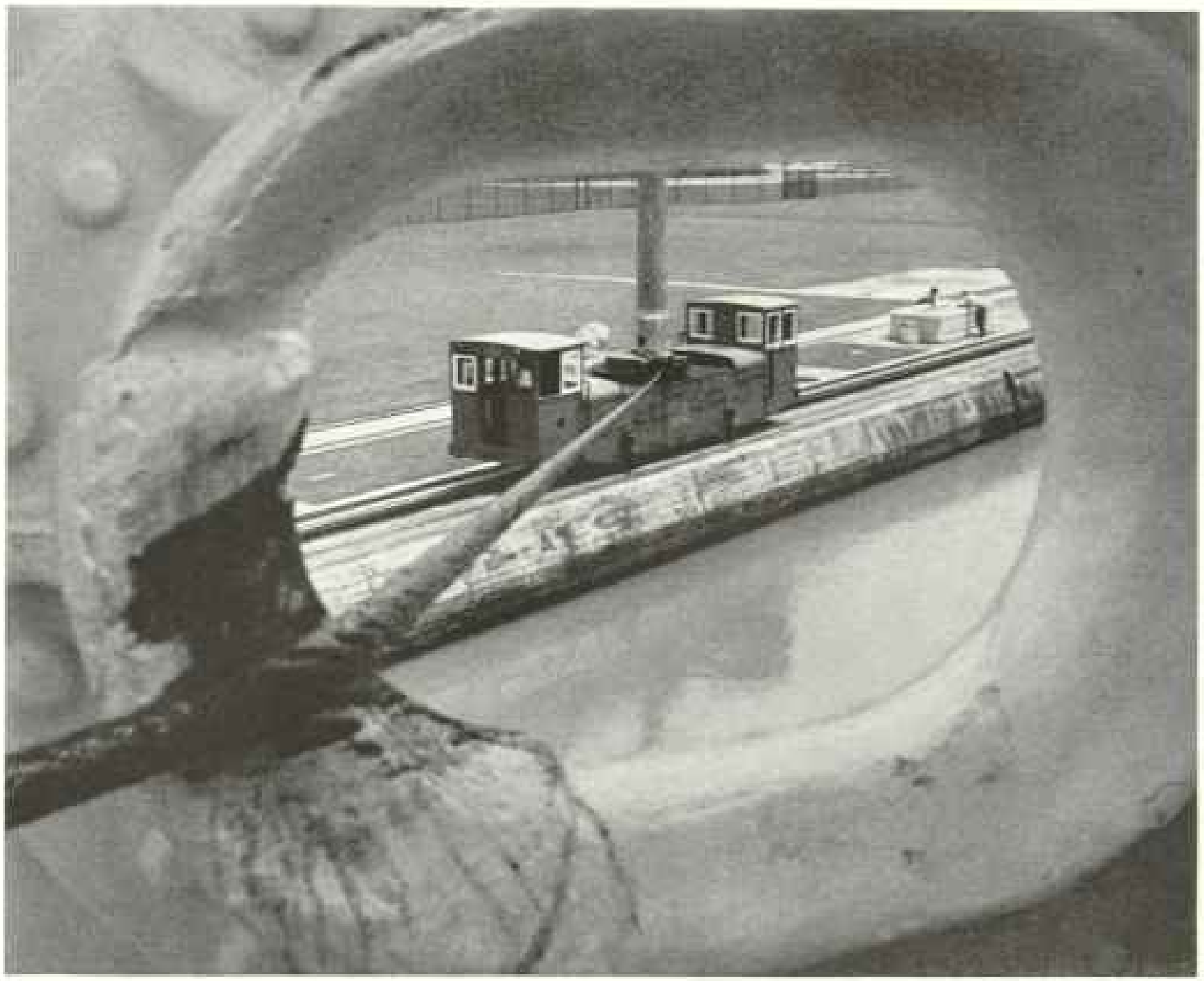
A few days later I again watched leaping porpoises as I sailed east along the coast of Panama. This time, however, I was on the Pacific side, aboard a coastwise lugger bound for the Province of Darién.

Darién is a region between Panama Province and the Colombian frontier. There is not a single road in the Province. The network of broad and muddy rivers that traverse the heavy rain forest is its highway system.

It takes 18 hours to go the 90 miles between Panama City and the wide Gulf of San Miguel, estuary of the Tuira and Sabana Rivers. A short distance up the estuary is the town of La Palma, capital of the Province of Darién. Here we waited for a shift in the tide before proceeding 35 miles upstream to El Real.

The Tuira River between La Palma and El Real is broad and flat, and its opaque brown waters flow swiftly along with hardly a riffle, the direction of flow changing with the tide once every four hours.

When our boat started upstream with the tide after dark, there was no moon, but the five stars of the Southern Cross hung slantwise over the wall of mahogany and balsa trees on the shore. Every now and then the white beam of a searchlight on the wheel-



Painted from Three Lions

A Machine Age "Mule" Hauls Its Charge into a Panama Canal Lock

Ships are not permitted to enter the locks under their own power. Small, squat, but powerful electric engines pull them silently and efficiently (page 598). Four "mules" are required for the average ship—two at the bow to pull, and two at the stern to act as brakes. Their name recalls the towpath mule of old-time canal days. A safety device limits the pull to 25,000 pounds; otherwise, the engine might be pulled from its tracks and toppled into the water.

house would pick up the twin ruby gleam of a crocodile's eyes where the reptile lay half submerged on a mud bank.

It was from a high place somewhere off in the darkness to our left that Vasco Núñez de Balboa in 1513 first saw the "South Sea."

John Keats in 1815 made the blunder of substituting Hernán Cortés, conqueror of Mexico, for Balboa (p. 614), when he wrote:

> . . . when with eagle eyes
> He stared at the Pacific—and all his men
> Look'd at each other with a wild surmise—
> Silent, upon a peak in Darien.

Several hours by dugout canoe above the village of El Real are the first houses of the Choco Indians. These and the Cunas, a tribe related to the Indians of San Blas, inhabit the trackless rain forest of Darién. While the tribesmen of the far interior resist intrusion with blowguns and poisoned darts, the Chocos that live near the white settlements are peaceable (Plates XII and XIII and page 629).

Lipstick for War Paint

I watched some putting on "war paint" for a photograph. Each indulged his fancy. Some painted red circles on their cheeks, others black triangles; and some merely made their whole face ghastly with a white powder. I looked at the coloring matter they used, thinking to find an ingenious use of vegetable dyes, but—the wild Indians of Darién were using a woman's imported lipstick!

This was the only "outside" thing I saw in the palm house set high on its wooden piles above the jungle floor. Here Chocos roast their yams and paint their faces, while, 150 miles and 400 years away, airplanes roar over the Canal Zone and men dig feverishly in the red earth.

Black Acres

A Thrilling Sketch in the Vast Volume of Who's Who Among the Peoples That Make America

By Dorothea D. and Fred Everett

ONLY fifty miles from New York City a band of immigrants is pioneering America much as our forefathers did. Most of these immigrants are Polish.

About 1880 a few recent arrivals from Poland were brought upstate from New York City to help on the farms around the towns of Florida and Pine Island. They had been stifled by the unfamiliar life of the big city.

When first they saw the black acres of the Orange County mucklands stretching out before them like the beloved soil of their native Poland, they fell on their knees, crying for joy, and kissed the dirt.

They have literally been on their knees ever since, raising onions and other crops.

A Saga of Humble Folk and Good Earth

It was our good fortune about four years ago to move to Florida, New York, and come to know the drama in the lives of these unusual people. Their story is a saga of dismal swamps and lowly folk, of the sweat and toil of a courageous people fighting odds, of the growth and flowering of a new generation out of the black dirt.

It is evolution both of humanity and of the soil, the transformation in little more than half a century of a miscellaneous body of foreigners into a group of loyal, self-reliant Americans.

Until recently these people and their soil were little known, although Goshen, only five miles north, has been famous for years as the seat of the Hambletonian, classic of harness racing (page 638).

Florida's first claim to fame was as the birthplace of William H. Seward, who became Governor of New York State, United States Senator, and Secretary of State in the Cabinet of Abraham Lincoln during the War between the States. Today the house of his birth is a barn, and the village is rapidly becoming more famous as the capital of the richest onion-producing section in the State.

Soon after our arrival we began to make excursions to watch the ever-changing landscape as the farmers tilled the soil, the crops grew, and the harvest came. The fresh-turned muck of early spring is a deep, moist black. It stretches for miles like a soft rug, divided into rectangular designs by the green-edged drainage ditches and dotted at regular intervals with small, weather-beaten, unpainted sheds or small houses.

As the weeks pass, the crops and weeds slowly change the rug to a beautiful dark green, which by harvest time fades to the dull yellow of dead onion tops. All the time the view is speckled with hundreds of industrious workers.

The soil is as soft and springy as sponge rubber and will pulsate for many yards if one jumps on it. It is also soft to the touch, and the farmers on their knees seem to caress it as they pull up weeds and then smooth the dirt back into place with their hands.

In these black acres skeletons of the American mastodon have recently been unearthed. The upright position of some of the skeletons shows that the area was once a huge swamp or lake, with islands of higher ground jutting up out of the water. As the years passed, decaying vegetation composed the muck, which pushed out the water and formed a rank, dismal swamp overgrown with lush vegetation.

Such were the black acres at the beginning of our country's history. Until the last half century these acres were known as the Drowned Lands, and were considered worthless except for a few spots cleared for vegetable gardens.*

Game and birds abounded, beaver and muskrat being so plentiful that their furs added greatly to the wealth of the early settlers. Little was known about the value of the black muck until a series of reclamation projects had drained the Wallkill bed and cleared the swamps of water except during floods. One of these projects was financed by New York State. A large fund was appropriated to cut off one of the biggest loops in the river between New Hampton and Denton.

A Drainage Project Caused Fighting

William J. Clark, of Pellets Island, one of the oldest residents of the Wallkill Valley, recalls the bitter conflict over the cutoff. Residents who were benefited by the canal called themselves the Muskrats, and those who thought their lands harmed were the Beavers.

The Beavers would build dams to force the

* See Map Supplement "The Reaches of New York City," National Geographic Magazine, April, 1939.

Volkmar Wentzel

With a Jalopy-tractor She Pulls the Plow Her Husband Guides

These resourceful onion growers cut an old automobile in two, junked the body, welded the rear end under the front seat, and lo—they had a utility tractor. So vanishes the horse.

Volkmar Wentzel

"What a Wife! She Can Weed Five Acres of Onions"

Fingers sunk in his rich black earth, Anthony Skutnik glances with husbandly pride at his smiling Isabelle, who works beside him in their onion fields. Their daughter bosses the job. In these mucklands fifty miles north of New York City, the harder a girl can work the greater is her eligibility as a bride.

Volkmar Wentzel

"Black Acres" Indeed Are the Reclaimed Swamps of Orange County, New York

So descriptive of the onion belt is the name of this farm that the authors have applied it to the entire area. As evening shadows lengthen, the farmer riding his disk harrow leaves the black dirt for barnyard chores.

stream back into its original bed, and the Muskrats would attack at night and tear the dams down. Feeling ran so high that some settlers refused to pay the taxes levied for the drainage work and consequently lost their lands.

By this time the original English and Irish settlers, whose principal industry had been dairy farming, had begun to realize the value of the black dirt, which was very high in nitrogen and from 10 to 20 feet or more in depth. They turned to the immigrants in New York City to work their farms.

Two groups other than the Polish came to Orange County at that time. Italians were brought into Chester to work a cheese factory, but the owners soon closed the factory and returned to the city. The Italians remained to clear and till the black acres. Their descendants claim that these farmers were the first to discover the value of the land for raising onions, although their principal crop is celery.

About the beginning of the 20th century a band of German-Russians came to Little York, where they built their own community, including a school and church.

Nearly all the rest of the area has been taken over by the Polish-Americans. When Andrew J. Bogdanski of Pine Island came here from Poland in the middle eighties, fewer than 400 acres were planted. There were very few Polish families here at that time, but they began coming rapidly in the next decade.

The Lowly Onion Takes the Lead

For some years these people were hired hands on the upland farms, where they cleared black-dirt areas. One by one they decided to strike out for themselves, to clear their own land, to create their own homes. At first they worked on shares; then they bought small tracts, usually three to five acres, paying for them out of the earnings from the crops.

They grew many crops on the rich black soil—carrots, beets, spinach, lettuce, celery,

Volkmar Wentzel

By Motor He Cultivates Three Rows of Onions at Once and Saves His Back

This prosperous farm adjoining Durlandville, New York (in the distance), can afford power equipment, but many growers stick to the tedious, hand-pushed, one-row cultivator. At right is one of the ever-necessary drainage ditches, without which the onion-raising area would soon revert to a swamp (pages 640, 651).

Vollmer Westcott

Devout Onion Growers Bring Seeds to Be Blessed to Assure a Bountiful Harvest

The Reverend Vincent J. Raith conducts the springtime ceremony of the "Blessing of the Seeds" in the Catholic church of the Polish community at Florida, New York. The ceremony is held as soon as the land is dry enough to support the machines for planting (p. 649). Each family tries to be the first to put its seeds and sets into the ground.

Staff Photographer J. Baylor Roberts

Skirts Swish Gaily in a Polish Folk Dance, but to the Performers It's Serious Business

Solemn faces indicate how hard these young people are trying to please the thousands of spectators at the annual Onion Harvest Festival near Florida, New York. All of the dancers are workers in the onion fields of Orange County, where they celebrate the harvest season much as their forefathers did in Poland (page 649).

Staff Photographer J. Baylor Roberts

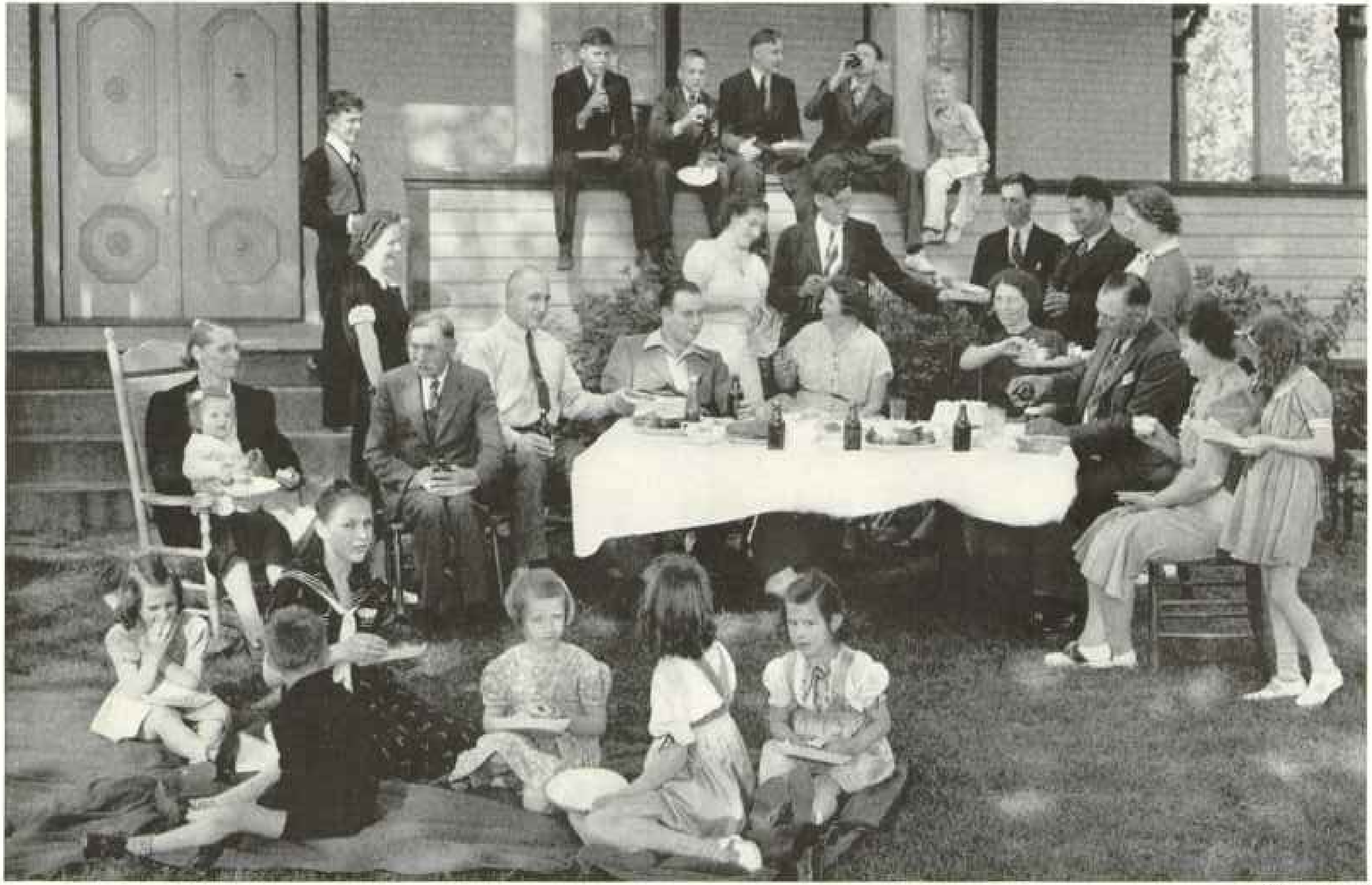
Thousands of the Pungent Bulbs Pass Swiftly through a Machine that Knows Its Onions

Power equipment owned by groups of growers handles large crops rapidly. From the drying racks (left) a Gargantuan feast of onions is fed to the machine. Inside, loose skins and dirt are removed by suction and the onions pass over a moving grate. Undersized ones drop through; the others fill 50-pound bags.

Staff Photographer J. Baylor Roberts

America's Fastest Trotters Round the First Turn in the Hambletonian, Rich Harness-racing Classic

The annual event for three-year-olds takes place in August at the Good Time track at Goshen, on the fringe of New York's onion belt. Purses range from $30,000 to $60,000. Colts are nominated for this race before they are foaled, and nominees often number between 400 and 500, but actual starters are less than a score.



Yolkmar Weitzel

Three Generations of Onion Growers Hold a Family Feast on the Parental Farm

Forty years ago Mr. and Mrs. Joe Wiecek (left) came to New York's onion belt from Poland. With the help of their growing boys and girls, their farm prospered. Here 26 descendants gather to honor the founders of the family in America. Joe Wiecek, Jr., World War veteran, sits behind his father (page 640).

potatoes, sweet corn. However, as demands for onions increased in the city, more and more land was turned over to that crop until Orange County became the largest producer of onions in New York State.

At first the landowners had to go to Ellis Island or to the Immigration Home in New York City to select workers, but as these foreigners took over the land and made money, they sent for their relatives and friends. Thus the area soon became a miniature Poland.

Most of the early immigrants were lovers of the soil, and their descendants are sticking close to it. Others, however, became farmers only through necessity, and as they prospered their children chose other walks of life.

In the farming group one of our friends is Joe Wiecek, Jr. Joe's grandfather, Josef Gajli, came from Poland in 1899, worked on the black dirt on shares, and in two years sent for his family. They also started on shares, but soon bought, cleared, and worked 10 acres of muckland. On this they prospered and reared seven children. The children in turn bought more land. Their sons and daughters are playmates of our own children.

From two Polish immigrants to twenty-nine Americans the family has grown in three generations (page 639). Altogether, they own and work more than 200 acres. One of the largest owners in the county is our friend Joe; he has 130 acres, a real fortune in black dirt.

During the World War Joe volunteered and served with the First Regiment of Engineers, First Division, and was at the front when the first American shot was fired.

"We Are Americans"

The youngest generation understands and speaks only a few Polish words.

"We are Americans," Joe says, "and will live and talk as Americans. It is our duty and our desire."

Of the families whose children have left the soil, the Felczaks are best known to us. Rose taught our children in the Florida school.

Among the first Poles to come here in 1880 was Ignatius Brink. By 1888 he had saved enough to pay the passage of his sister and her husband John Hetman, Rose's grandparents. The Hetmans never learned to love the land, although Anton Felczak, who arrived in 1895 and five years later married one of John Hetman's daughters, bought land and prospered.

All of Anton Felczak's six children have left the soil to become successful in other work. One is now Father John (Jan), the well-loved priest of the Pine Island Church. Joseph is a correction officer at New Hampton. Rose is a teacher in the Florida school. Helen is a nurse in New York City. The other two sisters married outside the farm community.

They Came, They Toiled, They Prospered

In the days of the firstcomers, clearing the land and making it fit for planting constituted a real job. Trees had to be girdled and left to die. The underbrush, rank and tough, was cut by hand. The dead trees were felled, and most of the stumps, after they had been dug around and the main roots cut, were pulled up by horse power. Stumps which could not be pulled were burned. Often the fire took hold underground, burning the soil as well as the stumps and leaving treacherous sinkholes.

Even today, men, horses, and tractors sometimes sink nearly out of sight when working over such fire-made caves.

The problem of drainage, still a major one, was difficult from the first. Ditches up to six feet deep and miles in length had to be dug to reclaim each new section, and the cost of clearing and drainage often reached $200 an acre. Since the purchase price of some lands was from $500 to $1,000 an acre, each tract was a big investment, to be paid for over a long period. Bad years often wiped out the gains of the good, but values increased. After the World War, some single acres sold for as much as $3,000.

Small one- and two-room shacks were thrown together from whatever building material could be obtained. A few original homes, still standing in the black acres today, are mute testimony to the privations and barren life of those first settlers in the muck. The old houses are not so good as some of the shacks now in use to store crates and tools.

By toilsome effort the acres were made ready for tilling; then with the first breath of spring the land was plowed and harrowed. Horses and sometimes oxen were used in the work. When seeds and sets had been put in, the farmer settled down to await his first crop off the land, knowing full well the battle ahead before harvest time.

Always there was the danger of floods, for the land is nearly level and the flow of the draining Wallkill is slow and sluggish. The drop in its bed is only a foot or two in as many miles. Floods come up fast, stay long, and recede slowly. If the waters stay up too long, the seed and onions rot; if the run-off is too fast, soft dirt, seeds, and onions go with it.

This danger past, weeds become a menace. It is an everlasting fight to keep ahead of them. The earlier settlers worked with crude hand

Kodachrome by J. Baylor Roberts

Waist-deep in Green-gold Glory Stands the Onion Queen of Black Acres

Miss Stella Gutowski, crowned at the Onion Harvest Festival in Orange County, New York, inspects a rich seed patch. Sixty years ago Polish immigrants came to these black mucklands and began to raise the lowly onion. Today their descendants cultivate some 9,000 acres.

© National Geographic Society

A Wreath for the "Lord and Lady of the Manor"

Reviving an old Polish custom at the Onion Harvest Festival, the smiling "tenant" will present her symbolic gift to imaginary "landed gentry" as their share of the crop. Most growers of Orange County own their farms.

Kodachrome by J. Baylor Roberts

Silks and Satins Replace Dungarees on Festival Day

All through the onion-growing season, this sturdy farmer spends long daylight hours on his knees in the black dirt, tending his rows. Now, harvest over, he rises to join in the Polish folk dances of celebration.

Kodachrome by Volkmar Wentzel

Transplanted to the Orange County Mucklands of the Empire State—a Bit of Old Poland

So closely have these veteran onion growers stuck to the rows through the years, they can neither speak nor understand English. On the wall is a picture of their hero, the late Polish Marshal, Josef Pilsudski. The rising generation has few ties with the Old Country. Today English is the prevailing tongue of Black Acres.

Even Onions Can't Bring Tears When Hearts Are Light on Black Acres

 Kodachromes by J. Baylor Roberts

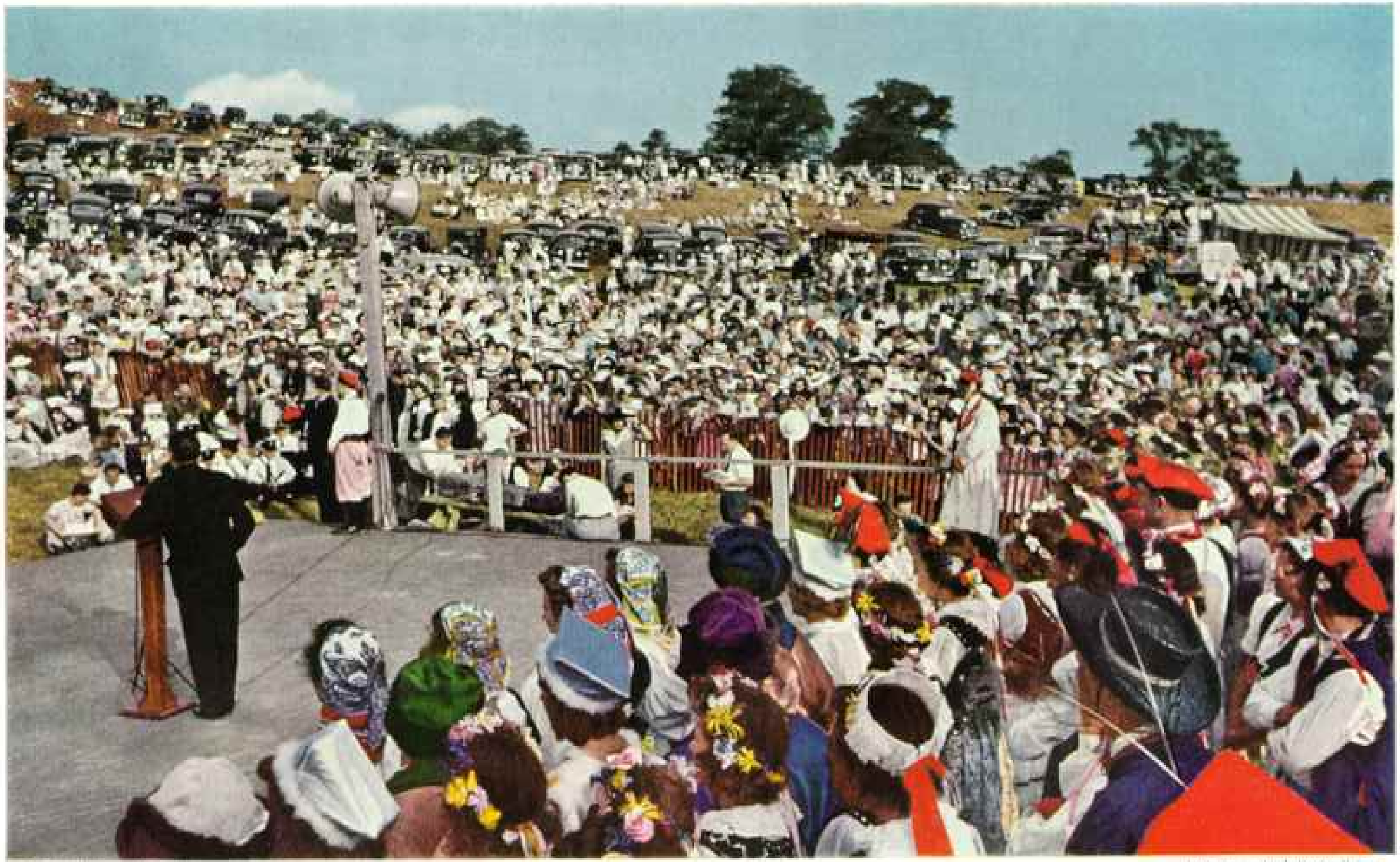
Youthful Onion Growers Come to the Dances on a Hayrack

They took part in a parade, and stole the show with their spirited steps at the annual festival.

 Kodachrome by Volkmar Wentzel

Two's Company, Three's a Crowd—But It Doesn't Matter on Festival Day

These youngsters, in Polish folk costume, are Relief Fund dancers who helped raise money at various events throughout southern New York State to aid the destitute in the land of their forefathers. All costumes were designed with care to make them authentic.



Kodachrome by J. Baylor Roberts

New York Onion Farmers Mass to Honor the "Wine-scented and Poetic Soul of the Capacious Salad Bowl"

On the Durland Farm near the town of Florida, tillers of Black Acres hold their annual Onion Harvest Festival in August. Here they give thanks for a bountiful crop of the vegetable Robert Louis Stevenson called the "rose of roots." Highlights of the festival are the folk songs and dances presented by the youthful, costumed Polish-American group in the foreground.

Cream of the Crop! Young Americans Raised in the Onion Fields of Hard-working Polish Immigrants

Kodachrome by J. Baylor Roberts

Under Tutelage of a Master, Onion Weeders Turn into Graceful Dancers

The Harvest Festival performers learn the authentic Polish folk songs and dances under the supervision of Stanislaus Polenski, of New York City, former director of the Kraków Opera Ballet. A Polish band plays the music.

Kodachrome by William Weintal

Choral Singers with a Love for Music Inherited from the Land of Paderewski

cultivators (some are still in use), tolling up and down single rows, pushing, stepping, pushing. For closer weeding they went down on their knees, as they do today, straddling the onion rows, and crept along at the back-breaking job (page 632).

As the onions grew, pests and disease appeared. The tiny thrips were and still are the chief scourge, with maggots and blights close behind. Even after years of study, these enemies are merely checked, not yet under control.*

Often, after the rains, came long dry periods, shriveling the crops to half. Hot sunlight beating down on wet fields would literally cook the onion tops.

Faith and Work Strive Together

Those bad years might easily have discouraged the bravest hearts. Yet the people somehow rolled up their sleeves, tightened their belts, and stayed in the fight, praying for a good crop next year.

Prayer and hard work brought ultimate success. In good years the black fields were veritable gold mines, producing from 600 to 1,000 bags of onions to the acre. (Average production runs about 300 bags an acre.) Prices ranged from a dollar to three dollars a bag. After a few such seasons the land was paid for, and the future looked bright.

Everyone in the family works in some way, and many who have gone away to engage in other businesses come back at planting, weeding, and harvest time to help in the rush. The season is short and the hours are long.

As soon as the land is dry enough to hold the machines, there is the ritual of the "Blessing of the Seeds" (page 635), and the planting begins. Every family strives to be first to get in the seeds and sets. Like a game, the work begins in the spirit of competition. Companionship and cooperation lessen the burden and make the labor endurable—even a pleasure.

At night the toilers come home black with dirt but happy. Week ends they clean up and gather for a few hours' dancing to their own Polish band music. For more than two years we lived across a small valley from their woodland park, and often the summer breezes wafted to us their sprightly tunes.

The swamps are being drained and cleared at an ever-increasing rate. In 1930 some 3,000 acres were in use; in 1939, 6,800; and in 1940, about 9,000. At this rate the total area of over 26,000 acres will soon be under cultivation. Sections such as the "Florida Flats," "Indiana," "Michigan," and the "Great Swamp," to mention only a few, have had to be given names for reference.

With the rapid growth came more settlements, the small islands with individual homes and the larger ones with communities. There are Pine Island, so named because of the pine trees which once covered it; Big Island, Black Walnut Island, Pellets Island, Snufftown, Durlandville, and so on. Mount Adam and Mount Eve are the high points of the terrain.

Although floods, weeds, and pests are still the major problems, new difficulties are on the horizon. One is overproduction, a too-rapid increase in volume that is sending prices downward. The onion farmers are not yet well enough organized and advertised to market their million-dollar output of more than two million bushels.

Spring Dust Storms Wreak Havoc

In the spring of 1941, other unforeseen events took place which may foreshadow a radical change in the life and work of the Black Acres. Two series of heavy dust storms swept over the mucklands, uprooting onion sets and scattering the planted seeds to distant hills. About a third of the crop was lost, and in some sections as much as half. Those who could afford to buy the now high-priced seed, replanted, only to have another high wind again sweep the land bare.

The courageous resourcefulness of these farmers asserted itself, and they immediately planted their acres to other crops—lettuce, carrots, spinach, and cucumbers. The results have been so successful that the farmers have been shaken out of their one-crop lethargy. Through patriotic desire to raise all they could for the sake of national defense, and through dire necessity, they have gained valuable knowledge.

Because of increased demand and shortage of the onion crop, prices have more than doubled. Thus the farmers are receiving more for their half crop of onions, with less labor and overhead, than they would have realized from a large crop. Furthermore, the new crops have proved hardier and more successful than the onion growers believed possible. Profits on these vegetables have been larger than normal onion profits; so the dust storms, in this instance, proved a blessing.

Perhaps in the future these Black Acres farmers will put their eggs in more than one basket and free themselves from their reliance on only one crop. The evolution continues.

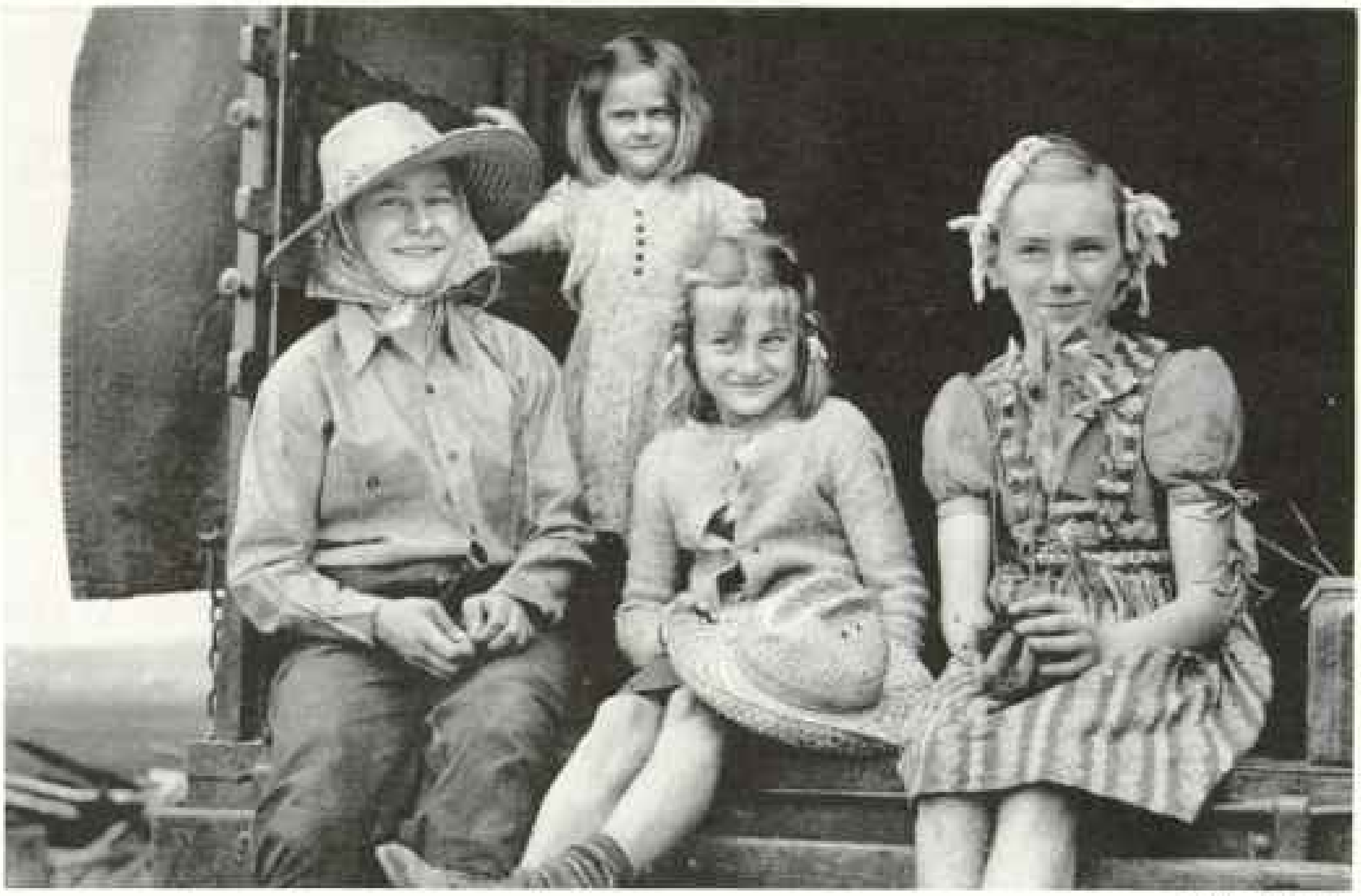
The idea of an Onion Harvest Festival was conceived in 1938, but the floods of that year

* See "Our Insect Fifth Column," by Frederick G. Vosburgh, NATIONAL GEOGRAPHIC MAGAZINE, August, 1941.

Staff Photographer J. Baylor Roberts

Small Boy's Delight—a Revel in Dirt and Onions

This four-year-old was busy stacking 10-pound bags of onions to be sold at the Harvest Festival (Plate VI).



Volkmar Wentzel

Off to the Onion Fields on the Endgate of Their Father's Truck

Shining faces will be smeared with Orange County's fertile black dirt after a few hours of weeding the rows on their knees. The kerchief around the oldest girl's head will keep her ears and hair clean, but the other youngsters don't mind such a trifle.

washed away the harvest and spoiled the plan. In 1939 and 1940, however, festivals were held to celebrate banner crops. A motorcade depicted the history and seasonal operations in onion farming; and the costumes, dances, and songs of Old World Poland were colorfully and authentically presented by the Polish-American black-dirt workers (see color plates and page 636).

Festival Customs from Old Poland

These celebrations, called "Festival under the Trees," follow closely a pattern handed down from generation to generation in Poland.

For the authenticity of the songs and dances credit is due largely to the training and directing of the performers by Stanislaus Polenski, former director of the Kraków Opera Ballet. He was directing the Polish exhibit at the New York World's Fair when Poland was invaded, and since that time has made his home in America.

Volkmar Wentzel

To Grow Onions, They Must Keep Their Ditches Clear

Floods and increasing dust storms threaten the drainage system in the Orange County mucklands each year. Only by constant watchfulness can the onion farmers keep their lands properly drained (page 640).

A Polish band from New York City plays for the pageants, and an Onion Harvest Queen, called Queen Cebula (Polish for onion), is chosen from among the girls who work in the soil (Plate I).

Although the Harvest Festival was canceled this year because of the unusual crop conditions, sponsors hope to hold it annually and to teach people to say, when Orange County is mentioned, "Oh, that's where they grow the onions," instead of, "That's where they hold the races." But when the festivals are resumed, onions may share honors with other crops.

Interested though we became in the land and work of these people, our greatest pleasure has come from their friendship. To know them is to admire and respect them. They are individualists who have made their own position in this new country. They are self-supporting, independent, and proud.

Parents refuse aid from sons and daughters who have become well-to-do. They have their original acres from which they still wrest their own livelihood, even though their children would gladly care for them. We have seen many such cases.

Landowners have self-reliance, no matter how small their holdings. Our friends were anxious that we make this point clear, for they are reluctant to see their neighbors sell their land to big operators.

Volkmar Wentzel

Cutting up Seed Potatoes for the Family Garden Is Everybody's Work

Most onion farmers hereabouts have private vegetable gardens, but few raise potatoes for market. Local jokers say the potatoes are apt to rot because their eyes water too much with so many onions around!

From these lovable people we have heard many stories brought over from the Old Country, legends based on superstition. Favorite subjects are the balls of fire seen dancing through the swamps on dark nights. Scientists, of course, have an explanation, but to simple folk such phenomena are weird omens.

In earlier years so many ghost stories were told that most children were afraid to go out after dark. Our friends now laugh at their superstitions, but admit it took many years to overcome them.

Some years ago Father John was called to administer last rites to an old man who, the messenger said, was dying. When the priest reached the small shack, he found the wife had stripped all the clothing from the sick man and was kneeling beside him, scrubbing his body vigorously with a stiff scrubbing brush, using salt and water profusely. The body was so red it looked raw all over. Because of that Old Country remedy, or perhaps in spite of it, the old man is alive today. He asserts that he is now more than a hundred years of age.

Joking about the lack of conveniences in the early days of the settlements, our doctor tells a tall story of an old-timer who was taken seriously ill and had to be rushed to the hospital for an operation. The patient, who had been working in the black dirt, had to be given a thorough bath. Some ten years later, the doctor avers, the man returned to the hospital in good health, requesting another treatment!

One day last year a corner of the flats caught fire. Fires are extremely serious, for they burn deep and ruin the land with strongly alkaline ashes. Nevertheless, before putting out the blaze, the settlers made use of it to destroy all the refuse and trash they could find near by. They are always practical.

Among these people the Polish language and the feeling of kindred ties with the Old Country are rapidly fading into the past. Members of the new generation are all-out Americans and proud of their heritage.

K. M. Newman from Wide World

Red, White, and Blue Is the Flag of Thailand, "Land of the Free"

National flags encircle this memorial to the New Constitution Book, before which court dancers perform in Bangkok's Royal Plaza. The monument marks the change, in 1932, from an absolute to a constitutional monarchy. Siamese have always called their country *Muang Thai,* or "Land of the Free," now its official name.

European

Boy Scouts and Youth Movement Members Take the Oath of Fealty in Bangkok

For 30 years Boy Scouts have flourished in Thailand. The Youth Movement was organized eight years ago, following ascension to the throne of the boy king, Ananda Mahidol, now 16 years old. He became ruler when his uncle, the late King Prajadhipok, abdicated in 1935, but he lives in Europe. Thailand is governed by Luang Bipul Songgram, a virtual dictator, who has built up a small but modern army, navy, and air force.

P. P. C.

In the Shadow of Bangkok's Royal Palace Pagodas, the Thailand Army Parks Its Antiaircraft Guns from Sweden

These 75-mm. Bofors guns were used when Thailand tried to annex parts of neighboring French Indo-China in the fall of 1940. After several frontier clashes, the two countries agreed to mediation by Japan, and Thailand received a strip of border territory. This country of 15,000,000 Asiatics borders British Burma, near the Burma Road to China, and juts south into the Malay Peninsula, toward Singapore (map, page 662).

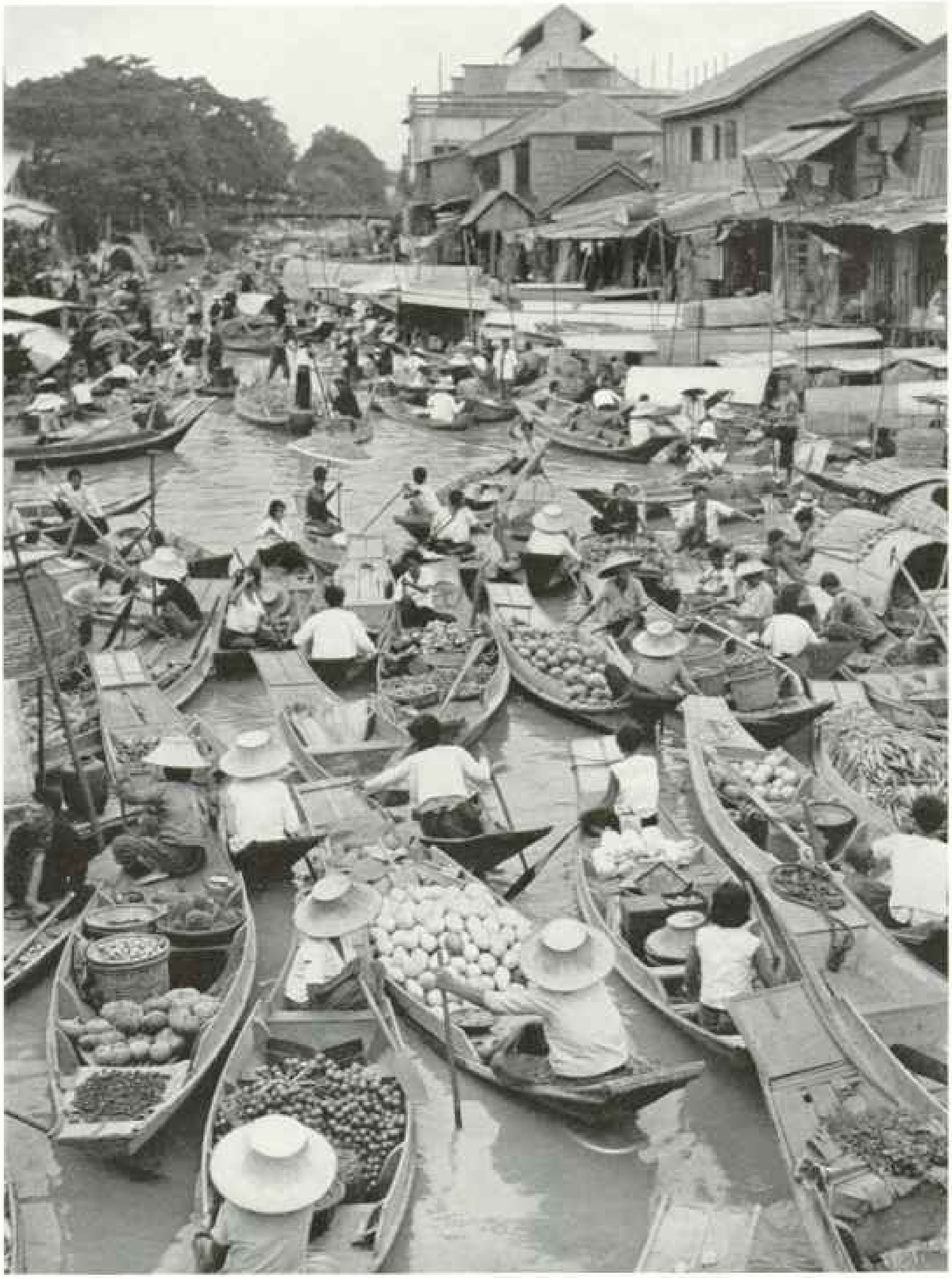
One-manpower Taxis Wait for Fares Outside a Movie in Bangkok

So sultry is the climate of Thailand's capital that many people find walking unpleasant and ride even short distances in bicycle cabs. United States films are popular in this air-conditioned theater.

Staff Photographer Maynard Owen Williams

Laurel and Hardy Star in a Bangkok "Peep Show"

"Admission one *satang*," the sign reads. After putting in a coin, worth about one-third of a United States cent, the engrossed lad watches the antics of the Hollywood comedians.



Staff Photographer Maynard Owen Williams

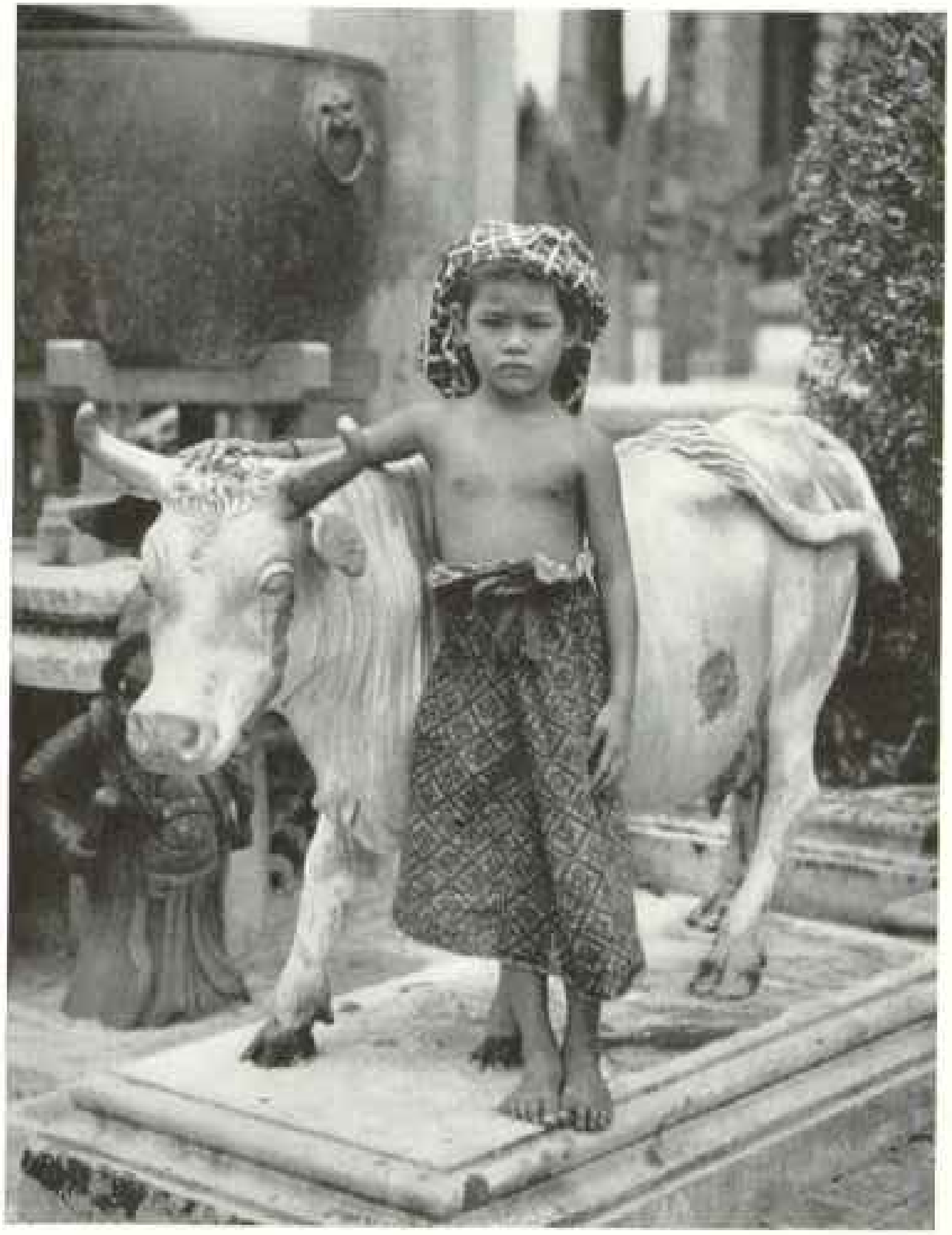
A Nautical Traffic Jam in the Heart of Bangkok

Suburban truck farmers float their heavily laden boats through a network of canals to Mahanak Market, convenient for city dwellers. Powerboats, pulling strings of craft of all description, some from far-off villages, tie up at a larger marketplace on the MeNam River (page 658).

Staff Photographer Maynard Owen Williams

Humble Man-sculled Sampans Ply the MeNam River at the Foot of the Lofty Temple of Dawn

The 242-foot tower of Wat Arun Rajavararam is encrusted with pieces of pottery and tile which glitter by the light of sun or moon. Majestic landmark of Bangkok, it fronts on the capital's chief business artery, called "Royal Mother of Waters." At extreme left is outlined a radio mast.



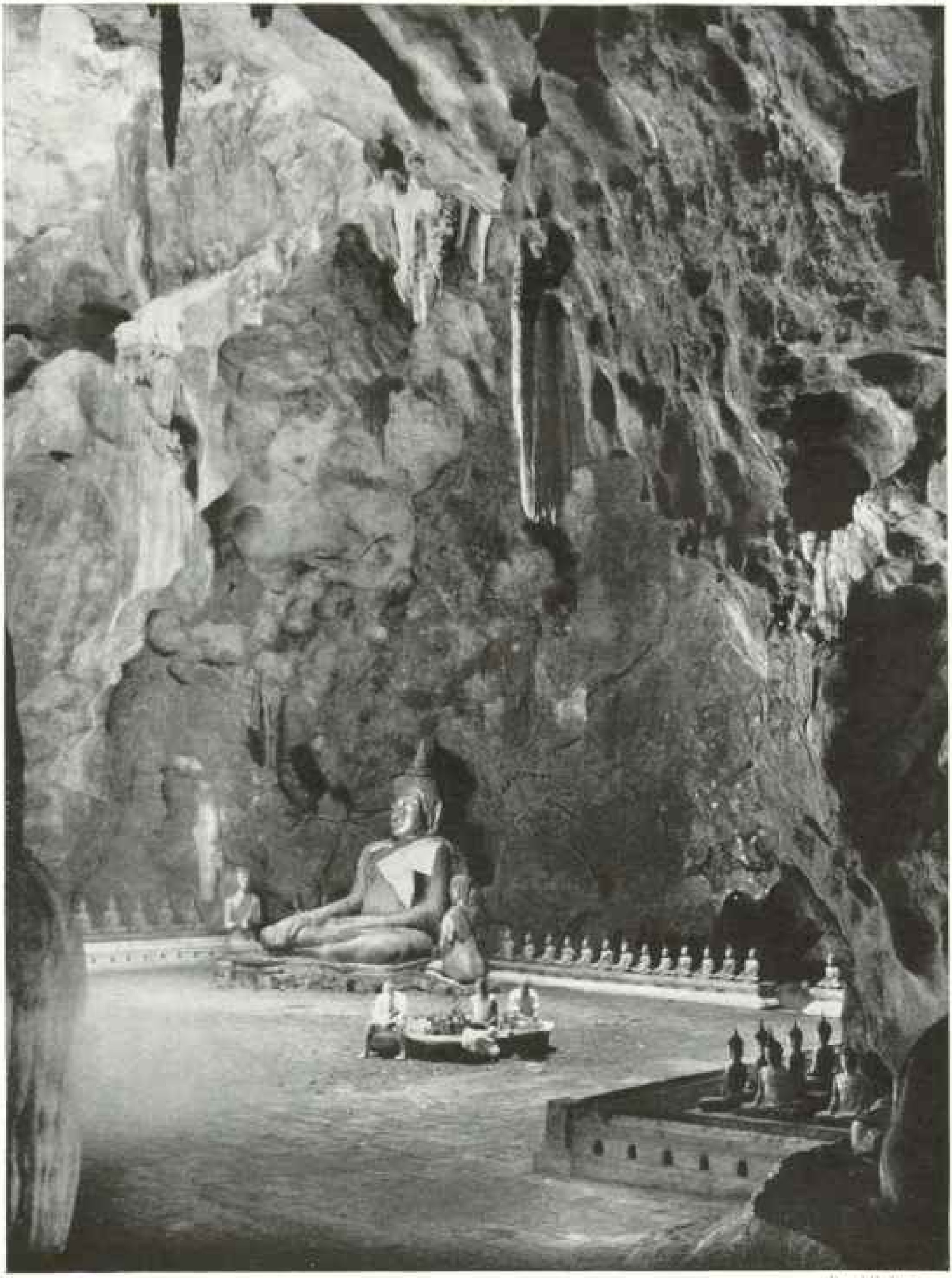
A Country Girl Makes Friends with a Temple Cow

She has come to Bangkok for a religious festival. The image stands in the courtyard of the Royal Temple, shrine of the celebrated Emerald Buddha.

Staff Photographer Maynard Owen Williams

Beware the Wide-mouthed Lion of Beuchamabopitr!

The fanciful figure guards the temple in background, one of Thailand's 18,416 shrines, served by 140,000 priests. Nearly the entire population is Buddhist.



David H. Hickson

Shoulder Scarfs Keep Buddha and His Acolytes Warm

This chilly, damp "green room," in the Petchaburi Caves on the southern peninsula, is a mecca for Buddhist pilgrims. Rows of small images, representing solemn worshipers, are ranged around the edges of the cavern, while the bench in center is for visitors. The walls have a natural greenish tone.

Life Grows Grim in Singapore

By H. Gordon Minnigerode

Former American Vice Consul at Singapore

ONE bright April day the ship dropped anchor at the great port of Singapore, which was to be my home for more than three years, first in peace and then in wartime.

From vessels dotting the spacious harbor flew the flags of twenty nations. Modern liners from all parts of the world lay berthed near native sampans, deckless wooden Chinese junks, and sailing vessels similar to those in which Malay fishermen plied the seas centuries ago.

Carefree passengers on cruise ships bought trinkets or lightheartedly watched the old man who dived for coins with his short lighted cigar inside his mouth.

But all this is part of a peacetime picture. Today it is greatly changed by war and the threat of a spread of war. Many of those flags are gone from the seas. Cruise ships have become transports; and peaceful freighters now are skulking the seas as enemy commerce raiders. Fighting planes in maneuvers swing overhead and practice blackouts veil the city. Life has indeed grown grim in Singapore.

Every Blowout Brings Singapore Closer

Striking, too, is the rapidity with which American interest in Singapore has grown. Though half a world away from Washington or New York, this city off the tip of the Malay Peninsula is no longer a symbol of exotic remoteness. American lawmakers study problems connected with it, and John Citizen has begun to realize that every time he blows out a tire, uses a can opener, or takes quinine, he must look chiefly to Singapore for replacement.*

As a leading commercial center as well as Britain's chief military base in Asia, Singapore ships us the bulk of our rubber and tin. It normally handles the greater part of all the world's rubber and immense quantities of tin, not only from the Malay States but also from the near-by Netherlands Indies, Burma, and Thailand (Siam). Of British Malaya's exports last year, the United States took more than half.

So long as mosquitoes bite and fevers come, quinine is vitally important. Java, via Singapore, furnishes the United States with nearly all of this benevolent bitterness. Manila hemp, Burma teak, Thailand rice, Indo-China rattan, Sarawak oil and rubber, in normal times, all pass through Singapore's busy warehouses, in whose shade Chinese coolies bet on which small coin will first attract a fly.

Much of the Netherlands Indies' output of petroleum and fuel oil, quinine, spices, coffee, tea, copra, and tapioca joins the parade of products through the bottleneck of the Strait of Malacca (map, page 662, and Plate II).

Singapore, guarding that strait, ranks with Gibraltar, Suez, and our own Panama Canal as one of the four great gateways of the world.

Aptly Named "City of the Lion"

Founded among mangrove swamps on a tropical isle less than a century and a quarter ago, Singapore is now a modern metropolis with a population estimated at 650,000. It ranks among the leading ports of the world, and militarily it forms the pivot for the whole of Britain's Far Eastern empire.

Still visible in present-day Singapore are traces of an earlier city, established at least seven centuries ago, which bore the name of Singapura, or the City of the Lion. Thence comes the present name, especially appropriate for a citadel of the British Lion.

Modern Singapore is a curious blending of the old and picturesque with all that is new and businesslike. Its stately white Municipal Building and water-front boulevard, Connaught Drive, would be a credit to any city (page 677). Many restaurants and movie houses are air-conditioned. Yet in back streets and slums tens of thousands of natives are crowded together in squalor.

Luxurious limousines purr past primitive rickshas and oxcarts, while trackless trams, powered by electric wires overhead, plow through crowds of humanity straining under heavy loads borne on sweating backs or on Chinese carrying poles.

Although the ricksha has long been the principal means of transport, there is now a growing feeling against it. Passengers still recline in two-wheeled ease while the Chinese puller strains and swelters in the tropical sun; but with the swift competition of tram and motorcar, there is a strong probability that the ricksha will lose its dogged race and the pitied pullers be driven into other occupations.

Before I had been long in Singapore, I discovered American signboards extolling the virtues of films or condensed milk. Picture advertising has a wide appeal in a city where many languages are spoken but few are read.

* See "Behind the News in Singapore," by Frederick Simpich, National Geographic Magazine, July, 1940.

Drawn by Herbert Eastwood

Britain's Mighty Fortress of Singapore Links India and the Far East

To this cosmopolitan city, on an island at the tip of the Malay Peninsula, come valuable cargoes of rubber and tin to be transshipped to all parts of the world. Ships plying between the Indian and Pacific Oceans on the most direct route steam through the Strait of Malacca. To defend Singapore, the Malaya-Thailand border to the north has been heavily fortified. In addition, the coastal defense area on the South China Sea was extended in September, 1941, to a point 200 miles north of the city, to guard against sea-borne invasion.

Bicycles and rickshas carry the native population to factories, large and small, which turn out soap, cigarettes, soft drinks, candy, biscuits, rubber tennis shoes, coconut oil, furniture, and canned pineapple.

Modern to the tips of their rouged fingernails and the slits in their narrow skirts (Color Plate VII), Singapore's Chinese girls play tennis and basketball or dance to swing music in cabarets in a way which might well make their sedate and venerable ancestors turn in their graves. Singapore's taxi dancers—Chinese, Malay, or Filipina—are famous from Port Said to Port Arthur.

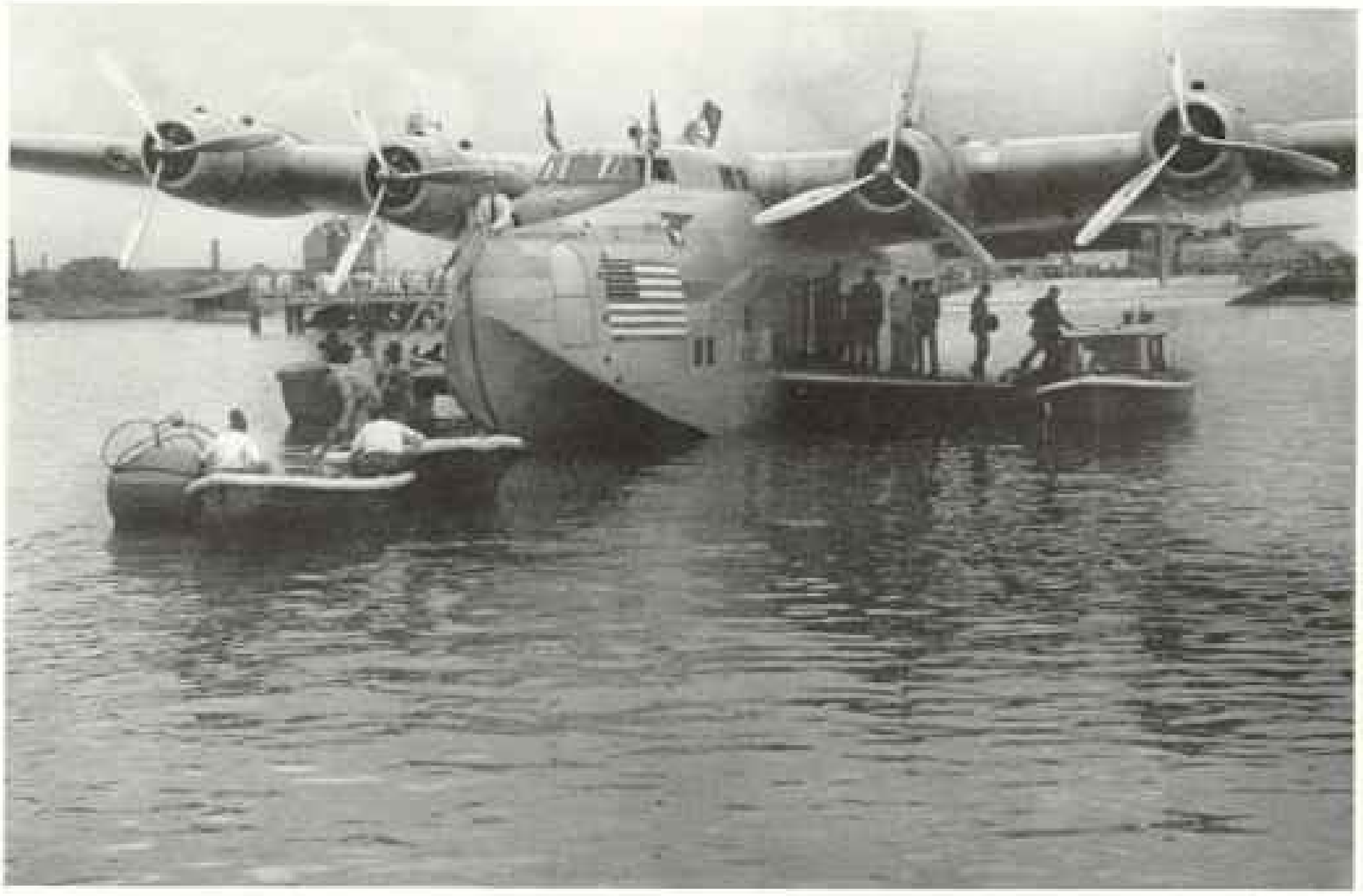
Only One Kind of Weather—Hot

Only 90 miles above the Equator, Singapore has a climate which resembles that of Washington, D. C., during an August heat wave. There are no seasons. One can look forward neither to "next fall" nor to "next spring." The thermometer changes only a few degrees all the year round.

The climate dictates the styles. Many of the humbler natives wear a practically irreducible minimum of clothing. Occidentals are bathed in perspiration most of the day. The men wear chiefly white linen suits, and women are dressed in the lightest materials. High humidity is the cross to bear.

Beyond the business districts are the quiet residental sections resembling beautiful gardens, among which are located the large and spacious homes of Occidental and wealthy Oriental residents. In contrast, along South Bridge Road and in the back sections of Chinatown, teeming multitudes are herded together in the space of a single block, and the clatter of industry continues day and night.

On a tidal swamp now reclaimed from the sea stretches the magnificent Singapore Airport, formally opened in 1937. It was



Pan American

Every Two Weeks a Pan American Clipper Now Docks at Singapore

The 9,473-mile flight from San Francisco's Treasure Island takes six days and costs $825, or $1,485 round trip. Way-stations are Honolulu, Midway, Wake, Guam, and Manila. The first Clipper arrived in Singapore on May 10, 1941 (page 680).

Australian News and Information Bureau

Malay Naval Ratings in Singapore Welcome Reinforcements from "Down Under"

This trainload of Australian troops is bound for an upcountry military post.

built primarily to accommodate British Imperial Airways planes plying between London and Melbourne. But today the waters off the airport are journey's end for Pan American's passenger planes flying here regularly from faraway California (pages 663 and 680).

A proud day for all of us Americans in Singapore was May 10, 1941, when the first of these American Clippers arrived. Eagerly we watched as the great white ship of the sky hove in sight, first a mere speck no larger than a bird. Rapidly it grew in size and settled in stately dignity on the water. In six days this *California Clipper* had flown more than 9,400 miles across the vast Pacific.

We felt that we were seeing transportation history in the making, and the significance of the flight as a closer link between Singapore and America was fully appreciated. The captain and crew of the Clipper were officially welcomed by Sir Robert Brooke-Popham, Commander in Chief of British Forces in the Far East (pages 683 and 686). They were also greeted by other notables and were given the freedom of the city before the departing engines roared "California, Here I Come."

Polyglot Population Is Chiefly Chinese

Singapore has a confusing diversity of races, languages, and religions. About 584,000 Chinese constitute the bulk of the island's population, and most of them live in the city. When it was evident that well-governed Singapore was becoming the great clearinghouse of the East, the Chinese swarmed in. Retail trade has largely drifted into their hands, although Indian merchants sell their share of American fountain pens, Troy-made shirts, and safety-razor blades.

Some Chinese are millionaires, having made fortunes from rubber, tin, or medicine, but most of them are small shopkeepers or tradesmen. House servants, factory hands, coolies, rickshamen, and stevedores, working in some cases for a few cents a day, maintain the Chinese tradition of industry and cheer.

Many and wonderful are the gods of China. Sons of Han from Swatow, Amoy, or Canton have deities and religious festivals all their own. In the innumerable Chinese temples, the worship of ancestors is still carried on as in the Celestial Kingdom.

Interesting at night is the Chinese section with its narrow, tortuous streets, its swarms of people, blaze of lights, noise, music and clatter of every description. Here are found the Chinese theaters (Plate IV) and amusement parks with their side shows, shooting galleries, gambling games, and restaurants where families dine on the sidewalks—and where I was not too gently initiated into the mysteries and wonders of Chinese food. Chinatown after dark has glamour and a spirit of gay adventure.

The Chinese are canny and literal-minded, as a friend of mine discovered when he attempted to change an American note at a Chinese bank. The note happened to bear the picture of a buffalo instead of the customary American spread eagle. After perusing it carefully and consulting the officials of the bank, the Chinese clerk returned it.

"Why?" my friend asked. "It's perfectly good currency."

"Maybe," the clerk replied, "but all the other American notes had pictures of a beautiful buzzard on them and this one only rates a cow."

The Malays, numbering about 75,000, form the second largest group on the island, but many of them live in the rural districts. They are all Moslems and speak a single language, Malay (Plates I and VI). Most of them are clerks and tradesmen and many others are employed as gardeners and chauffeurs.

Third after the Chinese and Malays in number are the Indians, totaling about 60,000 on the island. These also form communities of their own, depending on the part of India from which they come. They are chiefly money lenders or sellers of clothing, textiles, or other commodities. Some of the poorer Indians are employed as watchmen and many serve as gardeners in homes of wealth.

The famous Sikh policeman, with his impressive bulk, beard, and long hair, is a familiar sight in Singapore, his dignified mien enhanced by a brilliant turban and a most military uniform.

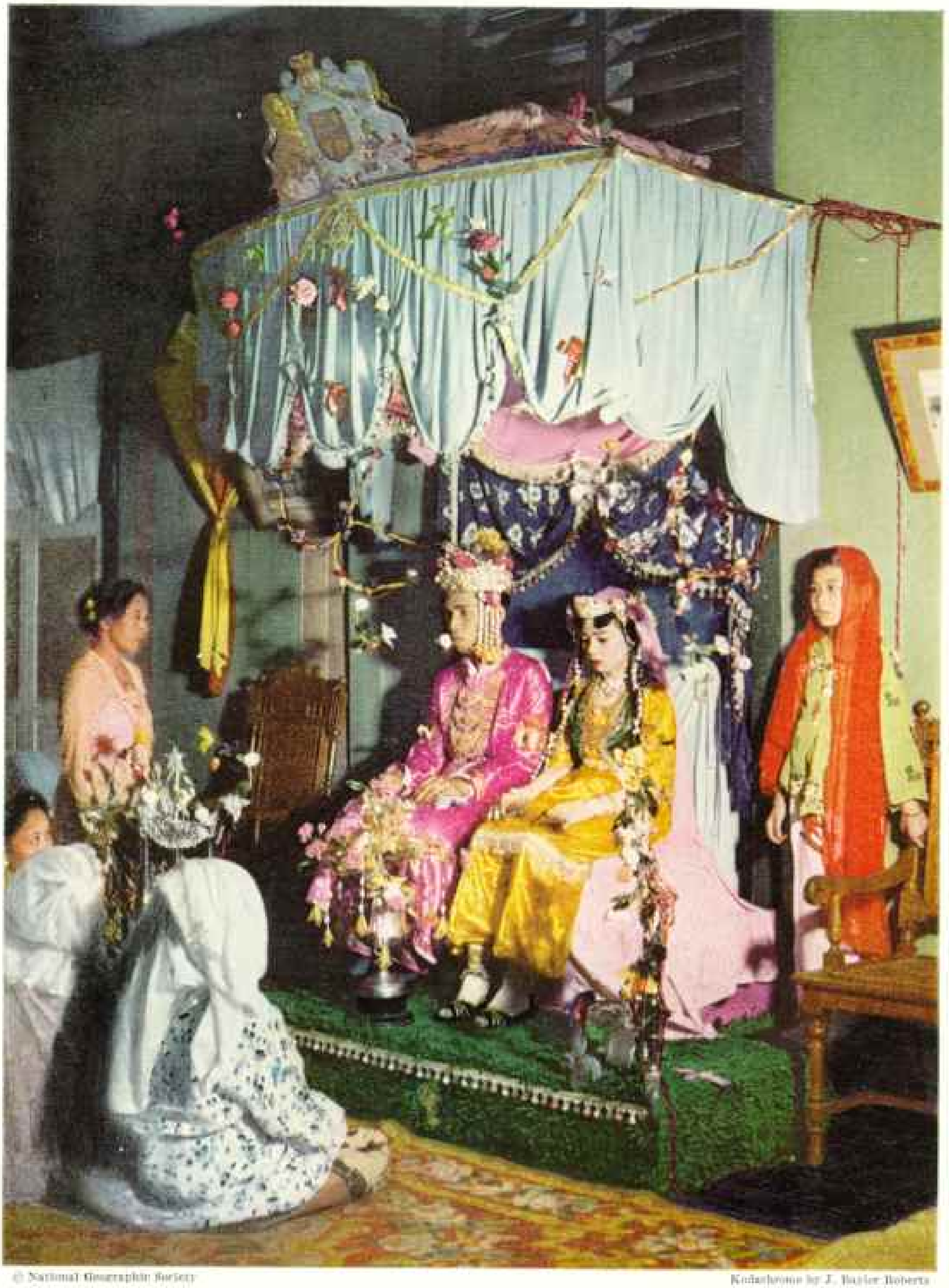
Hindus Walk on Coals of Fire

Like the Chinese, the Indians represent a variety of races, languages, and religions.

Every year at the Mariamman Temple in South Bridge Road Hindu fanatics whip themselves into emotional frenzies. In a state of exaltation, they thrust knives or skewers into their bodies or walk across coals of fire in the presence of a shouting crowd of devotees. Meanwhile Occidentals take motion pictures of the gruesome ceremonies.*

Soon after our arrival in Singapore my wife and I attended a fire-walking ceremony. From the sweltering roof of the Mariamman Temple we could look down on the seething throng in the courtyard below. Our ears were almost deafened by the wild exhortations of the

* See "Fire-walking Hindus of Singapore," by L. Elizabeth Lewis, National Geographic Magazine, April, 1931.



 Kodachrome by J. Baylor Roberts

Eyes Downcast, a Malay Bride and Groom Sit for Hours on the Nuptial Throne

Relatives admire the bright silks and ornate headdress of the stoical couple patiently enduring the lengthy Oriental ceremonies in Singapore. Surmounting the rich canopy are the Lion and Unicorn of Great Britain and the motto of the Order of the Garter—"Shamed be he who thinks evil of it."

Kodachrome by J. Baylor Roberts

Malacca's Shallows Make Time Stand Still beside the Historic Strait

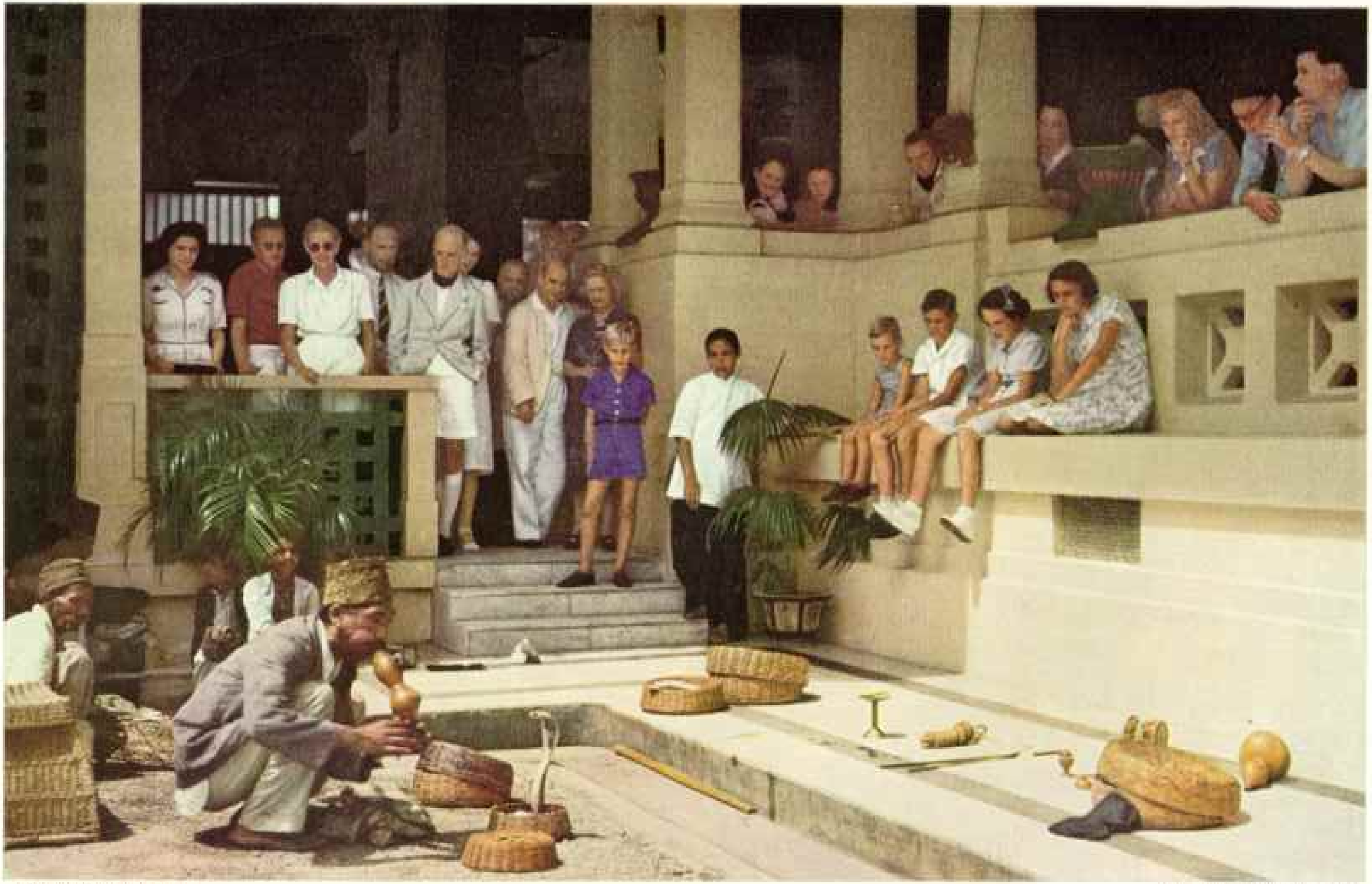
Once the goal of high adventure, this center of Moslem Malaya was the first Christian outpost in the East. So shallow was its harbor that Dutch ships could not get close enough to bombard the Portuguese walls. Now Singapore and Penang take most of the trade, leaving to the city of St. Francis Xavier its old-time charm.

Kodachrome by J. Baylor Roberts

Singapore River, Pulsing Heart of Straits Settlements Life, Separates New from Old and North from South

Kodachrome by J. Baylor Roberts

A Chinese Theatrical Troupe Competes with Modern Cabarets in One of Singapore's Three Amusement Parks



Kodachrome by J. Baylor Roberts

Magic and Snake Charming Follow a Sunday Morning Concert in a Singapore Hotel

The Sea View, near Katong (Turtle) Point, has a breezy ballroom, where excellent concerts are held in a less formal manner than in the world-famous Victoria Theater. When the sports-clad crowd breaks up, snake charmers and magicians are sure of an interested audience and a shower of small coins

Fine Feathers Give a Fine-bird Feeling to the Malays of Singapore

At work and play the Malays wear utilitarian clothes. But for a social visit they dress up and are models of neatness and deportment. Both men and women wear the skirtlike sarong. Batik patterns of Java are rare among the Malays, who number only about ten per cent of the population of Singapore.

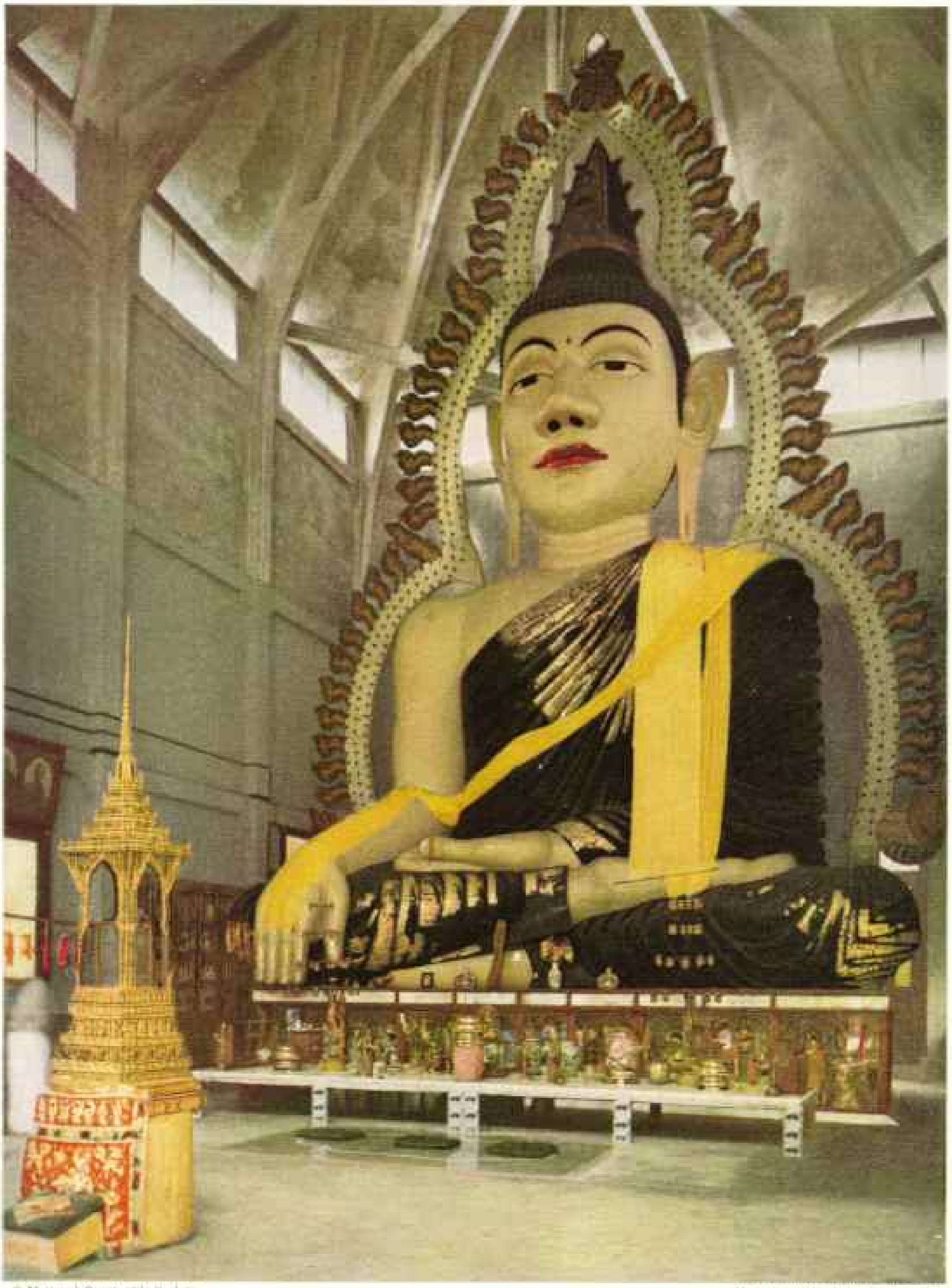
Singapore Says "Safety" in Four Ways

In English, Malay, Chinese, and by a picture of cloth-clad feet, jaywalking is discouraged. Chinese girls wearing Shanghai dresses with slit skirts have a trackless-trolley bus as background.

Kodachromes by J. Baylor Roberts

They Think You Can Take It with You

Sweet-smelling incense and bundles of spirit money accompany a Chinese body to the grave. Tiles with a religious meaning hang next to a sign panel reading "Clothes for the dead." An artist decorates a Chinese lantern.



 Reproduction by J. Baylor Roberts

Swathed in Bright Silks, a Concrete Buddha Sits and Stares

In the Siamese Tiger Temple is this huge figure of the Teacher of the eightfold path of righteousness in word, act, belief, resolve, meditation, thinking, effort, and life. Once the founder was not depicted, but giant "Buddhas" are now common. The most famous is the Great Buddha at Kamakura.

priest and the shouts of the mob. Our nostrils were assailed by the nauseating odor of the burning flesh and blood of a goat which had been decapitated before our eyes. My wife then and there decided that her presence was not necessary at such festivals!

The Eurasians, or mixtures of Europeans and Asiatics, number about 8,000. Many are descendants of early Portuguese settlers and bear Portuguese names which sound odd in the Oriental setting of Singapore. Eurasians are often excellent clerks. Some have small businesses of their own and many are in the Government Civil Service.

Other races add to the strange hodgepodge of Singapore's population. Japanese, Arabs, Iranians (Persians), Afghans, Thais (Siamese), Singhalese, Cambodians, Annamites, and Filipinos contribute to the racial complex. From time to time yellow-robed Buddhist monks are seen amid the heterogeneous throngs of this melting pot of Asia.

In the first official census, taken many years ago, the police rounded up weird creatures from the back slums who had come from no one knew where, to whom it was found impossible to give any racial classification, and who spoke no language known to any available interpreter.

The Occidental group, exclusive of troops, now numbers nearly 14,000. About 10,000 of these are British, employed either in the Civil Service or in business.

The city's 200 to 250 Americans consist of missionaries, consular officials, and business people dealing in oil, rubber, shipping, banking, insurance, or motion pictures. When "The Jungle Princess" played in Singapore, the audience joined Dorothy Lamour in singing Malay songs.

No Time Now for Daily Siesta

Life in Singapore is pleasant, but by no means soft or easy. Offices open at 8:30 or 9 a. m., and close at 4:30 or 5 p. m. Though afternoon siestas were once regarded as essential to health, there are none for business people. Wartime means overtime, even in the Tropics, and vacations are rare.

Social life centers around the Singapore Golf Club, with its fine golf course; the Swimming Club, with a membership of 3,000, and the Tanglin Club where Singapore social lights congregate for dancing on Wednesday and Saturday nights.

Both men and women play golf, tennis, squash, and badminton during the fleeting afternoon twilight. Cricket and soccer draw crowds. A thriving baseball team, sponsored by the American Consul General, usually plays British Army, Navy, or Air Force teams on Sunday afternoons. But one of its strongest opponents is a Japanese nine.

Occidental residents of Singapore usually live in spacious, rambling, two-story homes with extensive grounds and with the kitchen often joined to the main dwelling by a covered passageway. Many bungalows similar to those of southern California have been built in recent years, but the older residents generally prefer the more spacious, if less modern, dwellings.

Servants are cheap and plentiful in Singapore. An average Occidental family has a houseboy, a man cook, and a washwoman—all Chinese; a Malay chauffeur, and at least one Indian or Malay gardener. There may also be a Chinese nurse. The wages for the lot are far less than generally paid for two good servants in most parts of the United States.

We found it important that Chinese house servants should all come from the same part of China; otherwise friction and squabbling ensued.

Most Singapore servants and their colossal families live on the premises. The employer is regarded as a benevolent sort of patriarch, or Santa Claus, whose generosity is solicited whenever there is an addition to the family, sickness, unemployment of a relative, or other emergencies—which occur with amazing frequency.

How a Cook Rates His Employers

As the time approached for us to leave Singapore, our inscrutable cook confided to my wife the subtle way in which a retiring Chinese cook advises his successor of the character of his employers by leaving certain well-known signs in the kitchen.

Rice at the bottom of a pan indicates that the head of the house is stingy. The lid lying on the floor beside the pot means a hard place and a frequent shortage of servants. The saucepan placed upside down denotes a hot-tempered master, but if laid on one side it means the whole family is hard to please. If the pot is left on the stove inverted, it signifies that wages will come regularly, but if the bottom of the pot is chalked, it indicates the breakage will be taken out of the wages.

Just how we were classified by this merciless appraiser my wife had not the courage to ask.

Entertaining in Singapore usually takes the form of large cocktail parties, called "pahit" (pronounced "pite") parties, or private dinners which end up at a movie or local club for dancing.

G. H. Meisell

If You Can Brave the Durian's Unpleasant Odor, You Will Find the Fruit Rich, Creamy, and Delicious

Malays prize this exotic fruit, armored with sharp spikes, and ascribe to it magic powers as a rejuvenator. Seeds are roasted and eaten like nuts. Durians grow on tall trees and are so solid that a person walking below might be killed by a falling eight-pound fruit.

One of the most time-honored methods of entertaining is the informal "tiffin," or luncheon party, given Saturdays or Sundays. The most nondescript sport clothing, minus coat, collar, or tie, is coin current at these gatherings. Guests arrive about noon, and, after an hour or two of thirst-quenching and gossip, tiffin is served. This usually consists of a weird concoction of Chinese food called "mah mee" or a spicy Malay or Indian curry.

One of the first problems which beset a new arrival in Singapore is that of calls. The leading Government officials, such as the Governor, Colonial Secretary, and Chief Justice, have enormous visitors' books placed in what resemble sentry boxes at the entrances to their residences. Here new arrivals, married or single, are expected to sign dutifully.

The less official residents, who do not have these books, call first on newly arrived married couples and leave cards, which must be promptly returned. Bachelors, in addition to "signing," are expected to find out for themselves the principal members of the community and leave cards between 4 and 6 p. m.

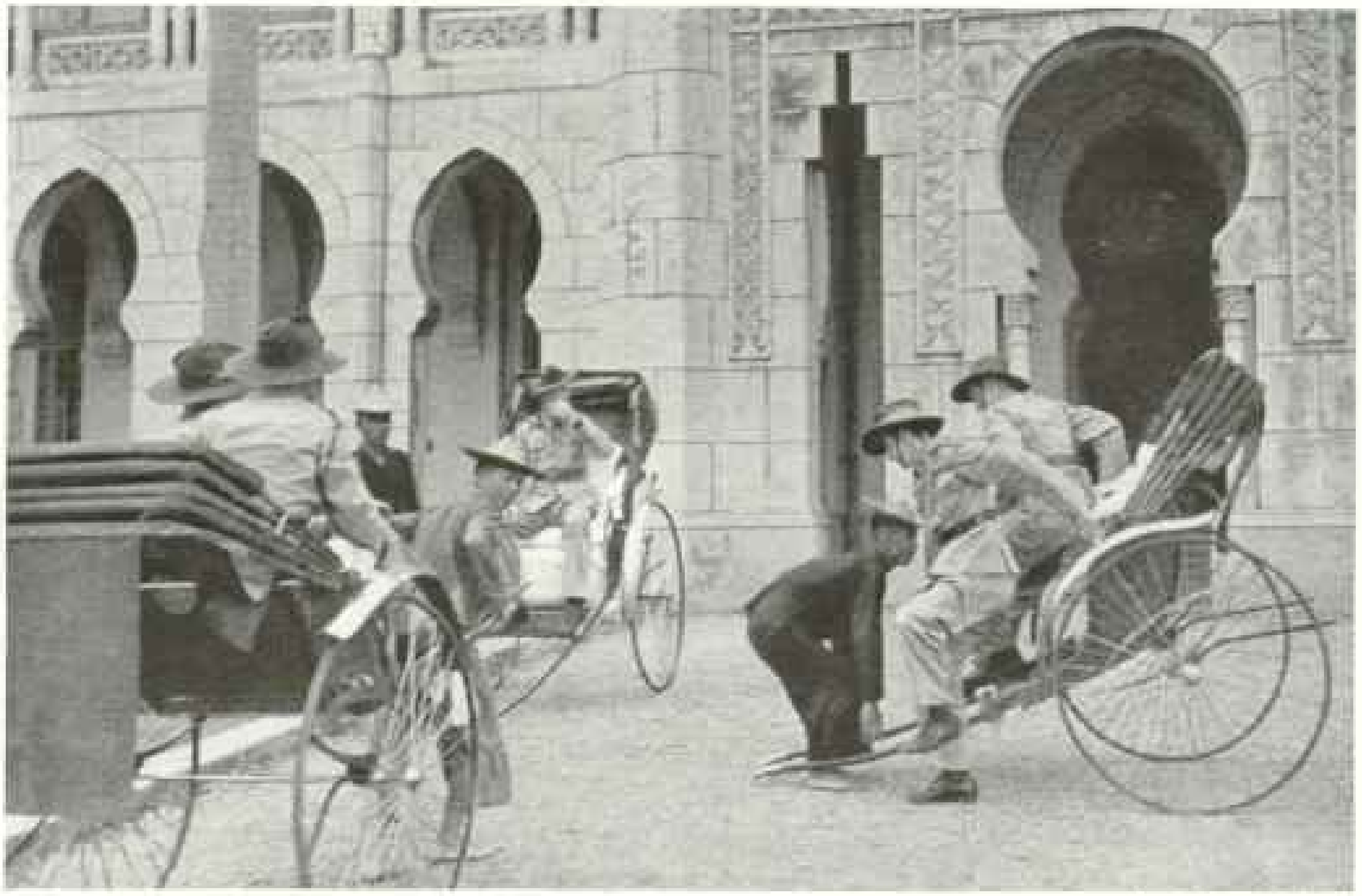
Not a few stately dowagers of long residence and ancient vintage have been seriously affronted by the failure of young bachelors to deposit cards promptly upon arrival. Card-leaving is taken seriously by the older residents, and delinquents are usually made to realize their social blunder.

Hostess in Sight but "Not at Home"

A surprising aspect of calling is that the visitor never meets his hostess the first time he calls, but merely signs in her book or leaves cards at the gateway in a grim little box marked "Not at Home," which is often the abode of a family of ants or lizards. Even if the hostess is in plain view, tripping about the tennis court or having tea on the veranda, no notice is taken of the caller.

Some days later the hostess's husband leaves his card on the bachelor in the same manner, or condescendingly sends it through the mail, and an invitation to "pahits" or dinner sometimes follows.

This curious custom dates from the Victorian era when the colony was so small that



Metcalf from Black Star

Two Sight-seeing Australians Make One Ricksha Load in Singapore

Sons of intrepid Anzacs who covered themselves with glory in France and the Near East during the first World War serve today in Britain, Malaya, Syria, Palestine, and Egypt.

Australian News and Information Bureau

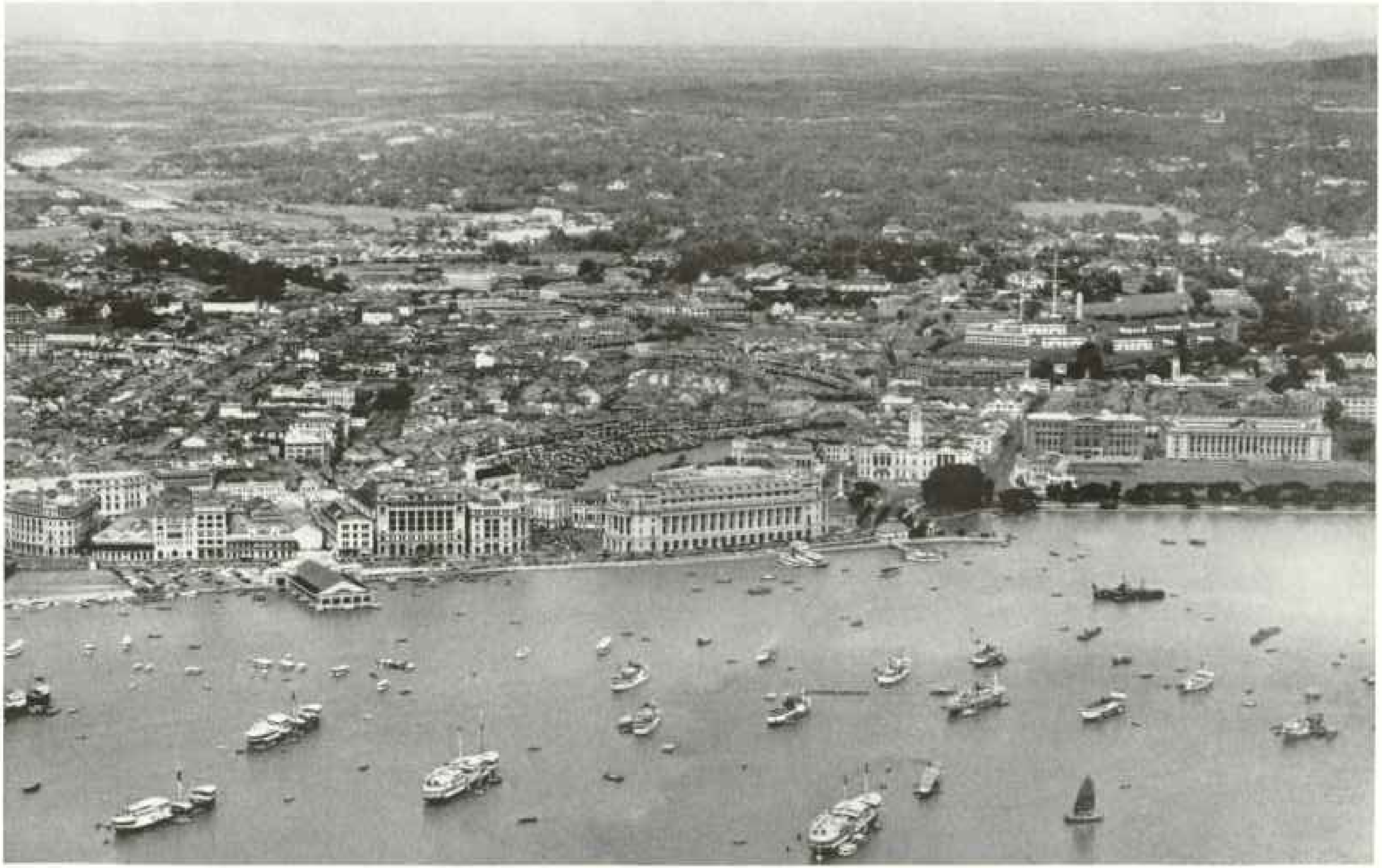
Happy-go-lucky Australians Learn to Fight in the Malay Jungle

These antitank gunners find plenty of cover amid the ferns and lush tropical growth which surround Malaya's rubber plantations and zealously guarded cities.

Staff Photographer J. Baylor Roberts

Coolies Shoulder Bales of Rubber When *Tongkangs* Dock in the Singapore River

These clumsy craft, poled into the heart of the city, bear cargoes brought from interisland steamers anchored in the harbor roadstead (opposite page). Here the crude rubber is weighed and checked by Rubber Regulation officials, who use the little house-on-wheels as headquarters. Then the bales, some weighing 300 pounds, are carried to the waiting trucks of rubber merchants.



Enriched by World Trade, Singapore Proudly Parades Its Palaces Before Its Benefactor, the Sea

Fleets of small craft bring cargoes up the Singapore River into the heart of the city behind the massive Fullerton Building in the center (page 684 and Color Plate III). Beyond the modern façade along Collyer Quay (left) squats the teeming native city, three-fourths Chinese. Victoria Memorial Hall, the new Supreme Court structure, and the Municipal Building face on lawnlike playing fields at right.

Harrison Forman from Acme

Air Raid Defense Calls for Speed and Precision

This unit of Indian antiaircraft gunners is one of many practicing daily in the vast fortress of Singapore.

Harrison Forman from Acme

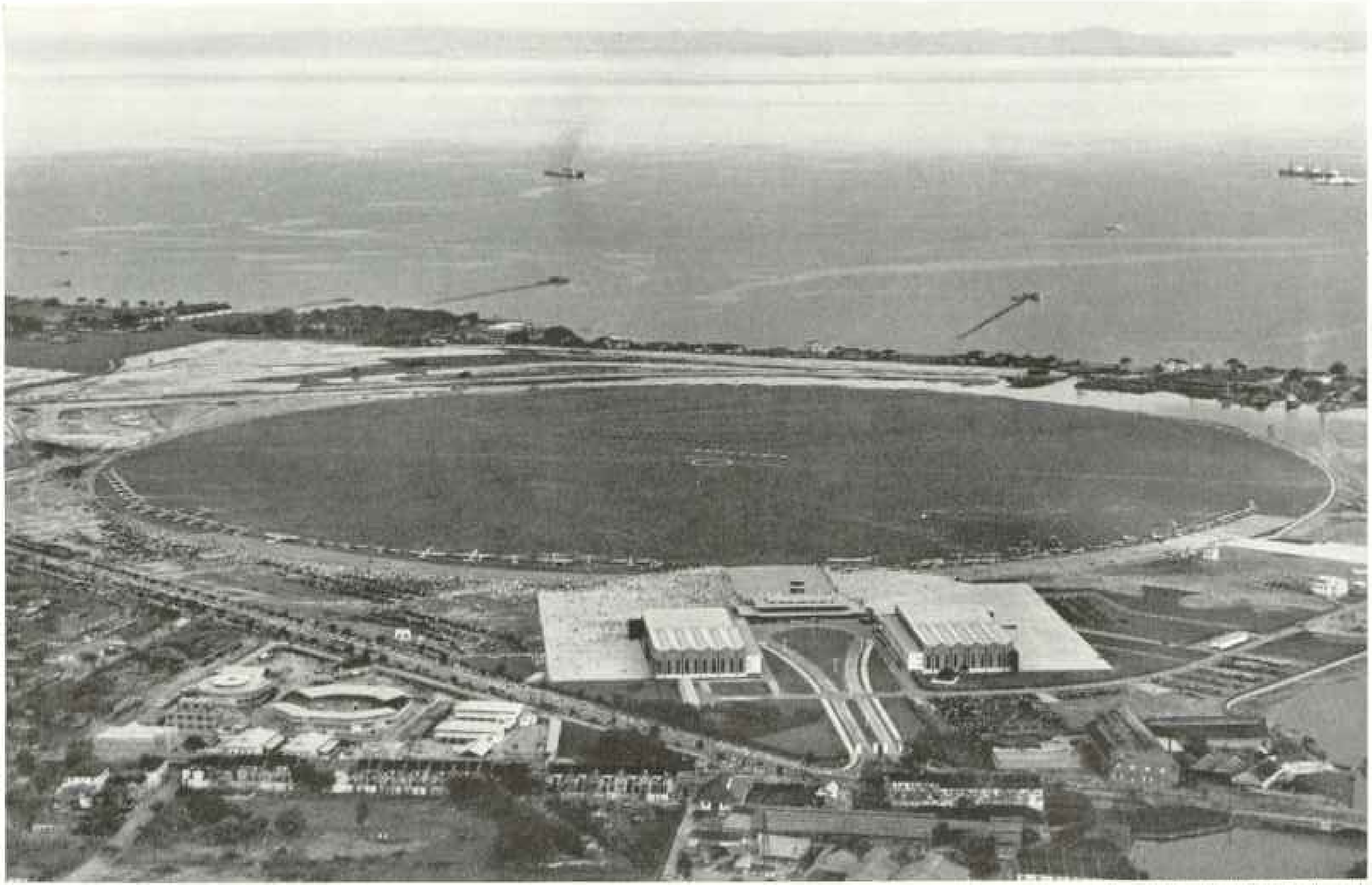
Chinese, Malays, and Indians Give First Aid in a Mock Air Raid

A stretcher-case "casualty" is being lifted through the window of a traction company bus and will be transferred to an ambulance. All races in cosmopolitan Singapore are learning what to expect if attacks come from the skies.

European

Turbaned Punjab Fighters Dock Near a Japanese Steamer in Singapore's Harbor

Many of the troops pouring into Malaya come from India—Gurkhas, Sikhs, tough veterans of the North-West Frontier. British troops, including Scottish regiments, have been heavily reinforced. The first division of Australians, made up of husky ranchers and miners, came in February, 1941, and their numbers, too, have been increased (pages 663, 675, and 683). Singapore residents serve in a Volunteer Corps, some of them as pilots.



Sixty Planes Stage an Air Show at Singapore's Ultramodern Airport

Motorcars and sight-seers crowd the field, which only a short time before was a steaming tidal swamp. This aviation center was built primarily to serve British Imperial Airways planes plying between London and Melbourne, Australia. Today the waters off the airport are journey's end for big Pan American Clippers (p. 663).

Staff Photographer J. Baylor Roberts

Ankle-deep in Muddy Streams, Sluice Tenders Retrieve Tin Ore, Vital U. S. Defense Need

Under pounding of a powerful jet of water, tin-bearing earth is broken down and washed into a basin. Then the mixture of water, ore, sand, and dirt is pumped up to the top of these sluices and allowed to flow down. Strips across the flooring catch the heavy tin, while the lighter sand and dirt wash away. At intervals the stream is shut off and the collected ore removed in baskets. From the Malay Archipelago comes about one-third of the world's supply of tin.

Australian News and Information Bureau

Ready Guns Defend the Vital Rubber of Malaya

An Australian defender of Singapore learns how to take cover behind the much-scarred trunk of a rubber tree, while milky latex, essential to modern war, drips into a coconut shell.

the new arrival was able to make a personal visit in each home. As the community grew larger, these visits became impossible, so the inhospitable "Not at Home" boxes—which often seem to imply "This Means You!"—appeared, and in them the caller surreptitiously deposits his cards.

Defense Becomes Paramount Concern

The ominous gathering of war clouds over the Pacific has wrought many changes in the life of Singapore, and defense is now the paramount concern.

With Singapore in British hands, an enemy invasion of the Netherlands Indies or Australia would be a precarious undertaking. Were Singapore occupied by a hostile power, the situation would be completely changed. Enemy forces, with Singapore as a base, might drive southward to the Netherlands Indies and Australia. Simultaneously, an attack might be made northwestward against Ceylon, and the Indian Empire itself would be in danger.

With a foothold here, an enemy power could establish bases for raiders which might disrupt shipping in the Indian Ocean and split the British Empire asunder.

Singapore, therefore, by reason of its position, is the bastion of British power in the Orient and one of the greatest strategic points in the Empire.

The largest naval base in the world, capable of accommodating the entire British fleet, was opened on Singapore Island on February 14, 1938. This project, begun fifteen years before, was completed at a cost of some $80,000,000. The base contains the 1,000-foot-long King George VI graving dock, Britain's only dry-dock in the Orient capable of repairing and overhauling her largest warships. It saves British ships on the China station a 6,900-mile trip to Malta for repairs in normal times.

There is also a huge floating dock, towed all the way to Singapore from England in 1928, which is capable of handling battleships of 50,000 tons displacement, larger than any now afloat.

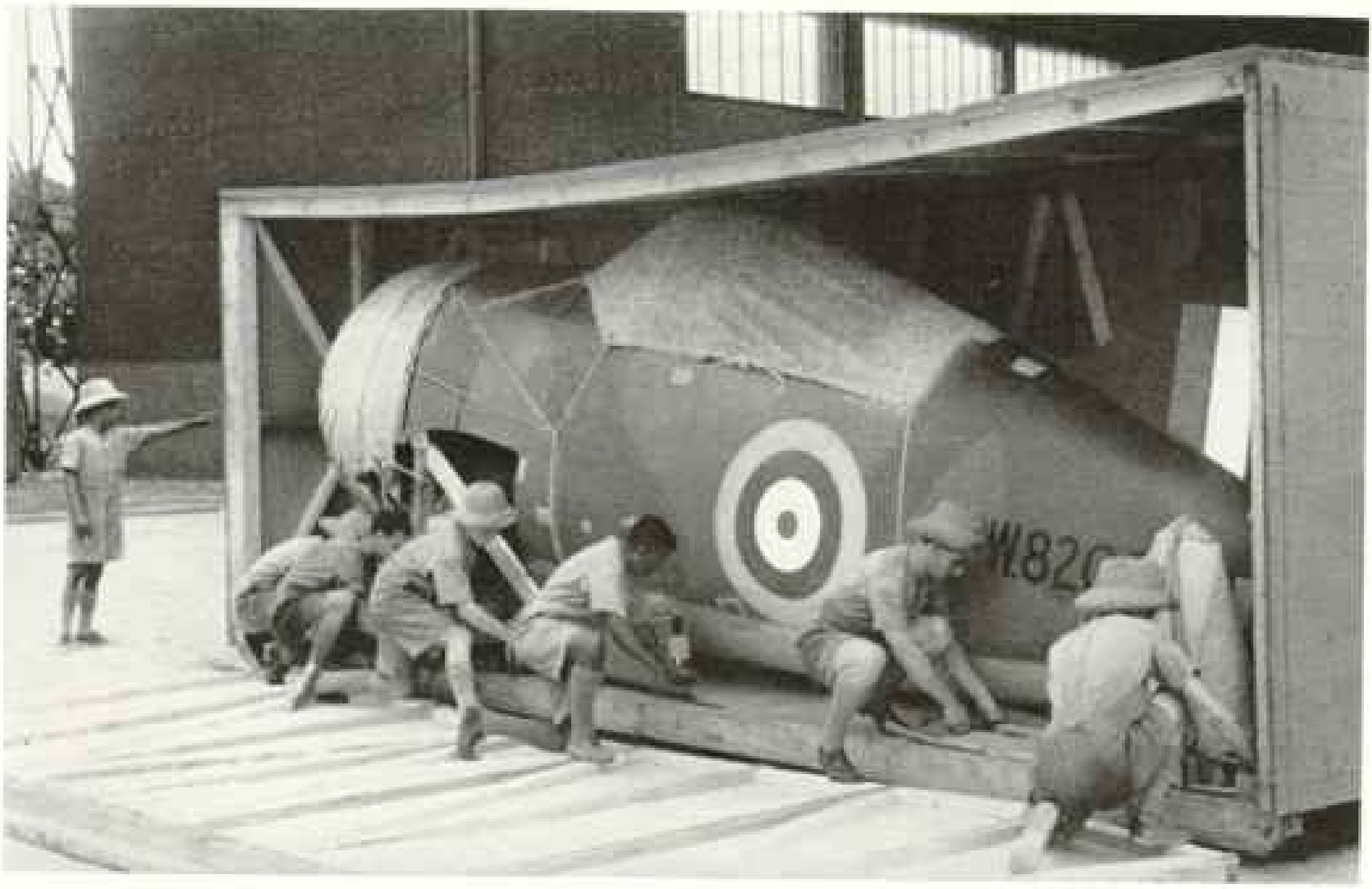
Eighteen-inch guns, with a range of over 25 miles, stand guard at the entrance to the Johore Strait. Other big guns on Blakang Mati Island dominate the narrow entrance to the Strait of Malacca.

These mighty batteries, among the most powerful in the world, are intended to render

British Official Photograph

Britain's Far East Commander in Chief Studies the Defense of Singapore

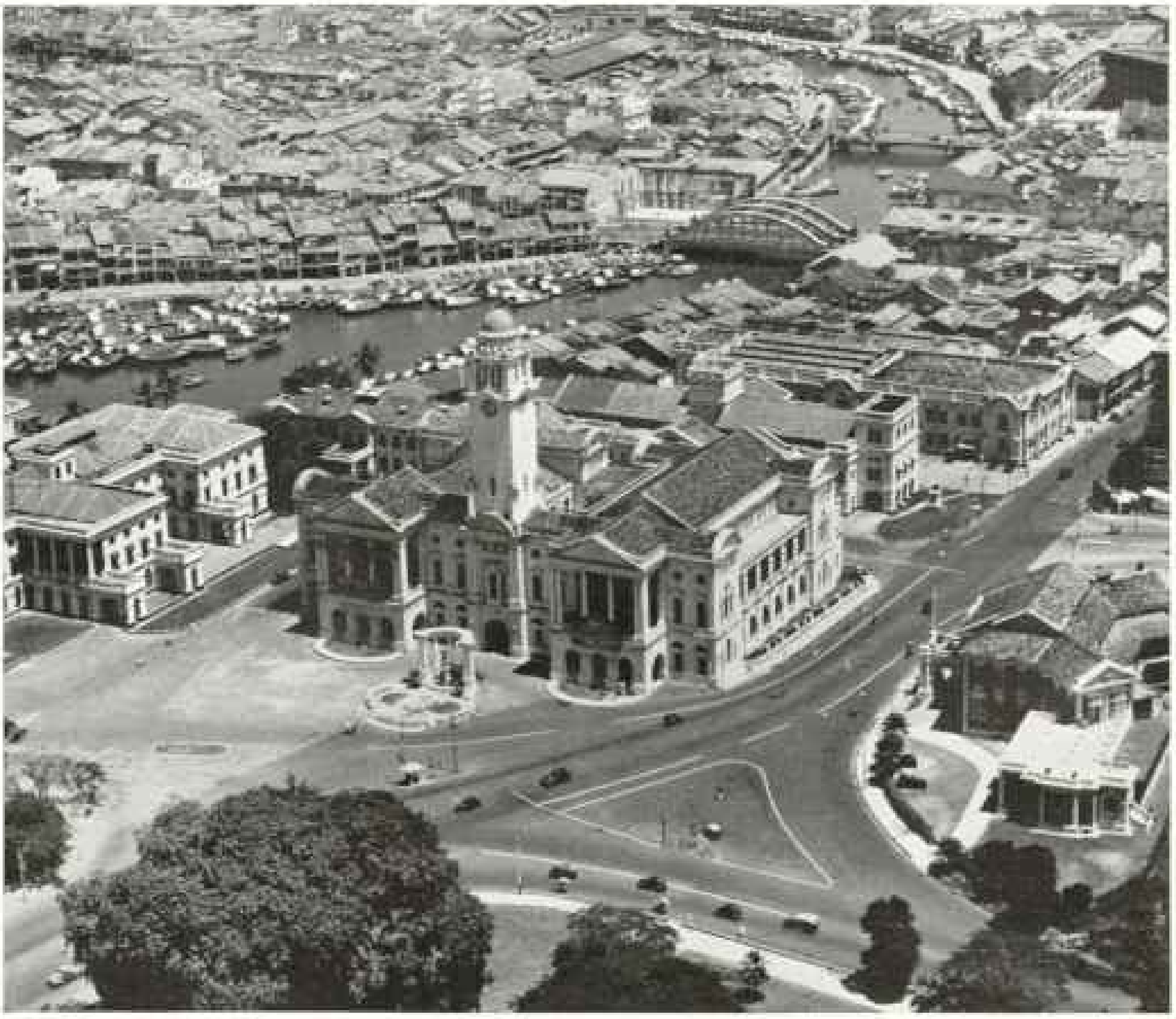
His back to a large map of Asia, Air Chief Marshal Sir Robert Brooke-Popham, first British flying officer to command an army, sits at the head of the table with his staff (page 686).



Keystone

Fresh from the U. S. A. Is This Flying Buffalo

Air Force men uncrate and assemble a speedy Brewster fighter to get it into the air as another addition to the defense of Singapore. Squadrons of these heavily armed single-seat monoplanes, manufactured by the Brewster Aeronautical Corporation, of New York, are on duty today in Malaya.



Before Victoria Memorial Hall Stands the Statue of Singapore's Founder

When Sir Stamford Raffles landed on Singapore Island, near the present Esplanade (foreground), in 1819, a pirate-haunted Malay jungle village occupied the site. Government law offices stand at left and at the right are the grounds and buildings of the Singapore Cricket Club.

Singapore impregnable against attack by sea.

At Seletar, Tengah, and Sembawang, in remote parts of the island to which only the initiated have access, growing swarms of bombers and fighting craft are based. On land reclaimed from swamps and jungles, large reserves of fuel and lubricants are stored. The bases are well equipped with antiaircraft guns and colossal searchlights finger the sky. Steel nets are stretched across harbor channels to keep off prowling submarines.

More than thirty years before Sir Stamford Raffles landed on Singapore Island in 1819, the first British settlement on the Malay Peninsula was founded on the island of Penang.

Today, strongly fortified, Penang stands as one of Britain's sentinels overlooking the northern entrance to the Strait of Malacca, as does Singapore from the south. Through this closely guarded waterway lies the shortest route from Europe via the Suez Canal to the Far East.

The three British settlements of Penang, Malacca, and Singapore, lying along the Strait of Malacca, form a separate Crown Colony known as the Straits Settlements.

From Singapore northward lies the snake-shaped Malay Peninsula, at present the largest single source of the world's rubber and tin. In 1940 about 38 percent of all rubber and 33 percent of all the tin produced in the world came from this peninsula (page 681). The United States took 57 percent of Malaya's total export of rubber and 78 percent of its tin.

Each of the nine Malay States, Federated and Unfederated, has its own Sultan, but all are under British control. In 1874, by the Treaty of Pangkor, Great Britain began to acquire interests in the peninsula, and its development dates from that time.

Harrison Forman from Acme

Feathery Palms Camouflage This Machine-gun Post Guarding Singapore's "Back Door"

Along the Thai border to the north, tens of thousands of troops defend the Malay Peninsula. Upcountry highways have been strongly fortified, and military and aerial maneuvers are a daily reminder that the British are doing everything possible to make Singapore impregnable (pages 675, 682).

Last year we traveled by car, safely and comfortably, over excellent roads from Singapore to Penang, a distance of over 500 miles. We traversed most of Malaya, stopping at good hotels at Kuala Lumpur and at the tin center of Ipoh on the way. The entire west coast is now well developed and policed; so visitors may journey by train or car from Singapore to the Thai border and be assured of safety and comfort all the way.

Since the outbreak of war, troops have poured into Malaya from all parts of the Empire. Most of the reinforcements are from India, largely Gurkhas and Sikhs. Tough veterans of the famous North-West Frontier stand watch beside noted Scottish regiments. In February, 1941, came the Australians, husky ranchers and miners from "down under" in their picturesque slouch hats, baggy trousers, and open khaki shirts (page 675).

In addition to the regular troops, a large Volunteer Corps has been raised from among the local residents and is undergoing rigorous training.

Along the Thai border, sometimes called the "back door to Singapore," fortifications are ready to prevent invasion from the north.

Another serious concern to Singapore has long been the possibility that an attempt might be made to dig a canal across the Isthmus of Kra in the north. This would open a new short cut to the Indian Ocean and, by-passing the great fortress, destroy its value as a strategic base and metropolis of trade.

Planes Include Many from America

In the air, Britain's forces have been reinforced many times with latest-type planes flown from England, Australia, the Near East, or India and operated in many cases by ex-

perienced veterans of the Battle of Britain.

Many of these planes are Lockheeds, ordered in the United States before the war and shipped to Australia early last year. Flown to Singapore by members of the Royal Australian Air Force, they are now based in instant readiness at Sembawang, a few miles from the city. Recently fast Brewster fighters and other American planes have been received (page 683).

Military and aerial maneuvers are of almost daily occurrence in Singapore and throughout Malaya. The sound of gunfire and the sight of troop convoys or plane formations overhead now attract little more than passing notice.

Strict rationing of gasoline came into effect on March 1, 1941, and large sections of the island formerly open to the public have been blocked off behind barbed wire as military reservations.

"Malaya is packed with troops and swarming with planes in readiness for any emergency," I was told by a high-ranking officer shortly before I left.

Because of the danger of conflagration and panic in the congested quarters, civilian defense against air raids is a vital problem. Evacuation plans have been drawn up for large sections of the population and camps have been constructed over wide areas in the country districts to receive them.

Sandbags and brick walls now protect the entrances to principal buildings. Concrete air-raid shelters have been built in the basements and on the grounds of private homes. Complete blackouts have been held with increasing frequency.

Within two minutes after the warning siren sounds its dismal wail, the entire city is transformed from a mass of lights to utter darkness. Householders are obliged to remain completely in the dark or to use lamps so shaded that no flicker or glow is discernible outside.

After the first two or three blackouts, my wife became expert at draping an old shawl and a black petticoat around our main reading lamp in such a way that we were able to carry on much as usual without the light's penetrating beyond the room.

Air-raid wardens patrol the streets and roadways during the imaginary raid, and failure to extinguish all lights when ordered to do so may result in a fine of $470 (American money). Other organizations, such as the Auxiliary Fire Brigade and the St. John's Ambulance Brigade, take part in the exercises dealing with "incendiary fires" and "casualties" (page 678).

As threatening as the possibility of air raid is the danger of blockade. Most of Malaya's population is Asiatic. Their staple food is rice, of which the country produces hardly more than a third. Most of Malaya's rice comes from Thailand, Indo-China, and Burma.

To reduce the seriousness of a possible blockade, the Government has encouraged the cultivation of additional rice areas and endeavored to increase the production per acre. Since the independent Malays prefer hunting and fishing, while the Chinese and Indians seek the higher wages obtainable in tin mines and on rubber plantations, popular enthusiasm for laborious rice cultivation is not excessive.

Attempts have been made to obtain a rice supply from Java in lieu of imports from Thailand and Indo-China. There is strict rationing of rice and large supplies have been accumulated, but in time stored rice is liable to mold and spoil.

"Wrens" in Navy-blue Uniforms

Shortly before our departure from Singapore, there began to appear a number of snappy-looking girls in navy-blue uniforms and tricorn hats, who are part of an organization known as the Women's Royal Naval Service, (W.R.N.S.), generally called "Wrens." By serving as auxiliaries to the Navy, they release male clerks, stewards, domestic workers, typists, telephone operators, drivers, and other naval personnel for active service.

These Wrens range in age from 18 to 45, and not a few of the oldest served in a similar capacity during the last war.

Aside from their efficiency and practical value, the Wrens add greatly to the social life of the younger set and are a godsend to many lonely bachelors in the Army, Navy, or Air Force stationed in Singapore.

The coordination of defense efforts took a tremendous step forward with the arrival in Singapore of Air Chief Marshal Sir Robert Brooke-Popham last November (1940) as British Commander in Chief in the Far East, a newly created post. Sir Robert has the distinction of being the first Air Force officer to command British armies.

The territory under his supervision stretches all the way from Rangoon, Burma, to Wellington, New Zealand, a distance of about 6,500 miles, or two and one half times the width of the United States; and from Hong Kong to Albany on the southwest coast of Australia, over 4,000 miles, or half again as wide as the United States.

Whatever may be the outcome of the present situation in the Far East, no effort has been spared by those responsible for the safety of the great Singapore fortress to make it impregnable. Singapore is ready!

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

Articles and photographs are desired. For material The Magazine uses, generous remuneration is made.

In addition to the editorial and photographic surveys constantly being made, The Society has sponsored more than 100 scientific expeditions, some of which required years of field work to achieve their objectives.

The Society's notable expeditions 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 solved secrets that had puzzled historians for three hundred years.

In Mexico, The Society and the Smithsonian Institution, January 16, 1939, discovered the oldest work of man in the Americas for which we have a date. This slab of stone is engraved in Mayan characters with a date which means November 4, 291 B. C. (Spinden Correlation). It antedates by 200 years anything heretofore dated in America, and reveals a great center of early American culture, previously unknown.

On November 11, 1935, in a flight sponsored jointly by the National Geographic Society and the U. S. Army Air Corps, the world's largest balloon, *Explorer II*, ascended to the world altitude record of 72,395 feet. Capt. Albert W. Stevens and Capt. Orvil A. Anderson took aloft in the gondola nearly a ton of scientific instruments, and obtained results of extraordinary value.

The National Geographic Society-U. S. Navy Expedition camped on desert Canton Island in mid-Pacific and successfully photographed and observed the solar eclipse of 1937. The Society has taken part in many projects to increase knowledge of the sun.

The Society cooperated with Dr. William Beebe in deep-sea explorations off Bermuda, during which a world record depth of 3,028 feet was attained.

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.

One of the world's largest icefields and glacial systems outside the polar regions was discovered in Alaska and Yukon by Bradford Washburn while exploring for The Society and the Harvard Institute of Exploration, 1938.

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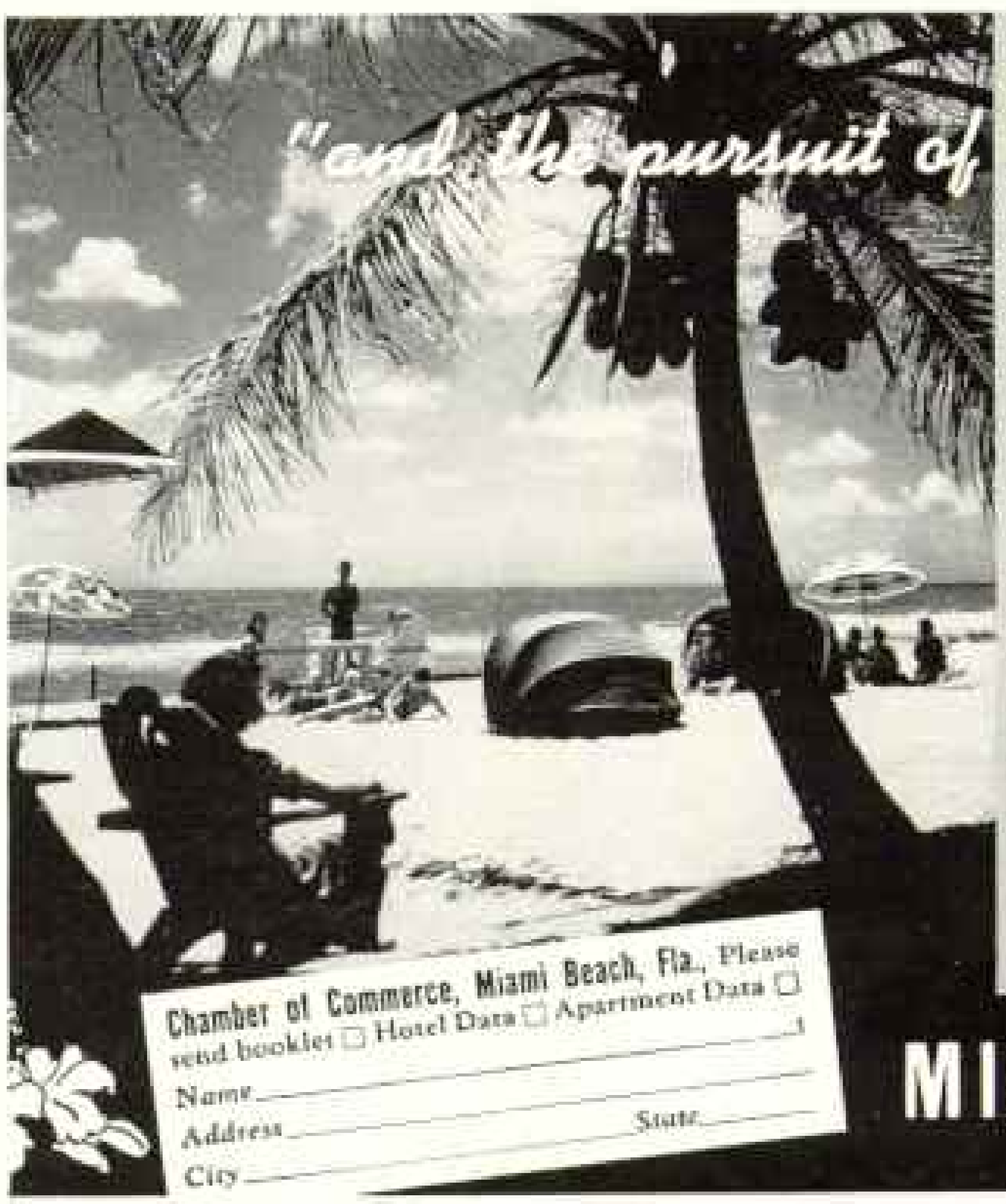
Until you've heard your own records played on the new Philco Photo-Electric Radio-Phonograph, you've really missed much of the enjoyment they can give you. Only Philco offers "Music on a Beam of Light" . . . Stroboscope Pitch and Tempo Control . . . Tilt-Front Cabinet! And in radio, Philco's 1942 inventions bring you glorious reception—plus Frequency Modulation *at new low cost.* Home Recording optional.

PHILCO 1012, Illustrated. Easy Terms.

PHILCO

See the 1942 Philco Phonographs and Radios at your Philco Dealer . . . from $9.95 to $525.

Prices slightly higher Denver and West; subject to change without notice.



HAPPINESS-"

● The big smile, coat of tan and Ready-for-Anything feeling that go with a Miami Beach vacation are worth more than ever this year... now that everyone has a bigger job to do. Happiness awaits pursuit in this golden, sun-washed city. Here's utter relaxation, America's biggest dish of seaside resort pleasures, within commuting distance of most of the U. S.

● Clip the coupon for new booklet in full colors, let it lure you down for your share of life, liberty and downright joy in the world's winter resort capital.

Chamber of Commerce, Miami Beach, Fla., Please send booklet ☐ Hotel Data ☐ Apartment Data ☐

Name _____

Address _____ State _____

City _____

MIAMI BEACH

Mr. Me goes to town

I HAVE a wholesale grocery business out in the Middle West. About twice a year I have occasion to go to Chicago, and talk things over with some people I deal with.

I suppose I *might* go to Chicago the cheapest way I can.

But I don't do it. I always go Pullman. I pay a little higher railroad fare, and it costs me $2.90 for a lower berth. And I figure it's money well spent.

In the first place it bucks me up. I just plain feel more important when I ride on a Pullman. Another thing. While I'm no scared-cat, I *do* like feeling safe, and knowing I'll get to where I'm going and not somewheres else.

And traveling in a Pullman is like staying in a fine hotel. Take the washroom. Everything in it is spotless and well arranged. They dish out spanking clean towels by the dozens. The hot water is hot, not tepid, and the soap lathers up the way soap should.

Your berth, if you've never ridden a Pullman before, will bowl you over. The bed is a big bed, more than 6 feet long and plenty wide. There are reading lights, and a shelf for your books or magazines. There are hangers for your clothes, and a net hammock for socks, handkerchiefs, underwear and so on. When I get in the berth, I feel plenty cozy. And do I sleep! Mmm, like a log.

And, as if all this wasn't enough, there's the porter. He takes care of me as though I was the only fellow on the car. Gets me up exactly when I ask him to in the morning. Brings me a drink of water if I'm thirsty at night. Beats me to the draw with an extra blanket if it's cold. And in the morning, he has my shoes shined and my clothes brushed, so that I feel pretty good about the way I look.

Also, when somebody asks me how I came down, and I say "Pullman," I get a quiet kick out of it. May be a little small of me, but I think most folks feel that way.

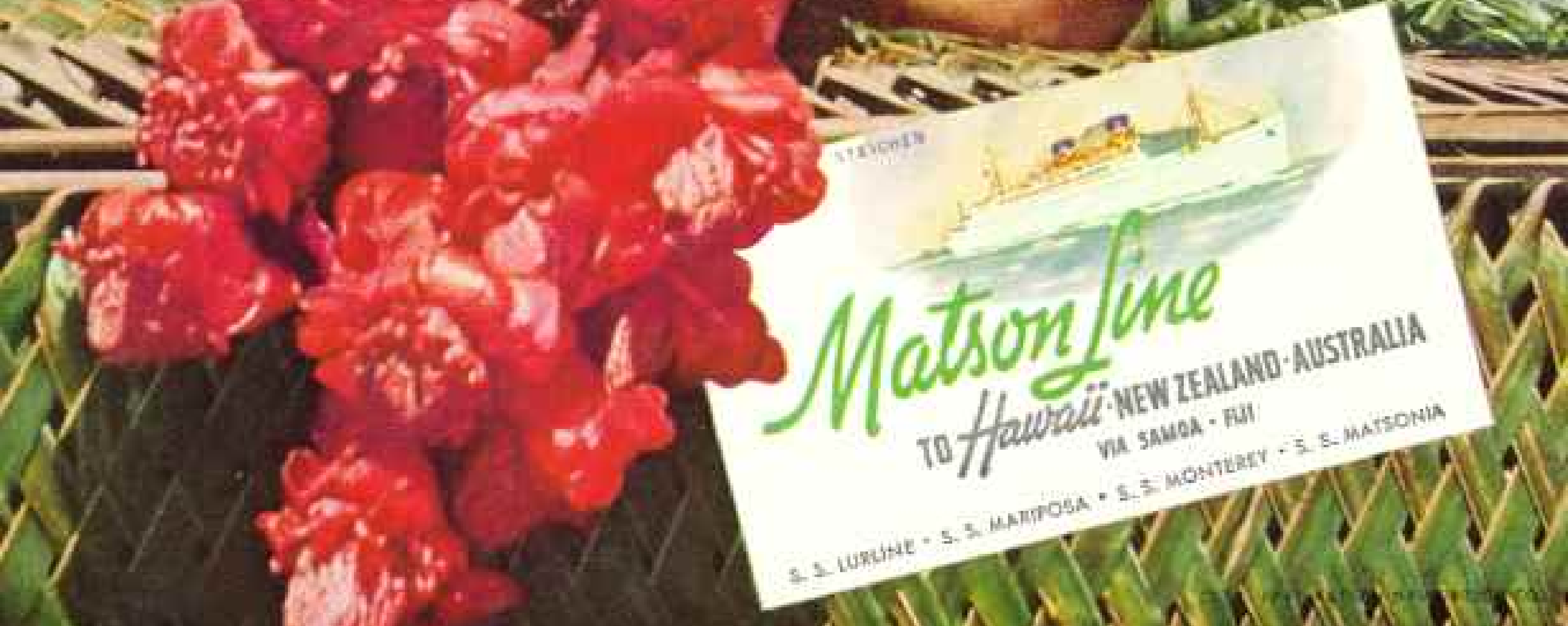
☆ For comfort—Go Pullman ☆

Hawaii

Standing two thousand miles out, in the gentle latitudes of the South Pacific, HAWAII is firmly woven into the fabric of the nation, by MATSON ships.

In an atmosphere which Hawaii herself has created, MATSON ships make of this famous four-and-one-half-day sea voyage an inspired experience.

Your Travel Agent or MATSON LINE *offices will gladly give you illustrated literature about* HAWAII *and the* SOUTH SEAS.



YOUR SCREEN has the "final say" ON PICTURE QUALITY

Your Camera takes the picture. Your Projector projects it. But it is your screen that has the "final say" about how brilliant, clear and enjoyable your pictures will be. For perfect projection, choose a Da-Lite Glass-Beaded Screen! It reflects maximum light for all practical viewing angles (especially important in showing color film.) Ask your dealer for Da-Lite Screens—famous for quality for 32 years. He has them in many styles. Write for literature!

DA-LITE SCREEN COMPANY, Inc.
Dept. 111G, 2723 No. Crawford Ave., Chicago, Ill.

THE DA-LITE CHALLENGER
can be set up anywhere, yet folds compactly for easy carrying. The only screen with all these features: light weight "all-in-one" construction, single-operation adjustment of height, square tubing in tripod and extension support.

Look for the name DA-LITE (Reg. U. S. Pat. Off.) *when you buy!*

Debussy's mystic, other-worldly strains come to you in all their richness . . . on a Scott!

Of all the great composers, Debussy is one of the most difficult to hear faithfully reproduced by record or radio. His soft passages often go below the range of the average radio, or his deftly pointed score may lose its brilliance by reproduction that is tonally dull. If you enjoy Debussy—or any of the musical great—hear his work in a "living performance" on a Scott.

At last here is a radio so true in tone and timbre that leading conductors and opera stars review their own records by it. The Scott is not just another radio. It is a great musical experience. Whatever your taste in music, this incredible instrument will bring you fuller enjoyment than you have ever known!

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• The Scott is made to a custom basis, largely by hand, set in the cabinet of your choice. Sold only by the Scott Organization—never in retail stores. Send the coupon now.

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Are Easy to Take WITH A REVERE

The fine lens and precision-built mechanism of the Revere 8 mm. Camera take brilliant color movies. Automatic film-loop sprocket, Eastman-licensed spool and spindle, and many other features. See at your dealer's!

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Have your dealer demonstrate the remarkable features of Revere Projector.
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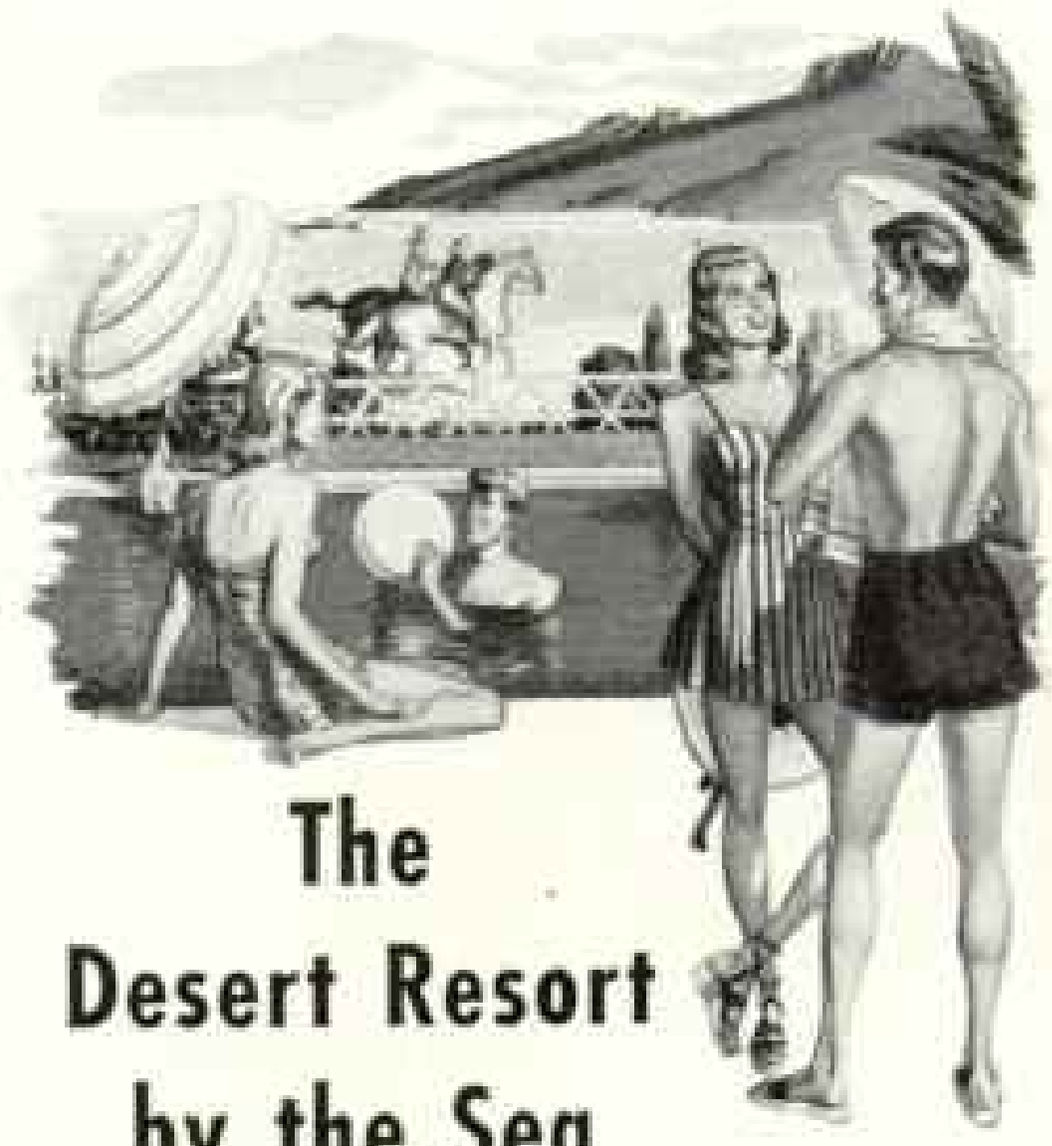
Deep, rich tones of the Great Outdoors . . . Interwoven Socks for Fall Town Wear . . . Fine Materials . . . Stylish Appearance . . . Every Size Knit to Fit . . . They Wear Longer.

Photo Courtesy U. S. Dept. of Interior National Park Service

New Interwoven *CABLE CORD COTTON WITH DUPONT *NYLON TOE TIP MARVELOUS *WEAR-RESISTERS

Interwoven

THE LARGEST MANUFACTURER OF MEN'S SOCKS IN THE WORLD



The Desert Resort by the Sea

GUAYMAS, MEXICO

OPENS DECEMBER 1

Southern Pacific's Hotel Playa de Cortés, near Guaymas, Mexico, the desert resort by the sea, opens December 1 for another brilliant winter season.

If you like to fish, you can go out any day in one of the Hotel's modern cruisers and catch more fish than you ever dreamed of. There's a big tiled swimming pool in a sunny patio. There are tennis courts and badminton courts. And there are saddle horses with guides to take you for interesting rides over the desert, along the seashore and through the mountains.

If you like to just sit in the sun and loaf, Hotel Playa de Cortés is the best place we know of to do it. The warm sunshine and leisurely tempo of Mexico make you relax in spite of yourself.

Streamlined "Arizona Limited"

Starting December 15, the streamlined *Arizona Limited* will run every other day from Chicago to Tucson and Phoenix in the Southern Arizona resort and guest ranch country. From Tucson, a Pullman takes you to Guaymas. There's fine daily service to Tucson on Southern Pacific's *Golden State Limited* and *Californian* (Chicago-Los Angeles), *Sunset Limited* and *Argonaut* (New Orleans-Los Angeles).

S·P The Friendly Southern Pacific

Mail This Coupon

O. P. Bartlett, Dept. NT-11, 310 So. Michigan Ave., Chicago, Illinois. Please send me folder describing Hotel Playa de Cortés.

*My Name*_____

*Address*_____

*City*_____ *State*_____

He's going to get a new G-E

EXPOSURE METER

(to guide his camera)

Here's the prize Christmas gift his camera wants. The new G-E exposure meter makes it easy to get beautiful shots in movies or stills, or thrilling color. It helps you save on film, and bring back pictures you're proud to exhibit. One hand operates it, fast. Many other features. See it today at your photo dealer's and solve an important Christmas problem.

GIVE THE NEW G-E and give 3 METERS IN ONE

GENERAL ELECTRIC

warm • dry • sunny • Tucson

Gain new health..new energy in this land of LAZY days and TRANQUIL nights

Tucson is a climatic 'pick-up'. It does things to you... good things. And no wonder. It is the driest city in the desert sunshine country, without fog or dew. Magnificent scenic attractions, cosmopolitan facilities and accommodations to suit every purse.

Write today for free information

TUCSON *Sunshine* CLIMATE CLUB

4104 B Riata, TUCSON, Arizona

Please send me your free descriptive booklet

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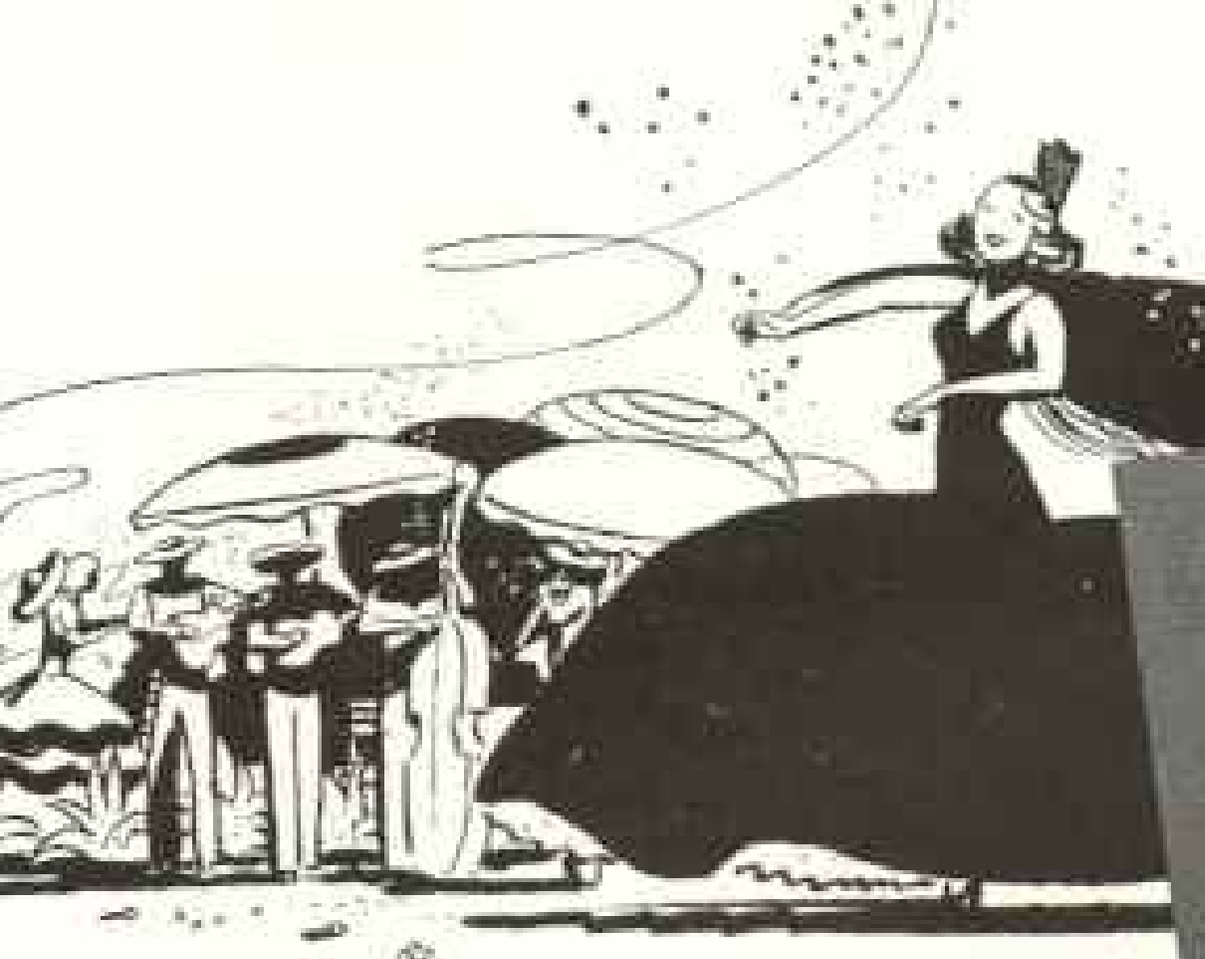


A PAGEANT OF FUN

THE TONIC YOU NEED!

Southern California

AND THE ALL-WINTER

SUN FESTIVAL

Worry, tense nerves, ragged tempers... more than ever, you and your family *need* release from the added pressure of today's problems. This winter, get *clear away* for a change. Let this all-winter pageant of sunshine and fun restore the energy and vitality these times demand.

300 sparkling events—rodeos, fiestas, regattas, parades, sports thrillers—a mammoth cavalcade of things to do and see—all added to the healthful sunshine, the ocean, desert and mountain grandeur of Southern California. It's the winter vacation you'll always remember.

Visit charming Old Missions, see glamorous Santa Catalina, the horse races, big trees, flowering desert resorts, the interesting industries of Los Angeles County ...oil, movies, oranges, national defense. And enjoy *in person* the gay night life along the boulevards...the famous eating places, the broadcasts, the previews!

Early "SUN FESTIVAL" Events

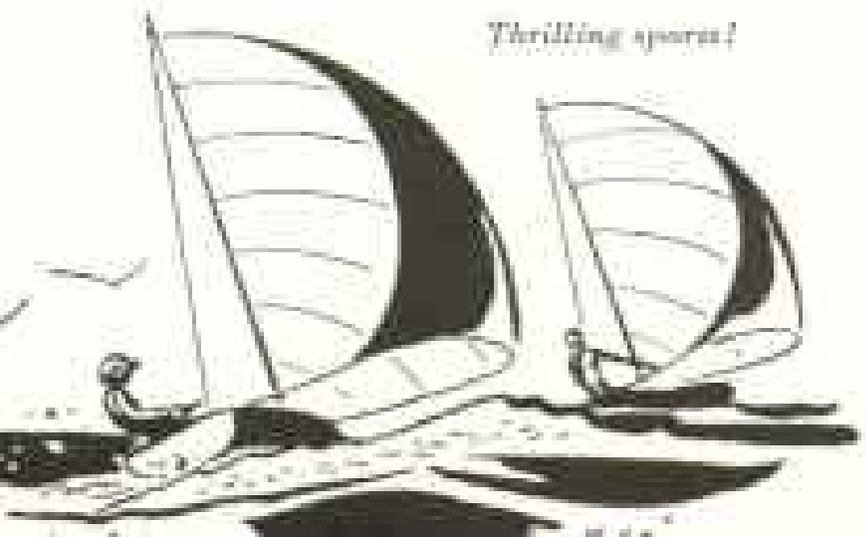
POLO—Tournament Matches During December • *FOOTBALL*—Rose Bowl, East vs. West, Jan. 1 • *CHRISTMAS*—Famed outdoor parades, lighting spectacles, concerts, celebrations • *YACHTING*—Christmas Regatta, Dec. 27-28 • *RACING*—Santa Anita Park, Dec. 31 to March 16 • *PARADE*—Tournament of Roses, Pasadena, Jan. 1 • *GOLF*—$10,000 Los Angeles Open, Jan. 9-12. Many other tourneys. *Write today for free folder.*

FASTER TRAVEL! Lower costs! Even from New York, Southern California and the "Sun Festival" are just overnight by plane, as little as two business days by fastest train, four to seven by auto or bus. Because Southern California is a *year 'round* playground, costs average 18.5% under those of 20 other leading U.S. resorts. Accommodations for every taste and budget in Los Angeles, Beverly Hills, Glendale, Pasadena, Pomona, Hollywood, Santa Monica, Long Beach, and other cities of Los Angeles County and its neighbors.

FREE! New Book Plans Your Trip!

New unique book, answers all your questions. Lavishly illustrated. Crammed with impartial facts available only through this non-profit community organization. Use this valuable coupon *now*, and get your free copy by return mail.

Thrilling sports!



When you arrive, see our famous Free Visitors' Bureau in downtown Los Angeles (505 West Sixth Street). Information, literature, 26 services—all free.

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Send me *free* book with complete details (including costs) of a Southern California vacation. Also send free routing by ☐ auto, ☐ rail, ☐ plane, ☐ bus. Also send free booklets about counties checked: ☐ Los Angeles, ☐ Orange, ☐ Riverside, ☐ Santa Barbara, ☐ San Diego, ☐ Ventura, ☐ Kern, ☐ San Bernardino, ☐ Sun Festival Events Folder.

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150 ENVELOPES TO MATCH } **$1.00**

The big "450" Package. All neatly printed with name and address in rich dark blue ink.

PACKED IN BEAUTIFUL PLASTIC GIFT BOX } **$1.75**

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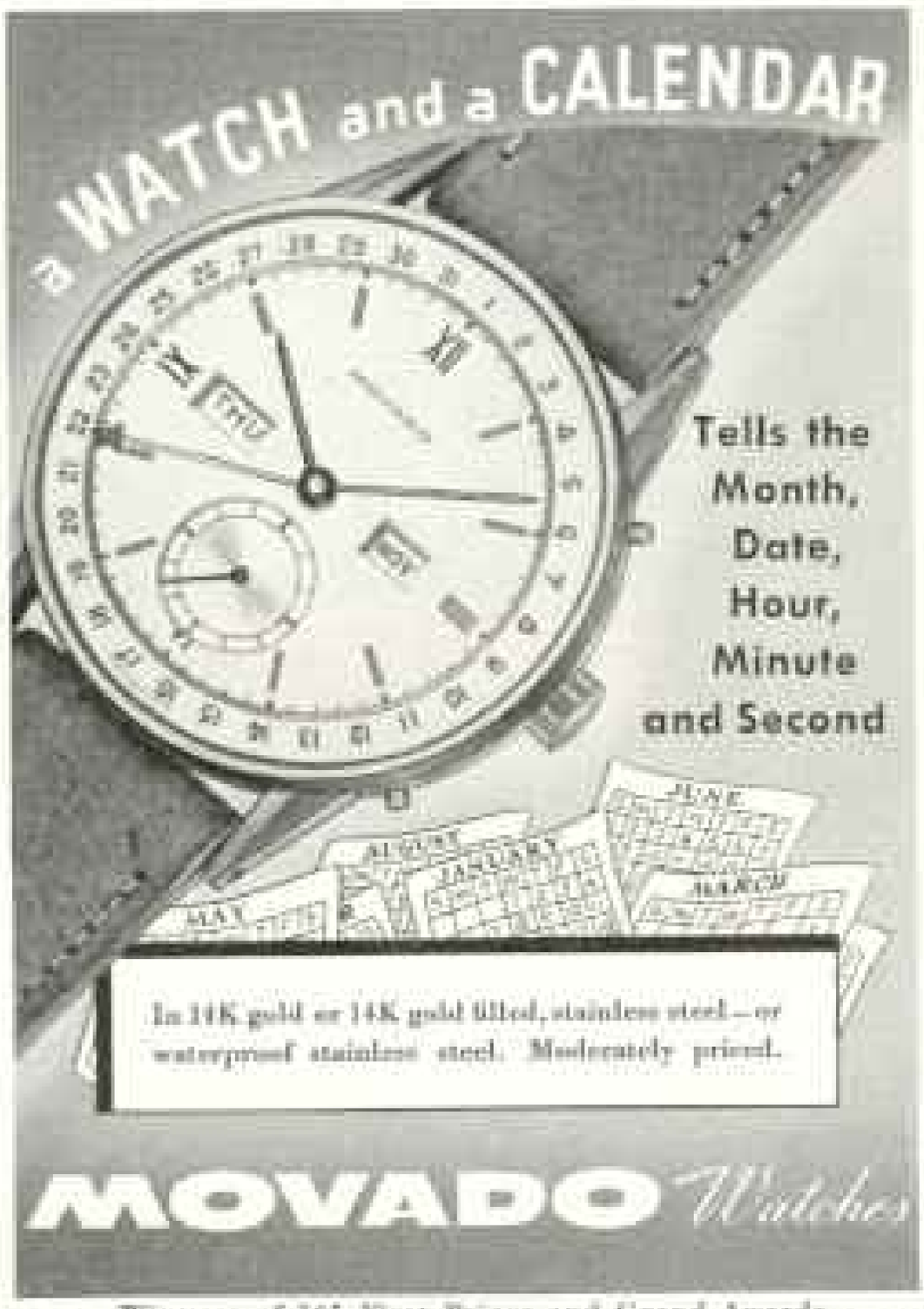

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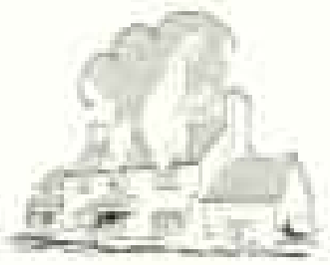
...and that promise *has been kept* ever since 1810



Through more than six generations, to millions of policyholders, the name "Hartford" on an insurance policy has meant a positive promise to pay losses.

Great disasters, conflagrations, wars and depressions during these 131 years have tested the Hartford and proven its willingness and ability to meet every obligation.

Hartford representatives give nation-wide service

Today the Two Hartfords write more than 60 different forms of fire and casualty insurance, as well as numerous fidelity and surety bonds, covering practically every risk that may bring financial loss to you or your business. To give you this prompt service, there are thousands of agents of the Two Hartfords throughout the 48 states, Hawaii and Canada.

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Why not have your local Hartford representative study *all* your risks and plan a program of real insurance protection? Such a survey costs you nothing.

Simply call Western Union or Canadian National Telegraphs and ask for the name and address of the nearest Hartford agent. Or talk with your own broker.

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Hartford Fire Insurance Company

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HARTFORD, CONNECTICUT

THE TWO HARTFORDS WRITE PRACTICALLY EVERY FORM OF INSURANCE EXCEPT LIFE

"Mention the Geographic—It identifies you."

New! Different! Christmas Gift Thrill!

AMERICA'S RAREST FRUIT

IMAGINE your friends opening this handsome box of huge, luscious Royal Riviera Pears on Christmas Day—tasting the marvelous flavor of America's rarest fruit! Yes, if you're the one person in a thousand who knows their matchless flavor, you realize why folks just can't get enough of them.

Yet these wonderful gifts that you can't buy anywhere else cost less to give than many ordinary gifts. We ship direct from the trees that bore these beauties, to you, your friends and associates.

The No. 1 Gift Box (illustrated), containing 10 to 14 pears, depending on size, is only $1.98 express prepaid anywhere in U. S. A. proper. No. 2 Gift Box (18 to 24 pears), $2.98. All handsomely wrapped, including gift card with your name or your own card if enclosed with order.

We guarantee you'll be delighted, or your money will be refunded.

HEAPING BASKETS OF CHRISTMAS JOY

Gorgeous gift baskets overflowing with Royal Riviera Pears, other rare fruits, unusual nuts, candies, rare fruit preserves. Four sizes: No. A, Deluxe Gift Basket illustrated, about 18 lbs., $6.98; No. B, 28 lbs., $9.98; No. C, 40 lbs., $14.98; No. D, Deluxe Basket Tray, 10 lbs., $4.48; express prepaid anywhere in U. S. A. proper. Send your list with check or money order today to

Harry and David

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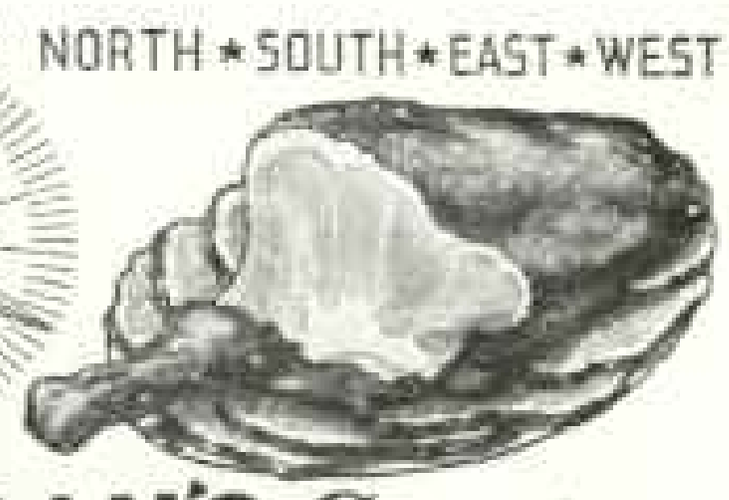
NORTH * SOUTH * EAST * WEST



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No matter where you live you can enjoy this delicious treat from Old Virginia. Jordan's Genuine Virginia Hams are slowly cured, aged and smoked over pungent hickory fires, then oven-baked with wine, according to a treasured recipe of the Old South. Ready to serve when received.

DIRECT TO YOUR TABLE FROM JORDAN'S FAMOUS OLD VIRGINIA SMOKEHOUSE

Average Weight 6 to 10 pounds—Price 90¢ a pound

FREE If you enclose check with order we will send with each ham a FREE sample of genuine Jordan's Virginia Sherry

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Jordan's Old Virginia Smokehouse
P.O. Box 224, Richmond, Va.

Please send me prepaid Jordan's Virginia Ham. Size about _____ lbs.

Enclosed check for $ _____ Send C. O. D.

Name _____

Address _____ State _____

Transportation charges prepaid east of Rocky Mountains. For shipments west of Rockies add 50c per pound.

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MAKE YOUR OWN METAL GARDEN MARKERS

ROOVERS Label Embosser is the first practical lifetime device for making indestructible metal labels for all plants, shrubs, trees, etc. Tells instantly what is growing where. Great fun to spell out the label and EMBOSS it, with easy pressure, in beautiful raised letters on ribbon of spray-and-acid-proof Monel Metal. Any desired wording or length. Great for marking equipment, tools, etc. Not a "gadget," but a real indispensable tool to put your garden on parade. Complete with instructive circular, $1. Money-back guarantee.

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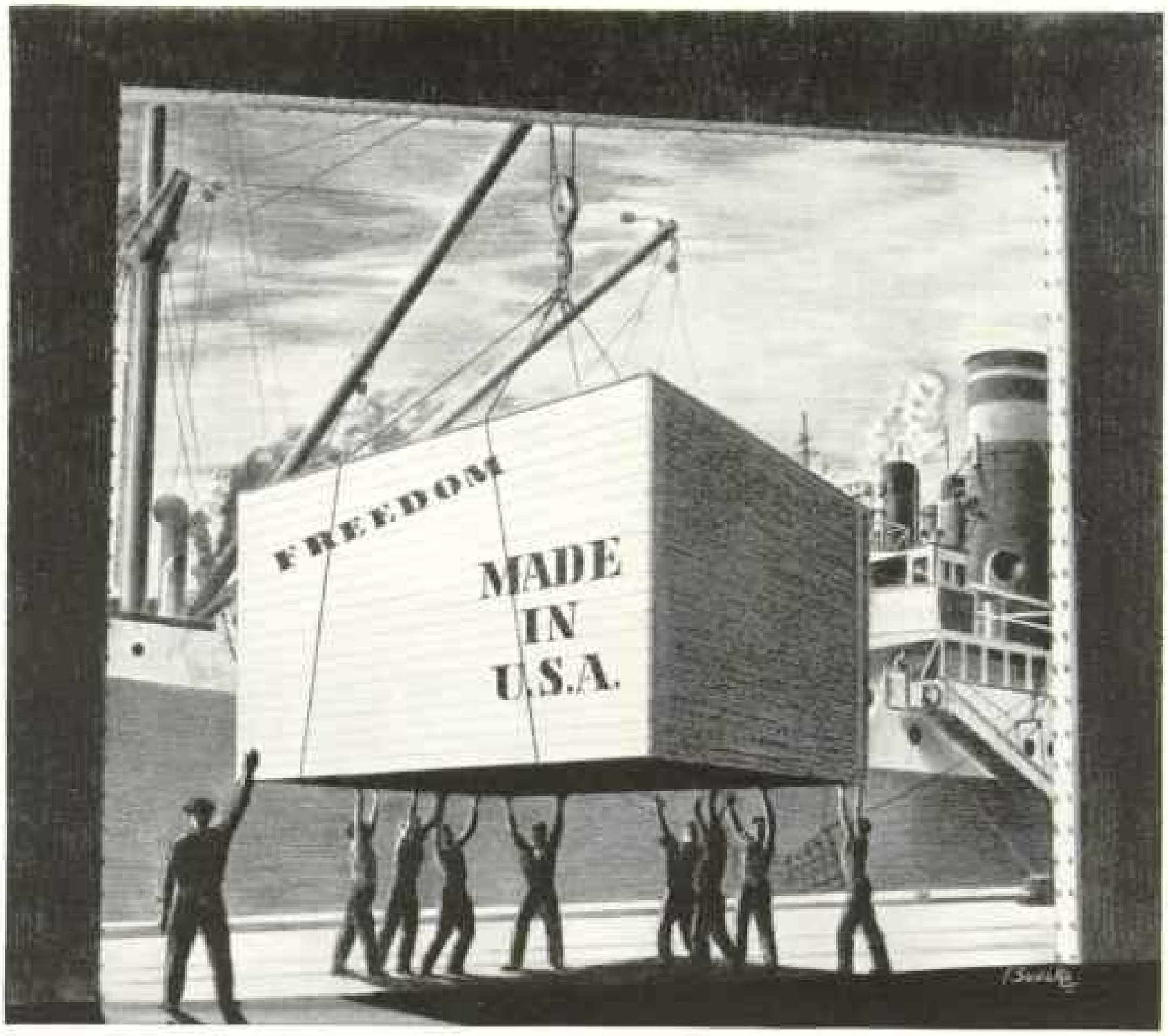
Emkay Candles

Create Your Own Decorative Effects

More than 200 Emkay candle designs, styles and sizes are ready to help you create beautiful and unique table and room decorations for your fall entertaining.

Send for complete free catalog

EMKAY CANDLES, Dept. N, Syracuse, N.Y.

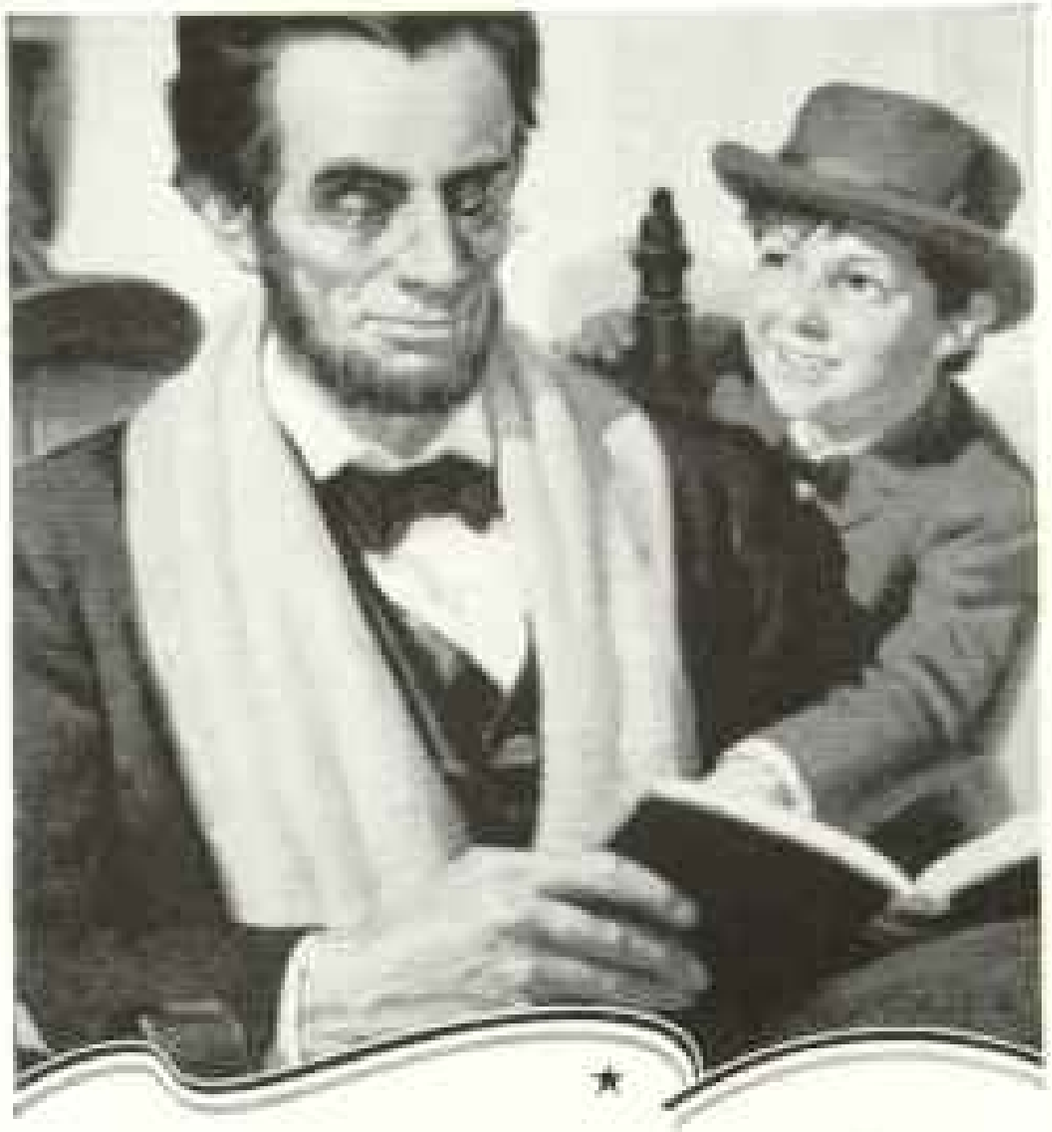


ON THE WHARVES of Liverpool and Singapore, in a freighter's hold halfway across the Atlantic, in a truck on the Burma Road, you will find them—three words stencilled on a thousand boxes and bales: "Made in U.S.A."

Yesterday, three big words to look for. But today they stand for more than the unequalled engineering and production that have made them familiar on every dock and pier in the world. They stand for the productive strength of a free people—a productive strength that cannot be matched; they stand for a determination to "deliver the goods"—a determination that will not be thwarted. And in the ports of the world's embattled democracies, where men are hourly risking their lives to take delivery, they stand for *freedom* itself!

To keep this great flood of goods moving is the most important job in the world today. Wherever it moves, General Electric helps to provide motors and propulsion equipment to keep it moving. In trains hauling ore to America's factories; in factories building guns and tanks and planes; in ships carrying oil to Britain and food to China; in destroyers and cruisers and battleships patrolling two oceans—the words "General Electric" stand beside "Made in U.S.A." *General Electric Company, Schenectady, New York, U.S.A.*

GENERAL ELECTRIC



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AT LOW COST!

THE four-fold purpose of the Lincoln Life Family Income Plan is: (1) To provide immediate cash and a continuing income to your family in event of your death; (2) guarantee schooling for your children; (3) provide income for your wife after children are grown; (4) pay you a retirement income after age 65. Best of all, your annual payment *decreases* in the later years of the policy. Find out how you can, at low cost, have this basic life insurance program for your family and yourself. For full details, mail coupon today.

More Than A Billion Dollars of Insurance In Force

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ITS NAME INDICATES ITS CHARACTER

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THE LINCOLN NATIONAL LIFE INSURANCE COMPANY
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Please send full details about your Family Income Plan.

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SEE IT 3 TIMES AS LARGE

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ELECTRIC READER

This new invention permits you to see clearly and distinctly without straining your eyes. It gives *exact* magnification in whatever manner desired. Unlike the ordinary reading glass, it produces sharp, *illuminated* images in the *entire* field of vision. As a supplement to reading glasses, it is a boon to all with poor eyesight. Ideal for scientists, draftsmen, research workers, doctors, stamp collectors, etc. Guaranteed to satisfy.

Two models available: Battery Model, $6.50 and Outlet Model (AC or DC) $9.50, postpaid anywhere in U. S. A.
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E. W. PIKE & CO., ELIZABETH, N. J., DEPT. NI

DON'T PULL HAIR FROM NOSE

May Cause Fatal Infection

Use **KLIPETTE** *New Invention*

You can cause serious infection as a result of pulling hair from nose. Use of scissors is also dangerous and impractical. No better way to remove hair from nose and ears than with KLIPETTE. Smooth, gentle, safe and efficient. Rounded points can't cut or prick the skin.

Guaranteed to Satisfy or Money Back

So Simple!
Just turn end. Surplus hair comes out easily, gently.

$1. Made from finest surgical steel. Chromium plated.

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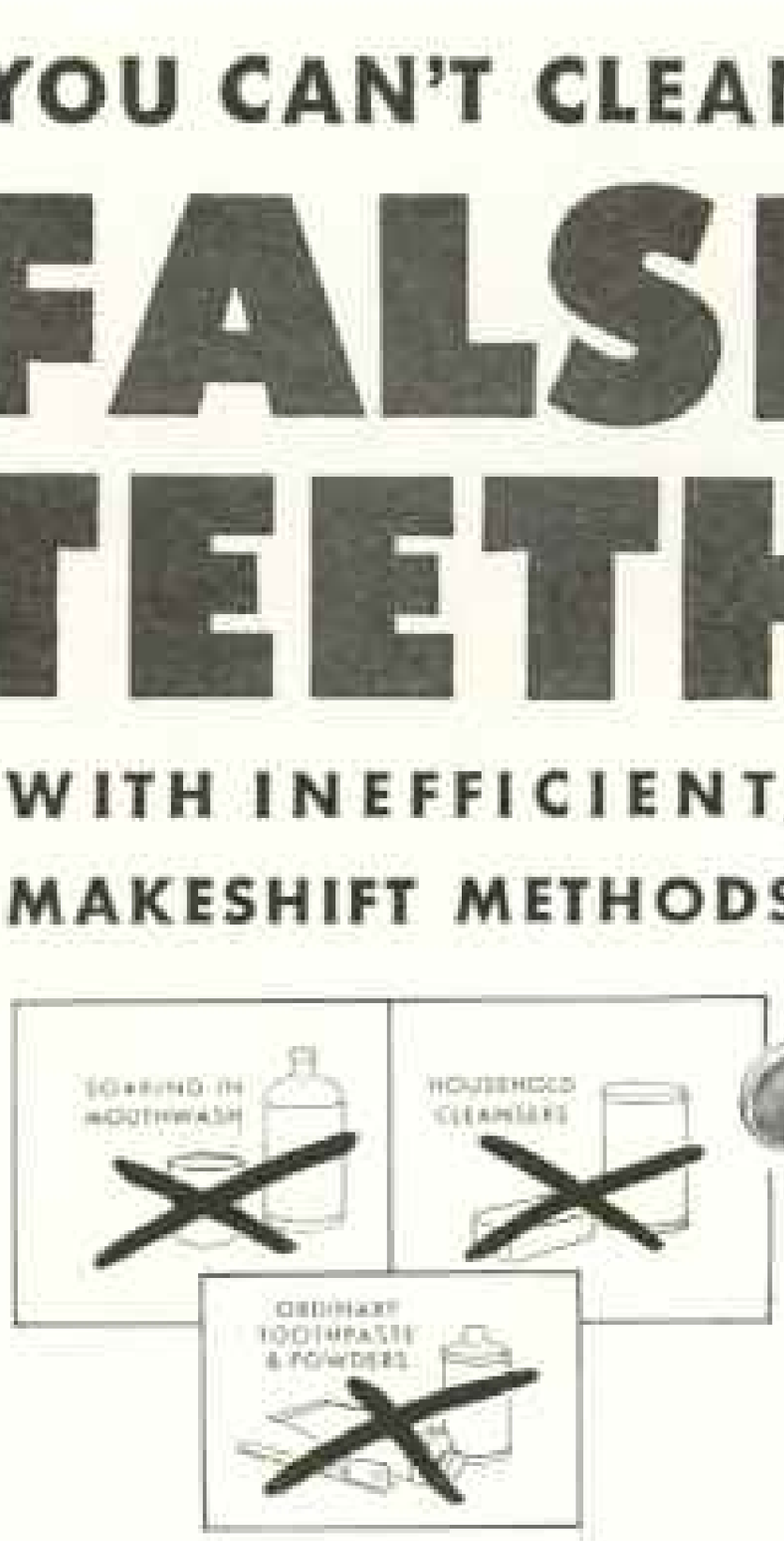
YOU CAN'T CLEAN FALSE TEETH

WITH INEFFICIENT, MAKESHIFT METHODS



Dentists say PLAY SAFE—USE POLIDENT
Cleans Without Brushing, Soaks Away Film, Stains

IN the tiny crevices of plates and bridges, food debris collects and decays. A tough, *almost invisible* film absorbs germs and impurities . . . gives teeth a dingy, more noticeably artificial look.

CLEANSERS THAT DO NOT CLEAN!

It is a fact that mouth washes and ordinary pastes or powders *are not designed* to clean and purify false teeth. Household cleansers can ruin your plate. Even a brush cannot reach the danger-spots.

That's why so many leading dentists recommend POLIDENT . . . the revolutionary cleanser that purifies every tiny crevice, *dissolves away* all film, stain, tarnish and odor *without brushing, acid or danger!*

GRATEFUL USERS PRAISE IT

POLIDENT actually *polishes* plates and bridges. They look clean, attractive—as natural looking as the day you got them. Gums look more "alive", too, and plates feel better in your mouth.

Tens of thousands call POLIDENT a blessing. A long-lasting can costs only 30¢ at all drug stores. Try POLIDENT today—your money returned if you are not delighted.

Hudson Products, Inc., 220 W. 19th St., New York

POLIDENT

Cleans and Purifies—NO BRUSHING!

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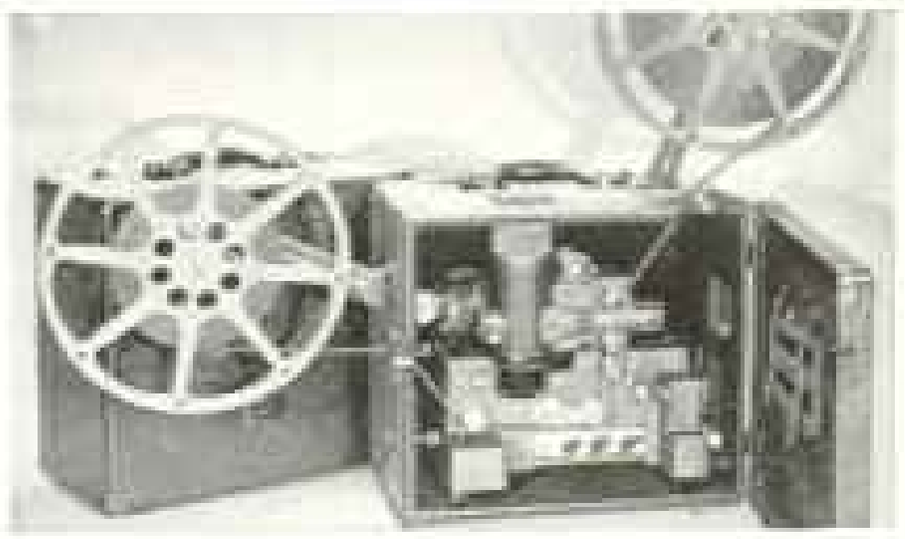
Filmo 8mm. Projectors show superb pictures, give film complete protection. Fully gear-driven—no chains or belts. Super illumination. Choose between 200' and 400' film capacity.

Filmo Master 16mm. Projector. Fully gear-driven. Super illumination and picture snap, plus true B&H perfection. Yet the price is low.



Filmosound "Academy," for showing Hollywood *sound* films at home. Thousands of the finest professional talkies are available from B&H Filmosound Library at moderate rentals. B&H also stocks all the popular Castle films, sound and silent. Bell & Howell Company, Chicago; New York; Hollywood; Washington, D. C.; London. *Established 1907.*

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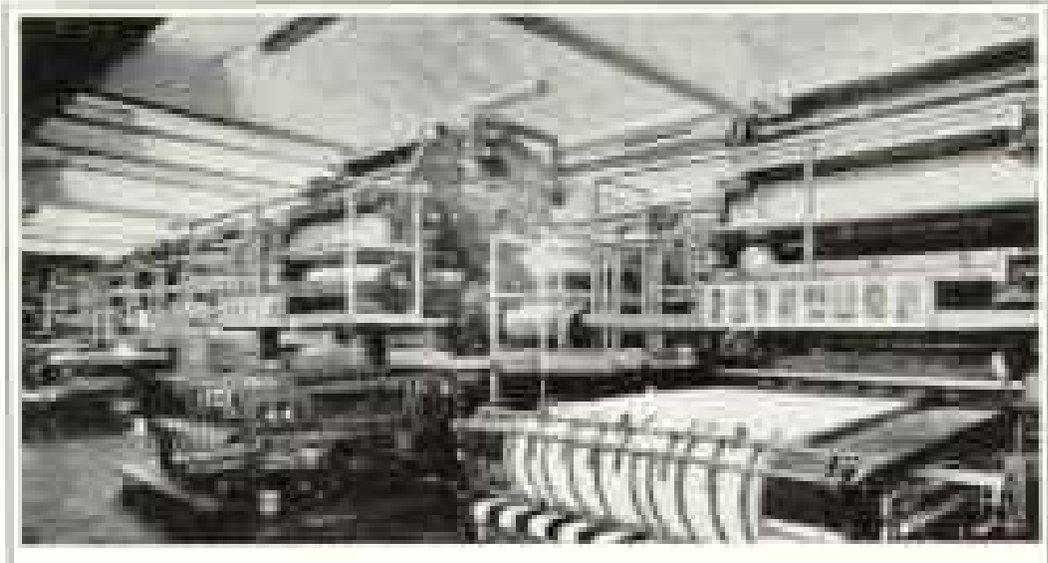

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When you discover that a mole, wart, scar, skin growth, or blemish is beginning to change in *color* or *size* or *texture*, or to become painful—that *may* mean the start of skin cancer. Open wounds which stubbornly refuse to heal may develop into skin cancer.

Skin cancers are the easiest of all to detect and cure. Most of them, promptly and properly treated, can be cured without causing disfigurement.

Some Dangers To Beware Of

Growths constantly exposed to irritation frequently become cancerous. Amateur razor-blade surgery or medicine-cabinet doctoring of moles and warts often is followed by the development of true cancer.

Cleanliness is especially important in the prevention of mouth cancer. Bad teeth should be cared for or removed. Jagged edges of teeth should be smoothed. Dental plates and bridges should fit comfortably. Some persons have a mouth condition known as leukoplakia—"white spot disease"—which, if untreated, may develop later into cancer. In these cases particularly, the excessive use of tobacco and sharp condiments should be avoided.

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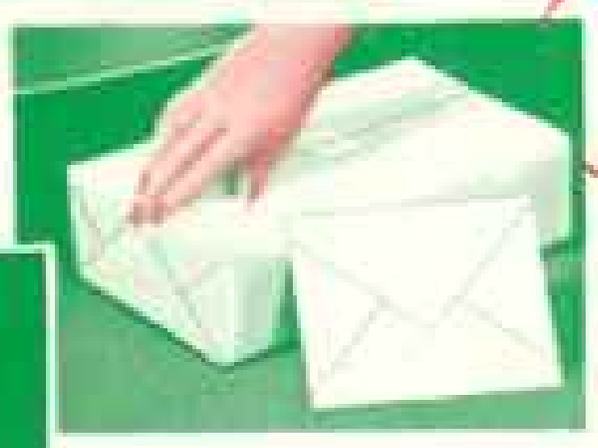

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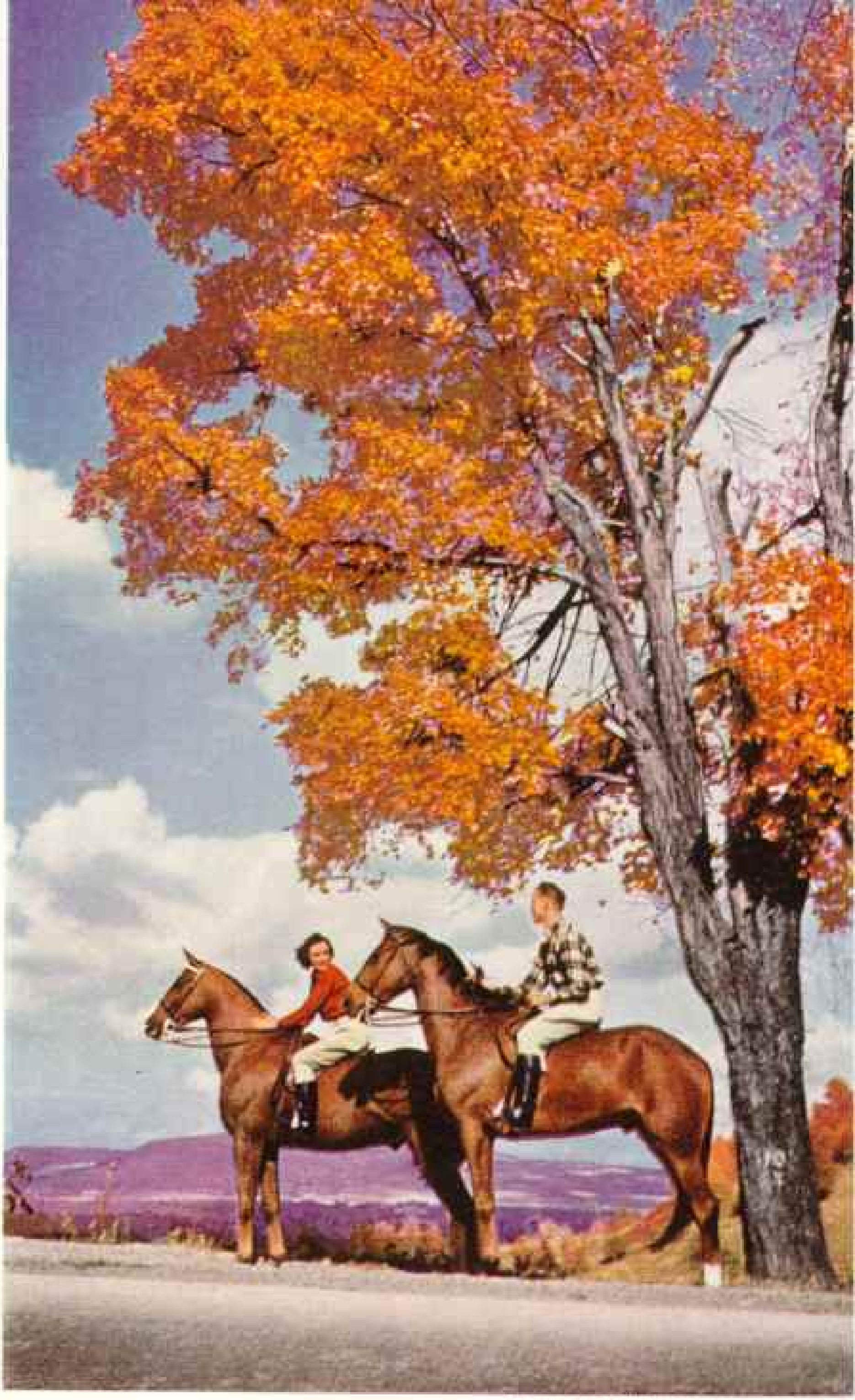

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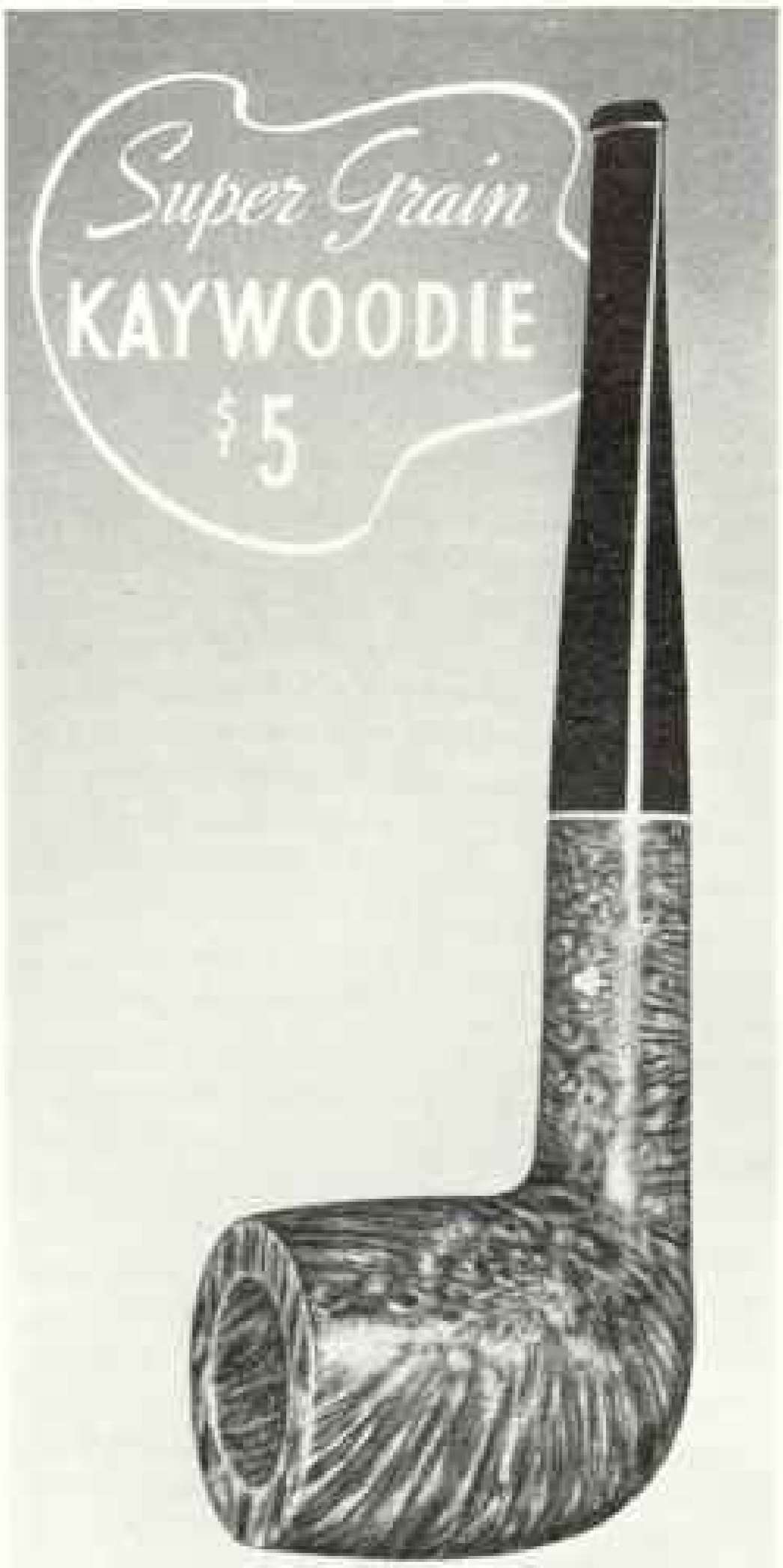

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