

VOLUME LXXXVI

NUMBER SIX

# THE NATIONAL GEOGRAPHIC MAGAZINE

DECEMBER, 1944

First Detailed Modern Map with English Names  
of Union of Soviet Socialist Republics

New Road to Asia

With 15 Illustrations  
26 Natural Color Photographs

OWEN LATTIMORE

Michigan Fights

With 20 Illustrations and Map

HARVEY KLEMMER

Great Lakes and Great Industries

19 Natural Color Photographs

The Society's New Map of Soviet Russia

The Geography of the Jordan

With 23 Illustrations and Map

NELSON GLUECK

Red Cross Girl Overseas

With 22 Illustrations

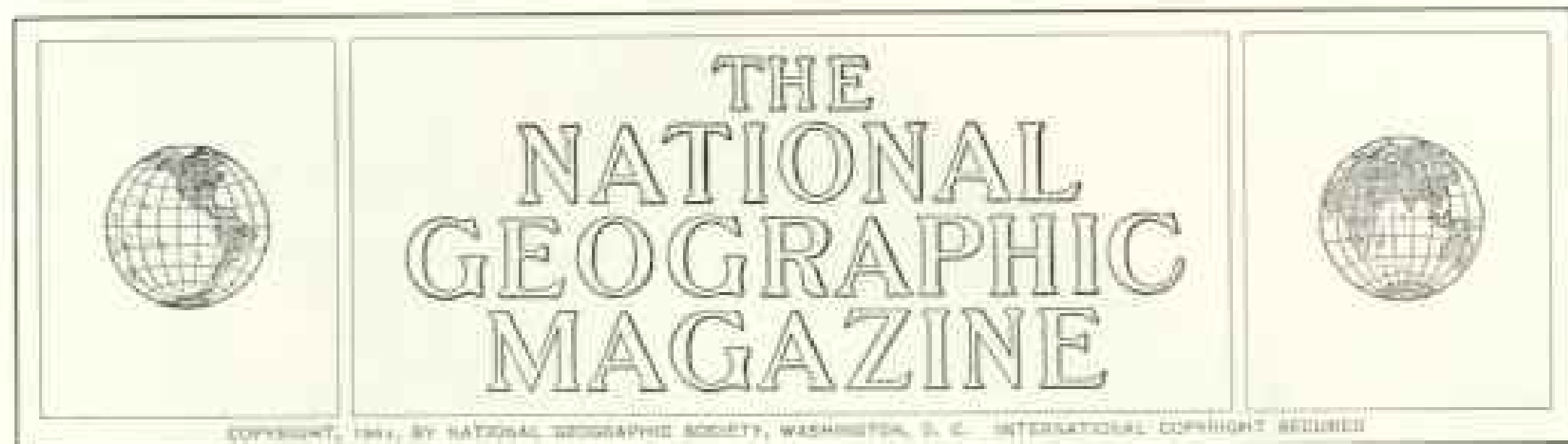
MARGARET COTTER

Thirty-two Pages of Illustrations in Color

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

\$4.00 A YEAR

50c THE COPY



## New Road to Asia

BY OWEN LATTIMORE

*With Illustrations from Photographs by the Author*

**O**UT of this war has grown a new road to Asia—a sky road which will give to Americans who travel after the war a new approach to Asia and a new picture of what Asia is like.

This new road is the Alaska-Siberia route. Its bases and the necessary knowledge of weather and experience with flying conditions have been developed with unprecedented speed by the need for a fast, safe route over which planes could be ferried from American factories to Soviet fighting fronts.

As a result of these developments Alaska has moved up to a new position and a new importance in the American scheme of things. Alaskan flying fields for land-based aircraft will very likely challenge in importance the romantic Treasure Island Clipper base at San Francisco's Golden Gate.\*

The rivalry will not be one of parallel competing routes, but of altogether different approaches to the far mainland of Asia, each with its own advantages for American enterprise and America's now vast and diversified resources in planes, flying personnel, and flying know-how.

### "North for Safety"

The first principle of the Alaska-Siberia route is north for safety. The Aleutian Island steppingstones to Asia look more attractive on the map than they do to the pilots and navigators on whom has fallen the grim responsibility of combat flying in Aleutian fog and rain.† They know that the Aleutians lie in one of the most treacherous temperature belts in the world, where the air is full of moisture suspended at a temperature just cool

enough so that the rush of a plane's wings will make it condense as ice.

Farther to the north it is cold enough so that on more days in the year the moisture in the air condenses and falls, leaving a safe path for aircraft. Therefore, the new route will avoid islands and head straight from Alaska to Seimchan or Yakutsk on the mainland of Asia.

Yakutsk, occupying in the Soviet Subarctic much the same relative position that Fairbanks occupies in Alaska, is the vantage point from which to look at the mainland air approach to Asia.

From Fairbanks the main flight lanes lead not to our Pacific coast, but straight to the heart of North America, east of the Canadian Rockies, across the Peace River country and the wheatlands of Alberta and Saskatchewan, and down to such points as Minneapolis, Omaha, and Chicago.

From Yakutsk the flight lanes also run "downhill"—across Outer Mongolia to the heart of China; through Soviet Central Asia and thence either to Calcutta on the eastern side of India or Bombay on the western side,

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Strategic Alaska Looks Ahead," by Ernest H. Gruening, September, 1942; "Our Air Frontier in Alaska," by Maj. Gen. H. H. Arnold, October, 1940; "First Alaskan Air Expedition," by Capt. St. Clair Streett, May, 1927; "Today on the Yukon Trail of 1898," by Amos Burg, July, 1930.

† See Map Supplement, "Union of Soviet Socialist Republics," with this issue of the NATIONAL GEOGRAPHIC MAGAZINE. Also: "Navy Artist Paints the Aleutians," by Lt. William F. Draper, August, 1943; "Bizarre Battleground—the Lonely Aleutians," by Lonelle Davison, September, 1947; and "Riddle of the Aleutians," by Isobel Wylie Hutchison, December, 1942.



### A Sluice-built Mountain Is a Gravel Monument to the Far North's Husky Placer Miners

They have to be strong to withstand winter's rigors. For water to wash pay dirt, they must await spring's thaw. These men had volunteered for war, only to be ordered to stay at work because of Russia's need for gold. They eagerly greeted the American visitors as allies (page 637).

and farther west to Iran, Turkey, and even Cairo.

Since the northern route to Asia crosses less water and more land, travelers of the future, buying their tickets in New York, may well argue the merits of flying to Moscow via Europe or via Asia.

#### Nearest Siberia Is Least Known

For a quarter of a century the Soviet Union has been little enough known to the average American. Paradoxically, it is the Soviet territory nearest to us which is the least known of all. The Soviet Arctic, northeast Siberia, and what Russians call "the Far East"—the Amur territory and the coastal strip leading to Vladivostok—are less well known to us today than they were seventy years ago.

The harbors of Kamchatka and the Sea of Okhotsk were once familiar to American whalers and sealers. The Western Union, in the vigor of its youth, tried to beat the laying of the Atlantic cable by pioneering a Russo-American telegraph line across Bering Strait and through Siberia to Europe.

This romantic and now-forgotten story is typical of American pioneering; it failed, but out of the failure grew the first telegraph line

connecting our Northwest with California and hence with the East. A by-product of that enterprise was one of the classics of American travel, *Tent Life in Siberia*, by George Kennan, who took part in the search for a Russo-American telegraph route.\*

Today that route is opening up again to Americans—by air. A few months ago I was lucky enough to fly down the band of Soviet Asiatic territory from Bering Strait all the way to Tashkent, as a member of the party which accompanied Vice President Wallace on his mission to Chungking.

The journey was precedent-breaking and precedent-making in many ways. Never before had an American of such high rank visited Soviet territory. The journey followed a route destined to be a focus of interest to us after the war, when the new structure of Asia, whatever it may be, settles into place.

The story properly begins with the crew, as outstanding representatives of America's young flying generation. All but two of them had been in the crew which flew the late Wendell Willkie around the world; several had

\* See "Island in the Sea of History: The Highlands of Daghestan," by George Kennan, NATIONAL GEOGRAPHIC MAGAZINE, October, 1913.



#### Nazi Armor, Moved 4,000 Miles from the Front to Komsomolsk, Awaits the Furnace

German invasion cut down shipments of iron to the "City of Youth"; so broken armament from the battle lines was made into plates for use in Far East shipyards (page 648).

accompanied Secretary of State Hull to Moscow in 1943; and as a group they had piled up a staggering total of flying hours and flying miles all over the world during the war. They were fine representatives of the Air Transport Command, which has built up such amazing air communications during the war.\*

#### Science in Siberia

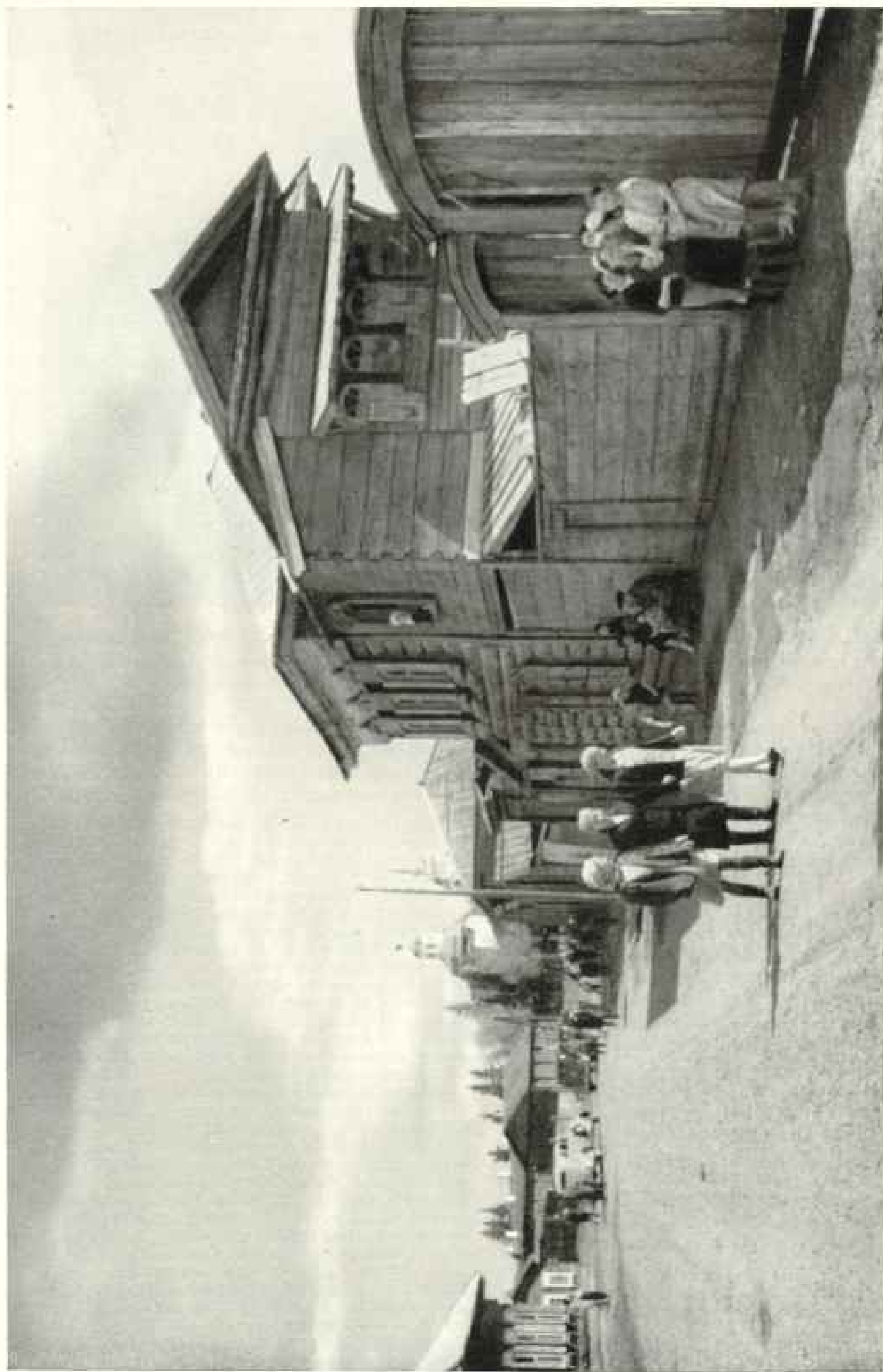
Of the civilian personnel, John N. Hazard, who did the most important interpreting in Russian, was especially well equipped because of his experience in the Soviet Lend-Lease section of the Foreign Economic Administration. I represented the Office of War Information and did the interpreting in Mongol and part of the interpreting in Chinese. John Carter Vincent, Chief of the Division of Chinese Affairs of the Department of State, was the Vice President's political and diplomatic aide.

Over and above his political rank as the representative of the President, the Vice President had several unusual qualifications for such a journey. He has studied Russian and was able to read his public speeches in Russian. Above all, he is a scientist of world rank. We soon found how important this was. In Siberia the scientific tradition and the pioneer tradition are closely intertwined.

We think of science and culture as amenities of life which catch up rather slowly with a young pioneer community after the wilderness has been tamed. In Siberia it is different.

\* Sgt. Roderick W. Robitaille, of Maine, is of French-Canadian descent. He has flown the China-Burma-India Hump and all over the world. Technical Sgt. Richard J. Barrett, radio operator, a quiet genius at his work, had accompanied Colonel Kight, our pilot, on almost all his major missions. Technical Sgt. Victor P. Minkoff, assistant engineer, was born in Philadelphia. The Russian which he learned in childhood from his parents made him a valuable interpreter between our flying personnel and the Soviet personnel. Master Sgt. James M. Cooper, chief engineer, born in Scotland, has probably the world's most startling combination of American wisocracks with Scottish accent, and of American know-how with the Scottish genius for making machinery work. Capt. Kenneth Knowles, as observer and military secretary, was a personal aide to the Vice President. Capt. John C. Wagner is a navigator of such uncanny skill that he is a legend even in the Air Transport Command. See "American Wings Soar Around the World," by Donald H. Agnew and William A. Kinney, NATIONAL GEOGRAPHIC MAGAZINE, July, 1943. Lt. William G. Golkowske, co-pilot, showed his quality when he stuck it out in the cockpit on the most trying flight of the journey, at the highest altitude and under severe weather and icing conditions, before collapsing with scarlet fever. Col. Richard T. Kight, pilot, and in command of the whole flight, had flown Mr. Willkie and after that had put in a grueling spell over the China-Burma-India Hump. He knows the Alaska-Siberia route and is a first-class diplomat in uniform (Plate I).





**Red Dawn's Girls Are Talking about the Americans' Automobile Parade down Main Street**

There is an old-style village reorganized as a collective farm. Twenty-five years have made little visible change. A church in the distance is a link to the past. Though half its adult population has gone into the army or war industry, production has been maintained. Red Dawn operates 20,000 acres near Irkutsk.



**So That Sheltered Young Plants May Get Direct Sunlight, a Cold Frame's Glass Windows Are Removed on a Warm Spring Day**

Thus a state farm near Irkutsk forces melons, cucumbers, and tomatoes to grow in a latitude corresponding to that of lower Labrador.



**Red Dawn's First-aid Station Goes Unpainted Except for White Blinds, the Height of Fashion in Siberia**

School children have come from a playground enclosed by the picket fence. A girl poses comfortably on one leg.



### Wall Cartoons Jest at "Strategic" Retreats

Says this poster at Seimchan: "Hitlerites are reducing their lines to the point where the shortest front will be along the River Spree, on which Berlin stands." Berlin burns in the background.

Political oppression under the Tsars was so harsh that the mildest liberals were often sent into distant exile. For this reason university professors, doctors, and scientists and intellectuals of all kinds were among the earliest exile pioneers of Siberia.\*

As one result, there is a larger, earlier, and more scientific literature about the peoples of Siberia when the Russians first came in contact with them than there is about the Indians of North America in the early days of colonial contact.

The scientific tradition continues, with the difference that the scientist no longer works as a lonely exile but with the organized support of the Government. There has probably never been a more orderly phase of pioneering

than the opening up of Russia's Far North under the Soviet.

While ships and planes work along the Arctic coast, explorers cross back and forth between the rivers flowing to the Arctic. They are not content with mapping and prospecting the surface. From the air we could see that prospecting shafts had been sunk at intervals in long lines across the country.

In the Soviet Far North work of many kinds is integrated in a complicated pattern. Education is brought to primitive tribes, offering a ladder by which they can climb up into the modern world; Chukchi and Koryaks can become scientifically trained meteorologists at weather stations.

### Pigs Bred Near the Arctic Circle

Nor are only the most valuable resources exploited, such as gold and furs; the over-all vision is one of communities which are well rounded and self-supporting.

We had our first evidence of this when we made an intermediate landing at Velkal, an Asiatic Eskimo village on Kresta Bay (Zaliv Kresta), near Bering Strait. Here we found pigs being successfully bred not far below the Arctic Circle. They were Yorkshire White and were crossed with Ukrainian and Siberian strains to make them hardier, but the climate was so severe that they had to spend most of their lives indoors in immaculately clean piggeries.

In this inaccessible part of northern Siberia food must either be produced or brought in by plane or ship, and freight space is valuable. So the pig, the chicken, and the cow are being

\* See "With an Exile in Arctic Siberia," by Vladimir M. Zenzinov, NATIONAL GEOGRAPHIC MAGAZINE, December, 1924.

taught to pioneer; new strains of wheat and rye are being developed which ripen in the short northern summer; cucumbers and tomatoes are started under glass and then transplanted into the open.

Sometimes bees can be kept in the greenhouses to pollinate the plants; at other times the pollination has to be done by hand.

Even apples are grown where no one would think it possible. This is done by training the branches of the young trees out along the ground in the same way that we espalier a fruit tree against a sunny wall.

When the branches are spread out close to the ground, they can be covered with fir boughs and earth during the winter to protect them from frost. This creates another problem: the covered trees are bleached, and the bark easily scorches under the sun the next summer. To protect them against sunburn, they have to be white-washed.

Native experience is also turned to good account. Yakutsk is the capital of the Yakut nation, a people whose language is a branch of the Turkish family of languages. At some time in the remote past, their ancestors migrated from much farther south, probably from the region around Lake Baikal (Ozero Baikal).

Moving slowly to the north, they managed to bring their cattle with them. In summer the people lived in tents or tepees, like the steppe nomads, but in winter the cows could be kept alive only if they were under shelter.

The Yakuts therefore built log cow barns. These were oblong, to make it easier to feed the cattle and clean out the barns. Since the cattle would have suffered from hoof rot if they had been allowed to stand in mud through the long winter, the barns even had wooden floors.



Treasured Silk Brocades Are 15 to 20 Years Old

Buryat-Mongol women wear the traditional costume, an import unobtainable now because of war. China's dragons show the origin of the fabric.

Then, to look after the cattle more easily, the Yakut family made a one-room dwelling for itself at one end of the barn.

This room, though square, was arranged in the same pattern as the original round tent. In the center was the fireplace. At the left, as you came in the door, was the place for men and weapons. At the right were the places for women, children, and household gear.

#### Fire Warms Cows; Cows Warm People

Since no one had a wooden floor in a tent, no one thought of providing this room at the end of the cow barn with a wooden floor, with the result that the cows were in this respect better off than the people.

So that the cows might get the warmth of the fire, and the people the warmth of the



cows; there was only a half partition between the barn and the family room. Such close company resulted in a high rate of tuberculosis. Under the Soviet regime, therefore, the Yakuts have had to be persuaded of the benefits of living apart from the cows.

Nevertheless, it was the Yakuts who brought cows to the north and proved that they could be kept alive there. In fact until recently, with planned and general scientific development of technique under Soviet rule, the Yakut way of life had a higher survival value than that of the Russians.

The poorer Russian colonists would settle among the Yakuts and learn to live as they lived; their children would grow up speaking Yakut, and in a generation or two they would all be Yakuts.

At present it is chiefly the Yakuts who are learning from the Russians; but Yakut pride in Yakut nationality and tradition continues and is officially encouraged. As among all other "national minorities," as the Russians call them, a large measure of self-government prevails. The Yakut language is the official language, and newspapers and books are printed in Yakut as well as in Russian. Russian is taught only as a "foreign" language in Yakut primary schools and high schools, much as we teach French. To go on to a university, however, it is essential to have a good knowledge of Russian. This results in a selective process.

The Yakut people, as a people, remain Yakut; but the ablest and best educated among them use Russian as a language. This is not only a link between them and the Russians, but between them and the active leaders of the other national minorities whose native language is not Russian.

On the other hand, Russians who live in a Yakut community are not forced to educate their children as Yakuts. They may organize their own Russian schools; but in these schools the teaching of Yakut, as a second language, is compulsory. In other words, in the land of the Yakuts it is the Yakut language that counts; in the Soviet nation, it is the Russian language that counts.

### A Brisk "City of Youth"

Industry can also be right up in the forefront of pioneering. Perhaps the most striking example is at Komsomolsk, "City of Youth," on the Amur River.

It was only in 1932 that the first detachment of 4,000 members of the Young Communist League arrived to break ground in the virgin wilderness for a settlement. Today it is a city of some 100,000, and it is still rare to see

anyone who looks over 40 years of age. As the people came when they were young and married young, the city swarms with children.

Although founded in the wilderness, Komsomolsk was designed from the beginning to be an industrial city. Today it manufactures planes and refines oil; but shipbuilding is the major activity.

Komsomolsk lies far enough downstream from the Japanese-held frontier of Manchuria,\* and far enough upstream from the mouth of the Amur, with dense virgin forest all around it, to be very nearly impregnable. Yet the stream is wide and deep enough for the launching of ocean-going ships. The largest we saw was an 8,000-ton vessel.

Although this was a journey which was full of unexpected things, it was here that we ran into one of the most spectacular. Komsomolsk, as an industrial center, was planned as the concentration point of a number of raw materials drawn from the whole region.

Because of the German invasion, however, iron could not be mined and transported to Komsomolsk as fast as originally planned. The shortage at the shipyards was dramatically met by using German tanks and self-propelled guns.

These were brought east along the Trans-Siberian Railroad by trains returning from western Russia, where they had carried munitions and supplies. Then they were shipped down the Amur to Komsomolsk, to be rolled and stamped into ship plates (page 643).

There were thousands of them—mountain ranges of them. Komsomolsk is a place to think about when you read in the Soviet communiqués about the destruction of German armor.

### The Problem of Frozen Subsoil

Practically everywhere north of the Trans-Siberian Railroad the Russians are grappling with a problem which is also known in Alaska and northern Canada—the problem of the permanently frozen subsoil. The Russians call it *vechnaya merzlota*. They consider it so serious that they have a National Institute of the Merzlota, with branches in a number of places.

The problem itself is simple. In parts of northern Siberia which were not covered by an icecap in the last ice age, but were exposed to the cold of that time, the soil is permanently

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Japan Faces Russia in Manchuria," by Willard Price, November, 1942; "Byroads and Backwoods of Manchuria," by Owen Lattimore, January, 1932; "Here in Manchuria," by Lilian Grosvenor Coville, February, 1933; and "Manchuria, Promised Land of Asia," by Frederick Simpich, October, 1929.

## Sunny Siberia



### Polar Bear on a C-54 Transport Is the Trademark of an Unborn Airline

Col. Richard T. Kight, who flew the author to Siberia, peers from the cockpit. A Soviet flyer designed the insignia as a pledge that after the war the two airmen would organize an Alaska-Siberia "Polar Bear" airline.



© National Geographic Society

Redesigns by Owen Lattimore

### Siberia's Hosts to Visiting Americans Were a Diplomat and Air Force General

Dimitri Chuvakhin, head of the American section, Soviet Foreign Office, poses with General Semeonov, chief of the Alaska-Siberia air ferry. Since June, 1942, thousands of Lend-Lease planes have flown across Bering Sea.



Photographs by Oroski-Lachmann

**In Shushenskoe, Where Exiled Lenin Lived in a Log Cabin, Villagers Await the Passing of an American Mission**

A gravelled, graded street is a reminder that Siberia once knew only mud. A well swept projects above a high board fence enclosing a yard. Before many years growing shade trees will break the monotony. These women may be descendants of exiles, religious dissenters, or migrating serfs—three classes that populated the old Siberia.

© National Geographic Society



© National Geographic Society

**In June the Wilderness Blazes with Wild Flowers**

Thaw having unlocked the earth, the hot brief summer brings asters, hollyhocks, violets, forget-me-nots, pinks, pond lilies, roses, and rosemaries. Even the alpine edelweiss is known to forest clearings.



Kotzebuisen by Owen Lattimore

**Here a River Boat Stopped in Admiration of the Blossoms**

On a Yenobai bank, stewardsesses display the harvest. Even the botanizing former Secretary of Agriculture, Henry A. Wallace, could not name all plants he saw here. Part of Siberia's huge timber reserve stands in the distance.





**A Dozen Bright Young Reasons Why Komsomolsk Is Called the "City of Youth"**

Few in this town, founded a decade ago in the wilderness, appear older than 40. With their play supervisor, these children of working parents meet Capt. Kenneth Knowles, ATC liaison officer.



© National Geographic Society

Eschschismus by Owen Lattimore

**A Dominoes Game Kills Time on the Deck of the Steamer *Joseph Stalin***

John Carter Vincent (bow tie) of our State Department watches. Two men on the left are Russian photographers covering the Americans' tour. Their uniformed companion is a Soviet official.

## Sunny Siberia



### Colonel Kight and Mr. Vincent Meet Three Ranchers on a Buryut-Mongol Collective

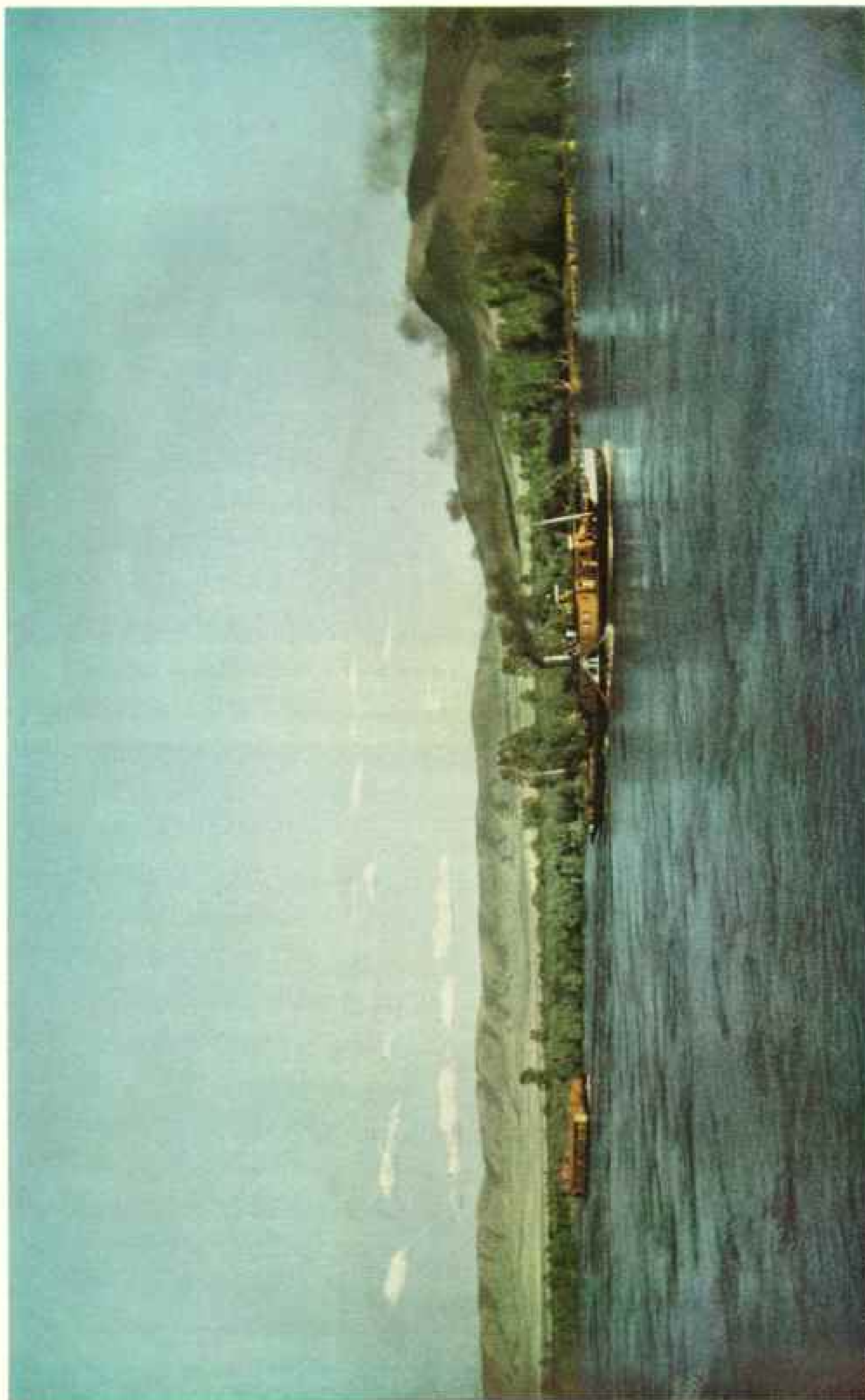
At least two have been decorated for service on the food front. They wear European headgear with their prewar tribal costumes. Their growing sons dress Russian-style, as trade goods no longer arrive from China (Plate XV).



© National Geographic Society

Exhibition by Owen Lattimore

Windows' Red Geraniums and Lace Curtains Show the Care Lavished on Simple Log Homes. During icy winters the flowers are cherished as signs of life. Except for blinds, which may be swung and bolted, this is not unlike a pioneer American cabin.



© National Geographic Society

Kodachrome by Owen Lattimore

**Shearing the Swift Yenisei, a Side-wheeler Puffs a Streamer of Wood Smoke as It Tows a Barge Upstream**

For many of the Yenisei's 7,000 miles, no sign of life is visible. Like Canada's Mackenzie River, it flows into the Arctic, and so its usefulness is limited. In winter the frozen stream serves as a sled track, but at its mouth 50-foot ice hills grind thunderously. In summer its warm current softens the ice pack and assists Arctic Ocean navigation. Soviet icebreakers opened the Northeast Passage in the 1930's. Now ocean-going steamers push down the Yenisei to Igarka, a lusty lumber port.



© National Geographic Society

**A Kazakh Girl Clings to Age-old Styles**

She wears the traditional costume of a maiden. Her fur cap is topped with eagle feathers.

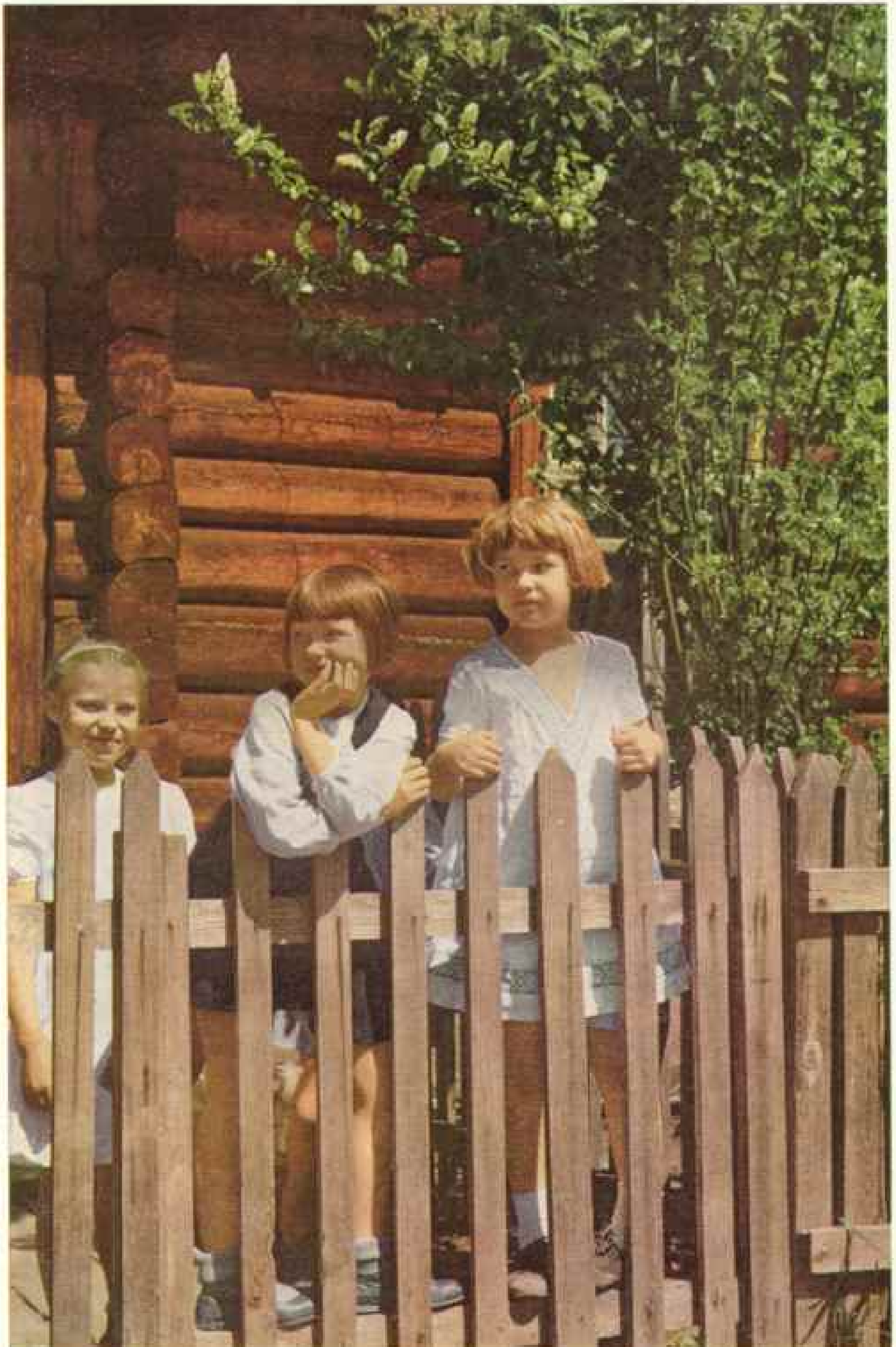


Illustration by Jean Lattimore

**Her Sovietized Cousin Prefers Modern Dress**

Graduate of a veterinary school, she has been decorated for "labor and glory" in preventing cattle plague.





© National Geographic Society

Kachinians in Green Lattimore

**Childhood and Picket Fence in Mid-Siberia Stir Memories of Rustic America**  
Mr. Lattimore found Siberian youngsters smiling, polite, and not at all shy of strangers or their cameras.

frozen to a vast depth. During the short summer, with its long sunlight hours, the surface thaws. Below the surface, however, the soil remains frozen. Since this condition largely prevents drainage, the whole surface tends to become waterlogged.

Naturally, it is difficult to put up a large modern building on such ground; but the Russians are proud that they have now almost solved this problem.

At Magadan, on the Sea of Okhotsk, we stayed in a seven-story apartment building which was one of the first large buildings put up on a foundation of permanent frost. This was done by excavating down below the level of the summer thaw. A layer of insulation was then spread to prevent the interior warmth of the building from affecting the permanently frozen ground, and the building was constructed on top of the insulation.

The completed building settled very little and has remained steady.

Magadan is also part of the domain of a remarkable concern, the Dalstroi (Far Northern Construction Company), which can be roughly compared to a combination Hudson's Bay Company and TVA. It constructs and operates ports, roads, and railroads, and operates gold mines and municipalities, including, at Magadan, a first-class orchestra and a good light-opera company.

At the time we were there, Magadan was also host to a fine ballet group from Poltava, in the Ukraine. As one American remarked, high-grade entertainment just naturally seems to go with gold, and so does high-powered executive ability.

Mr. Nikishov, the head of Dalstroi, had just been decorated with the Order of Hero of the Soviet Union for his extraordinary achievements. Both he and his wife have a trained and sensitive interest in art and music and also a deep sense of civic responsibility.

#### Greenhouse Vitamins for Miners

We visited gold mines operated by Dalstroi in the valley of the Kolyma River, where rich placer workings are strung out for miles (page 642). It was interesting to find, instead of the sin, gin, and brawling of an old-time gold rush, extensive greenhouses growing tomatoes, cucumbers, and even melons, to make sure that the hardy miners got enough vitamins!

At the port of Magadan we saw an American-built Soviet icebreaker, and the wharves were stacked high with American Lend-Lease equipment.\* Here and everywhere else we found the Russians very appreciative of Lend-Lease. American machinery and machine tools in factories were clearly identifiable, and

the workers liked them. "As good as American" is the standard at which Russian industry aims.

In the factories also we found among the numerous war slogans, posters, and cartoons, many which cordially named the United States and Great Britain as allies. Within twenty-four hours of the landings in Normandy, factories were carrying banners and long scrolls announcing the Second Front.

#### Welcome Warm and Sincere

There was no doubt about the warmth of Russian feeling for Americans. As we walked through a factory, we would frequently be followed by a ripple of applause. Sometimes the workers would bend even more intently over their machines; in other factories, men and women, section by section, would stand back from their work and cheer, or shout out slogans and greetings.

In Tashkent, one of the largest cities we visited, I went into a store with Colonel Kight. He was easily recognized as an American by his uniform, and his tall Texan figure and boyish smile made him a good mark for hero worship. By the time we came out of the shop, crowds jammed the traffic on one of the main streets of the city.

The throng broke into applause and made a lane for him as he walked to the car, and a boy who looked about fourteen called out, in careful English which he had evidently been practicing, "Long live America!"

In Tashkent, also, at one of the public parks, we noticed a girl picking flowers near the gate. She seemed to pay no attention to us, but when we came out she pushed her way through the crowd up to our car and handed an armful of flowers through the window, saying in Russian, "We do not have much in time of war, but we wish to give these to our American allies."

Peaceful, though Siberia is, and far from the war, "in time of war" is the refrain that runs through everyone's life. Because of the war, about 50 percent of the work on farms is done by women, and 30 percent of the work in factories, including heavy work.

Wounded men were everywhere, on the streets and in the public parks. This was partly because Siberia, though much more thinly populated than European Russia, has sent of its best to the front, where the tough "Sibiryaki" have made a grim record in the relief of Moscow, the turning of the tide at Stalingrad, and many another battle. Partly it is because the Red Army distributes its

\* See "Lend-Lease Is a Two-way Benefit," by FRANCIS FLOOD, NATIONAL GEOGRAPHIC MAGAZINE, JUNE 1943.



#### Pride of a Kazakh Rider Is His Fox-fur Cap

The design shows his robe was made in Central Asia. He is accustomed to both silk and cotton. His pony is a descendant of wiry mounts that bore Genghis Khan's conquering archers across icy mountain passes. Archery lingers on the steppes only as a sport, but Kazakhs have several divisions of modern cavalry at the front.

wounded widely to quiet places where they can get rest and sun and ample food (page 661).

Our American officers and men got on beautifully with the Red Army men. At one large hospital which we visited, some of our men took a quick look, then went back to the plane and returned loaded with cartons of cigarettes and settled down for a get-together.

#### Russians Are Able Flyers

Our men found the Russians impressive also as flyers. The colonel commanding a plane which the Russians had assigned to accompany us had made more than a hundred landings behind the German lines, in guerrilla territory, carrying supplies.

Colonel I. P. Mazuruk, also assigned to us, is a legendary figure, romantic, daring, good-looking, and full of fun. He "cracks wise," just like an American. Once, looking over the number of diplomats present, he said, "If we take them all aboard the plane, it'll fly zigzag."

Colonel Mazuruk—now a general—is a Hero of the Soviet Union. He deserves that and all his other decorations. He was one of the flyers who, in 1937-38, took the celebrated group headed by Ivan Papanin up to a point near the North Pole and set them down on the polar ice. Months later the party had drifted to a point off Greenland where they were picked up by a Soviet ice-breaker.

In this war Colonel Mazuruk has flown almost every kind of combat plane. Perhaps, however, the flying in which he has shown the steadiest courage and the most remarkable skill is in hovering with an unarmed American-built seaplane over the Murmansk supply route, and landing repeatedly on the icy Barents Sea to pick up men from sinking ships and planes shot down in combat. He has saved more than a hundred American and British lives in this way.

After Colonel Kight had turned over our big C-54 to Colonel Mazuruk to fly the first time, he asked Mazuruk how he liked the ship and how she handled.

"This is such a ship," said Mazuruk slowly and carefully, "that you could fly her till you are an old, old man, with a long white beard, and all you would need to do would be to take the end of your beard occasionally and wipe off the glass in front of you."

He had an insignia of a polar bear on an ice floe painted on our ship for Colonel Kight, as a pledge that after the war the two men would form a Belyi Medved (Polar Bear) Company to fly the Alaska-Siberia route.

We also met Colonel Mazuruk's former mechanic at the time of the Papanin flight. He is now head of a factory making two-engined Soviet bombers.

When we came down from the northern territories, we reached the line of the Trans-Siberian at Irkutsk, near Lake Baikal. This is one of the oldest Siberian cities. It was founded in 1652 and has more colleges than any other city in eastern Siberia.

Like Yakutsk, another old city, founded in 1652, which still has one of the wooden towers of its original Cossack fort, Irkutsk has many very old wooden buildings.

The typical Siberian construction is of heavy logs, roughly squared. Unpainted, the wood weathers to a lovely gray, like some of the old wooden houses in Sweden. In spite of the long, cold winters, houses have many windows; Siberians have learned to make the most of all the sun.

Gay red geraniums in the windows are almost the badge of Siberia; in town and country alike we learned to look for that splash of color. In many cities, of course, there are large new buildings, and a striking modern architecture is coming into being.

It is typical of the Russians, however, that things that are new and big belong to the community. Unless you live in one of the big new apartment houses, your home is more than likely to be a one-story log cabin in the country or a two-story wooden building in town.

There are still so many log cabins that Siberia ought not to run short of presidents for a long time.

#### Seals in an Inland Lake

From Irkutsk we visited Lake Baikal and later flew over the lake to the Buryat-Mongol Republic. We missed the full beauty of the lake, however, because of the haze of summer forest fires. Lake Baikal is one of the biggest fresh-water lakes in the world.\*

Once it may have been connected with the sea, because there are seals in the lake, the only fresh-water seals in the world that live so far inland from the ocean. It is the deepest lake in the world, and both the lake and the mountains on its western shore are subject to volcanic disturbances (Plate XIV).

\* See "Western Siberia and the Altai Mountains," by Viscount James Bryce, NATIONAL GEOGRAPHIC MAGAZINE, May, 1921.

The mountains are rich in resources, including wildlife; but the Russians, not satisfied with present resources, have recently introduced the North American muskrat, which is flourishing and will soon provide an annual fur harvest.

Native to the mountains is the strange little musk deer. In the male the upper canine teeth curve down from the upper jaw, like miniature tusks, and on its stomach there grows a "pod" of musk, a strange substance of high commercial value because it has the quality of blending with expensive perfumes and stabilizing their aroma.

The musk deer of western China, on the edge of the Tibetan highlands, are rapidly being exterminated by commercial hunters, but those of the Baikal area are protected.

East of Baikal lie the lands of the Buryat-Mongols, closely related to the Mongols of Outer Mongolia but not identical with them. In fact the Baikal area has been a vortex of human migrations ever since the Stone Age, because it is the meeting point of mountains, the vast forest wilderness, and the equally vast grassy steppe.

#### Birthplace of Many Peoples

Here, at the dawn of history, a number of peoples originated. Later they became known as races or tribes or nations, but in origin they were forest people, mountain people, or people of the open grassy plains. They formed their allegiances according to whether they were herders of reindeer or of cattle, fishermen, or hunters of the sable and the squirrel, shy people living in the depth of the forest, or mounted warriors of the open country.

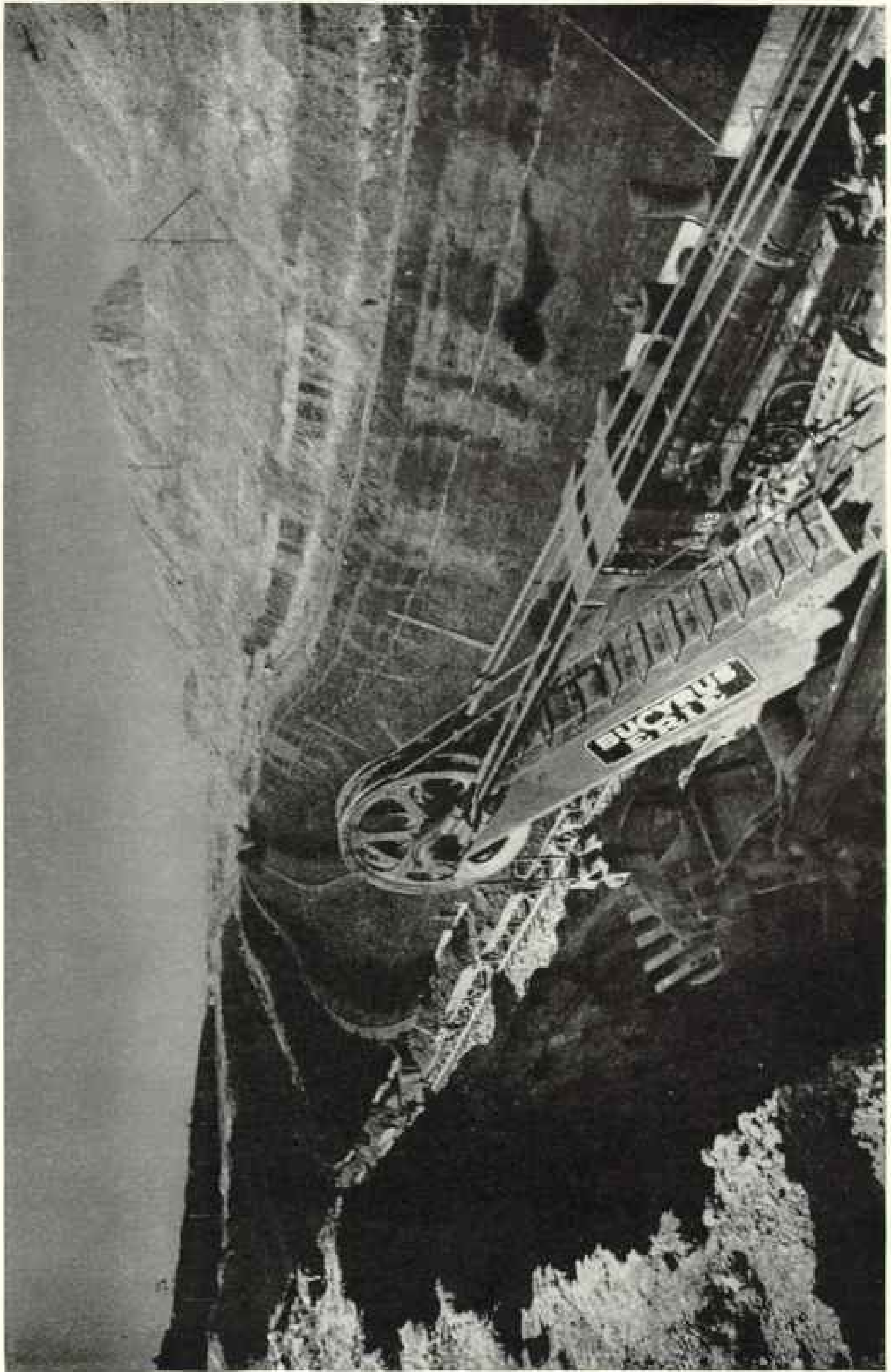
The blood of all these peoples is mingled among the Buryats, and this human mixture is largely to be attributed to one little animal, the sable, whose soft pelt was so valuable that it was known to the early Cossack freebooters as "soft gold." Throughout both Europe and northern Asia the sable pelt was a standard of luxury and prestige.

Because of this, a ladder of oppression led from the little sable of the forest to the Son of Heaven in Peking (Peiping), and another from the sable to the Tsar of All the Russias in Moscow. The Tungus (Evenki), the Urianghais, and other peoples of the forest hunted the sable.

The Buryats and the Daghors (Daur), living on the edge of the forest, hunted the forest peoples and forced them to give up their sables. The Mongols and the Manchus hunted the Buryats and the Daghors, forcing them in turn to hand over the sables.

Later came the Russian Cossacks, who laid





A Karaganda Locomotive Drags Dump Cars through a Canyon of Coal; an American-made Shovel Takes a Seven-ton Bite of Overburden. Low-cost operation is indicated by the fact that overlying dirt is no thicker than the coal. A long ladder gives a measure of the seam. More than 50 billion tons lie in reserve. Karaganda and Kozmetisk Basin coal, smelting Magnitogorsk iron ore, helped save Russia when the Nazis overran the Donets Basin (page 673).



**Karaganda, a City of White Public Buildings and Apartment Houses, Looks Like Anything but a Coal-mining Center in the Desert.**

Lenin in stone occupies the place of honor before the town hall. Shrubs are typical of the cultivated greenery that makes this a garden city (page 673).



**Front-line Veterans on Crutches Are Almost the Only Men in Shushenskoye**

In Siberia the Red Army's wounded enjoy quiet, ample food, and summer sunshine. The author saw many convalescent soldiers in parks and streets (page 664).

a heavy hand on all whom they could reach, demanding a yearly tribute of sable pelts or sometimes of cattle, and later of money.

Because of this turbulent history, the Buryats of today are the descendants of both tribute payers and tribute gatherers, peoples of the forest, the deep woods, and the grassy plains. At the time of the Russian Revolution they were rapidly dying out from drink and disease. Their old social cohesion had been broken up by the Russian conquest, and as despised "natives" and "savages" they had not been taken into the Russian society. Their pride was broken. Only about three or four percent of them could read.

#### Nomads Show Mechanical Aptitude

Although they number only some 300,000 people, the Buryats are now a nation. They have their own Republic. They publish books and newspapers in their own language. Their theater, music, opera, and ballet show an extraordinary vigor. At Ulan Ude (Red Gate), on the Trans-Siberian Railroad, their capital, there is one of the great locomotive works of the Soviet Union.

Like the Kazakhs and some other nomads, they show a surprising aptitude for machinery—which raises an interesting point. The chief difficulty with introducing machines among people who have never handled them, as the Russians found out during the early years of industrialization, is that it is easy to learn to step on pedals and pull levers, but hard to learn the importance of maintenance.\*

The nomad already knows, however, that if you ride a horse at a wild gallop all today, you cannot do it again tomorrow. In other words, he already knows that there is such a thing as upkeep and maintenance. "His" machine soon becomes to him like "his" horse—something alive, whose needs must be considered as much as the master's.

Among the Buryats and, as we later saw, among the Kazakhs (page 664), development of recent years has been the modernization of the old nomadic life. These nomads almost never grew hay or other winter feed. Accustomed to foraging for themselves all winter, their cattle and sheep were extremely hardy but low in output of meat, milk, and wool.

And hardy though they were, the spring season was a terrible economic gamble. The spring storms, the birth of lambs, calves, and colts, and the season of the new green grass all came at about the same time. If the herds, thin and worn after a hard winter, were caught by late storms and a late appearance of the new grass just when the young were being born, there was terrible loss of life.

After the Revolution attempts were made to get the nomads to settle down and switch over from nomadism to ranching, and to take up the growing of hay and other feed for the cattle, and potatoes and grain for the people.

This program ran into two kinds of trouble. First, the old aristocratic and ruling families among the nomads resisted the change. Their control of their own people was rooted in the old customs. They could collect so many cattle a year from a man's herds, because that was an established custom; but if a man began to grow hay or potatoes there was no custom to say how much he should give up to the family which traditionally was the head of his clan.

Thus there arose internal conflict which was as bitter and bloody as the civil war between old and new among the Russians.

The new, of course, won, being backed by the Russians and the power of the State, but then the second kind of trouble began. Settlement in villages for the winter benefited the herds, but in the summer there was not enough movement to make full use of the pastures and, with the animals crowded too much together, there was more sickness.

#### Tents in Summer; Log Cabins in Winter

This trouble is now being remedied by a partial return to the old life. During the summer people scatter far and wide, leading the old tent life. In winter they gather in a neat village of well-built log cabins. In the villages are schools, libraries, and community centers for movies and concerts.

There are several links between the winter life and the summer life. The fields of hay, potatoes, and grain are generally near the winter village. They are collectively owned, and tended in summer by "brigades" drawn from the summer camps.

Thus a man can live the old life all summer and yet know that when he returns to winter quarters his family will draw its proper share of food for itself and feed for the cattle.

In addition, "bases" are laid out in lines radiating from the winter quarters to the summer pastures. These bases contain sleeping quarters and kitchens for the people and corrals for the animals, which makes movement between winter and summer quarters easier for human and animal mothers and children, and minimizes sickness and loss.

At a "nomad collective" in the Buryat-Mongol Republic we saw how the winter village is

\* See "Magnetic City: Core of Valiant Russia's Industrial Might," by John Scott, NATIONAL GEOGRAPHIC MAGAZINE, May, 1943.



#### Stylish Russian Kerchiefs and Buryat Dresses Show Siberia's Mixture of Cultures

These two play in the band at a collective farm (Plate XVI). Their people, once near extinction, are making a comeback under self-government. In wartime their sex does half of Siberia's farm work (page 657).

the focus of community life and pride of achievement.

Here were selected stud horses to improve the herds of the whole community; a Wisconsin-type silo for feed storage which, we were proudly told, had been carefully selected as the best for local conditions; a really charming little community center and theater and, attached to it, an excellent small museum showing both local resources and wildlife and exhibits of the old Buryat way of life.

A brass band, mostly of women and girls, played music of an emphatic "oom-pah" variety. Both women and men were dressed in superb traditional costumes of Chinese brocades and silks, in bright-blue and orange and red and green, colors that might look garish in a city apartment, but are boldly appropriate to the bright sun, fresh wind, and galloping cloud shadows of the rolling steppe (page 647).

We noticed, however, that to cover their heads the women had universally taken to the Russian peasant shawl and the men to felt hats.

From the Buryat-Mongol Republic we turned west to Krasnoyarsk, where the mighty Yenisei flows across the line of the Trans-Siberian on its way to the Arctic.

From this point we made a most interesting

excursion southward to the famous Abakan steppes. Traveling overnight by train, we woke early the next morning to find a wide expanse of prairie, scattered through which was an extraordinary profusion of the burial mounds and stone monuments, set in circles, of ancient nomadic tribes.

#### On a Siberian Prairie

This region was a center from which migration after migration set out over the broad plains that link Europe and Asia. Chinese chronicles mention people with "red" hair and "green" eyes in this region, a fact which tells us that even in ancient times European and Asiatic tribes met here.

Minusinsk, close to Abakan, was the center of one of the world's most remarkable Bronze Age cultures, finds from which are displayed in one of Russia's finest museums.

The working of bronze was carried to the point where different alloys were used for ornaments and for tools and weapons. The Minusinsk artistic style shows influences also found thousands of miles away on the shores of the Black Sea in one direction, and along the Great Wall frontier of China in the other, demonstrating the vast range of trade in ancient times.



The flourishing bronze industry and culture of the Minusinsk area were wiped out comparatively suddenly. It seems likely that the people of this region developed such a strong vested interest in the working of bronze and the sale of bronze products that they resisted the introduction of iron, with the result that when they were finally attacked by people using iron weapons, they were quickly conquered.

An ironic comment on the "conservatives" of Minusinsk is that iron of superlatively good quality, easy to work, is also found in the vicinity.

#### Village of Lenin's Exile

Some 30 miles from Minusinsk is the little log-cabin village of Shushenskoe. Here Lenin was exiled from 1897 to 1900, and, therefore, this remote, almost untouched frontier village is now a national shrine (page 674). Nadezhda Krupskaya, a St. Petersburg (Leningrad) comrade, who was herself exiled, was allowed to join him here to be married and consequently there are two Lenin houses—one in which he lived before his marriage, and one after.

A number of personal relics are kept here, such as the gold medals Lenin won as a student. There is also a police register, open at a page which shows that Lenin was reported for leaving the village without permission to join a political discussion with other exiles.

In the summer sun, with their gardens and flowers, these modest wooden houses in a tiny village where war wounded rest on benches along the dusty street seem as remote from revolution and the beginnings of a nation, and yet as closely linked with them, as Mount Vernon (page 661).

From Minusinsk we returned to Krasnoyarsk by river steamer along the Yenisei. River life is part and parcel of the history of the Russian people. In this broad, flat land where high mountains are found only on the extreme frontiers, rivers were highways long before roads were passable.

The Cossacks, who made an amazingly rapid conquest of Siberia at a time when the American settlements were still tightly confined to the Atlantic coast, were not only horsemen but boatmen. This fact explains the speed with which they pressed forward from the Urals to the Pacific.

Riding across plains and threading their way through forests, they would reach a river, abandon their horses, fell trees, build boats, and follow the current until they reached a place where they could capture new horses or dog teams or reindeer. Nothing came amiss to them.

To this day the river steamboat plays in

Siberia a part as important as it played on the Missouri and Mississippi when Mark Twain was young and adventurous.\*

Perhaps only the Welsh can rival the Russians as group singers. The number of men and women with good voices and a knowledge of music never ceases to amaze an American. We gathered on the foredeck of the steamer *Joseph Stalin*, specially chartered by our hosts for the voyage back to Krasnoyarsk, and in the long, slowly dimming Siberian summer sunset and twilight the deep Russian voices rolled out across the broad river.

The next day, having a little time to spare, we tied up at the bank, and everyone went ashore to pick the wild flowers starring the meadows between deep stands of timber. Perhaps because the summer is for them a short and fleeting season, all Russians seem to be passionately fond of flowers.

From Krasnoyarsk we flew west to Novosibirsk, our farthest point west on the line of the Trans-Siberian.

Novosibirsk is as "high, wide, and handsome" as a Siberian Chicago. A few years ago it was a provincial town; now it is a huge city with a leading record in municipal building and improvements.

Its main street, Krasny Prospect, is an immense double avenue with a parkway down the center. Its opera house seats 2,000, has room for an orchestra of 120, an operatic chorus of 120 with 60 soloists, and a ballet of 120.

#### Moving a Factory by Rail

Novosibirsk is especially proud of its hard-driving war record. A number of evacuated war factories were relocated here. One, an ammunition factory, was moved in by units, and the planning was done so well that each unit could be set up as fast as it was unloaded from the train. The first units were turning out shells before the last ones had reached Novosibirsk and been unloaded.

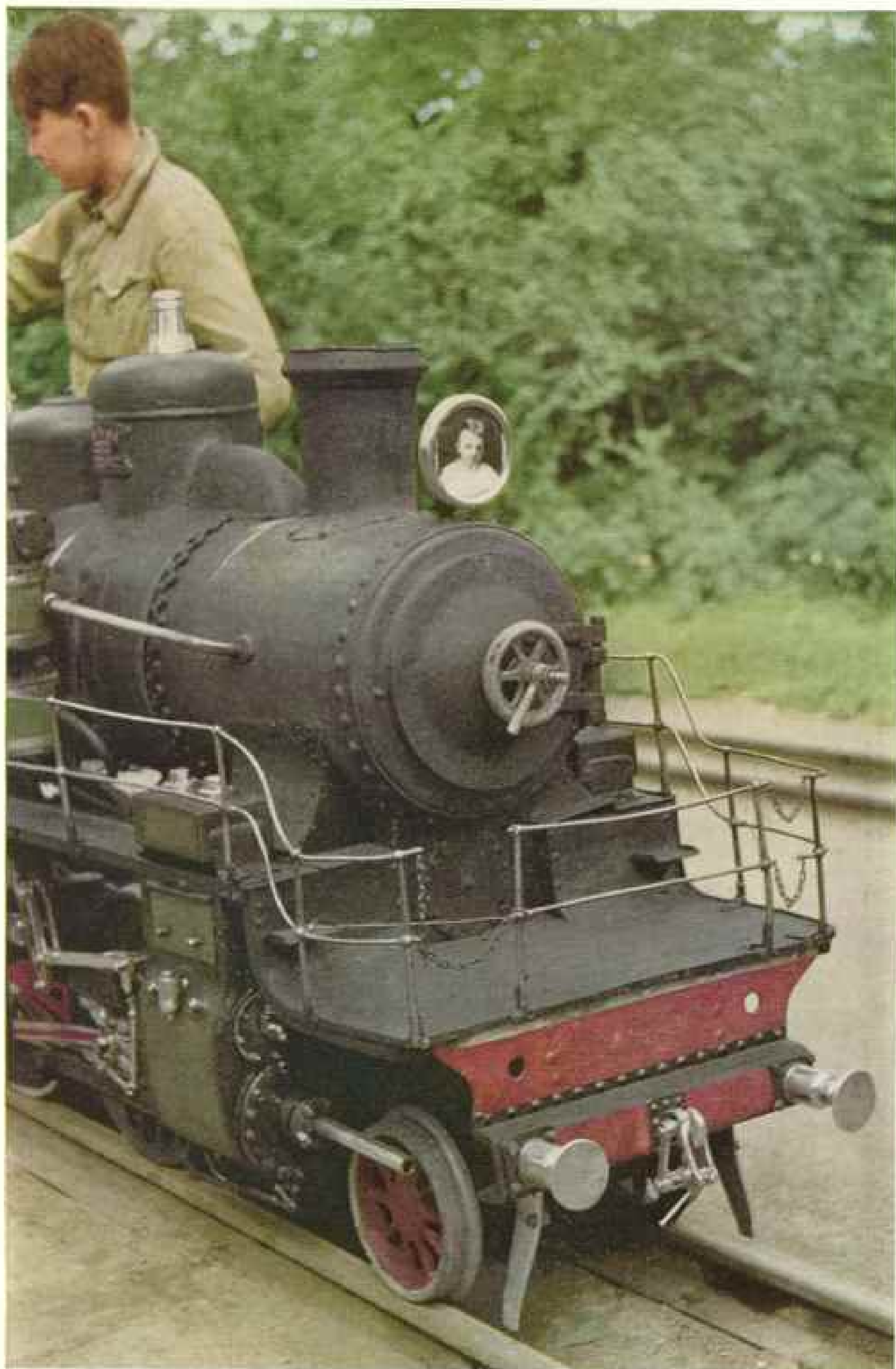
There is also a notable fighter-plane factory, which was of special interest because it was possible to check the very large increase in production which had been achieved since Donald Nelson had visited the same plant less than a year previously.

Turning to the south, the next stop was at Semipalatinsk, in the huge Kazakh Republic, which reaches from the Chinese frontier to the Caspian Sea.

The Kazakhs, numbering about three million, are one of the important Soviet minority

\* See "Mother Volga Defends Her Own," by Maynard Owen Williams, NATIONAL GEOGRAPHIC MAGAZINE, December, 1942.

Sunny Siberia



© National Geographic Society

Reduction by Owen Lattimore

**A Krasnoyarsk Boy Drives a Toy Locomotive Bearing Lenin's Baby Picture**  
Even in war Soviet children get priority. Mechanical toys train them for the future.



© National Geographic Society

Redaction by OpenStax

### Log Cabins, Grassy Steppe, and Rolling Hills—Here Is the Average Siberian Village of This Century and the Last

Woods dot the hills and follow the streams. Livestock from the corrals roam fenceless prairie. Wood built the town; stone and brick are for the new industrial cities. Skilled axmen joined the logs tightly, sealing out winter's blizzards. Here on the outskirts of Irkutsk, Abe Lincoln the storekeeper might not have felt too far removed from log-built Salem, Illinois.



© National Geographic Society

**Though Wanderlust Calls, These Nomads Stay at Home**

Other Buryat-Mongols, following the collective farm's herds, are in their cool tents on summer's pastures. They have left this brigade to grow hay and potatoes and care for winter's cabins. The boy wears a Red Army cap.

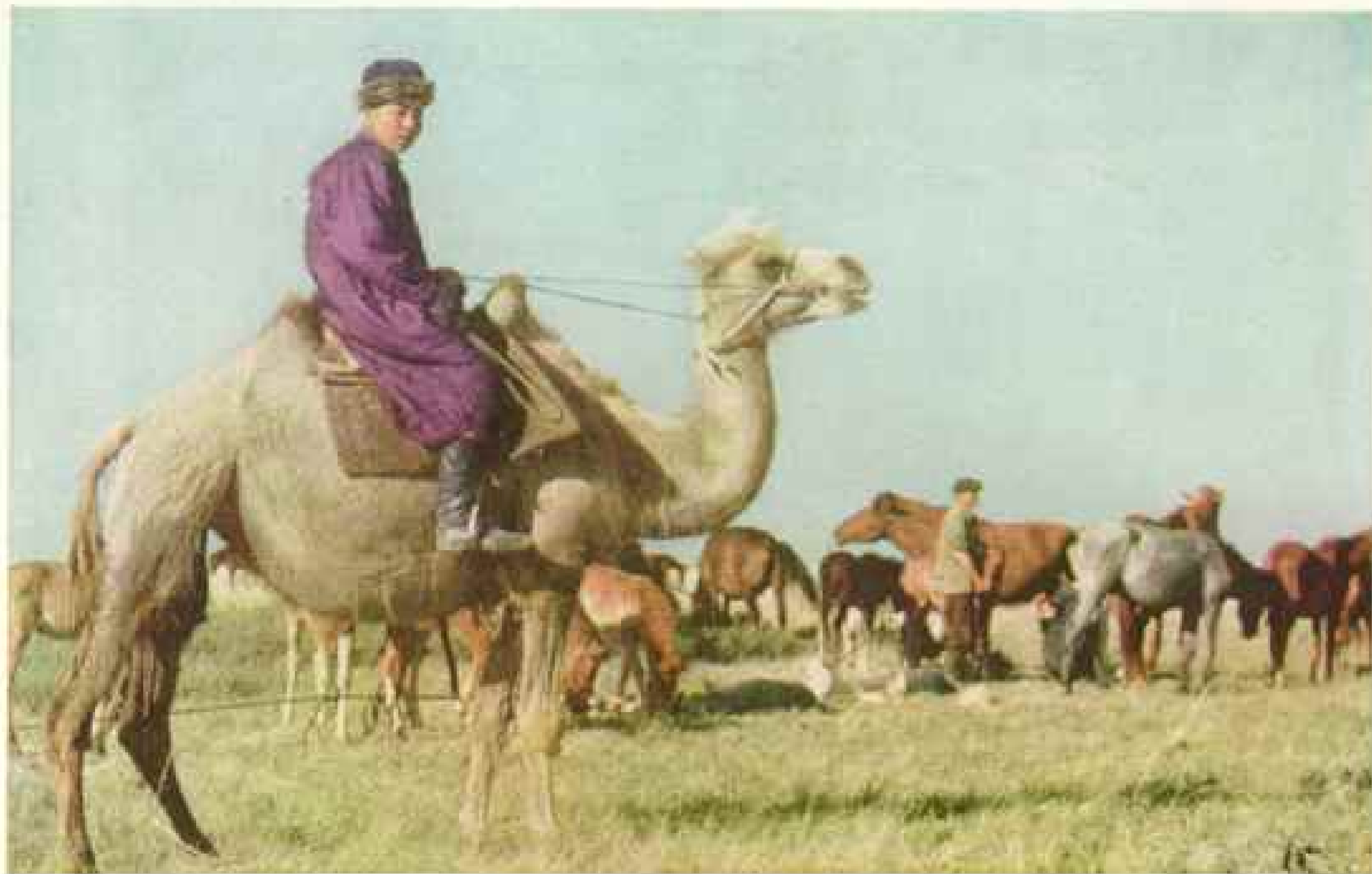


Illustration by Owen Lattimore

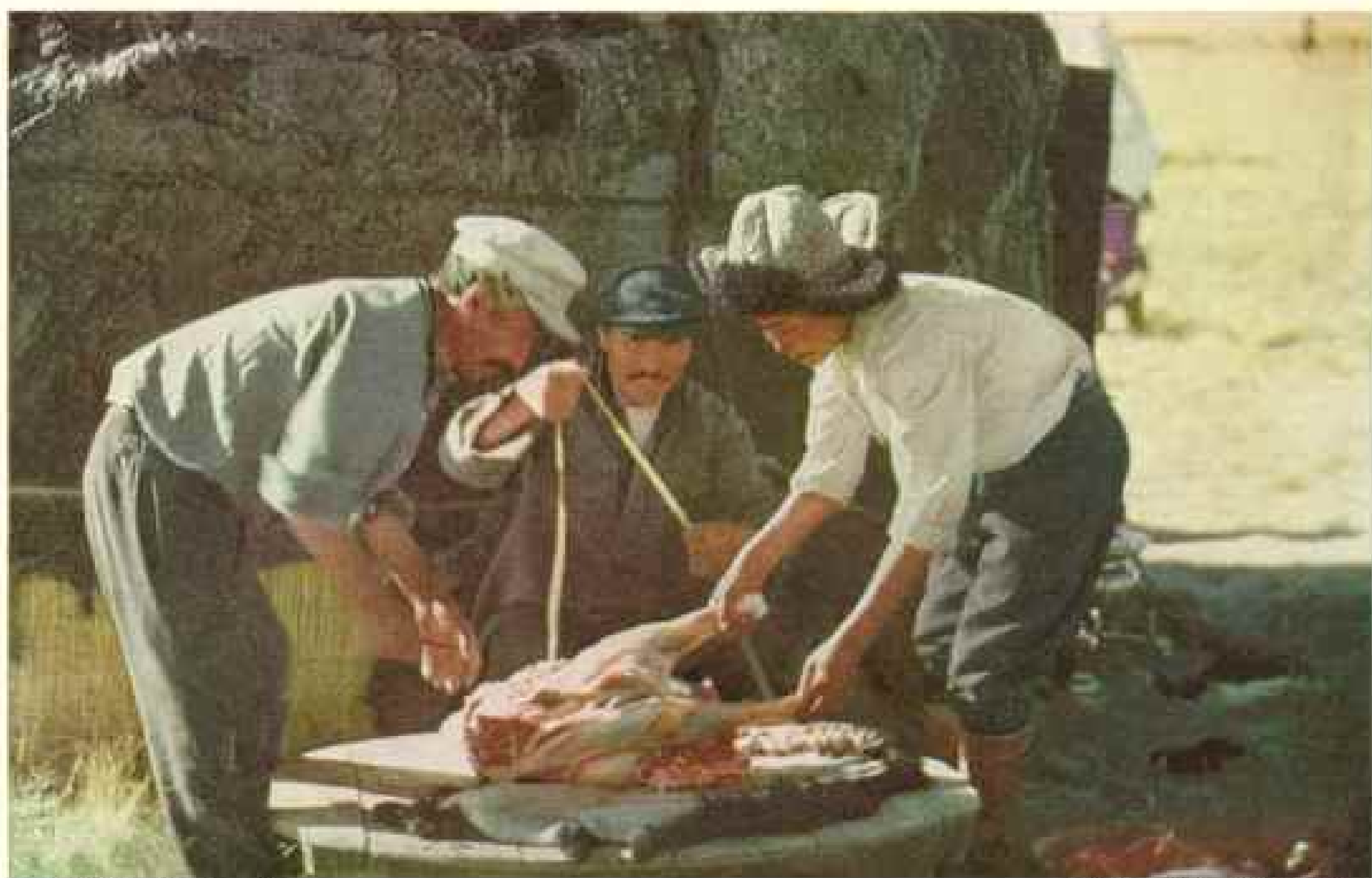
**Buryat Women Fill a Powerhouse Tank with Water**

Though the machinery is there, it lacks pipes, for war shortages set in before installations could be completed. These part-time nomads live in Ernst Thälmann, a collective farm named for a onetime political leader in Germany.





**What's This? A Camel Riding Herd on Horses? No, Its Kazakh Master Is Sight-seeing**  
Bridle and bit show it is a young beast not yet pierced for the nose peg. Summer's molt has set in. Two humps make an easy seat, but wide ribs stretch the tenderfoot's legs. Milk mares are tethered to the rope.



© National Geographic Society

Kodachromas by Owen Lattimore

**Anticipating the Feast, Kazakhs Cut Mutton for Boiling and Clean Casings for Sausage**  
Behind them stands their summer home, the age-old circular yurt. Reeds for air-conditioning and felt for warmth hang on a collapsible trellis. With variations, the same tent is found throughout Central Asia.

## Sunny Siberia



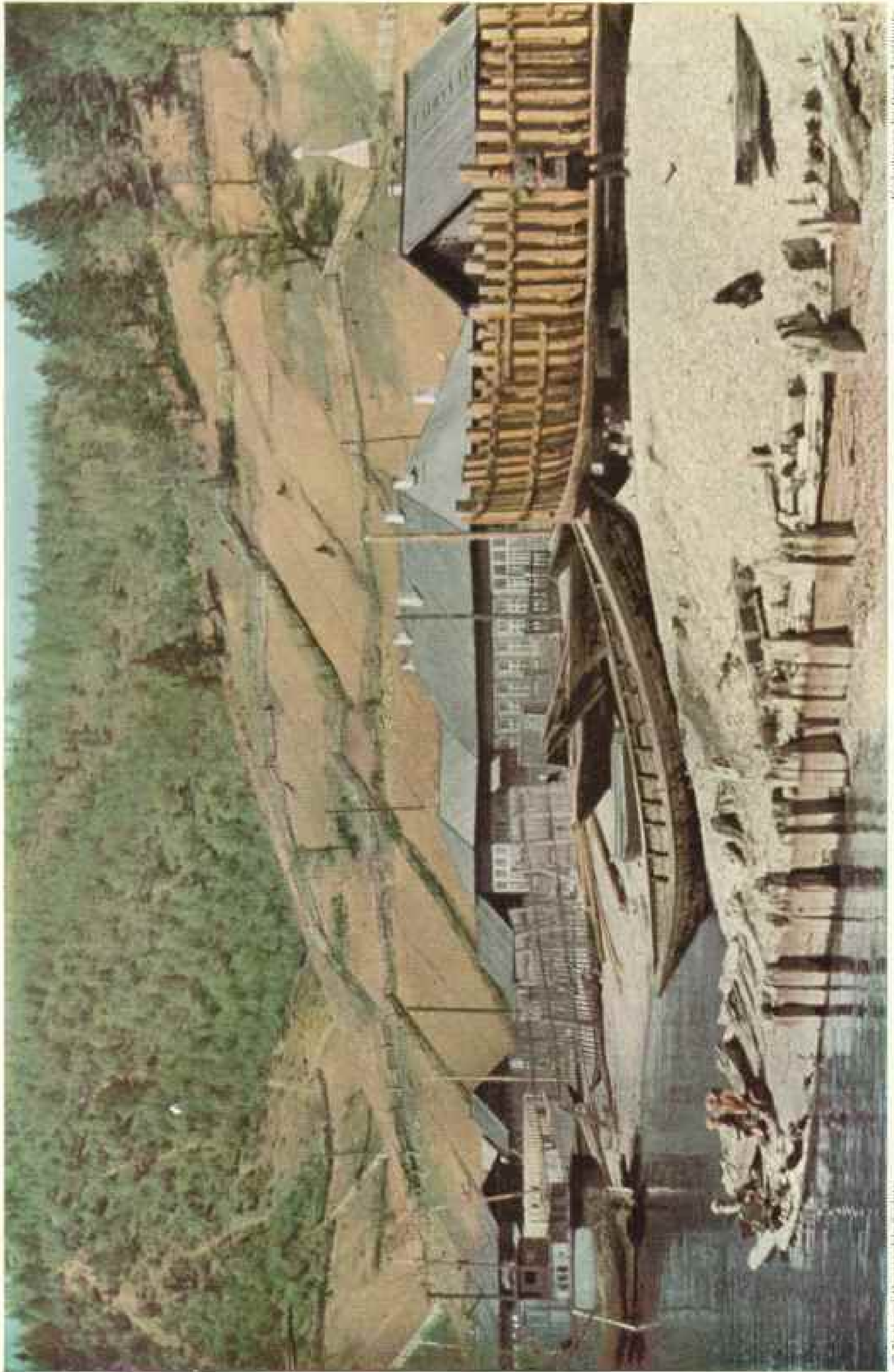
**For Roping Horses, a Cowboy Carries a Pole Lasso—It Lacks the Range of a Lariat**  
A good pole pony knows intuitively when to wheel or brace. Just as cunningly, the hunted mare bores head down into the herd. Kazakhs, who gentle colts from birth, do not admire pictures of our broncobusters' roughness.



© National Geographic Society

Kolobromes by Owen Lattimore

**It Takes Two to Milk a Mare—a Colt to Start the Flow, a Man to Fill the Pail**  
The result will be kumiss, a fermented milk wine. From it is distilled *airak*, of brandy strength. Though it has no age, "there's not a headache in a skinful" (so they say). Karakh men milk the mares, women the cows.

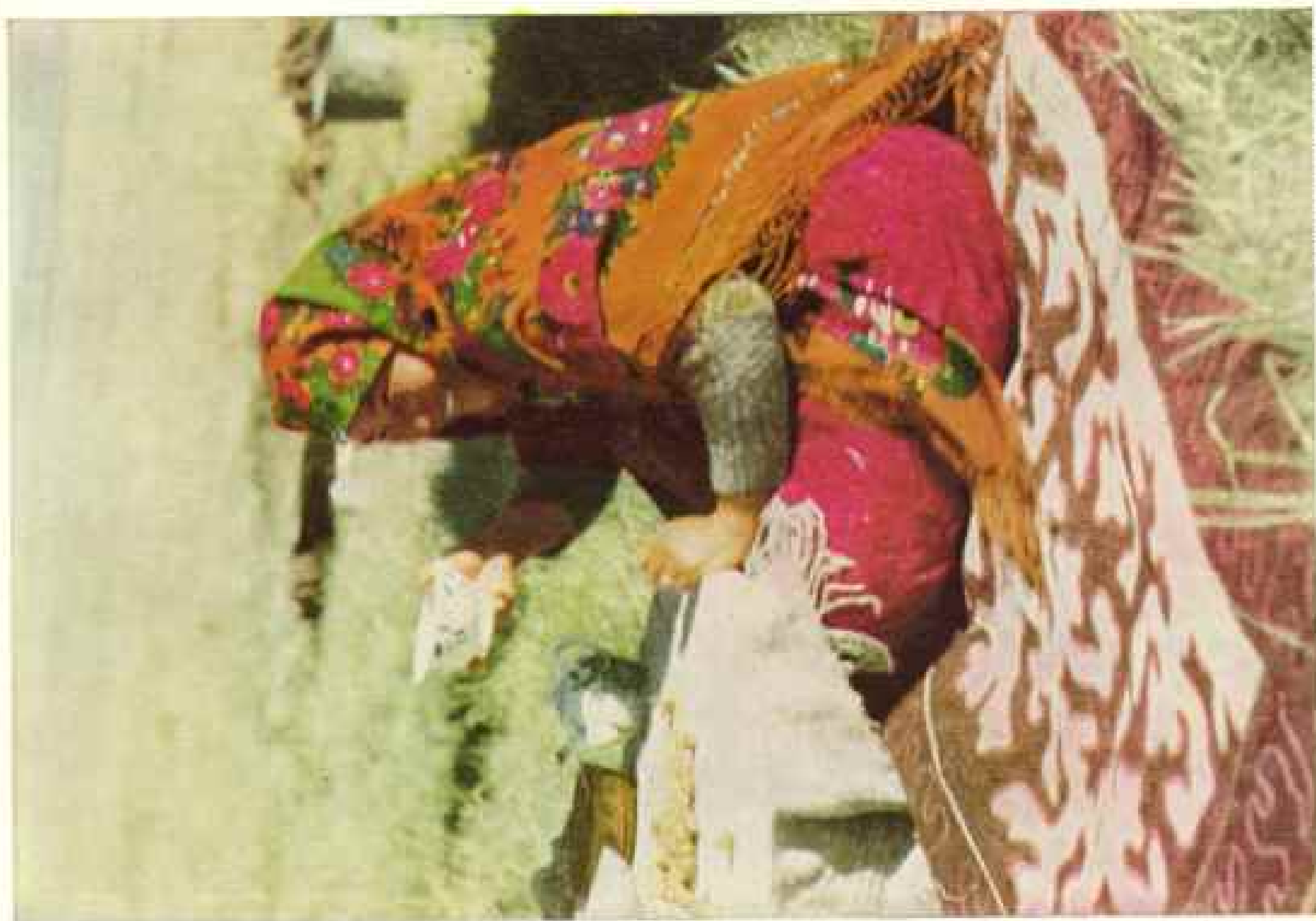


© National Geographic Society

**Small Fry (Left) Fish in Baikal, a Lake More Than a Mile Deep**

Museum of ancient life, Baikal contains more than 1,500 animal and vegetable species; most exist only in its waters. There are inland seals, fresh-water sponges, and deep-water fish. Seen from a wharf is a university's scientific station. Rail fences soar to timber. Right, a navigation market, on hill.

Reproduced by Open Learning



Photographed by Owen Jettison

Where Tencups Are Generous: a Kazakh Picnic on the Steppe



© National Geographic Society

Shirttail in or Shirttail out—Which Is Buryat Style?





**Baby's Cradle Is a Packing Box Swinging above Mother's Brick-and-Board Bed**

In summer they sleep in their poplar-shaded yard in Tashkent. The mother is a Tatar; by appearance she has some Russian blood. Her husband is an Uzbek. Tashkent, capital of the Uzbek S. S. R., is Central Asia's melting pot.



© National Geographic Society

Kulachromes by Owen Lattimore

**What Would Genghis Khan Say of This All-girl Orchestra (Barring a Boy in the Back Row)!**

They like brass in the community center of the Ernst Thaelmann collective farm. The traditional Mongol instrument is a fiddle. Russian shawls top Buryat costumes. Propaganda pictures line the wall.

ances. At one time a great warrior race, they fought a long time against the Tsarist advance into Central Asia; but, like the Indians of our own Western Plains, they fought without unity because they were divided into many tribes and clans, and were eventually crushed.

Even in defeat, the Tsarist authorities regarded them with distrust, and they were not recruited into the army. During the last war attempts were made to conscript them into labor battalions, but they rose in a bitter rebellion which preceded the Russian Revolution.

This rebellion during the last war is a measure of the change that has now taken place among the Kazakh people. The old tribal divisions have been discontinued, and they are now welded together as a single nation. Instead of rebelling against war service, the Kazakhs have contributed whole cavalry divisions to the Red Army.

Because the majority of the Kazakhs do not speak any language except their own (which belongs to the Turkish group of languages), they are not scattered among Russian troops but grouped in divisions of their own, under their own officers, and have shown a fighting quality which the Russians warmly acknowledge.

The nomadic life of the Kazakhs is much like that of the Buryats, except that most of their grazing lands are decidedly more desert, with a much hotter summer. These conditions make it necessary for them to use more camels and to move farther and more often; consequently the organization of "nomad bases" is even more important (page 676).

#### Education Among the Kazakhs

The achievements of the Kazakhs are even more striking than those of the Buryats, partly because, being a more numerous people, they can support a larger system of higher education of their own.

There is also a remarkable variety of industrial development in Kazakhstan. Semipalatinsk is the great stockyard city, with vast slaughterhouses, cold-storage facilities, and canning plants.

In addition, the dislocation of industry in western Russia has been turned to as good account as possible by relocating at Semipalatinsk industries dealing in leather and wool. As a consequence, Semipalatinsk is rapidly becoming a center of consumer-goods industry—still an exceptional development in the Soviet Union, where the emphasis has hitherto been on heavy industry.

In addition, Kazakhstan has important new industries at Karaganda and Balkhash.

At Karaganda, in addition to coal pits, there is opencut coal mining on a very large scale. The seams are so wide and deep and so near the surface that it is practicable to scoop off the top crust with bulldozers and steam shovels. This exposes the seam, and the steam shovels are again put to work, gouging a channel into the heart of the coal.

#### American Equipment for Coal Mining

With a channel opened, tracks are laid and trains run right into the body of the coal, where they are loaded by steam shovels working at the sides. Quantities of American equipment are used in this work.

The Soviet engineers are anxious to get additional electric shovels, to lessen the fire-hazard and to facilitate work in winter when temperatures are so low that steam operation is hampered; but in the meantime the steam shovels are being operated efficiently, often by women.

Until coal mining started, Karaganda was only a name in the desert. The city at the heart of the coal field was built from the beginning as a model city, its white public buildings and apartment houses defying the traditional drabness of a coal-mining center (page 661).

Miners from the Donets Basin, the South Wales of Russia, form the nucleus of the labor force. The chief engineer, a short, stocky man built just like a Welsh miner but with the Russian blondness, told us that he was a third-generation miner. He was the Russian equivalent—which we met again and again, handling the tough jobs and directing the key operations—of the American industrial leader who has come up from the ranks.

He told us the Kazakhs were rapidly entering the coal mines and that a high percentage of them were qualifying as Stakhanovites, or workers who exceed the normal output quota (and draw corresponding premium pay), not by working overtime but by skillful organizing of their own work and teamwork with others.

When we asked him whether he himself intended to stay after the war, he grinned and said that he was going back to the Donets Basin and let the Kazakhs run their own show. It was the Russian equivalent of "giving it back to the Indians."

At Balkhash, on the shores of Lake Balkhash (Ozero Balkhash), copper is mined at the Kounrad mine, a hill of copper-bearing ore that juts up from a desert plain.

A Russian engineer told me that when he first visited this region twenty years ago, as a university student on summer vacation, the desert was so bleak that only one or two



#### Lenin's Bachelor Home in Shushenskoe Is a Museum; Its Staff Stands on the Porch

Even the remoteness of his exile did not prevent Lenin from working to prepare the revolution that was to make him famous two decades later. In another house in this village Lenin lived with his bride, a comrade from his St. Petersburg union. There he wrote *Development of Capitalism in Russia* (page 664).

Kazakh families were encamped in the whole region.

The mines were from 31 to 43 miles apart, and it was possible to travel only by camel. Now there is a small but flourishing modern city on the shores of the lake.

The Russians call the Kounrad mine their Anaconda. The engineers told us that the flotation process of concentrating used there is the same.

Work in the mine and the processing plant is unhealthy because of the dust and the fumes; women are largely employed because of the drastic manpower shortage during the war.

The interests of the labor force, however, are protected by special hours, pay, food allowances, frequent health checkups, and vacations.

#### Farthest from Washington, D. C.

Flying on across Kazakhstan, we came to Tashkent, capital of the Uzbek Republic,\* the farthest point from Washington which we reached.

Here we were in the oasis zone of the vast Central Asian desert. The oases are fed by the glaciers and eternal snows of the Pamirs

and high mountains which demarcate the Afghan and Chinese frontiers.

In the oasis zone itself there is little or no rain. The arrangement is ideal for crops like fruits, melons, and cotton, because there is no danger of spoilage by unseasonable rain.

Instead, the hotter the weather gets and the more water is needed, the more the ice and snow melt in the distant mountains and the more water obligingly flows down the rivers, to be diverted into the irrigation channels.

In this land live the Uzbeks, whose tongue is closely related to the Turkish languages distributed so widely over Central Asia. Like other peoples of this region, they have had violent ups and downs in their history. At times they have attained high cultural levels; at other times their economic prosperity, together with the standard of civilization, has been violently shaken by devastating wars.

#### Cotton in Uzbekistan

The main story of Uzbekistan for a good many decades has been a story of cotton. The Russian cotton-textile industry was young

\* See "Russia's Orphan Races," by Maynard Owen Williams, NATIONAL GEOGRAPHIC MAGAZINE, October, 1918.



A Clubhouse for Executives Rewards a Group That Made Good in Karaganda Coal  
Gleaming white, the building represents a government gift to the leaders of a successful project in Kazakhstan.  
In most other countries such men would have been rewarded individually.

at the time of the American Civil War. Cut off from American supplies at a time when it had not yet accumulated capital reserves, it suffered heavy losses.

The whole industry was therefore much interested in the cotton of Central Asia, which was then being conquered by the Tsar's armies. This cotton was of inferior quality, but in due course American cotton was introduced. In order to safeguard the interests of the textile industry in central Russia, no mills were allowed to open in Central Asia, and the section suffered accordingly.

Moreover, the American cotton of Central Asia was not up to American quality. The reason for this has only recently been worked out and the problem solved by Soviet scientists.

The trouble was that the Central Asian cotton belt, though it had temperatures like those of the American Cotton Belt, lay much farther north, at about the latitude of New York State.

This meant longer summer days, and consequently much more sunlight, which upset the growth habits of the cotton and the date of maturing.

It was therefore advisable to cross American cotton with native Central Asian cotton in

order to breed a type with the growth habits of Central Asian cotton and the superior characteristics of American cotton.

Here the most difficult problem arose: one type of cotton had 52 chromosomes, the other 26, which made the cross infertile.

The problem was finally solved by chemical treatment of the plant with only 26 chromosomes, in order to step up the number of chromosomes long enough to get a cross which bore fertile seed.

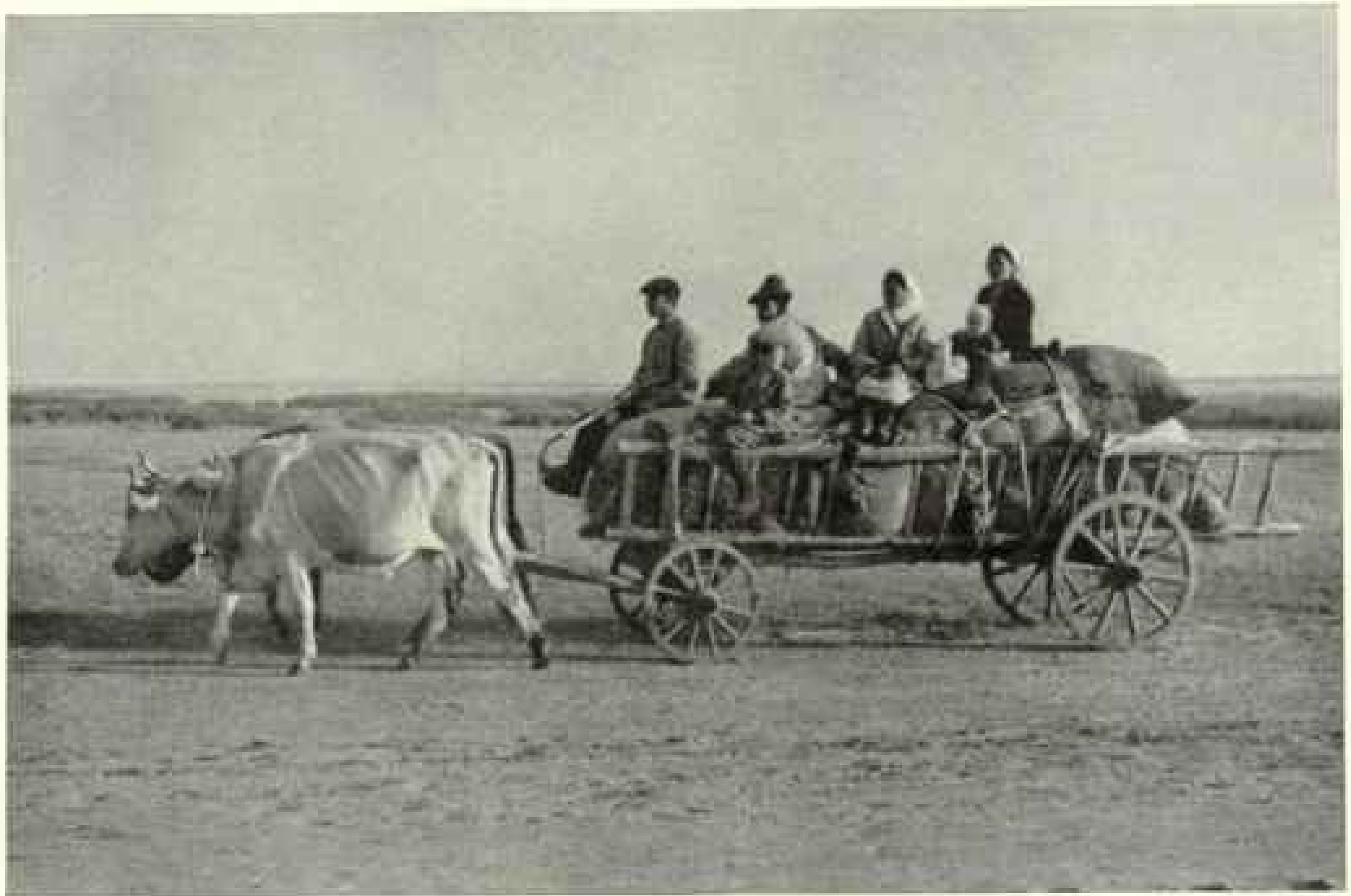
This has now been successfully done, and Uzbekistan is now producing more and more cotton of the highest quality.

The old ban against mills in Central Asia has been removed, and the area now produces both raw cotton and the finished commodity. Mining and other industries also are flourishing.

#### From Oasis Agriculture to Irrigation

The result is that Uzbekistan and all Central Asia are advancing with extraordinary rapidity from highly specialized oasis agriculture to a rounded and diversified economy of large-scale agriculture, increased by new dams and irrigation projects which the Uzbeks of the past could not attempt for lack of machinery.





#### Migrating Kazakhs Ride a Russian Four-wheel Cart Rather Than a Nomadic Two-wheeler

With harness variations, these versatile part-time nomads hitch horses or camels to the same cart. They travel between bases set up by their collective to modernize old migration routes (page 673).

The results are likely to be significant, not only in Soviet territory but in changing the general balance of agriculture and industry in "the unchanging East." We, who approach Asia from the sea or from the air, are accustomed to think of most of Asia as under-industrialized.

The whole problem of future industrialization changes if we take into consideration the fact that on the landward, inner Asian side of Asia, industrialization is already going on apace, served by a growing network of roads and railroads.

Turning back from Tashkent and re-entering Kazakhstan, the last stop of the journey in Soviet territory was made at Alma Ata, capital of the Kazakhs and center of Russia's motion-picture industry.

A beautiful city of white modern buildings and weathered old buildings of log construc-

tion, it stands on one of the most impressive sites in the world, an infinite flat plain at the very foot of mountains covered with eternal snow.

#### Deeper into the Heart of Asia

Saying good-bye to the Soviet hosts who had accorded the Vice President of the United States unlimited hospitality and extraordinary facilities for seeing the wide range of life and achievement in Soviet Asia, we took off in the morning and headed east.

We were bound on a journey still deeper into Asia, in the face of a sun that gleamed warmly on the yellow desert and sharply on the white mountains.

It was not long before we crossed the U. S. S. R. frontier into Sinkiang and were over Chinese territory.\*

Heading straight for the Talki Pass and the ancient road that leads to Urunchi (Tihwa), to the Great Wall, and to the distant interior of China, we cleared the pass in a few minutes.

Eighteen years before, it had taken a full day of hard riding for my wife and me to cross that same pass on horseback. It was a strange return, and one that only 18 years ago would have strained the wildest imagination.

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Desert Road to Turkestan," by Owen Lattimore, June, 1929; "By Coolie and Caravan Across Central Asia," by William J. Morden, October, 1927; "With the Nomads of Central Asia," by Edward Murray, January, 1936; "On the World's Highest Plateaus," by Hellmut de Terra, March, 1931; "First Over the Roof of the World by Motor," March, 1932, and "From the Mediterranean to the Yellow Sea by Motor," November, 1932, both by Maynard Owen Williams.

# Michigan Fights

BY HARVEY KLEMMER

**A** WORKMAN in one of Detroit's great automobile plants lowers a battery of drills onto a block of gleaming metal. The drills bite into the block with fierce precision, throwing off rivulets of white fluid and littering the floor with bits of tortured metal. Wisps of smoke, blue and bitter, rise from the deepening holes. The drills reach the end of their journey, pause, extract themselves.

The workman carefully inspects the holes. He smiles grimly, pushes back his cap with oil-stained hands.

"Hitler should have known better," he grins. "He made a great mistake in putting this war on wheels."

Yes, Hitler made a great mistake when he tried to conquer the world with machines. Michigan has helped see to that.

## "Powerhouse of Victory"

One-eighth of the weapons now speeding the day of victory are the production of Michigan factories. These weapons have been pouring from the forge and the machine shop and the assembly line at the rate of millions of dollars' worth a month.

Detroit is producing more munitions than any other city in the world. The rest of the State piles record output on record output. Tanks. Trucks. Planes. Ships. Guns. Ammunition. And, most important of all, engines.

"Boss" (Charles F.) Kettering, of General Motors, said at the beginning of the war: "Horsepower is war power" (page 703). Detroit and Michigan have the horsepower. They probably have more of what it takes to keep planes flying, tanks rolling, and ships sailing than all of Hitler's domain. A war of movement is right down our alley.

General Brehon B. Somervell expressed it thus: "When Hitler hitched his wagon to an internal-combustion engine, he opened up a new front, commonly called Detroit."

The citizens of Detroit concur. They adopted a new slogan for their city. It is "Powerhouse of Victory."

It does not take long—in Michigan—to realize that you are on a real battle front. The industrial sections roar with machinery. The sky by day is dark with smoke and it glows by night with the reflection of countless retorts.

Waves of workers advance on the various plants, tend their machines, retreat to the sanctuary of home. This State and this city, which gave us the technique of mass produc-

tion, mobilized that technique in irresistible force to crush our enemies.

The bulk of Michigan's war production is accounted for by the automobile industry. Automobile, truck, parts and accessory plants are now working on war orders. They have filled about 20 billion dollars in war orders since Pearl Harbor—more than 8½ billions in 1943. The country's automotive industry entered 1944 with a backlog of nearly 14 billions.

About half the contracts were in aircraft, including helicopters and gliders, engines, and parts. The remainder consisted principally of military vehicles, tanks, ammunition, artillery, and marine equipment.

War production has been rolling off the assembly lines at the rate of a million dollars an hour. The same energy and materials applied to peacetime production would yield 16,500,000 cars and trucks a year—more than three times the record 1929 output of 5,358,000 units.

## In Engines, Michigan Shines

In engines, Michigan shines; here the automotive industry has really gone to town. Michigan motors have gone to war by the tens of thousands—in the air, on the land, and at sea. War is horsepower, and when it comes to horsepower the Detroit area can outproduce the entire Axis world. It is no wonder that the mechanics of Michigan are jubilant and that they are inclined to think Hitler blundered when he put the war on wheels.

Michigan's other industries also have run full blast on war production.

The building of ships has been resumed (pages 685, 703). One of the most interesting operations is the building of destroyer escort vessels at Bay City. They are built upside down and roll over in launching.

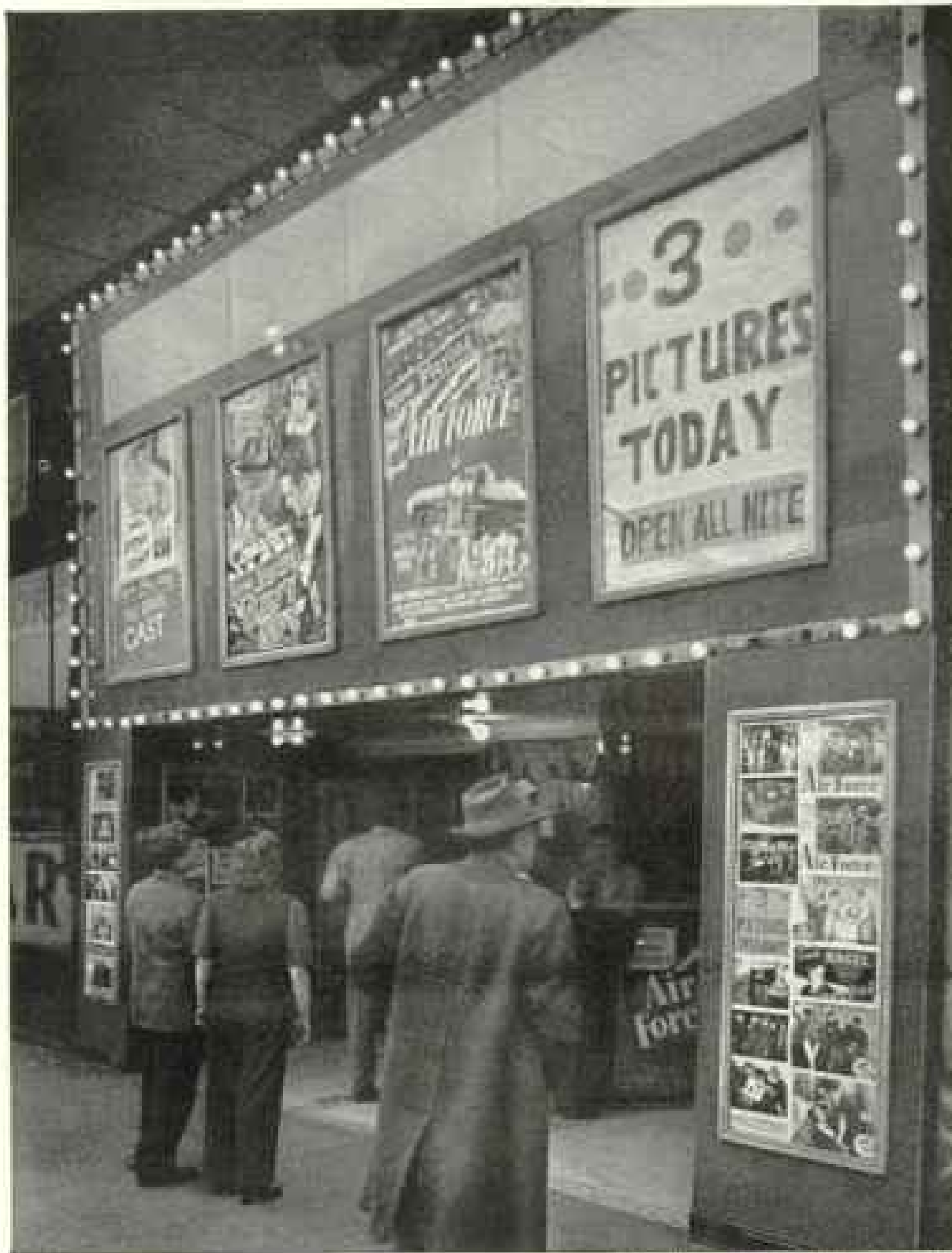
In the field of small powerboats, Michigan is pre-eminent. Gar Wood and Chris Smith have both gone to war.

The factories of Michigan also turned out radios for the armed forces, steel, chemicals, armor plate, parachutes, pharmaceuticals, gun carriages, and plastics.

Aircraft production, especially engines, is prodigious (pages 684, 702).

Detroit is today the leading tool and die center of the country.

Some amazing conversions have been undertaken. Thus a company which normally turns out vacuum cleaners is today making gas masks; lumberjacks are producing gliders;



Staff Photographer R. Anthony Stewart

### Detroit Is "Open All Nite" to Around-the-clock Shifts

Many seek relaxation on leaving jobs in the morning (page 697). Bowling alleys and movies are frequent choices. In the new reels workers watch how Allies are using what they make. Scanty numbers at the box office show the hour is between work shifts; otherwise a queue would have formed, even at 8 a. m.

Chrysler is making gyrocompasses; Reo, rocket fuses; General Motors' spark-plug division, machine guns; and its Buick Division, engines for the famed Liberator bombers.

Little plants have sprung up all over the State to supplement the work of established concerns. Garages, stores, even branch banks have been converted into factories.

Driving along Lake St. Clair, I saw a shack with ship propellers piled outside. A little farther along, in a field, was a sign and an arrow pointing into a neighboring wood lot. The sign said: "Thermo-Plastics." Look sharply before you enter a store in Michigan. It may look like a butcher shop, but when you

get in you are likely to discover that it is a machine shop.

Encountering an old friend in the western part of the State, I asked him how he was getting on with his law practice.

"Not so good," he replied. "I'm making munitions."

He had rented an old garage, rounded up a few workers, and become a manufacturer of anti-aircraft shells.

Another friend, also a lawyer, organized a small firm of toolmakers.

Great Lakes shipping has, for the third season, won a desperate race with ice, fog, and time. Prodigious quantities of the materials required for victory have been moved—coal, grain, limestone, and crumbly red hematite from the famed Mesabi, Menominee, and other ranges of the Lake Superior region.

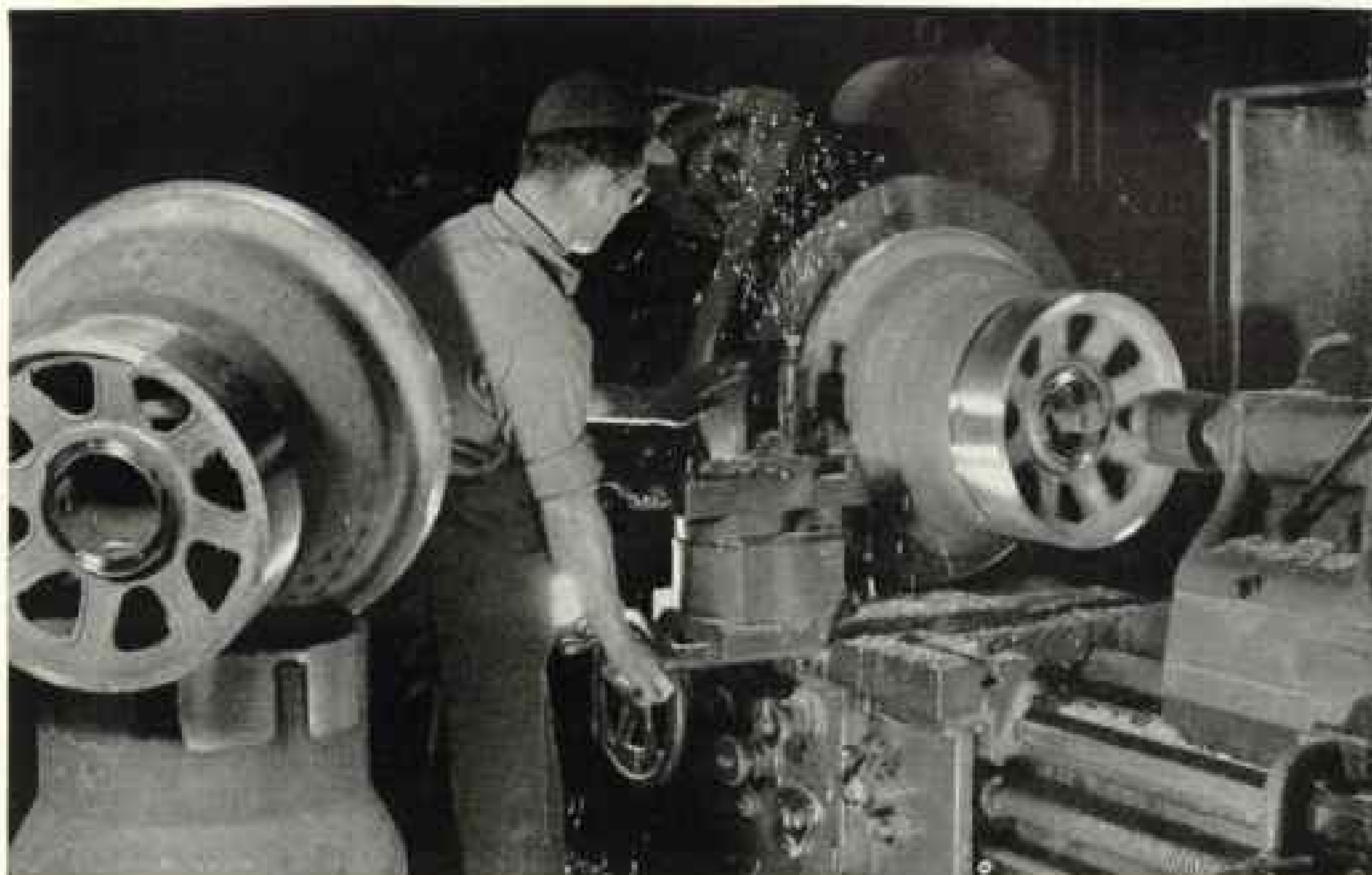
Ninety million tons of iron ore, one of the most vital materials of modern warfare, were scheduled for delivery to the arsenals of democracy this year.

Day and night, for more than seven months, a fleet of some

300 vessels has shuttled over the 800-mile route between the upper and the lower Lakes. It is one of the transportation miracles of the world. The vessels load in two or three hours, discharge in six or eight.

How these titans of the inland seas have toiled! The *D. G. Kerr* came into Conneaut, Ohio, and unloaded 14,275 tons of ore in 2 hours 45 minutes. The Nazis, with all of their vaunted achievements, have probably never matched that score.

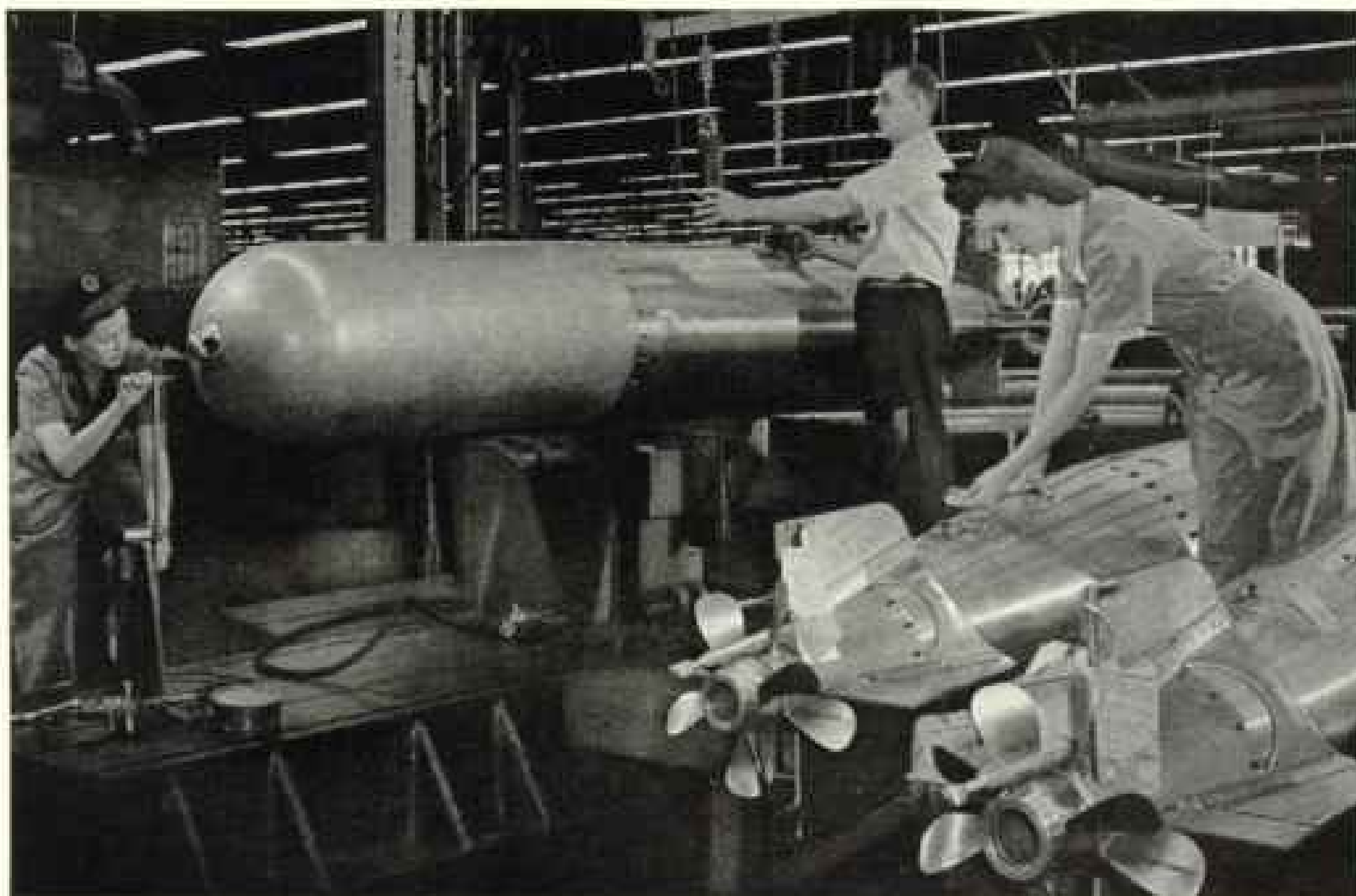
The great locks at Sault Ste. Marie have throbbled with activity. The Soo Canal system, even before the war, was by far the busiest waterway on earth, in some years



Staff Photographer Willard R. Culver

### Bay City Machines a Landing Wheel Made of Magnesium Alloy, a Tough Lightweight

Magic Downmetal is Dow Chemical Company's answer to *Elektron*, German aviation's new structural metal. Two-thirds as heavy as aluminum alloy and one-fourth as heavy as steel, it has helped to give the Allies mastery of the air. In Michigan, Dow extracts magnesium from brine wells; in Texas it uses sea water as an inexhaustible mine. Even when cold, magnesium alloy is easy to work.



Staff Photographer W. Anthony Stewart

### For an Aerial Torpedo's Price, General Motors Could Build Half a Dozen Cars

For accuracy, a "tin fish" is balanced at final assembly in GM's Pontiac Division.





### As a Result of the Bloodless "Toledo War" with Ohio, Michigan Is Split in Twain by Water

In 1835, two years before admission to the Union, Michigan Territory quarreled with Ohio over the borderline "Toledo strip." Both claimants called out militia. Congress gave Ohio the 470-square-mile strip, but Michigan got a profitable consolation, Wisconsin Territory's 17,000-square-mile ore-rich peninsula.

passing more tonnage than the Suez and Panama Canals combined (Plate XII). For the past three years, it has been one of the most vital life lines of the war. Eighty-five percent of the iron ore required by American industry must pass through this channel. It is no wonder that Sault Ste. Marie has become one of the most closely guarded spots in the United States.

Although Michigan has gone into the air and out to sea, it is primarily interested in things that roll. In 1942 the Army's Ordnance Tank Automotive Center was taken out of Washington and transferred to Detroit, with Brig. Gen. A. R. Glancy, a former General Motors vice president, in charge.

The "TA" Center created quite a stir in Detroit. The Army had to have space quickly. The 40-story Union Guardian Building looked good to the Army, and hundreds of startled tenants were told to move out.

#### A Bomber an Hour at Willow Run

In addition to serving as an armorer of the United States, Michigan has also turned out enormous quantities of material for our Allies.

The Russians have always leaned on Detroit; Detroit engineers, architects, and industrialists figured largely in the first Five-Year Plan. A great deal of work has been done for Britain, notably in filling the famous Rolls-Royce engine contract which was turned down

by Ford and eventually landed at Packard.

A major war enterprise is the fabulous bomber plant built for Henry Ford by the Government at Willow Run. It is no secret that at Willow Run they can turn out a bomber every working hour if military needs require it.

I used to visit friends on a farm which once occupied this site. It gave me a queer feeling to go back. Willow Run just staggers the imagination. There is no other way to put it. Everything about the place is "supercolossal."

It is so big that workers must be careful to enter the right gate or they may have to walk for half an hour to reach their spot in the assembly line. The buildings seem to go over the horizon and out of sight. Highways, complete with cloverleaves and grade separations, cluster about the gates like skeins of tangled yarn.

Willow Run is a bone of contention for the surrounding countryside. Building such a factory in an area where there was neither housing nor transportation was bound to result in plenty of headaches (Plate II).

Housing in Willow Run, as elsewhere in wartime Michigan, is the principal difficulty. Neighboring communities, especially Ypsilanti, have been crowded to the point of explosion. Housing developments were put in by the Federal Government, including dormitories for single workers. Still there were not enough accommodations to go around (page 700).



S U P E R I O R

O N T A R I O

C H I C A G O

L A K E

H U R O N

A N N

O N T A R I O

I L L I N O I S

C h i c a g o

I N D I A N A

O H I O

L A K E E R I E

T o l e d o

Keweenaw Peninsula  
Copper Harbor  
Manitou Island  
Keweenaw Point  
Point Isabelle

Keweenaw Bay  
Point Abbaye

Marquette  
Au Sable Point  
Grand Island  
Munising

Mountain Norway  
Vulcan  
Niagara Falls  
De Pere

Menominee  
Fighting Rock  
Marquette  
Sargeon Bay

Green Bay  
Algoma  
Kewaunee  
Two Rivers

Manitowoc  
Chilton  
Kiel  
Sheboygan

Wauwatosa  
Milwaukee  
Cudahy  
South Milwaukee

Racine  
Kenosha  
Zion  
Waukegan

North Chicago  
E. Chicago  
Gary

Michipicoten  
Cape Gargantua  
Caribou

Whitefish Point  
Batchawana  
Parisienne  
Soo Canals

Munising  
Munich  
Newberry  
Trout Lake

St. Ignace  
Straits of Mackinac  
Beaver Island  
Mackinac City

Traverse City  
Manitou Islands  
Sleeping Bear Point

Frankfort  
Manistee  
Ludington  
Scottville

Reed City  
Hart  
Big Rapids  
Shelby

Muskegon  
Muskegon Heights  
Grand Haven  
Holland

South Haven  
Kalamazoo  
Hartford  
Benton Harbor

St. Joseph  
Decatur  
Vicksburg  
Three Rivers

Whitefish Point  
Batchawana  
Parisienne  
Soo Canals

Whitefish Point  
Batchawana  
Parisienne  
Soo Canals

St. Ignace  
Straits of Mackinac  
Beaver Island  
Mackinac City

Traverse City  
Manitou Islands  
Sleeping Bear Point

Frankfort  
Manistee  
Ludington  
Scottville

Reed City  
Hart  
Big Rapids  
Shelby

Muskegon  
Muskegon Heights  
Grand Haven  
Holland

South Haven  
Kalamazoo  
Hartford  
Benton Harbor

St. Joseph  
Decatur  
Vicksburg  
Three Rivers

Winnipeg Lake  
Chapleau  
Rice Lake

Winnipeg Lake  
Chapleau  
Rice Lake

St. Ignace  
Straits of Mackinac  
Beaver Island  
Mackinac City

Traverse City  
Manitou Islands  
Sleeping Bear Point

Frankfort  
Manistee  
Ludington  
Scottville

Reed City  
Hart  
Big Rapids  
Shelby

Muskegon  
Muskegon Heights  
Grand Haven  
Holland

South Haven  
Kalamazoo  
Hartford  
Benton Harbor

St. Joseph  
Decatur  
Vicksburg  
Three Rivers

Winnipeg Lake  
Chapleau  
Rice Lake

Winnipeg Lake  
Chapleau  
Rice Lake

St. Ignace  
Straits of Mackinac  
Beaver Island  
Mackinac City

Traverse City  
Manitou Islands  
Sleeping Bear Point

Frankfort  
Manistee  
Ludington  
Scottville

Reed City  
Hart  
Big Rapids  
Shelby

Muskegon  
Muskegon Heights  
Grand Haven  
Holland

South Haven  
Kalamazoo  
Hartford  
Benton Harbor

St. Joseph  
Decatur  
Vicksburg  
Three Rivers

St. Joseph  
Decatur  
Vicksburg  
Three Rivers



STAT PHOTOGRAPHER R. ANTHONY STEWART

**At 3:20 by Detroit's City Hall Clock, Cadillac Square Has No Traffic Problem—Yet!**

This vortex of more than a million and a half people is one of the world's busiest intersections. At rush hour it is black with throngs. A Navy recruiting station occupies the dry-land warship. Greater Penobscot Building, Michigan's tallest, is 47 stories topped with a 100-foot neon-lit aviation beacon.



Detroit Free Press

### As Court Removes the "Curse of a Name," Detroit's Five Fuhrers Become Fullers

"This family carried the name honorably for generations," said their lawyer, "but an ignominious character using the title Führer (leader) cast odium on it." Wives and children, too, are Fullers now.

Workers commute from as far away as Adrian, a distance of 43 miles. Many come 40 miles from the east, including 20 miles through Detroit traffic. Trailer camps dot the fields for miles around. People live in anything with a roof on it—barns, garages, stores. One family found refuge in a chicken coop.

Private contractors have attempted to take up some of the slack. There is a new subdivision near Dearborn with an enormous sign on the highway:

"Houses! \$100 down. No red tape. Move in."

The doubling and quadrupling of populations has naturally created problems in near-by communities. Hospitals are inadequate; nor are there enough doctors and dentists.

The people have pitched in, however, and somehow or another have managed to get along. The bombers are rolling—that is the important thing.

A good share of the credit for the spec-

tacular achievements of Michigan industry must go to labor. The record of Michigan labor is a fine example, on the whole, of what the American worker can do when he has a war on his hands.

Management and labor do not see eye to eye on many things (they never do), but each respects the other's ability when it comes to production. The Michigan worker is one of the most productive workers in the world. He gets high wages, but he earns them.

One of the big automobile companies has calculated that it would cost more to make automobiles in India, where the men are paid a few cents a day, than it does in Detroit, where the average wage is about ten dollars.

#### Workers from Far Away

Employers have had to go far afield for help. The State was forbidden by the War Manpower Commission to recruit in Ohio, Illinois, Wisconsin, and Indiana. The result was that workers had to be brought in from a





Staff Photographer B. Anthony Stewart

### In an Air-conditioned Building, an Airplane Engine Gets a Dust-proof and Moisture-proof Cover

In its River Rouge plant, Ford builds this 2,000-horsepower Pratt & Whitney engine for the Republic Thunderbolt, Martin Marauder, Curtis Commando, and the Navy's PV-1 patrol plane. Ford-built Liberators use 1,200 horsepower Pratt & Whitney's made by Buick and Chevrolet (pages 677-8). This interchange exemplifies the automotive competitors' wartime collaboration.

considerable distance, many from areas where industry on the Michigan pattern was unknown.

A woman who handles personnel relations at one of the largest plants told me that the plight of some workers, unused to factory conditions and unfamiliar with modern conveniences, was pathetic. She described people who had never seen modern plumbing, had never been to a movie, had never ridden on a train.

One man, I was told, reported to the employment office without mentioning the fact that he was blind. Another found the monotony of tending machines too much for him and announced that he was going back to his native mountains. After he had drawn his pay, there appeared a sign on the time clock: "Going home. Pair of shoes for sale."

The president of a body-building company was startled to discover the wife of a colleague in his plant.

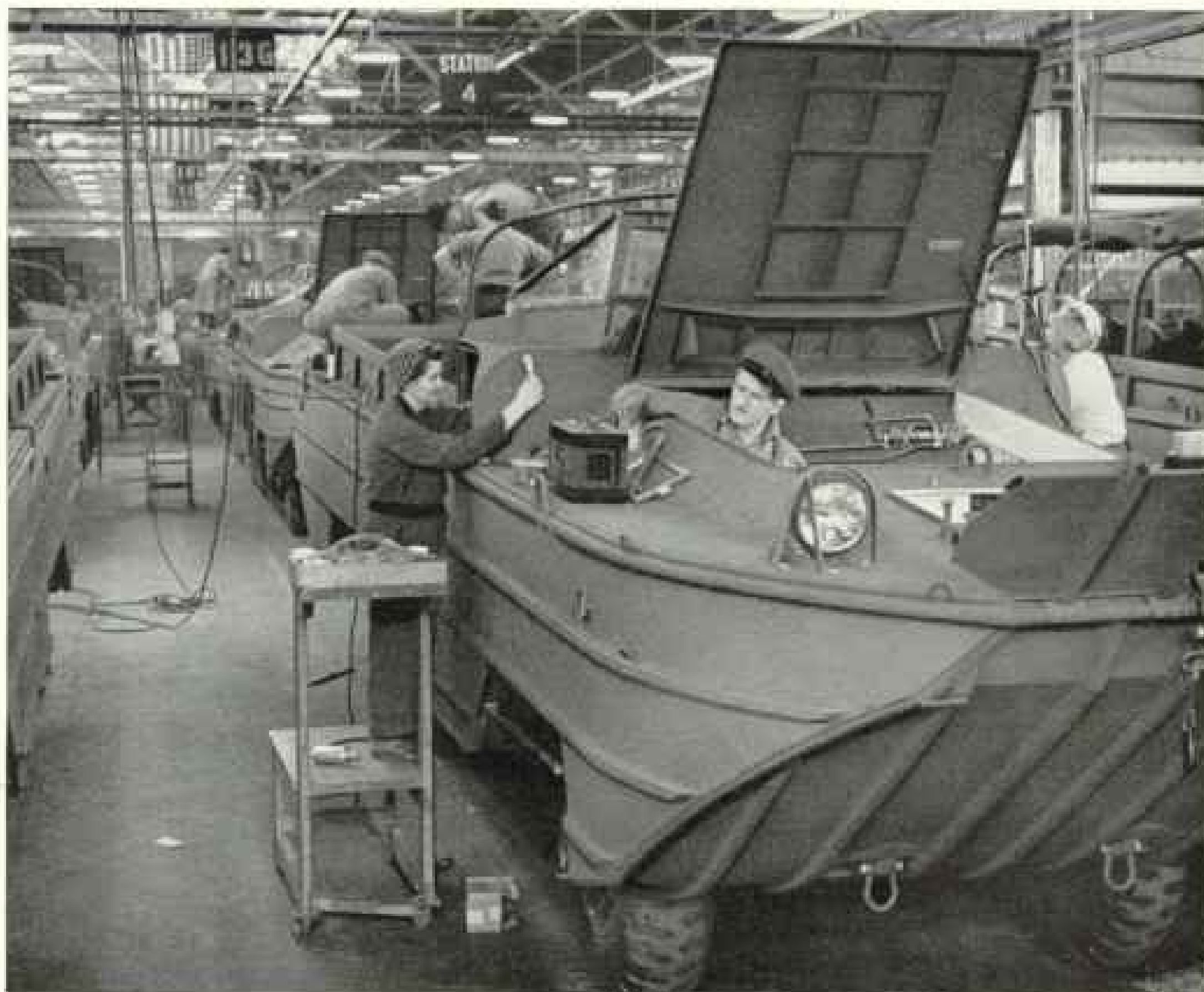
"What in the name of heaven are you doing here?" he asked.

"Making bullets," she replied nonchalantly and went on with her work.

### Women's Part in Michigan Industry

Women have always played an important part in Michigan industry. They are doing even more in the war. Consider Eleanor Hardy, mother of 14, who went to work in a Detroit war plant. Mrs. Hardy's mother-in-law looks after the children. Mrs. Hardy spends ten hours a day, six days a week, at a lathe.

Wages have been good. Weekly factory earnings have averaged around \$62 in the Detroit area, \$56 for the State as a whole.



Staff Photographer D. Arthur Stewart

### GMC's Truck Division Builds Ducks with Propellers for Water, Six Wheels for Land

A dash from heaviest surf to toughest beach does not break these boat-trucks' stride. In Italy ducks crossed a defended river, served as offshore decoys, and ran supplies through harbor wreckage. In the Pacific they charged Japanese outposts with rocket guns blazing. In France they set ashore munitions, troops, King George, and the Allies' top generals. Land speed is 50 miles an hour, water speed a military secret.

The people of Michigan have not contented themselves with turning out weapons. They have also given generous support to other phases of the war effort.

A glance at a globe will show that Michigan industries are not beyond the range of foreign bombers; in fact, they are closer to the enemy, via the northern route, than some coastal areas. This probably accounts for the stress which has been placed upon civilian defense in Michigan.

#### Victory Gardens Produce

Elaborate security precautions have been taken. There has been no sabotage worthy of mention, but the State has had several first-class spy scares. Max Stephan, who assisted an escaped German flyer, was saved from death only through the intervention of President Roosevelt. Six persons, led by a bogus countess and including the wife of a university

professor, were seized by the FBI in a roundup.

A proposal that Japanese internees be placed on Michigan farms was greeted with an emphatic no.

Victory gardeners produced 500,000 tons of food, valued at \$20,000,000, last year. The acreage devoted to victory gardens in Michigan is slightly greater than that utilized for the commercial growing of vegetables.

More than half a million Michigan men have gone into the armed services.

The exploits of Tom Harmon, former All-America halfback at Ann Arbor, have been splashed in the newspapers. The people are proud of Dewey, Lt. Gen. William S. Knudsen, Eddie Rickenbacker, Prentiss M. Brown of the OPA, and scores of other talented sons who have gone out to serve in larger fields.

The pre-eminence of Michigan in the realm of production is no accident. History,



Staff Photographer W. Anthony Stewart

### Monument to Whimsy That Broke a Legislative Deadlock; the State Capitol at Lansing

In choosing a permanent capital, Michigan's legislators wrangled for months at Detroit over the merits of rival cities. When a prankster offered the "township of Lansing"—a wilderness—the tired lawmakers accepted the compromise that spared everyone's feelings. Called "capital of the woods," Lansing then had a sawmill and one log house.

topography, and natural resources have all contributed to the upbuilding of the kingdom of mass production.

The Ojibways, the Ottawas, and the Potawatomis once ruled this land. The first white men to come here were missionaries and traders from the St. Lawrence Valley. They came in the beginning by way of Lake Nipissing and Georgian Bay; later through the lower Lakes.

#### Beaver Hats Fostered Exploration

In 1634 Jean Nicolet came through the Straits of Mackinac looking for the Northwest Passage; he was the first known visitor to Lake Michigan. In 1669 Louis Jolliet passed through the strait now known as Detroit River.

Then came the Jesuit missionaries—Father Isaac Jogues, Father Charles Raymbault, Father Claude Dablon, and the gentle but indomitable Jacques Marquette. In 1701

Antoine de la Mothe Cadillac founded a trading post which was to become the city of Detroit.

They were looking for two things, these early explorers. The priests sought souls. The traders were interested in furs—beaver furs. Beaver hats at that time were very much in demand in the Old World. They brought a high price. A European fad brought the voyageurs to Michigan and led to the settlement of this area.

The topography of Michigan, as a glance at the map will show, is unusual to the point of being fantastic (map, pages 680-1). The State is in two pieces.

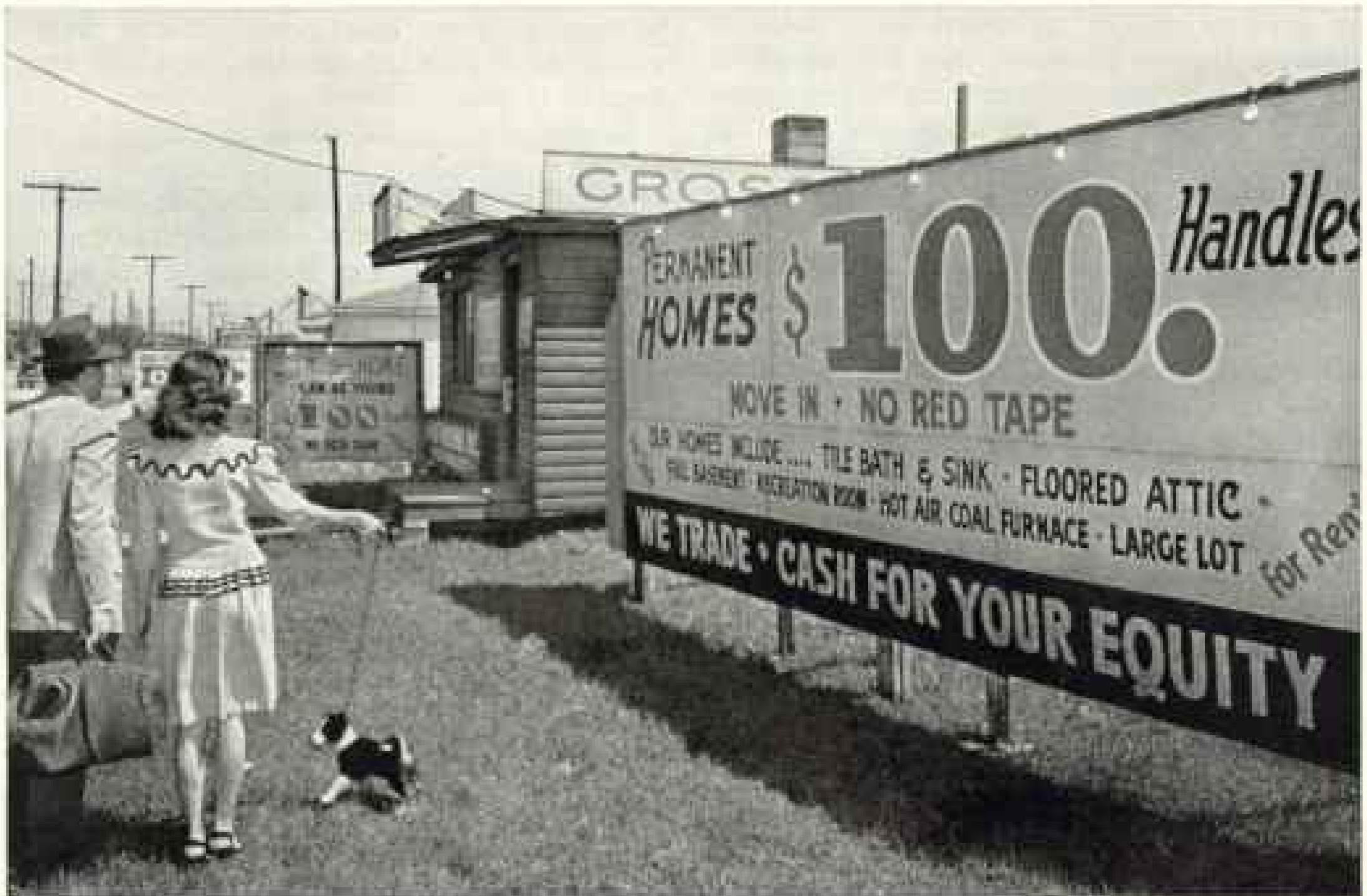
Every school child knows that the Lower Peninsula resembles a hand, with Lake Michigan running down the little finger, Mackinac Island at the tip of the middle finger, and the area around Saginaw Bay known as the "Thumb."



Joe Clark

### Henry Ford, 81 Years Old, Rides the Reaper He Used as an 11-year-old Boy

Mr. Ford always dreamed of closer ties between industry and agriculture. His slogan: "One foot in industry, the other in the soil." Since the death of his son Edsel, he has resumed direction of his enterprises.



Staff Photographed by Anthony Stewart

Put up \$100 and Move In, Says a "No Red Tape" Housing Division Remote from Detroit. Situated between Willow Run and Dearborn, the development is an expression of confidence in Willow Run's future. During wartime, trailers, barns, garages, stores, and even a chicken coop served as homes.



Four of the five Great Lakes lave the shores of the two peninsulas. The peninsulas are not joined, at their tips, by any sort of land connection; to go from one to the other requires a journey by boat.

In addition to surrounding Michigan with water, Nature also saw fit to endow this State with a generous supply of inland lakes. There are between 5,000 and 11,000 of these smaller bodies of water, depending on how far down you count. Many of the lakes contain islands.

There are 2,000 streams in Michigan. They range from gurgling brooks to the busy Detroit and the equally busy St. Clair, each upwards of a mile wide.

#### An Inland Beach Line

The State is flat in the south, hilly to mountainous in the north. Much of the southern portion once was under water. The remains of an ancient beach line can still be seen in Ypsilanti.

The climate is varied but temperate, on the whole. It should be temperate, as the State is exactly halfway between the Equator and the North Pole.

It will be seen from the foregoing that Michigan is something of a curiosity geographically.

The Bureau of the Census gives Michigan an area of 58,216 square miles. Chase S. Osborn, former governor, and his daughter, Stellanova Osborn, have challenged these figures. They contend that the area of Michigan should include adjacent waters of the Great Lakes as far as the international boundary.

This claim, if allowed, would expand the State by nearly 40,000 square miles, to a total of 98,176 square miles. It would also lift Michigan from 22d place among American States to tenth place, from the third largest State east of the Mississippi to by far the largest.

One thing is sure, however. That is that Michigan is generously supplied with many of the natural resources required for a healthy economy.

The principal minerals are copper and iron. There is evidence on Isle Royale and on Keweenaw Point that this metal was obtained in prehistoric times. Michigan was the leading producer of copper for many years, but has now fallen to sixth place.

At the famous Calumet and Hecla Mine there has been some expansion in production to serve the needs of war.

Iron was discovered in 1844 near Ishpeming. Today Michigan is our second largest producer. Some of the deepest iron mines in the

world are in the Gogebic Range. The Eureka Mine, near Ironwood, has a working depth of 3,276 feet.

The importance of copper and iron to Michigan is indicated by the frequency with which these metals crop up in place names. Thus we have such cities as Ironwood and Iron Mountain. The entire area about the Keweenaw Peninsula is known as the "Copper Country."

Michigan is a heavy producer of salt (page 698) and limestone. Petroleum, graphite, manganese, and natural gas are also found.

At Alabaster, there is a gypsum bed 18 to 23 feet thick. Below this quarried bed lie five or more beds from 4 to 22 feet thick.

There is a good supply of cement, and some coal, mostly low-grade bituminous.\*

The production of chemicals taken from the ground increased rapidly. The principal commodities are bromine, calcium chloride, magnesium, and iodine.

#### Tall Timber on the Way Back

One of Michigan's greatest resources has been timber. The entire State was once covered with forests. But within the space of a few years, when lumber was badly needed in the development of the Middle West, the land was stripped, and the lumbermen moved on, leaving in their wake ghost towns, barren earth, huge piles of sawdust, and the ever-present menace of fires.

Today the tall timber of Michigan is well on the way back.

Despite the terrible fires which followed the early cuttings, Michigan's fire-control program of the last two decades is enabling the forests to come back under their own power and to give to the State again the lush green face it wore when the white man came.

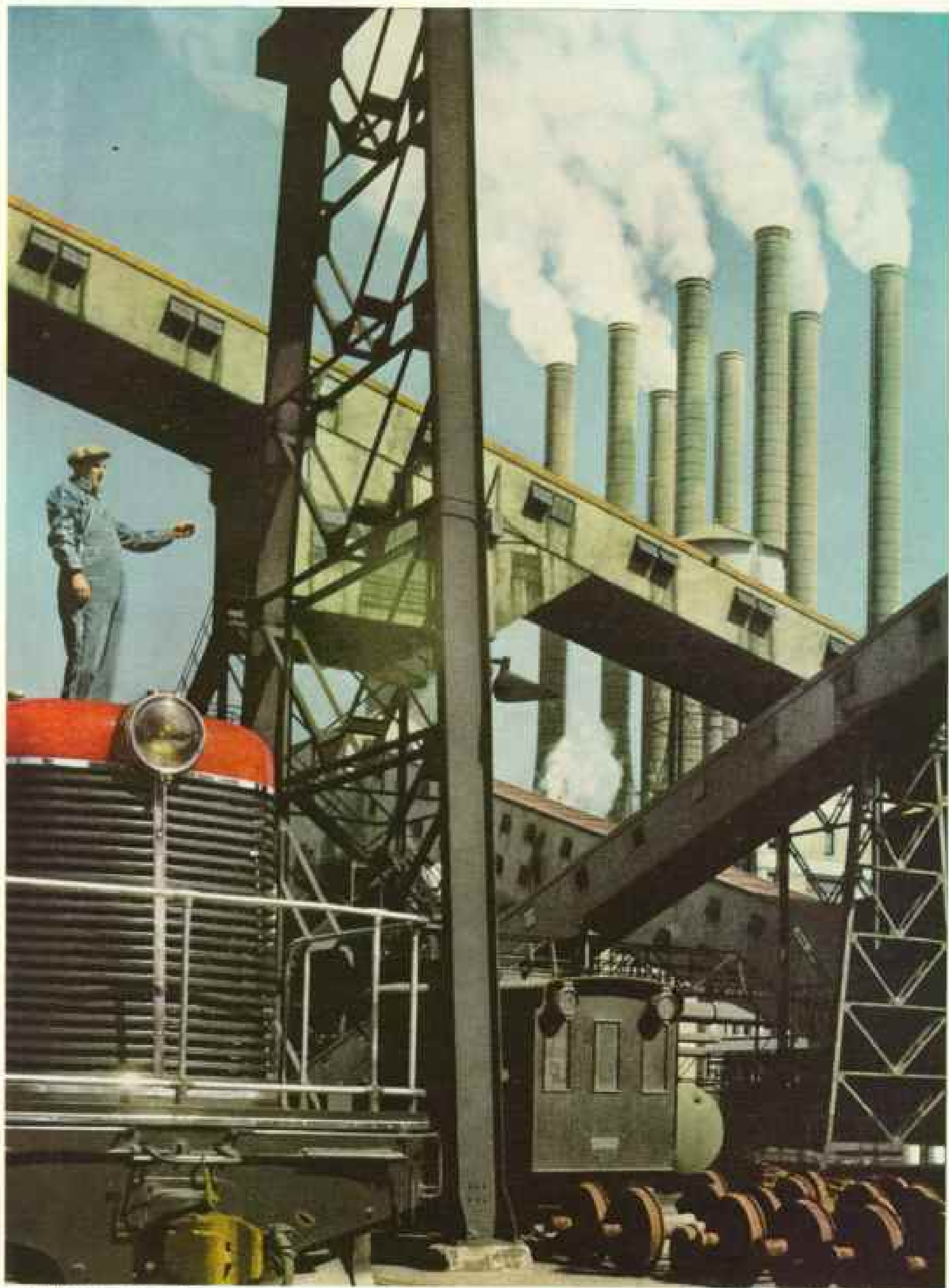
There has also been considerable planting by all agencies, with some 750,000 acres planted to date; since 1933, about half a billion seedlings have been planted.

Federal and State forest landholdings now total approximately seven million acres.

There are still fine stands of virgin timber. There are 130,000 acres of the hardwood hemlock types, chiefly maple, birch, basswood, and hemlock, in the Porcupine Mountains, one of the largest tracts of its kind in the country. At Grayling is a 60-acre tract of virgin white and Norway pines, the so-called "Hartwick pines," now incorporated in a State park; in Luce County there is another, which is now being logged off by private operators.

\* See "Coal: Prodigious Worker for Man," by Albert W. Atwood, NATIONAL GEOGRAPHIC MAGAZINE, May, 1944.

## Great Lakes and Great Industries



© National Geographic Society

Reproduction by B. Anthony Stewart

### Against the Sky, Eight Smoking Fingers Write the Story of Michigan Power

In Dearborn, Detroit's busy neighbor, giant stacks crown a Ford powerhouse. River Rouge plant boilers generate current enough to run peacetime Boston. Carrying coal and coke, the inclined shods cover part of a 100-mile conveyer system. A Diesel, one of the plant's 21 locomotives, switches cars.



© National Geographic Society

**At Willow Run, a Liberator's Fuselage Makes a Cozy, Private Nook for Eating Homemade Lunches**

Women have gone into Michigan's war plants in large numbers. They constitute about 35 percent of Willow Run's payroll. These three do a variety of assembly and inspection jobs. At home or in a bomber, cramped quarters are likely to be their lot. Oxygen tanks arrive ready to attach.

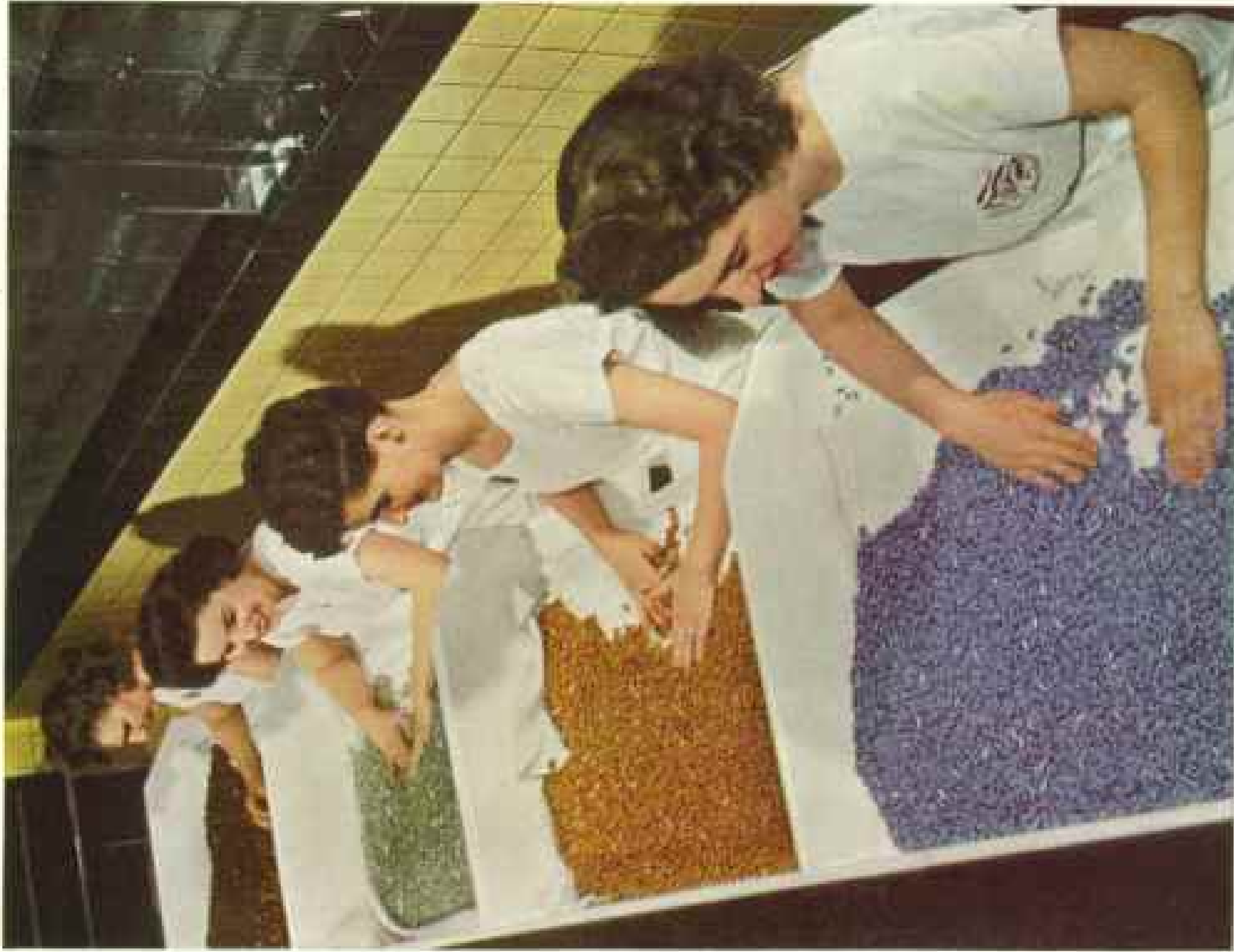
Photographs by R. Anthony Stewart



© National Geographic Society

**Children Like Mortimer, Papier-mâché Traffic Cop**

In East Lansing, the dummy stands guard on the Detroit-Grand Rapids road. Twice he has suffered collisions in line of duty. The girl's armband identifies her as a member of a squad which watches exits during fire-escape drill.

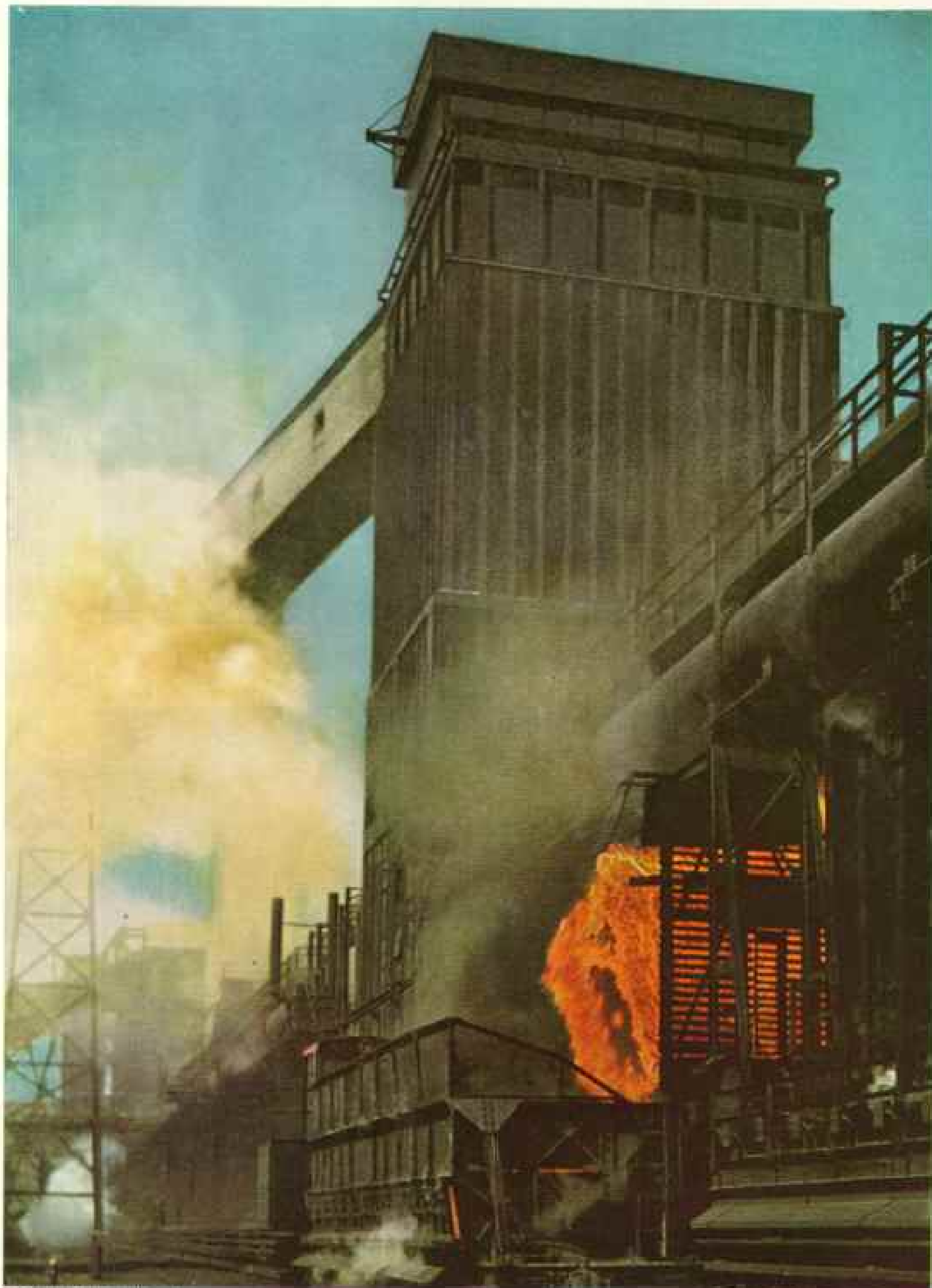


Contributed by B. Allison Stewart

**Detroit, Forger of Deadly Arms, Makes Lifesaving Drugs**

The city was a pharmaceutical center 40 years before it became the automobile capital. Medicines, as well as motors, carry its fame abroad. At Parke-Davis Laboratories, these girls inspect millions of capsules.





© National Geographic Society

Kodochrome by B. Anthony Stewart

**Oven-fresh Coke, Rammed into Fresh Air, Bursts into Flame at River Rouge**

Soon the fiery mass will be quenched in water. Mixer and pulverizer, the tower prepares coal for baking. Daily, 4,500 tons of coal flow into Ford ovens. Out come 3,300 tons of coke and 52,500,000 cubic feet of gas.

## Great Lakes and Great Industries



### Polish Youths in Old World Costumes Entertain a Nursery Class with Folk Dances

On festive occasions in Hamtramck, Polish community within Detroit, young and old bedeck themselves in colorful dress. This canteen, like many others, keeps the children of working mothers out of mischief.



© National Geographic Society

Kodachrome by D. Anthony Stewart

### Yanks and South Africans Look On as Young Nova Scotia Sits for His Picture

Just across the border from Canada, a Detroit USO Club entertains visiting British Empire boys. Photograph and negative will be sent to the subject's relatives without charge. His number, 464, is an identification for mailing.



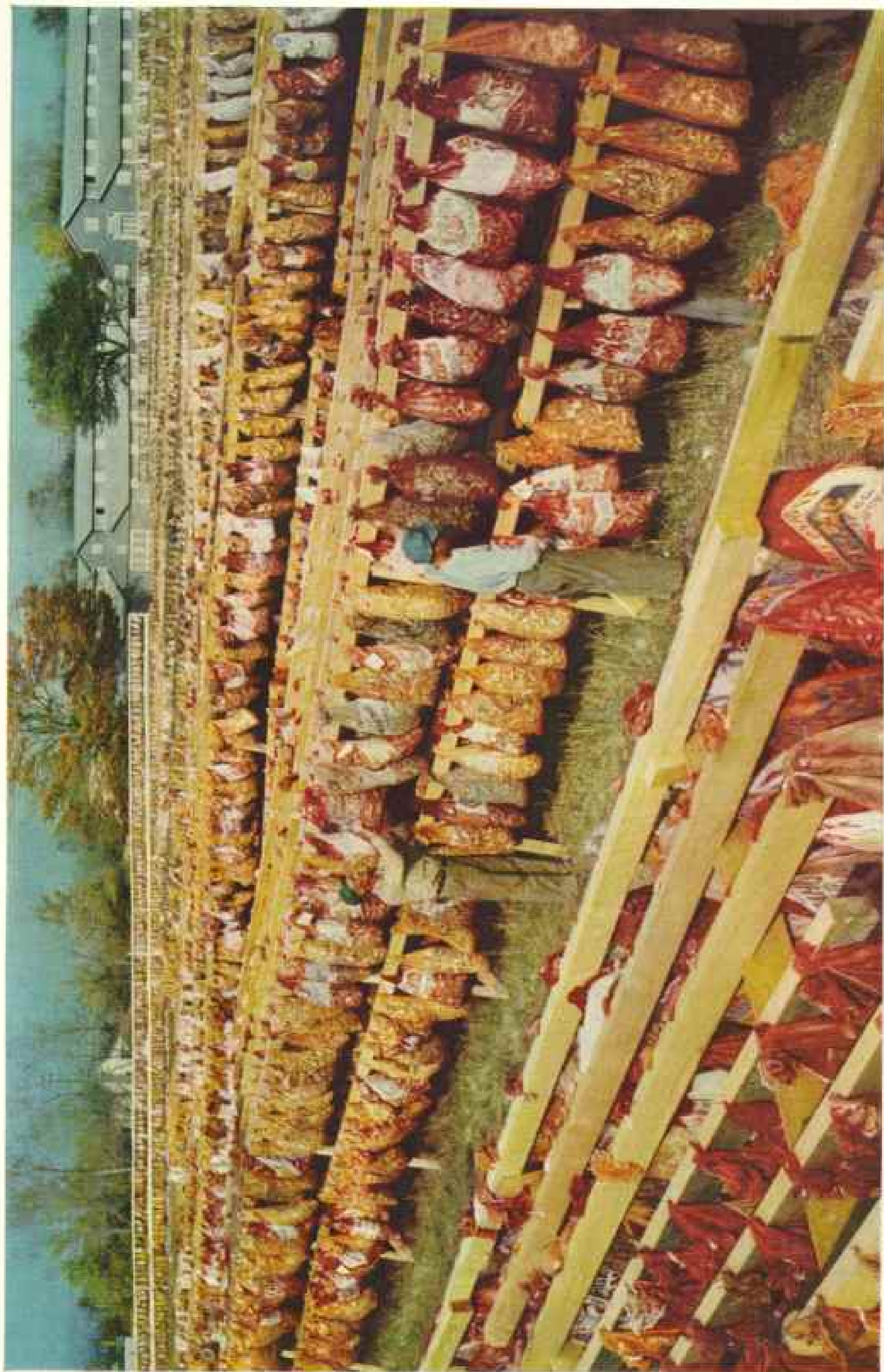
© National Geographic Society

Illustration by Alfred W. Faber

**Brilliant Foliage of Autumn's Maples Frames Upper Peninsula Beauties**

Michigan's forests are growing back. Millions of seedlings have been set out. Fire, once scourge of two million acres annually, is controlled scientifically. Game and fish abound in woods and waters. Recreation, the State's second industry, provides a \$300,000,000 income in prosperous peacetime years.





© National Geographic Society

Contributions by Alfred F. Peabier

### To Buoy Up Fighting Men's Life Jackets, Children Picked These 90,000 Pounds of Fluffy Milkweed, Drying at Petoskey's Fairgrounds

A heavy stand of this waterproof substitute for Java's cultivated kapok grows wild in this area. In 1943 the crop was collected as an experiment. In 1944 a 79-State campaign was organized to gather 1,500,000 pounds of milkweed for military requirements. Pods were shipped to Petoskey for processing.





© National Geographic Society

Exhibitions by Willard B. Culver

### It Takes 40,000 Pounds of Navy Gun to Fling a 50-pound 5-inch Shell

Firing a dozen shots a minute, the gun is effective against ships, planes, submarines, and shore installations within ten miles. Five-inchers, a destroyer's main battery and a battleship's secondary, softened up a large part of the Normandy coast. At Pontiac, Fisher Body completes the assembly. Steel semicircles are roller paths.

To preserve a substantial portion of the Porcupine Mountain area, the Michigan Legislature at its 1944 session appropriated a million dollars to buy about 43,000 acres.

Visiting these forests is a soul-stirring experience. There is something cathedral-esque about the straight trunks, the sigh of the wind overhead, and the silence underfoot.

Michigan agriculture, like its industry, has gone to war. The fruit belt along Lake Michigan, the bean belt of Saginaw Valley, the potato-growing counties in both peninsulas—all are helping to produce the munitions without which all other munitions would be worthless. Half the land surface of the State is in crops. Corn, wheat, oats, barley, and rye are flowing into the river of food required to feed ourselves and our Allies.

Michigan is the country's leading source of navy beans. An enterprising statistician figured that the 1943 crop would feed an army of 11,000,000 men for five months.

The fishermen, meantime, are out with their nets in Saginaw Bay, in Potagannissing Bay, and in the deep waters of Lakes Michigan and Superior.

#### Farmers "Grow" Car Parts and Life Belts

Michigan farmers are keenly interested in the possibility of producing for industry. Ford is experimenting extensively with soybeans, some of which have long since found their way into cars. Around Petoskey they are harvesting milkweed floss as a substitute for kapok in the manufacture of life belts (Plate VII).

"Scare" shortages have developed from time to time. For example, a Detroit newspaper ran an out-State item on the possibility of an egg shortage. There was an immediate rush on eggs.

Somebody started a rumor that automobile batteries were to be rationed. Every battery in sight disappeared in a couple of days. A garageman told me that it was incredible. People bought anything that looked like a battery whether it would fit their cars or not.

"If I had only had what they wanted," he groaned, "I could have retired."

There have been intermittent shortages of beer.

The war towns are definitely getting shabby. The streets are not kept up, rubbish lies loose in the alleys, and the buildings grow grimmer by the day. People are philosophical about it all. There is a job to be done; our men need weapons; we can't worry about a little dirt in the streets.

The air in the war centers definitely is that of a boom town. Night clubs are crowded; money flows freely; the streets are thronged with shoppers. Because they work around the clock in these towns, a curious kind of night life has evolved.

Workers who finish at, say, 3 a. m. go out for a few hours of recreation before turning in. Detroit city ordinances have been amended to permit bowling alleys to stay open.

Young women war workers are now permitted, by ordinance amendment, to attend all-night movies. Going to work in the morning, you see queues before places of amusement (page 678).

#### Two Billion Telephone Calls

The indices of city life continue to climb. The Michigan Bell Telephone Company reports that calls hit the two-billion mark in 1943. Mail, power consumption, spending, saving, and wages have risen to all-time peaks. Detroit's population has been increasing at the rate of 13,500 persons a month for the past two years. The population of the city proper is now 1,650,000; of the metropolitan area, 2,455,000, an increase of 600,000 over the pre-war figure.

No one knows where it will all end. The important thing now is to win the war; later on we will worry about conveniences and comforts. Most of the new residents are coming from the South.

"How many States are there in the Union?" said one comedian to another in a Detroit theater.

"Forty-six," was the reply. "Tennessee and Kentucky are now in Michigan."

Transportation is bad. Transportation in Detroit especially revolves about the automobile; take away the automobile and you slow up everything. Eighty percent of Detroit's workers used to drive to work. Most of them are now riding—at least, trying to ride—in buses and streetcars.

Harvey Campbell, writing in the *Detroiter*, summed up the attitude of many: "Pyke Johnson says there are six States without streetcars. Sometimes we wish there were seven."

War workers trying to reach such out-of-the-way places as Willow Run use anything that runs.

It is an awe-inspiring sight to see thousands of vehicles converging on one of these plants at the beginning of a shift and leaving it at the end. There are shiny limousines and dilapidated crates, trucks, delivery wagons. Thousands are hauled in huge trailers, fitted with benches and covered with canvas to protect occupants from the weather.



Alfred T. Dennis

### Salt, Prepared for Export, Carries St. Clair's Name into Earth's Far Places

Michigan's salt deposits, which have yielded more than a quarter billion dollars, contain reserves enough to meet world needs for centuries. St. Clair's wells, half a mile deep, flood rock-salt beds with river water, then pump out the brine for purification and evaporation. St. Clair is the author's birthplace.

The automobile—perhaps more so in Michigan than elsewhere—is regarded as one of the necessities of life, on a par with food, clothing, and shelter. It is used constantly. You use a car to cross the street, or to cross the State. Before the war your Detroitier thought nothing of jumping into his car, on the spur of the moment, and tooting off to Mackinac Island (a distance of 300 miles) to catch a fish.

#### In the Days of Plentiful Gas

A group of us were visiting a Detroit doctor one Saturday night. It was a quarter to twelve. Somebody got to talking about Drummond Island, about the old fort, the fish, the Finnish baths. Sighs of reminiscence. If we were only there. Well, why weren't we there? We could be if we wanted to. All we had to do in those days was hop in the car and go. Which was exactly what we did.

We saw the sun rise at Alpena. We crossed

the Straits of Mackinac during the morning. We were on Drummond Island by sundown and that night snuggled under woolen blankets in a fisherman's shack.

That, I submit, is life at its best.

#### Log Cabins for Temporary Homes

A Grosse Pointe woman who took war workers into her home in violation of a zoning ordinance went to jail rather than evict them.

As elsewhere in the country private building is at a minimum. Persons in rural areas have overcome priorities by turning to the traditional log cabin of pioneer days.

Inadequate housing, among other things, is blamed by many for the racial and other tensions which have become a problem in Michigan.

It would be idle to deny that the war has brought serious problems to the people of Michigan. The influx of several hundred thousand people, representing many races,



### Born at Flint, Buick's 50-mile-an-hour M-18 Is Called "Hottest Thing in Armored War"

Speed enables the Army's lightly armored "Hellcat" tank destroyer to dodge return fire while its own 76-mm. cannon picks off German panzers. Once it is in the clear, the enemy lacks time to mine its path. One M-18 unit in France drove 165 miles in a day and a half. Ten driving wheels, operating independently, allow no broken unit to stop the endless tracks. Dual controls permit instant relief of an injured driver.

creeds, and shades of political opinion, has set up stresses and strains which many regard as dangerous. Students of the situation believe that Detroit and Michigan will solve their problems, but they do not dodge the fact that these problems are serious.

The principal difficulty, of course, is overcrowding. Other problems are lack of recreation, a preponderance of men in the population, and the drift of young people away from the land.

Finally, the mass-production technique, with its monotonous repetition of a single motion, contains certain dangers. In peacetime the monotony of the assembly line is balanced by shorter hours. Today, overtime work has removed the safety valve of leisure.

Notwithstanding the abnormal conditions of wartime life, authorities say there has been no serious deterioration of morals in Michigan. The boom towns are not "wide open." Or-

ganized vice has been kept well under control.

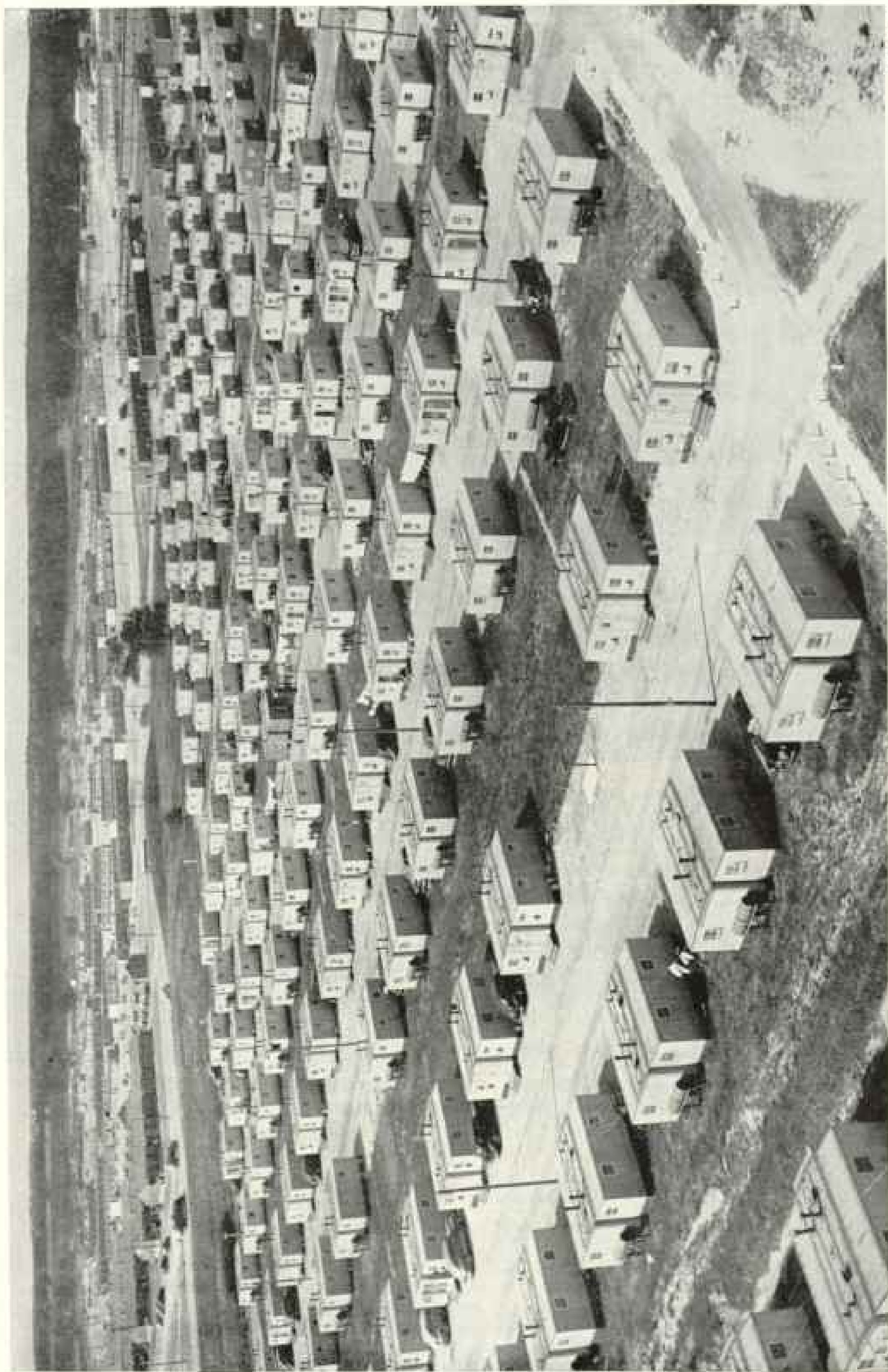
Health conditions generally have been good despite war conditions. The year 1943 set a new record in the number of babies born, the highest since 1915.

However, authorities now are concerned over a shortage of hospital beds. A probate judge in Detroit, after investigating conditions at the Receiving Hospital, said the load was so great that patients had to be "piled in like cordwood."

### Problem of "Latchkey Children"

The authorities are worried about juvenile delinquency. Working mothers are blamed, and the Governor has asked plants to refrain from hiring mothers with young children. Schoolteachers characterize the children from homes where the mother has gone into a war plant as "latchkey children." They carry house keys around their necks.

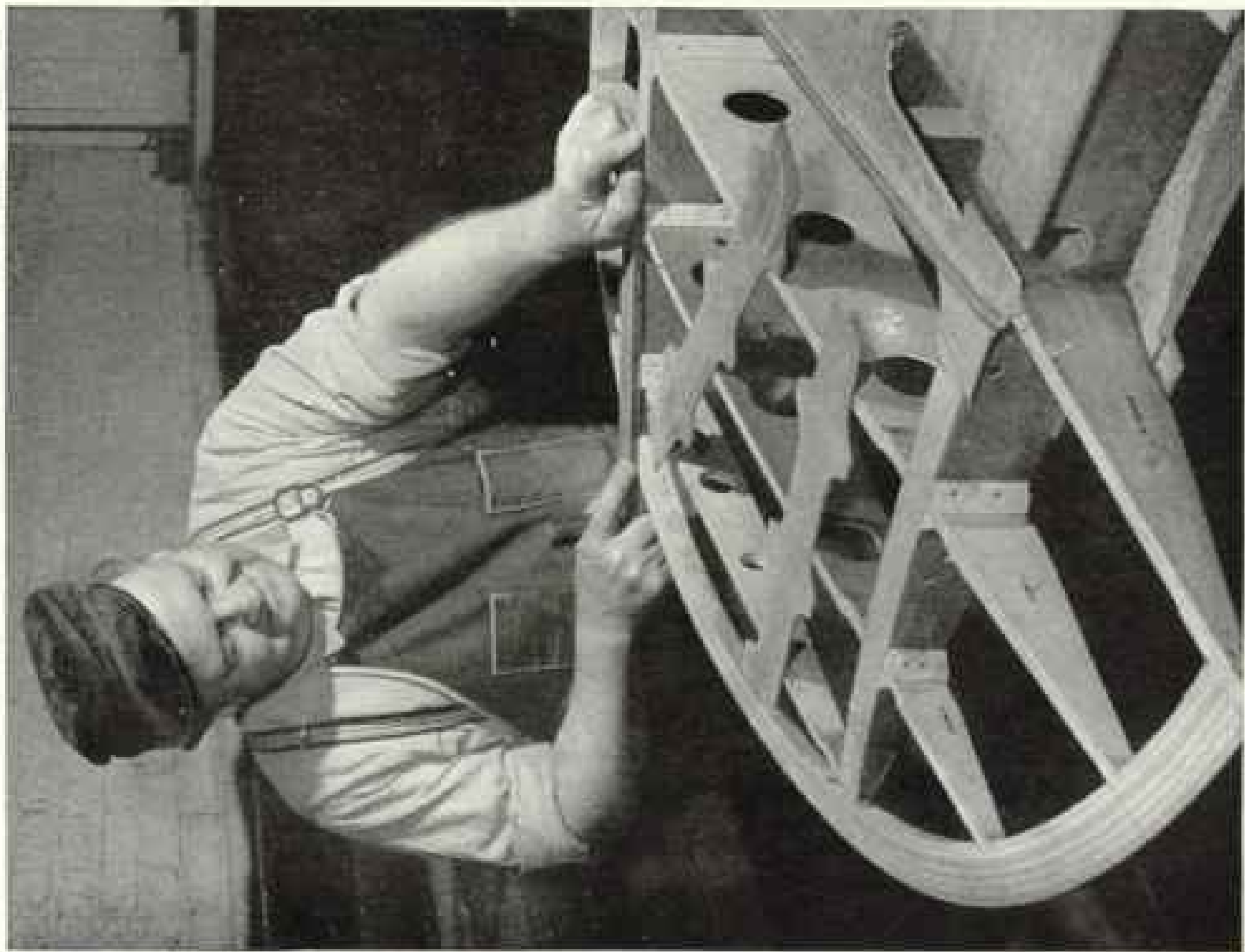




Joe Clark

### Acres of Temporary Duplexes Solved a Part of Willow Run's Housing Problem

In the distance stand stores, dormitories, and nurseries. Though the Army cut back the manufacture of Liberators, Willow Run expected full employment to continue. Ford contemplates purchasing the Government-built factory and converting it into a postwar tractor and farm-machinery plant (see pages 680, 711).



### Furniture or Wing Tip, It's All Woodwork to Grand Rapids

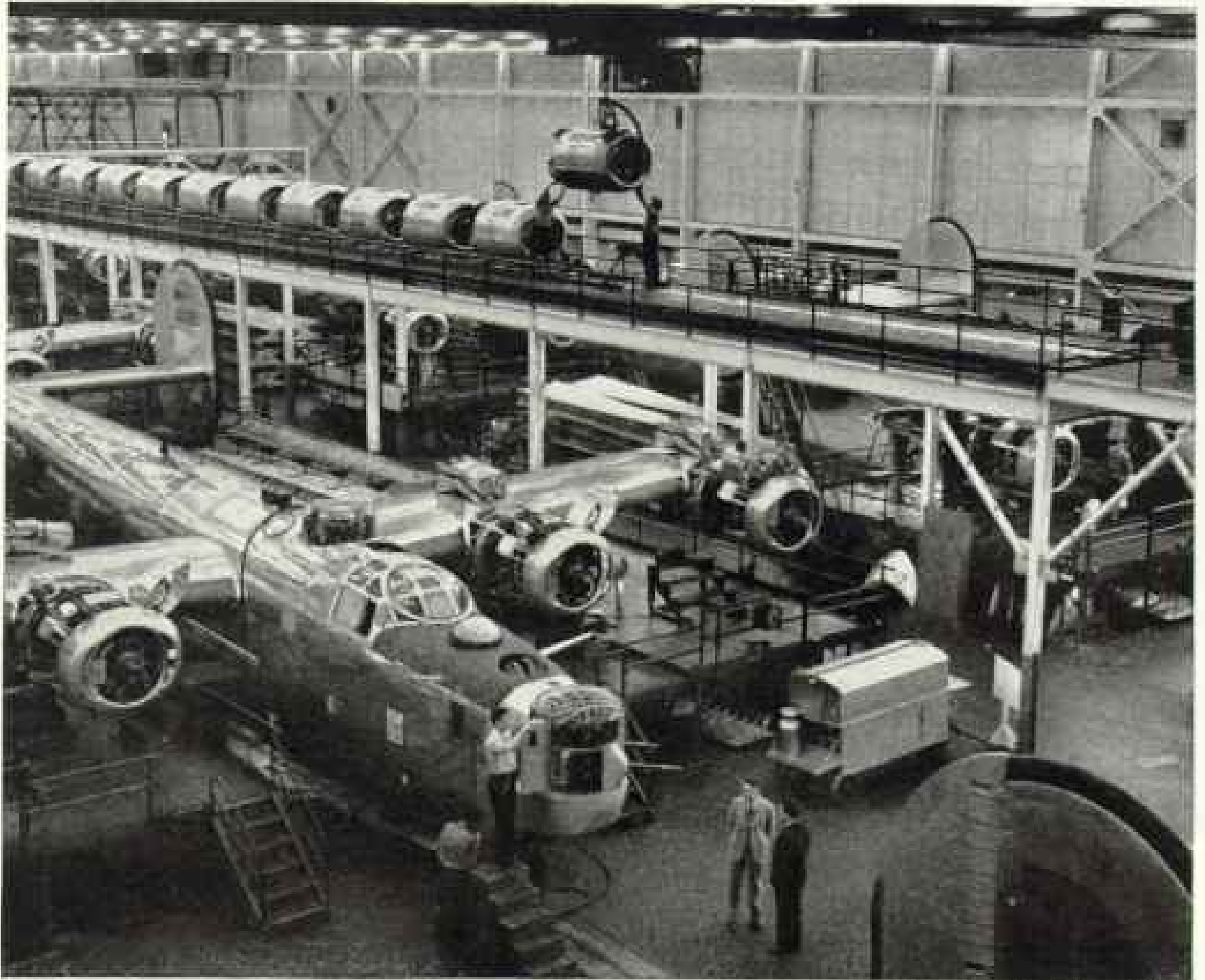
With a rasp, John Buskers fits an Army trainer's plywood aprons. Thousands of Grand Rapids wings have carried United States airborne forces on invasions. In 1944 the city's summer furniture market displayed wooden war matériel.



Albertine, Gilbert

### Crisp, Noisy Celery Spreads Michigan's Fame

Kalamazoo is celery headquarters. Introduced there in 1856, it met a cool reception. "Poisonous weed!" exclaimed some. A persistent grower, sending his children on a house-to-house sales campaign, finally popularized it.



Staff Photographer E. Anthony Hewitt

### A Liberator Hoists Its "4,800 Horses" off the Engine Assembly Line at Willow Run

Guns are installed, but propellers are missing. Midgets work inside the wings. A lunch wagon (note the milk can) delivers food. In September, 1944, Willow Run completed its 6,000th four-engine bomber.

and are usually well supplied with money.

One teacher reported that teen-age children in her classroom carry as much as \$20. Another teacher said that she didn't know what to do with a girl who became ill, as there was no one at home, and finally had to turn her over to neighbors.

One social worker with whom I talked decried the discussion which has gone on about juvenile delinquency. She declared that in her opinion the problem is greatly misunderstood, that delinquency has not been increased to any marked extent by the war, and that the public is just more conscious of it than in peacetime.

Meanwhile, the State and city governments and private agencies are doing everything they can to give young people an opportunity to grow up in a healthful environment.

Constructive measures which have been undertaken include the establishment of canteens in schools, the opening up of school gymnasiums and swimming pools, and the en-

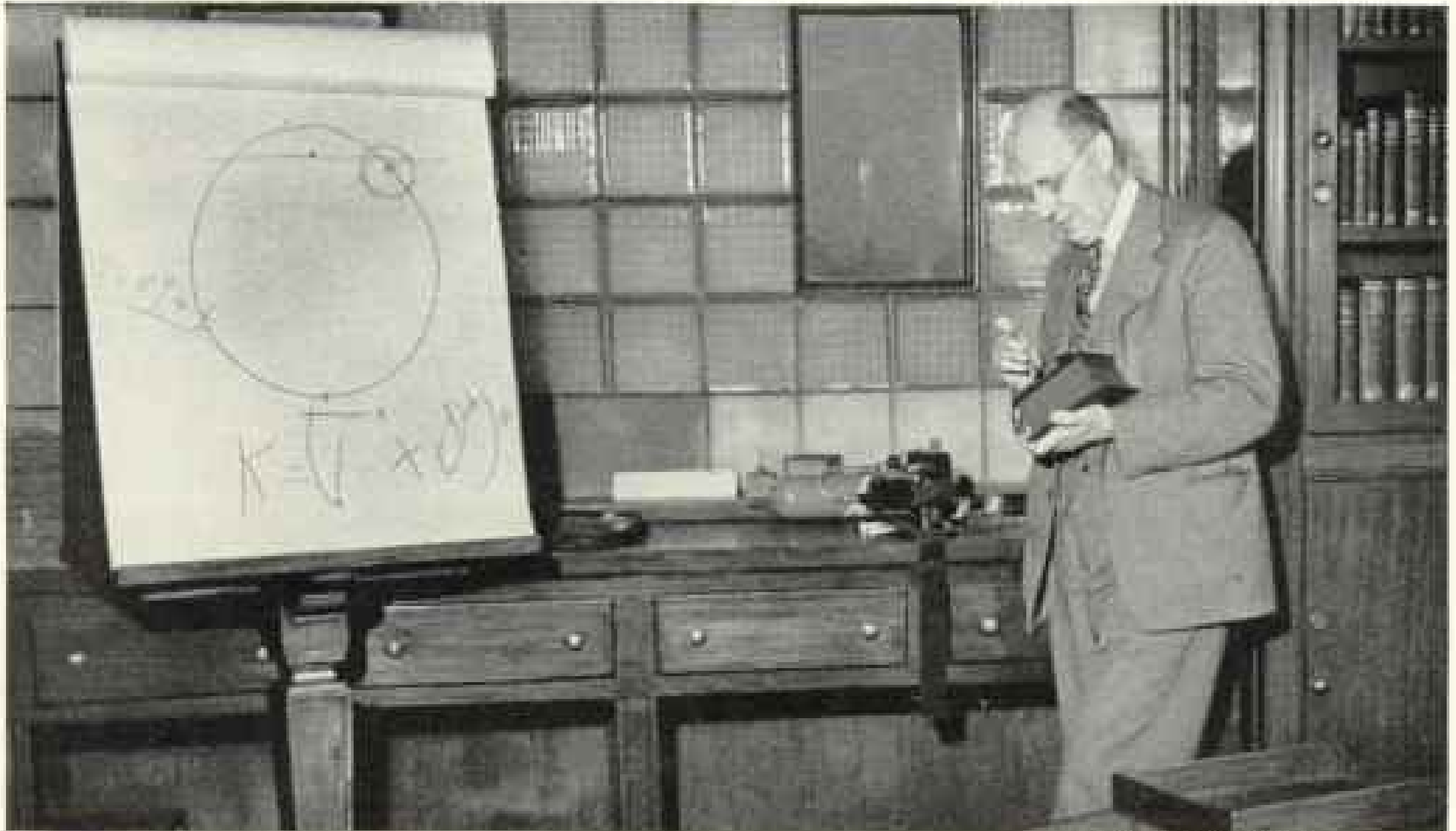
couragement of clubs and recreation centers throughout the State.

Liquor, rigidly rationed in Michigan, is dispensed only through State stores and specially designated distributors. There are long queues in front of these stores. The ration is one quart of hard liquor a month, with an added bonus of something else if it is available. There has been some recurrence of bootlegging, which the police have opened a vigorous campaign to suppress.

Social services, both public and private, have been stepped up to cope with wartime conditions. Special emphasis has been placed on the maintenance of nursery schools for the children of working mothers.

Although there were several thousand families still on relief, the welfare load was reduced by about two-thirds during 1942 and 1943.

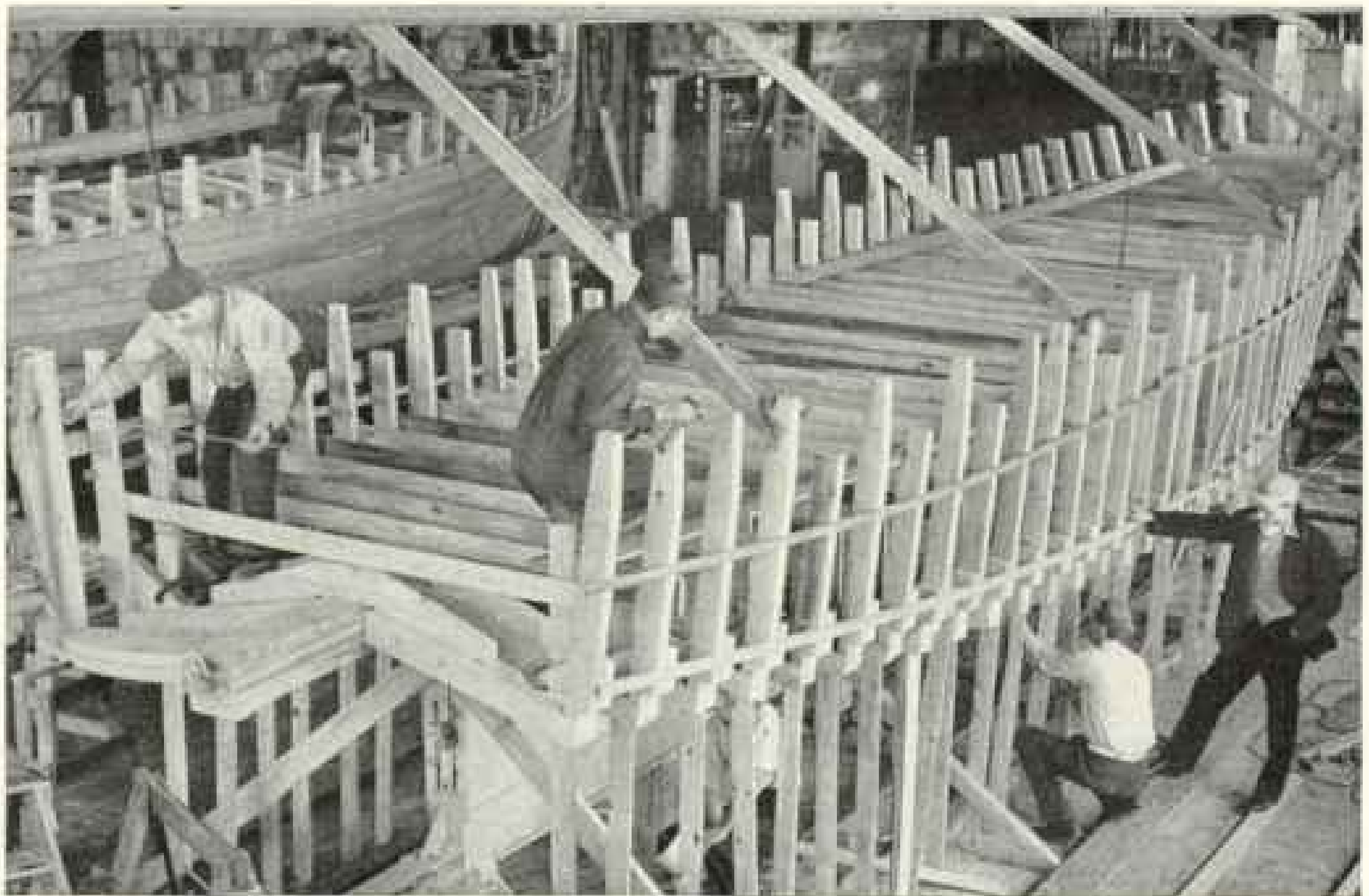
Education has suffered in wartime Michigan. There is an acute shortage of teachers; the colleges and universities have been



Staff Photographer H. Arthur Stewart

### Charles F. Kettering, Dean of Inventors, in His General Motors Research Office, Detroit

Affectionately called the "monkey-wrench scientist," he invented the self-starter, which made driving practicable for women. He helped develop Deleo power, the cheap lighting for farms; Duco, the quick-finish paint for cars; antiknock gasoline, electric refrigeration, the Diesel engine, and many time-saving devices. In wartime "Boss Ket" heads the National Inventors Council, which checks devices submitted to the Government. He is a member of the National Geographic Society's Board of Trustees. Each Sunday afternoon millions hear his voice over the radio. "Hotsepower is war power," says he (page 677).



Alfred T. Palmer

### At Marysville Gar Wood Builds Speed into a Towboat for the Army's Transportation Corps

Here begins a 550-foot production line from factory to launching basin. These men prepare keel and framing for planking. Their employer is speedboat racing's famous builder and driver of the *Miss America*.



devoting themselves largely to the training of men for the armed services. The campus at the University of Michigan looks like a drill ground.

Social problems are complicated by the heterogeneous nature of the population. It is estimated that a third of the people are either foreign-born or the children of foreign-born. There are large German colonies in various parts of the State. The Dutch have created a "Little Holland" (complete with tulip beds and wooden shoes) on Lake Michigan. There are also sizable groups of Italians, Russians, Hungarians, and Finns.

Poles play a prominent part in the life of Michigan. They comprise well over half of the population of the city of Hamtramck, which is surrounded by Detroit. These residents speak Polish, and they support one of the largest Polish newspapers in the country. Other Polish colonies are found in Grand Rapids, Saginaw, Bay City, Lansing, and Flint.

The Germans are mostly third- and fourth-generation residents. They are loyal and industrious and, on the whole, have no more sympathy with Nazism than other Americans. The five Fuhrer brothers of Detroit—Henry, David, Harold, Tobias, and Arnold—were applauded last winter when they asked permission to change their name to Fuller. They wanted to get out from under "the curse of a name made opprobrious by that individual Schicklgruber" (page 683).

Negroes are largely concentrated in Detroit, where the colored population has expanded from 150,000 in 1940 to some 200,000 today. Tense racial relations, aggravated by difficult living conditions and the hysteria of war, last year flared into a series of riots which resulted in the death of 36 persons, the wounding of a thousand others, and the destruction of millions of dollars' worth of property. Responsible citizens were very much distressed about these riots and are making an earnest effort to prevent a recurrence.

#### Indian Names and Indian Lore

Indian names and Indian lore are conspicuous in the life of Michigan. There are some 5,000 Indians in the State. Many are in the armed forces; others help in industry.

Indian villages are an interesting sight in the northern part of the State. I spent hours in an Indian burial ground in the Potagannissing Bay area, where tiny wooden houses still stand over the graves to shelter food placed there for the spirits of the departed.

Indian names predominate, the name of the State and of a good share of its cities having been derived from the language of the original

inhabitants. Even some of the non-Indian names are a heritage of the red man and have come to us through translations from the French.

The conglomeration of races has brought many picturesque customs into Michigan. At Holland there is the annual tulip festival. You can dine in German clubs in Detroit or, if you want to go farther afield, there are famous chicken dinners to be had at Frankenmuth, near Saginaw.

You see Cornish miners eating pastries, Belgians flying their pigeons, Greeks drawing on the storied *narghile*, or water pipe, Frenchmen singing the *Marsellaise*.

#### Travel Big Industry in Peacetime

The travel business, a major industry in Michigan, has been greatly curtailed by the war. "*Si Quæris Peninsulam Amœnam, Circumspice*," reads the motto of Michigan. "If you seek a beautiful peninsula, look about you." In peacetime more than ten million people came from other States to obey that injunction. They spent an estimated \$300,000,000. Travel, as well as manufacturing, is one of the chief sources of revenue.

Michigan has scenery, climate, water, woods, fishing, game, facilities for both summer and winter sports. Sufferers from hay fever find Michigan especially attractive. Sault Ste. Marie is the home of the "Ca-Choo Club," one of the first hay-fever organizations in the country. Thousands of persons annually find relief in the low ragweed pollen count of this area and in the cool, pure breezes which come in from the Lakes.

Michigan trout have lured fishermen from all over the world. Deep-water fishing has also become popular. The prize here is the magnificent lake trout, a fighter, running anywhere from four to twenty-five pounds.

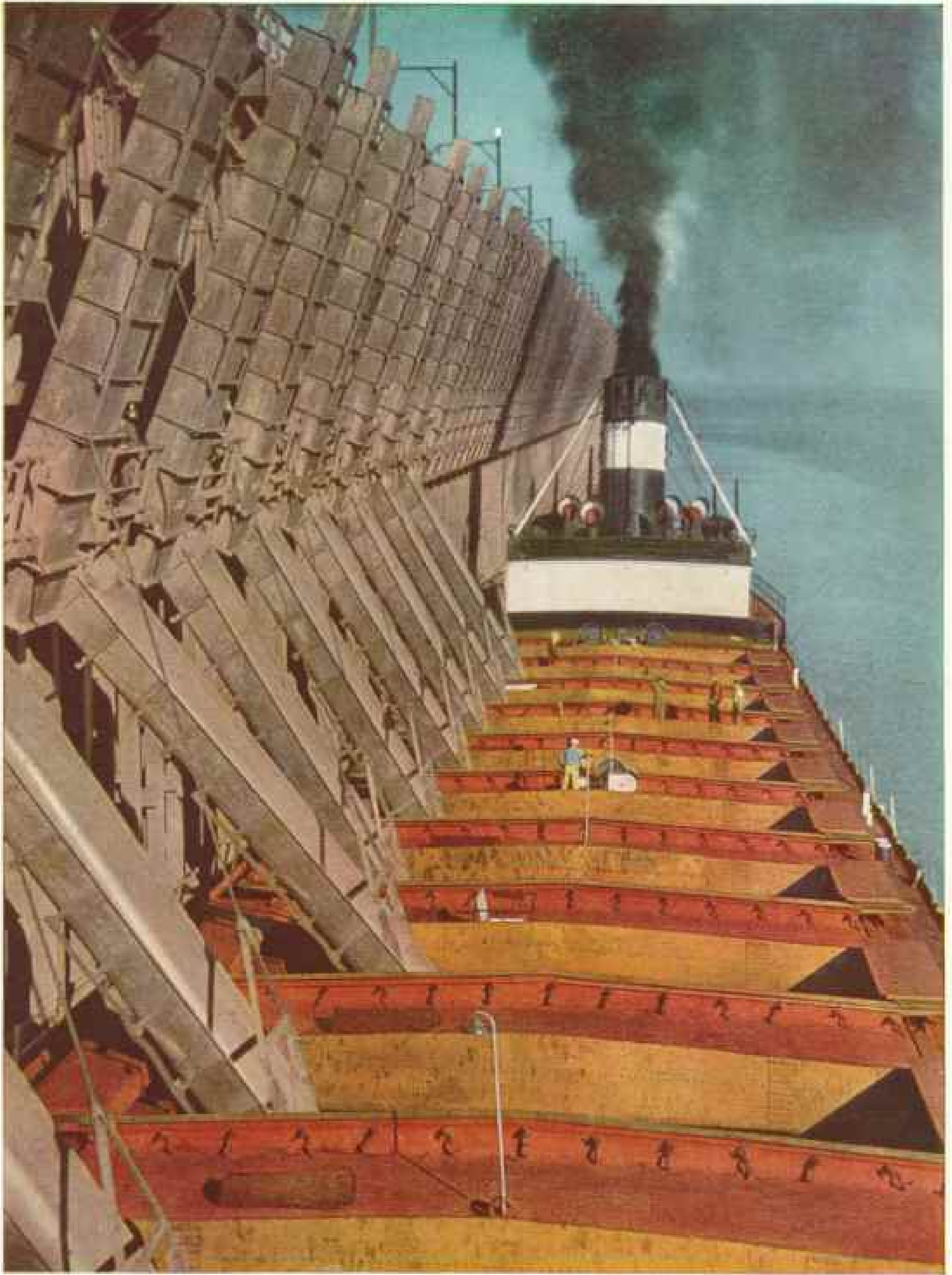
Fishing as a sport displeases Indian Jim, in Potagannissing Bay.

"No likum," he told me. "Ketchum too many fish."

Jim was referring to sportsmen. He never catches too many. He goes out in his canoe every morning before breakfast and takes his food for the day. There is never any formality about it. He just pulls in one or two, cooks his catch, and then takes things easy for the rest of the day.

Winter fishing, through the ice, is a thrilling sport. You sit in a little shack, over a hole about 18 inches square. It is dark in the shack and you can see perhaps 20 feet down. The fish swim by as unconcernedly as though they were in an aquarium—that is, until a spear comes hurtling through the water to

## Great Lakes and Great Industries



© National Geographic Society

Illustration by Alfred T. Palmer

### From an Escanaba Iron Ore Dock 10,000 Tons Rattle into a Bulk Freighter in a Few Hours

On the Great Lakes, 320 of these unarmed vessels fought the Nation's primary battle—a race to deliver a year's ore to steel mills during eight ice-free months. Averaging 90,000,000 tons a war year, they won that fight and set new records. Escanaba's two 2,000-foot-long docks, in use 24 hours a day, doubled their peacetime output.



© National Geographic Society

Reprinted by Alfred E. Palmer

**In Munising's South Bay Floats a Million-log Raft Towed from Canada across Lake Superior.**

Soon to be bond paper, spruce sticks are landed by a jack ladder (right). In the background a log boom holds the wood in storage. Superior's Pictured Rocks begin at shoreline's notch (left). Munising Paper Company's mill opened in 1907 to utilize peeled hemlock logs, waste of a tannery using only bark.





© National Geographic Society

Photograph by R. Antoine Stewart

### **Parked Hood to Door at Fort Wayne Ordnance Depot, Thousands of Detroit-made Ambulances Await Call to Battle Stations**

Driven by Medical Corps men, these Army machines will carry wounded to evacuation hospitals from collecting stations behind front lines. Their sign is not the American Red Cross, but the international symbol adopted by the Geneva Convention. "World's fastest-moving parts depot" is Fort Wayne's boast.





**Busier Than Suez and Panama Combined, Soo Canals Are Vital Wartime Arteries**

By-passing St. Marys rapids, a freighter from Lake Huron heads for Superior. Her channel is Davis Lock, one of four American canals and one Canadian at Sault Ste. Marie. They have an Army guard.



© National Geographic Society

Illustrations by Alfred T. Palmer

**A Limestone Quarry's 20-cubic-yard Dipper Hefts a 120-pound Passenger**

Limestone is a war essential. With ore and coal, it makes steel. Glass, carbide, cement, chemical, and agricultural industries use it. In a year, this Rogers City pit ships nine million tons through the port of Calcite.



© National Geographic Society

Engraving by W. Anthony Stewart

**In Henry Ford's Greenfield Village, Gog and Magog Prepare to Strike the Hour**

Lifelike bellringers, they are copies of Guildhall effigies lost in London's Great Fire of 1666. With Sir John Bennett's jewelry shop, they moved from London to Dearborn. Here these Greenfield school children may see the history of watchmaking, as elsewhere in the village they study evolution of American crafts.



© National Geographic Society

### From Streets and Lakes, Tides of Men and Raw Materials Pour into the River Rouge Plant

An incoming shift reveals a few of the Detroit area's 150,000 Ford workers. The giant cranes unload iron ore, coal, and limestone brought by Ford freighters out of the Great Lakes. A mile and a third of dock space lies before the barge and tug at the River Rouge end of the slip.

Reproduction by H. Anthony Stewart



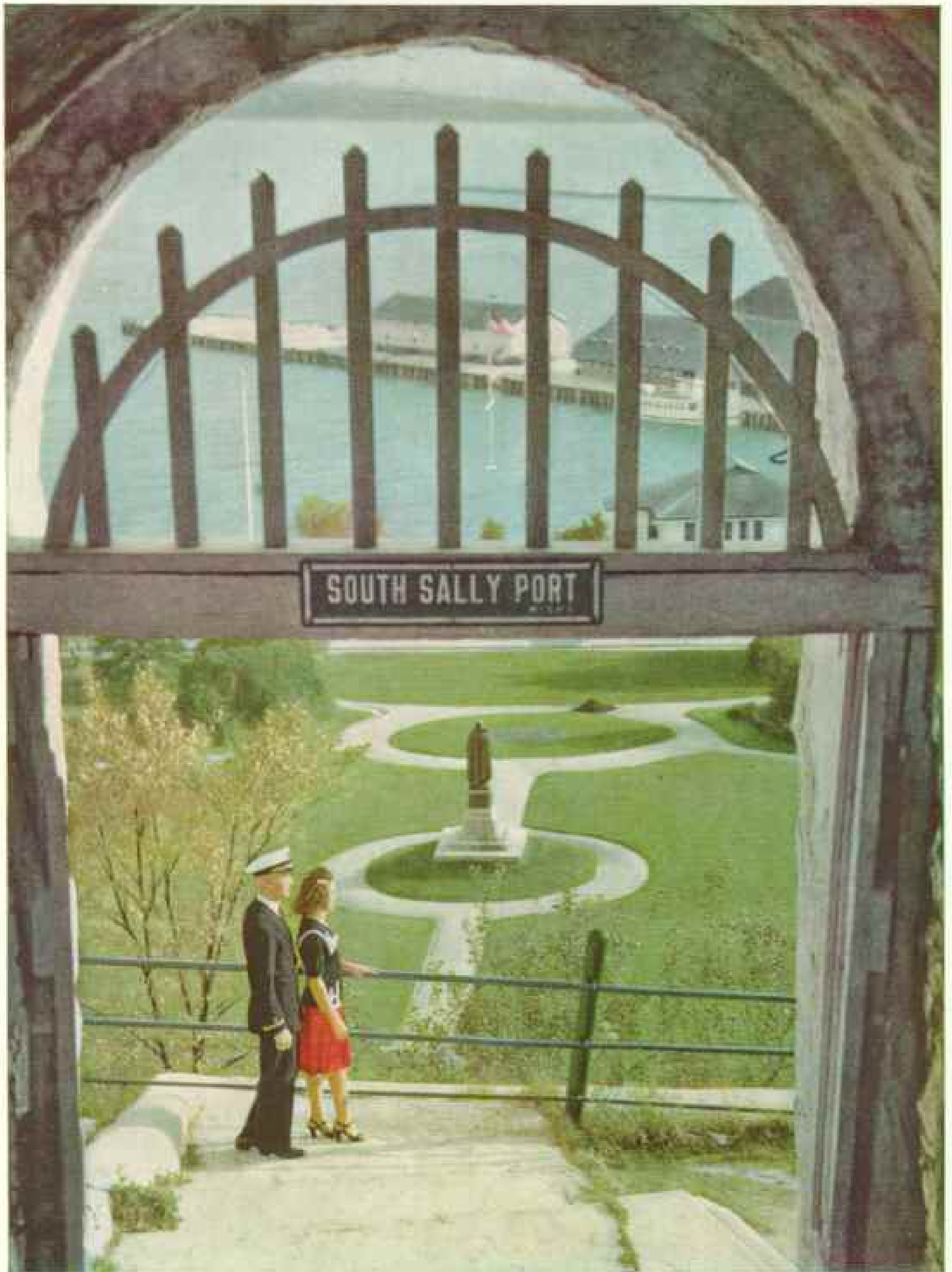
© National Geographic Society

Illustration by B. Anthony Bennett

**For May's Tulpen Feest, Holland, Michigan, Dresses in Baggy Pants, Billowy Skirts, and Wooden Shoes**

Its working days ended, the old windmill overlooks rows of King of the Reds and Crown of Gold tulips. These and 480 other strains help to fill needs of growers cut off from Netherlands bulbs. Founded in 1847 by a small Dutch band, the city is a trading center for 10,000 tracing their ancestry to an older Holland.





© National Geographic Society

Illustrations by Alfred T. Patten

**History, Wealth, and Medical Discovery Were Made at 164-year-old Fort Mackinac**

For strategic Mackinac Island, Americans fought Britons in 1812-14. Here Indians traded a fortune in furs to Astor agents. Several years treating an open abdominal wound, a fort physician, William Besumont, verified the digestive process. South Sally Port looks down on Father Marquette's statue.

impale the largest and fattest specimen on gleaming prongs.

This is the favorite method of fishing in Lake St. Clair. The hook and line is also used.

Deer and bear are popular big game. Despite efforts of the OPA to prevent the use of gasoline for hunting, more than 200,000 deer hunters went into the woods last season. Eighteen of them, unfortunately, were mistaken for game and were themselves killed.

Deer are a common sight in the north. They will come around your cabin, run ahead of your car, browse with the cows. Golfers at St. Ignace complain that deer are ruining the course.

On James Island in Potagannissing Bay one summer my five-year-old daughter fretted because she couldn't get near the deer which came to the beach each evening to drink. One night we saw a plump doe swimming from one island to another. Earl the fisherman and I went out in a boat, lassoed the deer, and brought her home. Joan was ecstatic. At last she had a real live deer to pet.

Resorts near war centers are sold out. However, many of the more distant places have had to close. Lt. Phil DeGraff, of Trout Lake, took it all in his stride. He advised his patrons that he had "gone to the wars," and asked their indulgence until victory.

"You folks will have to forgive me for running off," he wrote, "but there is a war on and I'm with Uncle Sam's Navy at (military secret).

"Maybe I'm selfish, but I decided to close Birchwood rather than turn it over to someone who wouldn't give you the meals, or the service, I want you to have. BUT . . . I'm coming back after Victory . . . and I'm going to open up the place again with a lot of new ideas (which I'll pick up here and there) and I want you to come back."

Which, I imagine, is the attitude of the others, too.

#### From War to Peace

Postwar planning is getting much attention in Michigan. Government officials, labor leaders, and industrialists alike are wondering what will happen when the war plants close and several hundred thousand workers must look for new jobs. They are exploring every avenue for making the transition from war to peace as orderly as possible.

Henry Ford has announced that he intends to exercise the option which he holds on Willow Run. He is considering manufacturing tractors and farm tools there.

The automobile men say they can get back into production within three to six months—

when the Government gets its machines out of the way so that they can move theirs in. There will be an enormous backlog of orders both for parts and for new cars. The industry estimates that parts equivalent to 4,000,000 new cars must be made before the assembly lines go into production. According to one estimate a total of 74,000,000 vehicles will have to be built in 10 years to cover replacements in the United States and abroad, to accommodate new owners, and to build up inventories.

Automotive designers scoff at what they term "fairy tale" ideas about the car of the future. The postwar car, they say, will be very much like the prewar car; in fact, for at least 18 months after the war the manufacturers will probably be using their 1942 dies. After that, say the experts, models will change slowly, with a tendency toward lighter, more economical cars.

Henry Kaiser also anticipates this trend, pooh-poohs the idea of a 3,000-pound car carrying a 200-pound man, promises a \$400 lightweight.

The auto makers have gone to great lengths to keep their dealer organizations intact. They estimate that eighty percent of the prewar dealers will be ready to resume business as soon as new cars are available.

#### "They Need What We Have"

The factories of Michigan will also be ready with a variety of other products. The world will need tires, radios, stoves, refrigerators; Michigan wants to supply them. A manufacturer told me, simply and with conviction:

"They need what we have; we have what they need."

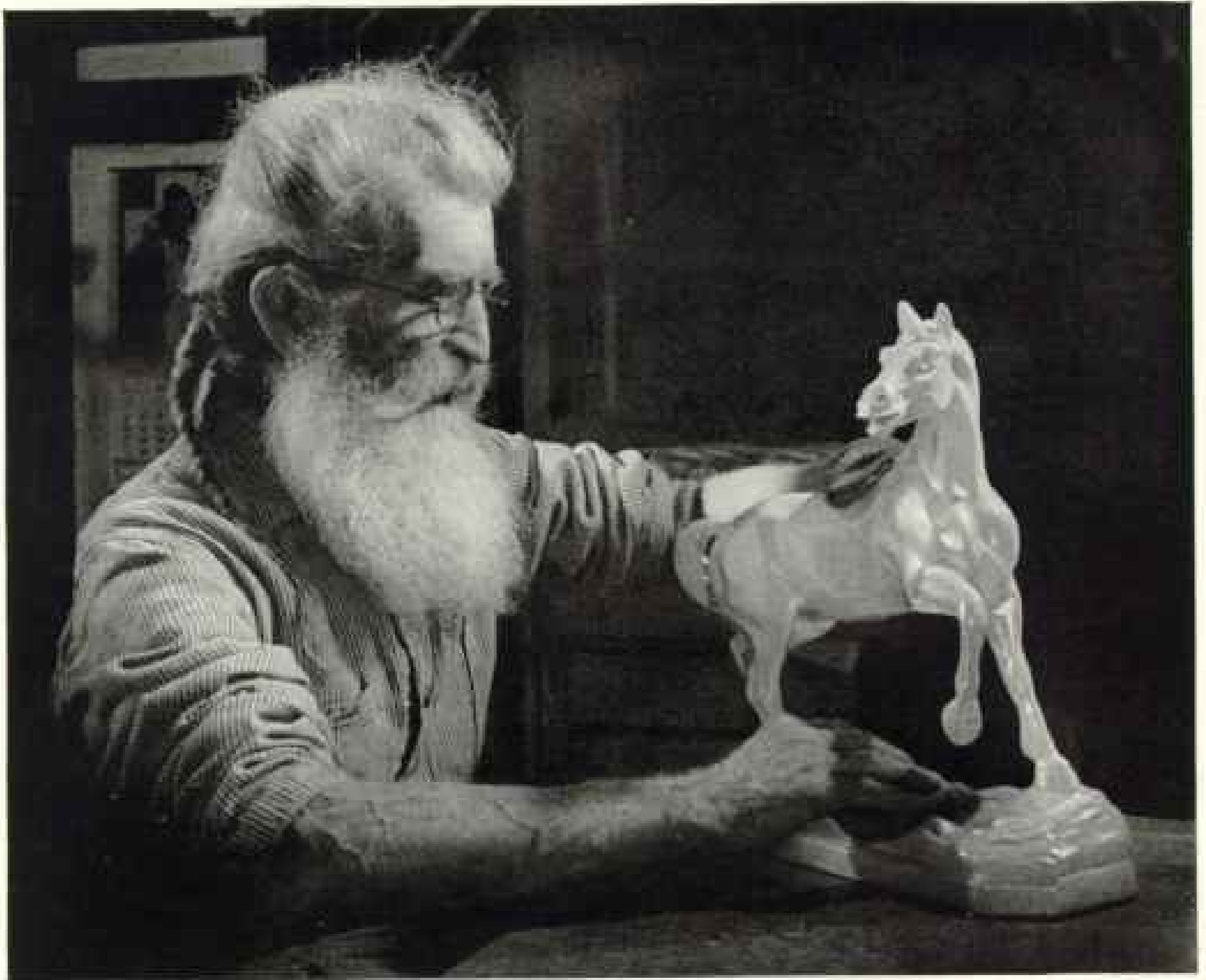
Half of the manufacturers, by actual count, plan to introduce new products.

A major problem will be the recovery of machine tools. Michigan tools are all over the world. Some of the plants can't operate until these tools are replaced.

There is also the matter of decentralization. The automobile industry has been spreading out for the past ten years. General Motors, for example, is now operating in 46 cities in this country.

Michigan would like to "go places" in aviation. At one time she hoped to capture the aviation industry as she did the automobile industry. This hope went aglimmering. There is much talk now of making another stab at it.

Along with other Midwestern areas, Michigan wants an outlet to the sea. Completion of the Great Lakes Waterway is regarded as a foregone conclusion. Someday, it is felt, the



Alfred T. Palmer

#### Polishing a Statuette in House of David's Art Studio, Benton Harbor

The craftsman is a member of a religious colony whose faith forbids him to eat meat or cut his beard and hair. House of David's bearded baseball team has a high semiprofessional standing.

ships of the world will come to the inland seas. Detroit is visualized as a great port.

People are foreign-trade conscious in Michigan. Thousands of the automobiles and trucks normally go into export channels; Michigan pharmaceuticals are known throughout the world (Plate III).

#### Plans for Work and Highways

The Governor has appointed a postwar planning group to work on the problem of absorbing returning servicemen and employees released by war plants.

Mayor Edward J. Jeffries, Jr., of Detroit, has proposed an ambitious program of public works to take up the slack and at the same time assure the completion of needed projects. There is plenty of room for highway improvement. Michigan, which gave to the country its first modern concrete highway, has fallen behind in recent years. City and State officials are determined to recapture their leadership.

Among the measures proposed is a \$148,-

000,000 highway system for Detroit, designed to connect the industrial sections of the east and west sides. Street and highway needs throughout the State are estimated to exceed \$400,000,000.

Building contractors expect a housing boom. Estimates run as high as three-quarters of a billion dollars in the first two postwar years.

There is also a large backlog of public building. Most ambitious project is a Medical Science Center to be constructed in Detroit. The Medical Center is planned for a 53-acre site to be cleared adjacent to the Art Center, in the heart of the city. The project is being sponsored by Wayne University and will involve an expenditure of about \$22,500,000 for land and buildings alone.

The State has begun to bid for postwar travelers. A fund to advertise the attractions of Michigan is now being raised.

A bill recently approved by the Legislature sets up a five-year program for the purchase of recreational areas in the lower part



Staff Photographer D. Anthony Stewart

### Though He Wears a Key, He's Not a "Latchkey Child"

Son of a Navy commander, this Dearborn boy wears the house key for convenience. True latchkey children are part-time orphans who carry house keys when parents go to work. Having money, too, they can buy plenty of trouble (page 699).

of the State, in addition to those in the Porcupine Mountain area.

A conservation program, to save Michigan's soil and water, has also been set in motion. The program is spearheaded by a group known as Friends of the Land, which seeks to bring farmers, business men, industrialists, and public-spirited citizens into a movement to save the precious resources which have made Michigan great.

The big problem, the one which must take precedence over all others, is employment. I asked Russ Hill, president of Martin-Parry, what he thought would become of those who came to Detroit from other areas to work in the war plants.

#### Will They Go Home?

"They'll go home," he declared. "They aren't trying to buy homes, to settle here. They are living in stores, attics, and trailers. They are saving their money. When it's all

over, you'll find them heading back to Kentucky, Tennessee, Oklahoma, and Texas."

Other industrialists are not so sure. They are lying awake nights figuring out what to do with a million people (servicemen plus war workers) when the enemy decides to quit.

K. T. Keller, president of the Chrysler Corporation, is bluntly optimistic.

"I think," he said, "that people after the war will be driving automobiles and eating bananas, washing their clothes, and wearing shoes."

Which is Mr. Keller's way of saying that there will be work to do.

Henry Ford, to whom one inevitably returns in any discussion of Michigan, recently remarked:

"In the postwar world, the people who survive will be those who know how to work with their hands."

The men and women of Michigan know how to work with their hands. They will survive.



# The Society's New Map of Soviet Russia

**M**OST recent in the National Geographic Society's memorable series of wartime maps is the Map of the Union of Soviet Socialist Republics, distributed to the 1,250,000 member-families of The Society as a supplement to this December issue of their NATIONAL GEOGRAPHIC MAGAZINE.\*

The new map is the third large-scale chart of a single nation and its approaches to be issued by your Society this year. The Map of Japan appeared in April; the Map of Germany in July. In addition, members received the notable Map of Southeast Asia and the Pacific Islands in October, in time to follow the ever-increasing activity in the Pacific area and the American invasion of the Philippines.

Our Soviet Russia map is printed in 10 colors, on a sheet 40 x 25 inches. It is the first and only available modern detailed map of Soviet Russia with place names in English. The spelling of more than 8,000 place names with the English alphabet was in itself a formidable task. The Russians use the Cyrillic alphabet, based on Greek letters with others added.

Soviet Russia comprises nearly one-seventh of the earth's land surface and embraces nearly one-twelfth of the human race. It is almost three times as large as continental United States. Only the British Commonwealth of Nations has more territory, but that is widely scattered.\*\*

To picture this vast expanse and its approaches, the new map extends from Hamburg, Berlin, and the Norwegian port of Narvik on the northwest, to Tokyo on the southeast; from the American Lend-Lease Persian Gulf port of Khorramshahr in Iran, on the southwest, to Bering Strait and the tip of Alaska on the northeast. The scale is 142 miles to the inch.

## Near Neighbors to the United States

Less than five miles of water in Bering Strait separate Little Diomedede Island, owned by the United States, and Big Diomedede Island, a Soviet possession.

Since autumn of 1941, some 11,000 American warplanes have gone to the Soviet Union. Many have been turned over to Soviet pilots at Fairbanks, Alaska, and flown to Nome, then across the Bering Sea and Siberia, to the war zone in eastern Europe.†

The map also shows the proximity of Russian lands in the Far East to the Japanese Empire. The upper half of Sakhalin Island is part of Russia; Japan holds the lower (Karafuto).

Russia's Siberian port of Vladivostok faces

the Japanese "mainland" across the Sea of Japan, 665 miles from Tokyo.

On the north, Russia looks out upon the Arctic Ocean, across which lies North America. Once the Arctic was an insurmountable barrier between North America and Eurasia. Today the skies over the bleak north afford the shortest air routes between the Eastern and Western Hemispheres.

For a score of years Soviet scientists have garnered data on the Union's Arctic regions. Lonely stations of Soviet explorers were set up not far from the North Pole. Some scientists have pitched their orange tents on ice floes at the North Pole and drifted hundreds of miles in subzero temperatures.

## Lighthouses for Icebreakers

Lighthouses stand far above the Arctic Circle to aid fleets of Soviet icebreakers. Soviet pioneers crossed the Northeast Passage between the Atlantic and the Pacific in their broad-beamed ships.‡

In the extreme northwest, extending across the Finnish border, nomadic Lapps live in reindeer-skin tents and herd the reindeer that live on tundra moss.

On the south, from east to west, Soviet Russia borders on Jap-held Manchuria, Outer Mongolia, Sinkiang, Afghanistan, Iran, and Turkey. Through the western part of Siberia and the Soviet Asiatic republics, which extend to the nation's southern borders, Owen Lattimore traveled on a recent journey to Chungking, China's wartime capital (page 641).

In the western stretches of the Soviet Union today are being written eventful chapters in Russia's long history.

Nazi armies thrust deep into the Soviet Union at their floodtide of conquest.§ Lenin-grad was besieged; Moscow was endangered;

\* Members may obtain additional copies of the new "Map of the Union of Soviet Socialist Republics" (and of all other maps published by The Society) by writing to the National Geographic Society, Washington 6, D. C. Prices, in United States and Possessions, 50¢ each, on paper; \$1 on linen; Index, 25¢. Outside of United States and Possessions, 75¢ on paper; \$1.25 on linen (postal regulations generally prohibit mailing linen maps outside of Western Hemisphere); Index, 50¢. All remittances payable in U. S. funds. Postage prepaid.

\*\* See "Young Russia: The Land of Unlimited Possibilities," by Gilbert Grosvenor, with 102 illustrations, NATIONAL GEOGRAPHIC MAGAZINE, November, 1914.

† See "Arctic as an Air Route of the Future," by Vilhjalmur Stefansson, NATIONAL GEOGRAPHIC MAGAZINE, August, 1922.

‡ See "Map of the Northern and Southern Hemispheres," NATIONAL GEOGRAPHIC MAGAZINE, April, 1941.

§ See "I Learn About the Russians," by Eddy Gilmore, NATIONAL GEOGRAPHIC MAGAZINE, Nov., 1943.

Stalingrad was assaulted; Transcaucasia was invaded; Baku's oil fields were threatened. All of the rich Ukraine, the Crimea, and White Russia were in Hitler's hands. The seat of the Soviet Government was shifted 540 miles eastward to Kuibyshev on the banks of the Volga River.

One-tenth of the Soviet Union, inhabited by 50 to 60 million people, had been overrun by the enemy. This one-tenth was by far the most developed segment of the nation. An estimated half of the Soviet's working coal mines, three-fifths of the iron ore, half of the steel and machinery industry, more than a third of the harvest, half of the electric power, a third of the railways, and most of the finest cities were in Nazi hands.

The map shows the border States—White Russia and the Ukraine—that bore the brunt of the attacks. The name, White Russia, has no connection with the defenders and exiles of the Tsarist regime, who called themselves "white" in opposition to the red emblem of the Bolsheviks. It is called White Russia to distinguish its peoples from the main branch of the Russian race.

#### Map Shows 16 Republics

White Russia, or the Belo Russian S.S.R., is one of the sixteen Republics which make up the Union of Soviet Socialist Republics. The map portrays these Republics in contrasting colors.

Of the sixteen, by far the largest is the Russian Soviet Federated Socialist Republic, which comprises 75 percent of all Russia's territory and had a prewar population of 109,000,000, more than that of the United States in 1920. Leningrad, Moscow, and Stalingrad lie within its borders, and it extends for almost 5,000 miles all the way across the Soviet Union to the Pacific coast. This vast and populous State was invaded by the Nazis, who reached nearly to its two principal cities and entered Stalingrad.

All of White Russia was engulfed by the Nazi invasion. A large part of this region is flat marshland; much of it was being drained before the outbreak of war. Now many square miles will be planted again next spring in rye and potatoes, as the Russians reclaim their marshlands.

South of White Russia lies the Ukraine, coveted by Hitler as far back as his writing of *Mein Kampf*. The Ukraine occupies most of southern European Russia bordering the Black Sea. Almost the whole area is a fertile steppe, and its loss to the Nazis put a terrific strain on Russia's other food-producing areas.

To help relieve the deficiency the United

States has sent more than three million tons of foodstuffs to Russia, including 17,000 tons of seeds.

Huge collective farms, with up-to-date machinery, tilled the soil of the Ukraine. Now tractors and other farm implements, destroyed by the Germans, are being replaced rapidly, and once more the landscape is dotted with fields of waving grain.\*

Coal and iron mines in the eastern Ukraine made this region the chief industrial area of the Soviet Union. But even before the invasion, new industrial centers such as Magnitogorsk,† and Karaganda in the Kazakh S.S.R., were springing up. These and other industrial centers, such as Chelyabinsk and Nizhni Tagil in the Urals, were enormously expanded during the war to make up for the loss of Ukraine industry. But the factories are being rebuilt and the Ukraine again will take its place as an important center.

#### Five New Border States

Shown on the map are five new border States, incorporated into the Soviet Union in 1939 and 1940. All five have been battlegrounds.

The map also shows the latest changes in the expanding boundaries of the Soviet Union as a result of the Russo-Finnish agreement signed at Moscow on September 19, 1944. One is the inclusion of Finland's Petsamo district, cutting Finland off from the Arctic Ocean and giving the Soviet Union a common boundary with Norway. Porkkala Peninsula on the Gulf of Finland will become the site of a Russian naval base.

Estonia, Latvia, and Lithuania—Russian provinces before World War I and independent nations afterwards—now are proclaimed by the Soviet Union to be the Estonian, Latvian, and Lithuanian Soviet Socialist Republics, integral parts of the Soviet Union.

The fifth new State is the Moldavian Soviet Socialist Republic, made up principally of the old province of Bessarabia. Romania acquired Bessarabia after World War I. It was turned back to Russia in 1940. Then, when Hitler invaded the Soviet Union and Romania became his ally, Bessarabia went back to Romania. The Soviet Union never relinquished its claim to Bessarabia, and now has reconquered that territory.

Three more Soviet republics which were threatened by the invader for a comparatively brief period are Azerbaijan, Georgia,

\* See "Liberated Ukraine," by Eddy Gilmore, NATIONAL GEOGRAPHIC MAGAZINE, May, 1944.

† See "Magnetic City, Core of Vallant Russia's Industrial Might," by John Scott, NATIONAL GEOGRAPHIC MAGAZINE, May, 1943.

and Armenia, in Transcaucasia, that rich stretch of territory between the Black and Caspian Seas, cut off from the rest of the nation by the Caucasus Mountains.\*

Most seriously damaged by war have been White Russia and the Ukraine. Rebuilding the big cities is a staggering task. To judge the extent of such rehabilitation, compare eleven of the principal Soviet cities destroyed by the Germans with cities in the United States of comparable size:

Soviet Russia	1939 Population	United States	1940 Population
Sevastopol	111,946	Gary	111,719
Rzhev	54,081	Kalamazoo	54,097
Kursk	119,972	Fort Wayne	118,410
Kharkov	833,432	Baltimore	859,100
Kiev	846,293	Cleveland	878,336
Odessa	604,223	San Francisco	634,536
Rostov	510,253	Buffalo	573,901
Novorossisk	95,280	El Paso	96,810
Stalingrad	445,476	Cincinnati	455,610
Smolensk	156,677	Des Moines	159,819
Dnepropetrovsk	500,662	New Orleans	494,537

The job is being done in record time. As fast as the Nazis left, squads of workers entered the cities and began to rebuild. First facilities to be restored were bakeries, water supply, power, transport, and schools.

A few weeks after the Red Army liberated Stalino, 16,000 pupils were going to 65 schools.

As soon as the Germans left, Kursk planted 15,000 victory gardens, and in Rzhev a belt of vegetable-growing plots encircled the prostrate town.

#### Women Help Build Homes

Some 8,000 houses had been built in Stalingrad ten months after the Nazis had surrendered there. Women who also fought the enemy with guns turned to with hammers and saws. After regular work hours, bookkeepers became bricklayers, steel smelters worked as carpenters, teachers turned roofers.

In August and September, 1943, some 1,200 bomb-damaged buildings in Moscow were repaired.

The new map affords a key to the location of Russia's postwar possibilities.

Four minerals vitally important in industrial development are aluminum, pig iron, copper, and manganese. In 1921 Soviet Russia's production of all four was negligible. By the time Hitler invaded Russia, Soviet production of aluminum was 75,000 tons a year, exceeded only by the United States, Germany, and Canada.

In 1940, pig-iron production had reached 15,520,000 tons, bettered only by the United

States and Germany. By 1940 copper production had reached 125,000 tons a year, topped by only four other countries. In manganese production, Soviet Russia had accounted for more than half the world's output by 1937.

Although Russia's oldest coal fields are in the Donets Basin, in the Ukraine, other important fields have been opened in the Kuznetsk Basin of southwestern Siberia, at Karaganda on the steppes of Kazakhstan, and in the Far East. Iron ore comes chiefly from Krivoi Rog, 200 miles west of the Donets and long the leading producing center, and also from the Urals.

Copper comes from Dzhez Kazgan, 300 miles southwest of Karaganda; from Kounrad, in the Lake Balkhash field, and from the Leninogorsk (Ridder) district south of the Kuznetsk Basin. The Kola Peninsula is rich in nickel deposits, and more of this mineral is found in the Urals.

Soviet Russia accounts for 10 percent of the world's petroleum supply, and 85 percent of this comes from the Caucasus. Embu, Ural-Volga, Sakhalin, and Central Asian fields supply the rest.

#### Fast-growing New Cities

Soviet Russia has established more than 350 new cities. Some of these have shown amazing growth. For example:

Novosibirsk, with a population of 5,000 in 1900, had more than 400,000 inhabitants in 1939. Kemerovo jumped from 21,730 in 1926 to 133,000 in 1939. Stalinsk, iron and steel center, grew in 13 years from 3,890 to 169,540 at the outbreak of the war.

When factories of western Russia are restored, their output, together with that of these vast new industrial centers, will make Russia a heavy producer of finished goods.

The map shows Russia's railroad system and network of automobile highways. Building of railways will occupy much of Russia's postwar effort, since the 59,000 miles completed by 1940 were inadequate.

Ten large rivers carry heavy water traffic. In Europe the Volga and its tributaries, the Dnieper, Don, Dniester, and Northern Dvina bear enormous quantities of freight.

To the east the Amur flows into the Pacific, and the Ob, Irtysh, Yenisei, and Lena drain northward to the Arctic.

The new map, like the Map of Asia and Adjacent Regions issued in December, 1942, is based on the Deetz transverse polyconic projection. This projection, little known until the National Geographic Society's Map of Asia was produced, was selected because it portrays a vast expanse of the globe from east to west with a minimum of distortion.

\* See "Roaming Russia's Caucasus," by Rolf Singer, NATIONAL GEOGRAPHIC MAGAZINE, July, 1942.

# The Geography of the Jordan

BY NELSON GLUECK

THERE is no river in the world which is more important than the Jordan, not even excepting the Nile or the Euphrates, for the history of the settlement of man in cities along its shores or for the tracing of the pilgrim's progress along its banks.

Moses viewed its trough, impassable for him from Mount Nebo. Elijah and Elisha were at home in its valley, Jesus was baptized in its waters, and three of the companions of Mohammed—Sheikh Maad, Sherhabil, and Abu Obeida—are buried along its length.

Human history in the Jordan Valley and in the rest of Palestine begins almost a hundred thousand years ago, when prehistoric Palestine man, *Paleoanthropus palestinensis*, lived there as a hunter, usually in caves, and employed tools and weapons of flint and basalt and bone (page 728).

His skeletal remains were discovered in 1931-32 at Wadi el Mughara, near Mount Carmel, on the Mediterranean coast of Palestine. Tusks of elephants he hunted have been found there, in Bethlehem, and along the banks of the Jordan River (map, page 722).

It was not till about 10,000 B.C. that his very great-grandchildren began to plant and reap crops, raise animals, build houses, weave cloth, and dabble in art.

These discoveries mark the real beginning of the story of civilization in Palestine in general, and along the Jordan River in particular. Its history has been seething ever since.\*

The Jordan is a weirdly strange stream. It twists and tears ever more swiftly downward in an almost incredibly sinuous manner from the sweet waters of the Sea of Galilee to the bitter waters of the Sea of Salt (Dead Sea).

Squirming frantically, burrowing madly, seeking wildly to escape its fate, the Jordan follows a course from its crystal-clear beginnings to its literally dark and bitter end which is a helpless race to a hopeless goal.

Like Lot's wife, it looks backward, but only inevitably to perish in the perdition of Bahret Lut, the Sea of Lot, as the Dead Sea is called by the Arabs (page 735).

## As Viewed by "the Man in the Moon"

If a man from the moon were to look at the Jordan Valley, he would behold at first an apparently lunar landscape. It would appear to him as part of a big crack in the crust of the earth extending all the way from northern Syria south to the Red Sea.

He would see malevolent masses of gray chalky marl, fantastically cut hillocks, sands

glittering with fool's gold, treacherously soft, salty wastes, sandstone formations riotous with color, reddish-brown ranges of hematite rock, black igneous mountains streaked with green.

His glance would take in the leaden gray-green of the Dead Sea and the dark brown of the Jordan, relieved by the sparkling azure blue of the Sea of Galilee (page 727).

He would perceive perhaps that the floor of the great rift he was looking at rested on burning or cooling foundations. They cause boiling-hot springs to emerge along its surface.

Earthquakes have destroyed cities in the Jordan Valley as large as Jericho, and have caused landslides which dammed up the waters of the Jordan.

Without them neither the Jordan nor the Nile nor their valleys would have come into being, because both rivers probably were born of the same geological spasm.

Several mighty upheavals blocked the farther thrust northward of the eastern arm of the Red Sea (the Gulf of 'Aqaba), which might otherwise have reached as far as Turkey.

One upthrust fashioned the wall that helped imprison the waters of the nascent Jordan in a devilishly deep hole, the top of which is 1,286 feet below sea level and the bottom of which is once again as deep.

There, compounded with salts and other chemicals drawn from the bowels of the earth, they were to form the witch's brew now known as the Dead Sea (page 742).

The fairest part of the great geological fault to which the Jordan Valley belongs is north of it—the Valley of the Lebanon.

Hemmed in by the cypress- and cedar-adorned Lebanon mountains on the west side, and by the Anti-Lebanon range on the east, El Beqa' (the Valley), as it is known to the Arabs, was once called Hollow Syria.

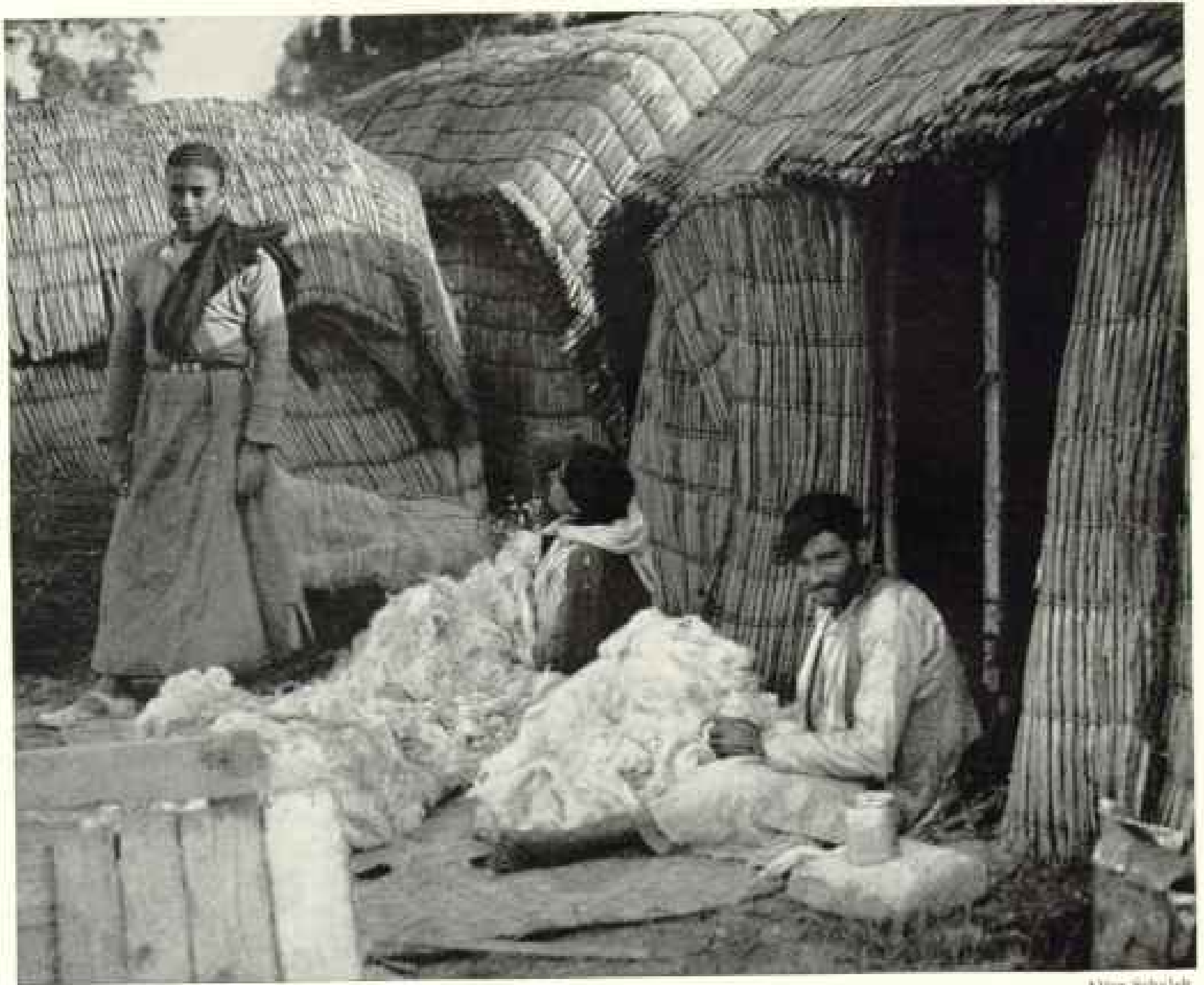
Its fat fields and strong streams have helped fill it with cities and settlements from earliest antiquity on; and their glittering crown was the city of Baalbek. Early peoples worshiped the god of fertility there.

Baal was the name of their god. The Greeks, however, had another word for it. They identified him with their sun-god, Helios.† In his honor, Baalbek was renamed

\* See "Bible Lands and the Cradle of Western Civilization," 10-color supplement map issued with the NATIONAL GEOGRAPHIC MAGAZINE, December, 1938.

† See "The Greek Way," by Edith Hamilton, "Greece—the Birthplace of Science and Free Speech," by Richard Stillwell, and "The Glory That Was Greece," 52 paintings by H. M. Herget, in the NATIONAL GEOGRAPHIC MAGAZINE, March, 1944.





Alyse Schalek

### Lake Hule Shepherds Weave Air-cooled Homes of Marsh Reeds

Cleaning wool, a Moslem country woman goes unveiled. City women cloak the face (thinly, if features are fair). As testimony to pottery's extinction, the author points to the "miserable gasoline tins" (page 726).

Heliopolis, only to revert to its former name soon after the Greek sun had set.

The Romans erected mighty temples there to some of their many gods. Six of the majestic columns of the Temple of Jupiter, each 62 feet high and measuring  $7\frac{1}{2}$  feet in diameter, hold themselves proudly erect to this day. Their glorious Corinthian capitals command a distant view over the watered greenness of their valley (page 724).

#### Sources of the "River That Goes Down"

The union of four streams creates the river that is so well named the Jordan—that is, the "River That Goes Down."

The Jordan, called Esh Sheri'a (the Drinking Place) by the Arabs, journeys downward, ever downward, from the glittering snows of Mount Hermon, which perpetually cap its top, to the turbid depths of the Dead Sea.

High stands Mount Hermon, its hoary head lending it grave and beautiful distinction (page 724). The Jebel esh Sheikh, the Moun-

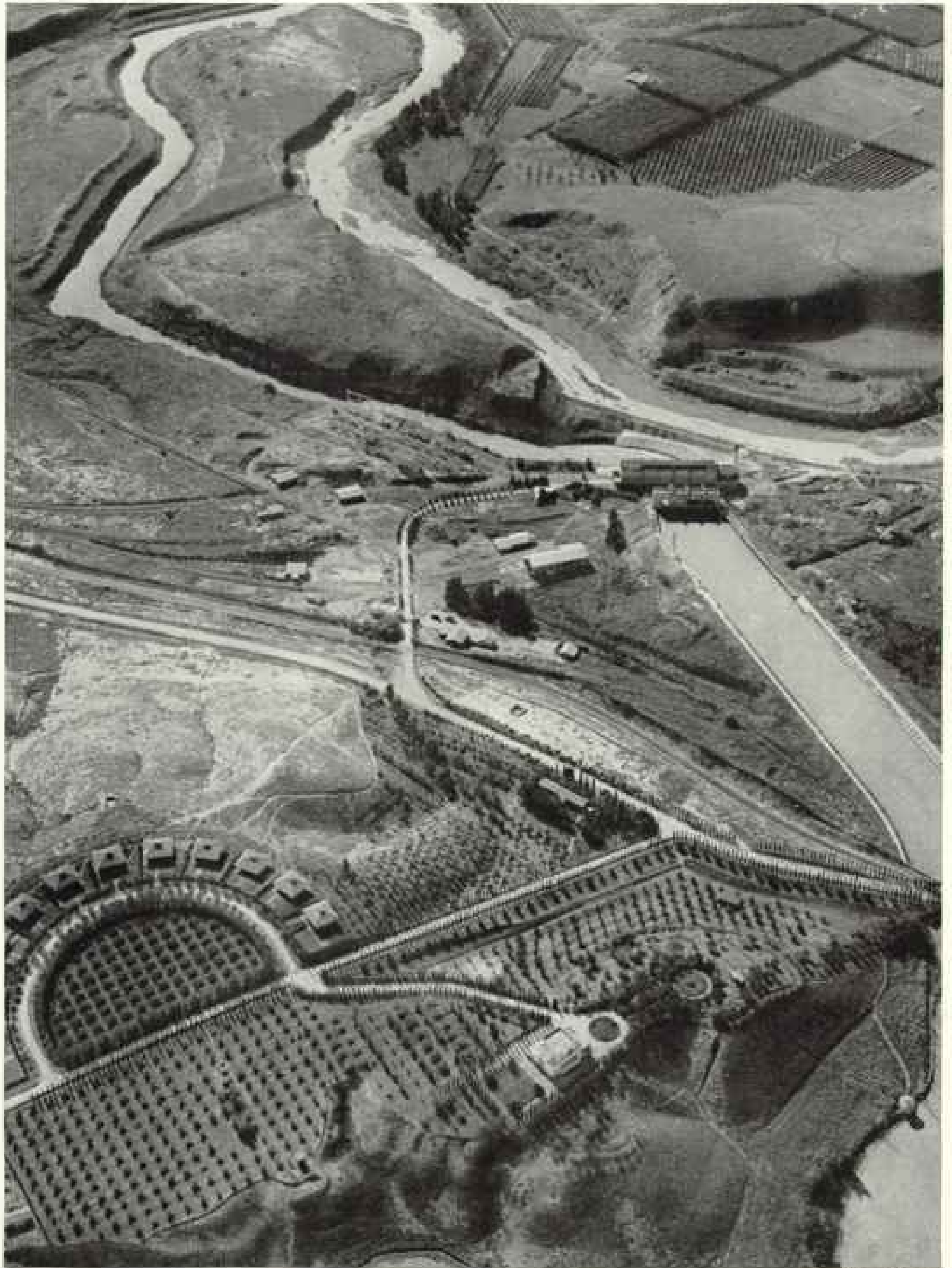
tain Chieftain, as the Arabs know it, dominates the entire Jordan Valley.

Walking in the Jordan Valley on a torrid summer day, at a point not far north of Jericho, I have glimpsed from afar the gleam of the mountain's quiet coolness. Its whiteness is reflected in the Sea of Galilee, whose very existence depends chiefly upon its bounty. Its principal peak is 9,232 feet high.

No wonder, then, that this stalwart sentinel was anciently dedicated to divinity and was thought to be the seat of gods. The temple of the chief of them, Baal-Hermon (Judges 3: 3), graced its top.

"As far as Mount Hermon" was a phrase full of meaning to multitudes whose lives were influenced by its founts, to travelers whose eyes were bent toward the familiar landmark, to armies for which it was variously a bulwark and a barrier.

The Bible tells us that Mount Hermon was called Sirion by the Sidonians, while the Amorites called it Senir (Deuteronomy 3: 9).



Keren Hazarod

#### At Naharaim (Two Rivers), Jordan and Yarmuk Create Electricity for Palestine

From a reservoir (lower right) water flows through a canal to the powerhouse. Thence it follows an artificial channel (left) into the Jordan. Employees live in the semicircle called Tel-Or (Hill of Light). From it a road leads to the director's "White House" (page 733).

**From Haifa, a Canal and Tunnel May Link the Mediterranean to the Jordan**

Walter C. Lowdermilk, an American, proposes a Jordan Valley Authority as a Palestine post-war project. His plan would divert Jordan's fresh water to irrigation. In its stead, ocean water would replenish Dead Sea's evaporation loss. Enormous power could be developed by the water's 1,300-foot drop.



And the Psalmist prayed when disquieted: "O my God, my soul is cast down within me. Therefore am I mindful of Thee from the land of the Jordan and the Hermons" (Psalm 42: 6).\*

The easternmost of the sources of the Jordan is the Nahr Baniyas. It is only about six miles long. At the base of a massive, precipitous, iron-reddened limestone cliff is a large cave, earthquake battered. From it bursts forth a full-formed stream, which seems to shout as it emerges, "Get out of my way, for here I come!"

The Greeks dedicated the cave to their vigorous and lustful god Pan, and called the adjacent town Paneas. Philip the Tetrarch, son of Herod the Great, established his residence there and changed the name to Caesarea. It became known as Caesarea Philippi, to distinguish it from his father's Caesarea on the Mediterranean coast of Palestine.

One day there came to Caesarea Philippi a Jew named Jesus and his disciples.

The little band of Semites must have looked with astonishment at the shrines and the temples and palaces with which this source of the Jordan and the site of the town were adorned.

"Now when Jesus came into the parts of Caesarea Philippi, he asked his disciples, saying: Who do men say that the Son of Man is? And they replied: Some say John the Baptist; some say Elijah; and others, Jeremiah or one of the prophets. And Simon Peter answered and said unto him: Thou art the Christ, the Son of the living God" (Matthew 16: 13-16).

That marked a turning point in the life of Jesus. He decided to return to Jerusalem.

When, as a result of this decision taken at Caesarea Philippi, Peter attempted to restrain him, he turned upon Peter and said: "Get thee behind me, Satan. Thou art a stumbling



Gift. of Palestine. Dept. of Antiquities

#### Eyes of Shell Have Seen 7,000 Jericho Years

This clay head is one of the oldest art discoveries known to archeologists. The artist, working without metal tools, left a fine witness to a Neolithic civilization, but he gave no clue to his own race. Painted chin suggests a beard; forehead lines may represent tattooing (page 743).

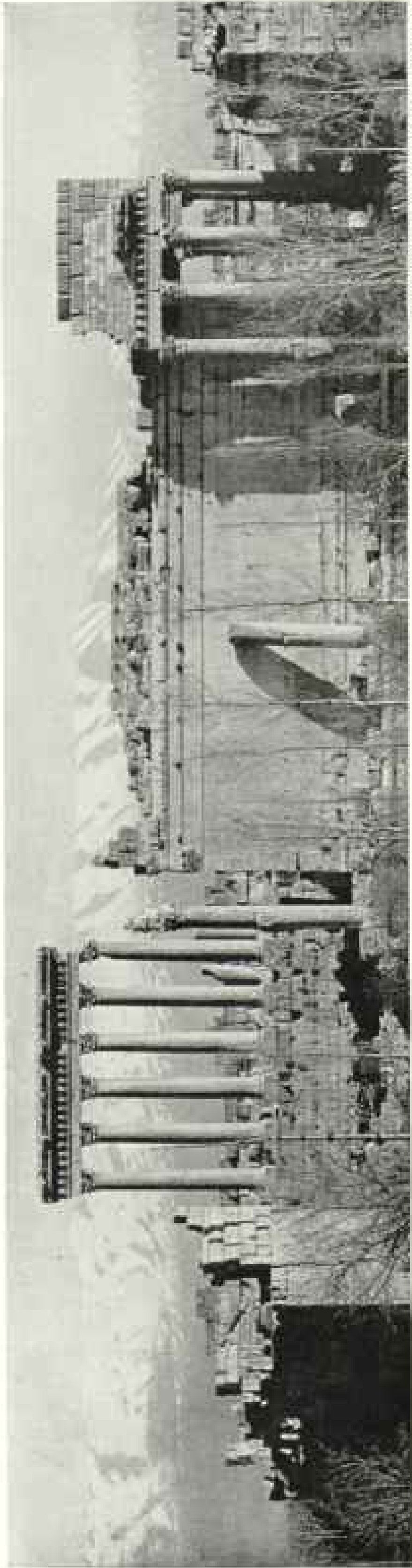
block unto me, for thou mindest not the things of God, but the things of men" (Matthew 16: 23).

About a 40-minute walk west of Baniyas, as Paneas is known today (with the Arabs every *p* becomes a *b*), is the strong spring of Ain Leddan, which forms the Nahr el Leddan, shortest but strongest source of the Jordan.

Its name reflects that of the tribe of Dan, which conquered the ancient Phoenician-controlled city of Laish (Leshem), now identified

\* As in his article, "On the Trail of King Solomon's Mines," in the NATIONAL GEOGRAPHIC MAGAZINE for February, 1944, the Bible quotations are the author's own translations from the Hebrew.

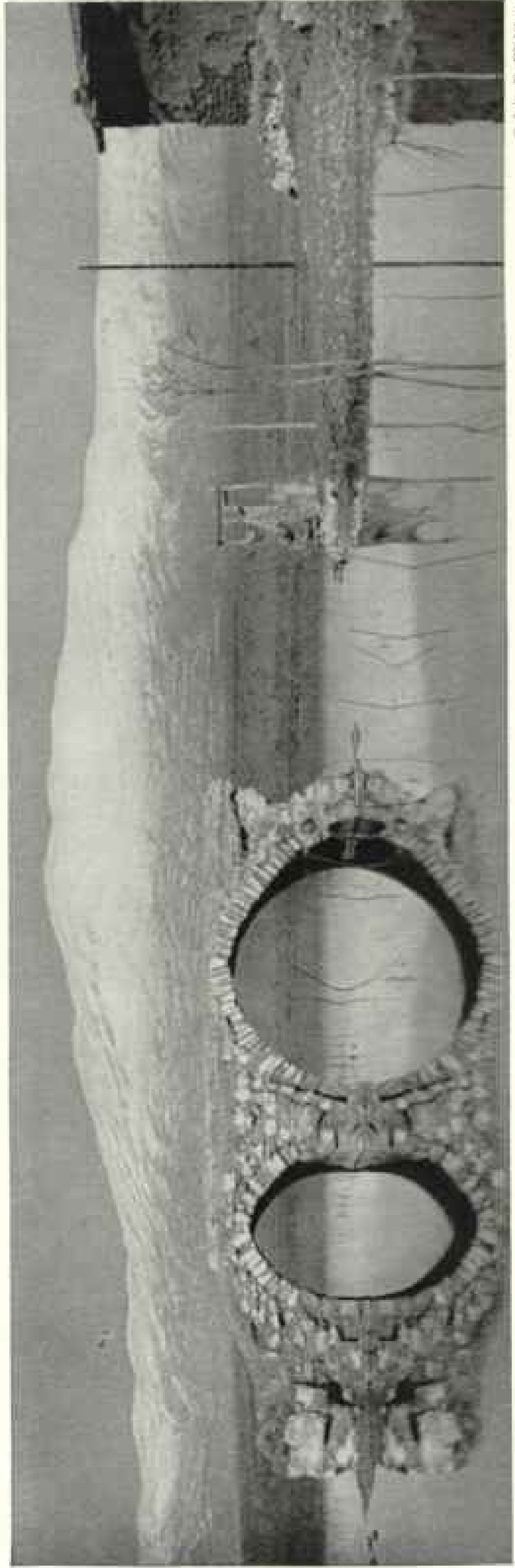




Staff Photographer, Bernard Owen Williams

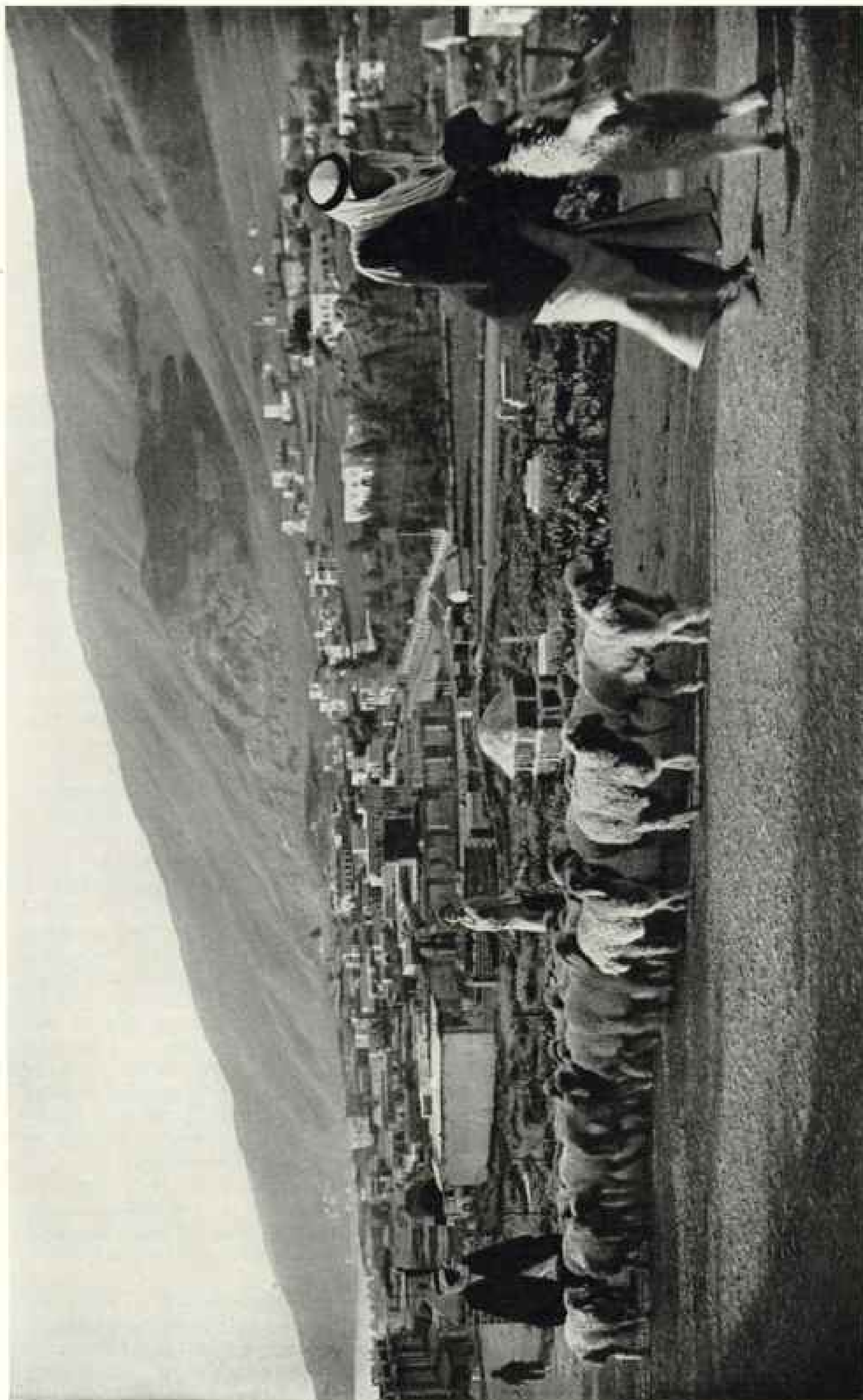
**Mount Hermon Is Seen Through Six Columns of Jupiter's Temple—a Broken Pillar Leans Against Baecbus' Shrine**

This is Baalbek, so named since antiquity, save when Greeks and Romans called it Heliopolis. Romans built its pagan temples, and Emperor Theodosius erected a Christian basilica. Conquering Arabs fortified Baalbek, Mongols sacked it, and Tamerlane's men wrecked it. Earthquake contributed to the havoc (page 719).



© John D. Willard

**Above a Ruined Bridge Soars 9,232-foot Mount Hermon, Whose Perpetual Snow Nourishes Jordan's Headwaters**



Smith Parsons Washburn

### Arab Shepherds Lead Their Flock from Tiberias, a Galilee Port Founded in Christ's Time

Tiberias, anciently a seat of Hebrew learning, had no Jews left by 1620. Today most of its 8,500 residents are Jews. Here the Crusaders, founders of the modern town, lost their stronghold to Saladin's Saracens in 1187 (page 728). Antiquity's celebrated hot-spring baths have been restored; they attract many visitors.



Staff Photographer Marnard Owen Williams

#### 696 Feet above Galilee, "Sea Level" Is Quite Dry

The Mediterranean's surface is used as the gauge. "Roof of the sea" is the literal Arabic (left); "face of the sea," Hebrew. Wartime Jericho removed just such a sign lest it aid an invader. Lacking a lamb, this Arab boy near Capernaum carries a sheep to help make a picture.

with Tell el Qady, next to the spring (Judges 18: 27; Joshua 19: 47).

It stood on the northern border of ancient Israel and marks today the boundary between Palestine and Syria.

#### "From Dan to Beersheba"

The phrase "from Dan to Beersheba" (I Samuel 3: 20) became a household word. It is reported to have been quoted by the Bible-bred Welshman, Lloyd George, at the Versailles Conference in 1918, when he insisted to the boundary commission that the territory of modern Palestine had to extend as far north as ancient Dan.

The westernmost source of the Jordan is

the Nahr Bareightit. It is a small mountain stream tumbling southward through a gorge in the high meadowland of the Merj 'Ayun, which retains in clear part its ancient Biblical name of Ijon (I Kings 15: 20).

The longest source of the Jordan, and the one most directly in line with it, is the Nahr Hasbany.

The Jordan marks the initial stage of its independence by passing through the marshlands of Ard el Hule.

Practically all of the Arab children born in these swamps during the spring and summer months die in early infancy of malaria. Their elders, too, are worn with the ravages of the disease, which they believe comes from the "hot air."

Some of the parchment which the ancient Egyptians used may have been made of papyrus plants from the swamps of Ard el Hule. Mats are woven from the reeds growing there and huts are made of the mats (page 720).

After a flow of less than seven miles, the Jordan empties into Lake Hule, which is about four miles long and three miles wide at its upper end, narrowing to a point at its southern end. It is from about 9 to 16 feet in depth and is 230 feet above sea level.

Shortly after leaving Lake Hule, the Jordan cascades through a forbidding-looking black basalt gorge, falling in less than nine miles to 696 feet below sea level when it enters the Sea of Galilee.

The Sea of Galilee is visible in wonderful perspective from the heights of the Horns of Hattin (Qurun Hattin) to the west, which tower about 1,700 feet above it. They were the top sides of an extinct volcano, which is quite in place among the broad black veins of



Royal Air Force, Levant

**On Galilee Christ Reproached Tempest-tossed Disciples—"Why Are Ye Fearful?"**

An air view shows the lake funneling into Jordan (left). Beside it stands Deganya, a pioneer Jewish colony helping to revive Galilean agriculture as it was in Jesus' day, when rich plantations and fair cities girdled the shore. Here dark orchards border light plowed fields. Samakh, an Arab town, clings to the foot of the lake.





Staff Photographer Myron G. Williams

#### Galilee Man, a Neanderthaler, Lived in This Cave 40,000 Years or More Ago

Portions of his skull were found here in 1925 (page 733). He is a predecessor of modern man. Sea of Galilee lies in the distance. Christ, the Man of Galilee, preached in near-by Capernaum.

basalt on the eastern side of the hills of Galilee.

There, on the waterless heights of Hattin, was fought a frightful battle between the Crusaders and the Moslems, on July 3-4, 1187, when the Christian army was practically wiped out by Saladin's soldiery.\*

Standing on the shores of the Sea of Galilee one day, I heard a distant humming in the sky; it soon grew to a steady roar. Suddenly, out of the sun, there flew a mighty seaplane, which circled and settled on the field of water. A tug put out from Tiberias to fetch its passengers.

Almost 2,000 years have intervened since the little boat in which Jesus and his disciples were seated was tossed about dangerously by one of the sudden tempests that beat the normally calm waters into a raging fury.

To his worried disciples Jesus had said, "Why are ye fearful, O ye of little faith?" (Matthew 8: 26).

The storm died down and their boat made port safely.

Much has changed since then, but not the contours and character of the lake itself. Thirteen miles long and about 8 across at its greatest width, it is shaped like a harp, receiving thus its ancient name of Chinnereth, which means a harp.

Its waters are clear and sweet, and at one point over 150 feet deep. The lava-fed fertility of the shores of the lake easily supports a rich tropical vegetation.

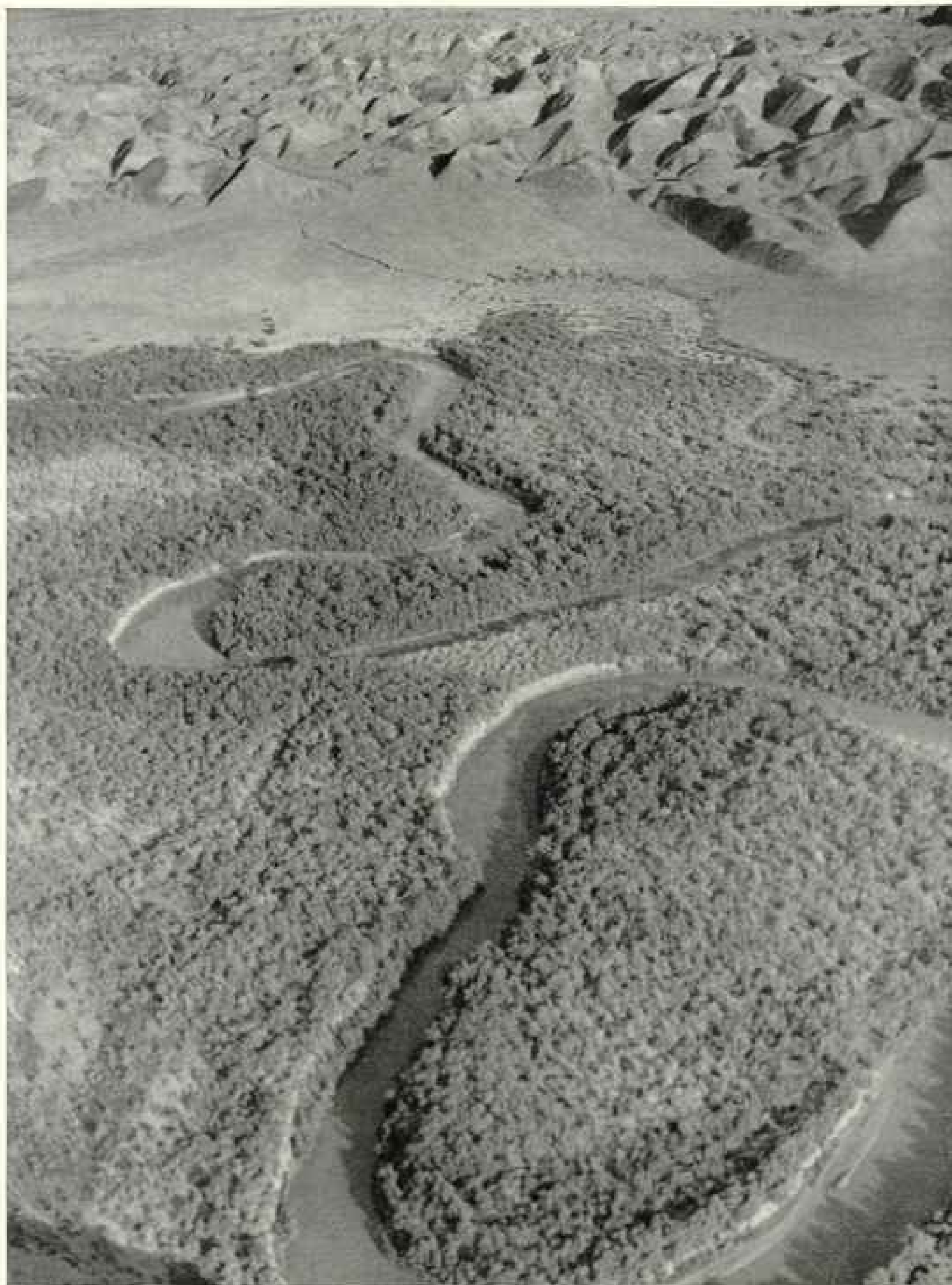
#### Galilee Lands Fertile in Jesus' Day

Newly settled Jewish colonies are reviving agricultural activity on an intensive scale around the lake.

The bareness and desolateness which, until recently, many a pious pilgrim thought to be a part of historic patrimony, would have been completely unfamiliar to Jesus.

A belt of plantations girdled the shores of

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Crusader Castles of the Near East," by William H. Hall, March, 1931, and "Road of the Crusaders," by Harold Lamb, December, 1933.



Keren Hazard

**Jordan Writhes Like a Fighting Serpent; Jungle Seems Swallowed by the Desert**

Though the Jordan here is swift, it meanders like a lazy tidewater stream. So sharp is the 150-foot drop between the upper terrace and the flood plain that a man on the terrace cannot see the airplane he bears hedgehopping above the river. Between the levels stand eroded hills. Nowhere is there a sign of life (page 733).



Sutton-Gilbert

#### A Well-armed Prince Carries Rifle, Pistol, Sword, and Bullets

Left to right: Emir Hamzeh el-Yaqub, a stockman, wealthy even by American standards; his heir, a peaceful man despite appearances; their attendant, a descendant of African slaves. The author was a guest in the goat's-hair tent. Its style shows little change from the Bible's black tents of Kedar.

the lake in his day. They were the setting for some of the fairest cities and flourishing towns of the Hellenistic-Roman Near East.

The power of Rome was paraded around the Sea of Galilee. The somber city of Tiberias was its main stronghold there (page 725).

Roman legions, sometimes heavy-handed, dominated the entire countryside. The prevalent architecture and the most pretentious religious expression also were Roman.

Is it to be wondered at that the madman, whose oppressed spirit Jesus saved, called himself by the commonly repeated name of Legion? "And he (Jesus) asked him, what is thy name? And he said unto him, my name is Legion" (Mark 5: 9).

The Palestinian or "Jerusalem" Talmud was concluded, and the Tiberian system of Hebrew punctuation developed there.

Chief among the Roman hill towns overlooking the Sea of Galilee was Gadara, which is best remembered in connection with the account of the Gadarene swine (Matthew 8: 28-32).

It does not take much imagination for the modern visitor to visualize Gadara in its heyday. The remains of a large reservoir, an aqueduct, three theaters, a temple, and a magnificent colonnaded street give an idea of its former grandeur.

About two miles southwest of the outflow of the upper Jordan into the Sea of Galilee lies Capernaum, Kfar Nahum (the Village of Nahum), to be identified today with Tell Hum. It is situated close to the shore, at the edge of the rich Plain of Gennesaret, which Josephus called the "ambition of nature" (*Jewish Wars*, III: 10, 7, 8).

The home of Peter in Capernaum became the "house of Jesus" after he left Nazareth. Immediately after the arrival of Jesus at Capernaum, "straightway on the sabbath day he entered into the synagogue and taught" (Mark 1: 21).

The partly restored ruins of a magnificent successor to the synagogue, built several centuries later, can be seen at Capernaum today.

#### Site of the Fishermen's Village

Near by, a short distance inland, with a view of the Sea of Galilee, was the synagogue of Chorazin. Its ruins are visible today (opposite page).

The people of Chorazin and Capernaum, as well as Bethsaida, "wherein most of his mighty



Staff Photographer Stewart Owen Williams

**Christ Knew the Site, But Not This Synagogue Ruin nor Its Vintage Scene**

This edifice at Chorazin was built several centuries after the time of Jesus. It stands a few miles inland from the Sea of Galilee (opposite page).



Govt. of Palestine, Dept. of Antiquities

**3,600-year-old "Jericho John" Is Not Twins but a Vase and Its Mirrored Profile**

Cartoon in clay, the jar pictures a Semite living in Jericho three centuries before the Israelites' arrival. Tumbling city wall was not a likely cause of the fractured forehead; "John" was already deep in ruins (page 743).





© G. Eric Matson

**At the Traditional Site of Jesus' Baptism, Russian Pilgrims Immersed in Holy Jordan**  
 Pious subjects of the Tsars gathered here by the thousands. Some wore layers of white robes to be given to friends at home. Americans, including GI's of this war, collect bottled Jordan water.

works were done," were upbraided by Jesus because "they repented not" (Matthew 11: 20-24).

The banks of the Jordan know no more storied site than that of Bethsaida, the Fisherman's Village. Located not far from Capernaum, it stood perhaps on the east side of the Jordan, near the point where it empties into the Sea of Galilee. Philip the Tetrarch named it Julias, after the daughter of the Emperor Augustus.

Near Bethsaida was the desert place (Mark 6: 31-32; Matthew 14: 13), where Jesus with five barley loaves and two fishes fed the five thousand, who had followed him on foot over the fords of the Jordan (Luke 9: 10-17).

The preachments of Jesus, like the lessons taught in the synagogues of the time, were far removed from the religions that had once held sway along the shores of the Sea of Galilee and the banks of the River Jordan.

The nature of one of these early forms of religion is suggested by the name of an ancient site situated close to the Jordan as it issues once again as an independent stream from the south end of the Sea of Galilee. It is a long, low mound facing the lake and is called Khirbet Kerak. It has been identified with the Beth Jerah of yore.

Now Beth Jerah means the Temple of the Moon. It testifies to the fact that in early pagan times the cult of the moon-god or

goddess was carried on there. This applies also to pre-Israelite Jericho, whose name clearly intimates devotion to lunar deity.

From moon worship to the worship of the idea of one invisible Father of all mankind was a long step forward in the history of human thinking. The period extending from the prehistoric Galilee Man to Jeremiah and Jesus marks a prodigious degree of development in the human species.

The skull of the Galilee Man, dating from at least 40,000, and perhaps 100,000 years ago, was discovered in 1925 near the western edge of that very same land of Gennesaret in which Capernaum was located (page 728).

At the south end of the Sea of Galilee the shore opens out again, marking the beginning of the main extension of the Jordan Valley, here approximately four miles wide.

Pouring out of the lake like a stream from the bottom of a funnel, the Jordan cuts its way through the valley, turning first due west and then striking south along the base of the hills. From here on it passes through no more lakes till it reaches the Dead Sea, in which it loses itself completely.

The valley through which the river flows between the Sea of Galilee and the Dead Sea is about 65 miles long and from 2 to 14 miles wide.

The river itself, however, twists and turns in quarter-, half-, and three-quarter loops for a total length of some 200 miles.

In the direct distance between the two bodies of sweet and salt water, the Jordan Valley falls 590 feet, an average of more than nine feet a mile. Therefore, in spite of its intestinelike configuration within the frame of the valley, the current of the Jordan is swift.

Whirlpools, rapids, and small cascades appear frequently along its length. Today a sluice gate regulates the flow of water from the lake into the river, in connection with the hydroelectric plant near the junction of the Yarmuk and Jordan Rivers. The plant, opened in 1932, belongs to the Palestine Electric Corporation, founded by the late engineer Pinchas Rutenberg (page 721).

A dam has been built there, forming an artificial lake into which the waters of both rivers are led. From the dam the water plunges down chutes nearly 90 feet high to create electrical power sufficient to serve the needs of much of Palestine.

With no diminution of their quantity, the waters of both rivers reach the main line of the Jordan through a new channel.

The Jordan, from the Sea of Galilee southward, is about 90 to 100 feet broad and from about 3 to 10 feet deep.

The present line of the river is a zigzag ditch carved crazily through the center of its long valley. The fickle stream, frequently bored with its narrow bed, changes its position as often as possible. There are numerous abandoned beds, through which for the present it no longer deigns to run. It casts them aside as if it were a serpent shedding its skin.

At floodtime in the spring it bursts its banks to frolic within the confines of its depression, called in Arabic the *Zor*, which is from 200 yards to a mile wide. The *Zor* (Thicket) through which the Jordan knifes its way is tropical in character and for the most part lush green in color. It looks like a slimy green snake, standing out all the more startlingly because of the desert white and dirty gray of the broken hillocks on either side of it.

#### "The Jungle of the Jordan"

In Biblical times it was known as the *Ge'on hay-Yarden*—that is, the Jungle of the Jordan. And a very good name it was. Lions once had their lairs there, and it is still frequented by jackals. "Behold, he shall come up like a lion from the Jungle of the Jordan against the strong habitation" (Jeremiah 49: 19).

We can now understand Jeremiah 12: 5, "And though in a land of peace thou art secure, yet how wilt thou do in the Jungle of the Jordan?" \*

When most people talk about the Jordan Valley, they are really thinking of its upper level, now known as the Ghor (Rift), and not of its lower one, the *Zor* (Thicket). There is as much as 150 feet of difference in height between them (page 729).

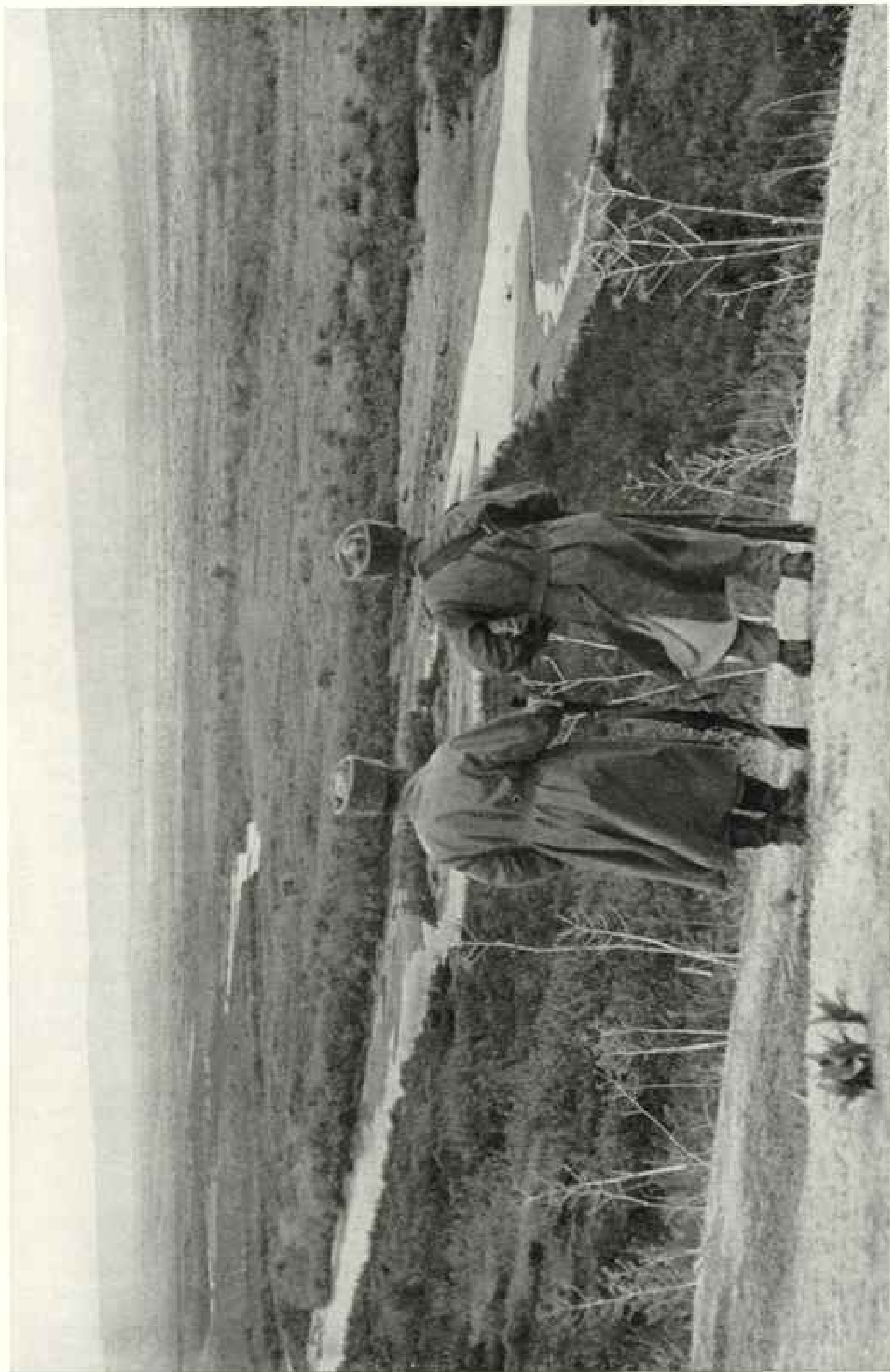
Separating them and marking the transition from the one to the other, are wildly torn, grayish marl hills on which practically nothing grows.

One may say that there are three terraces, with two steep hillsides between them, leading down to the Jordan, whether one approaches it from Palestine to the west or from Trans-Jordan to the east.

First comes the broken plateau or hill country of Palestine or Trans-Jordan, then the steep, jagged descent to the main part of the Jordan Valley, the Ghor, from which, in turn, desert-dead hills lead down to the *Zor*. In it the river weaves its erratic way.

I have watched fighter planes skimming along at terrific speed low over the *Zor*. Anyone standing in the Ghor above it would not have been able to see them, because they would

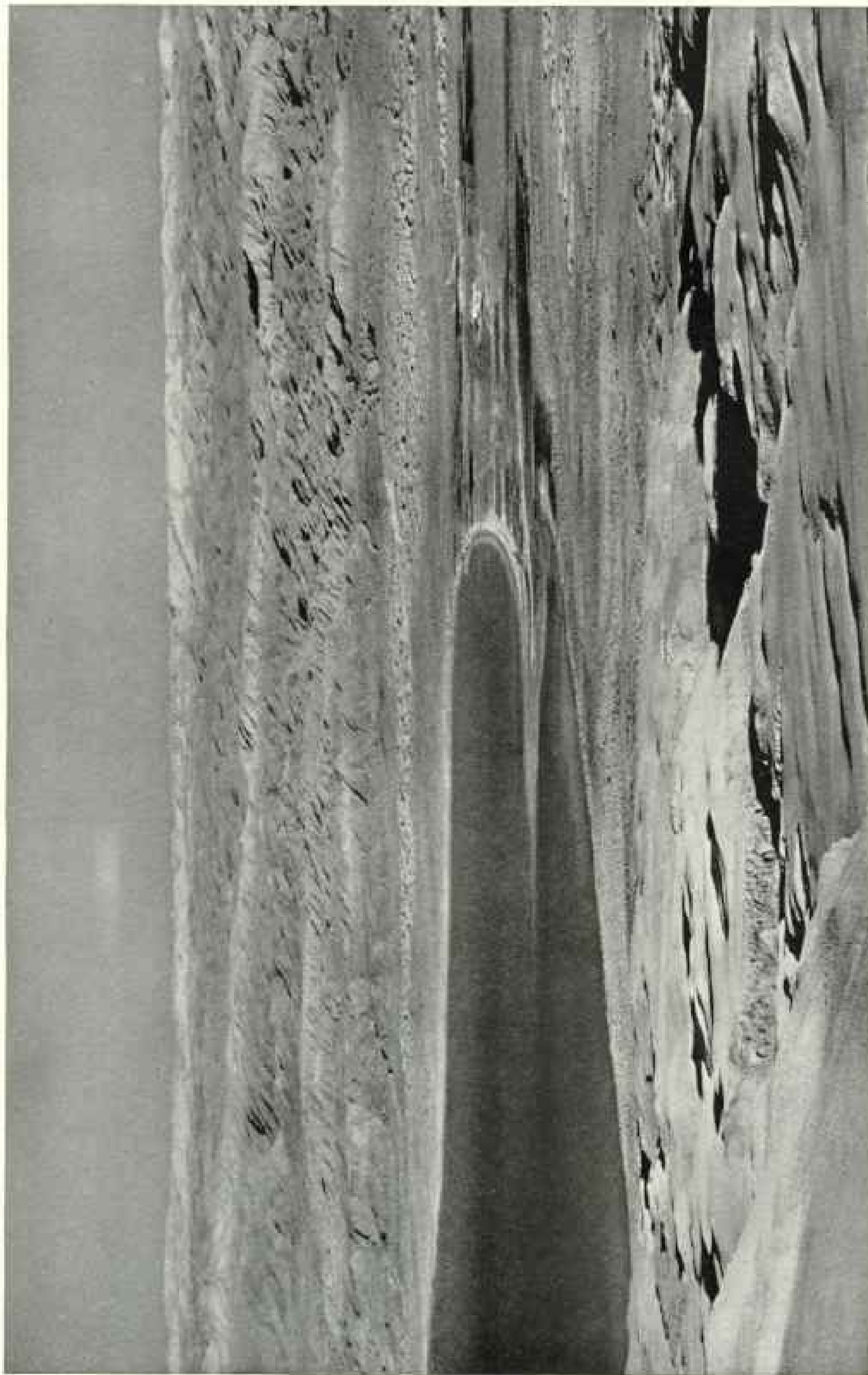
\* The author cites the phrase "the Jungle of the Jordan," usually rendered "the Pride of the Jordan," as a reason for translating Biblical quotations directly into modern English.



Dr. S. Glaser from Black Star

### Guarding a New Colony, Jewish Settlement Police Stand Watch on the Jordan

Housed in its remarkable valley, the narrow river resembles the Rio Grande at low water. Spring flood will cover the entire thicket. Abode of Bible-time's lion, the valley knows him no more. He is survived by the jackal, Viper and scorpion, too, dwell amid tangled oleanders, willows, tamarisks, and thorns.

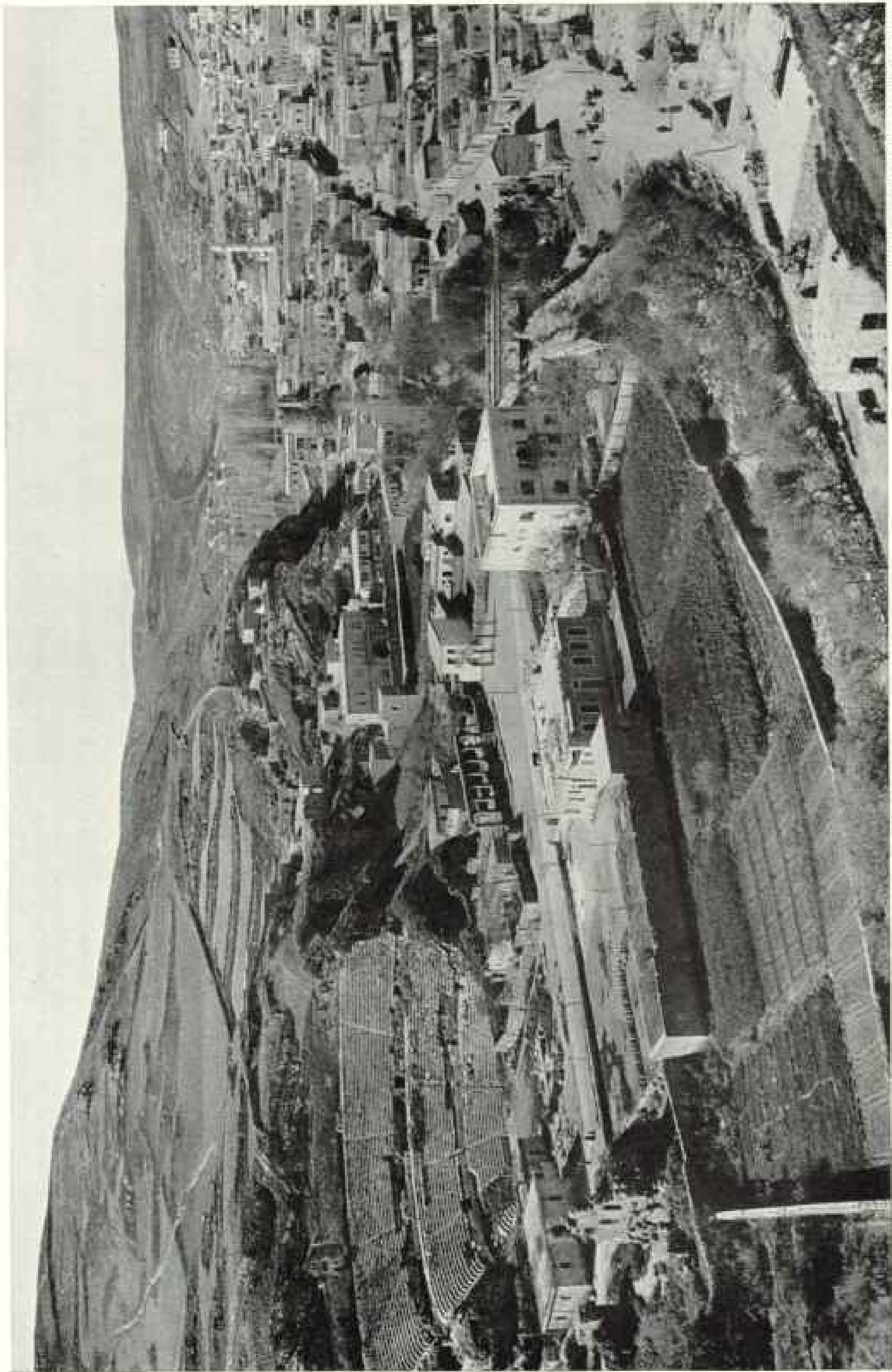


© G. Lyle Matson

**In the Promised Land Seen by Moses, the Jordan Dies in the Dead Sea—Jerusalem's Towers Notch the Horizon (Center)**

Earth's lowest sea lies 1,286 feet below the Mediterranean, and its depths plumb 1,300 feet more. Tradition says it covers Sodom and Gomorrah. As evaporation is the only outlet, the salt accumulation roughly measures the sea's age—an estimated 100,000 years. Only minute organisms exist in its brine. Fish expelled into the sea by rivers quickly perish, but birds, contrary to legend, do fly over. Its jutting delta identifies the Jordan (page 742).





Just Photographer Skinnard Dean-Williams

**When 'Amman, Trans-Jordan's Capital, Was Philadelphia, the Romans Built an Outdoor Theater (Left)**

Amid distant poplars bubbles a spring, a source of the Jabhok, a Jordan tributary. Just this side of the grove, the round tower is the Nymphaeum, monument to Roman divinity. It is some 1,800 years older than the minaret to the right. Seventy years ago 'Amman consisted of almost nothing but ruins.

be hidden from sight below the wild hills intervening between these two parts of the valley.

I have often thought, especially when coming from the Trans-Jordan side of the Jordan Valley towards Jericho, that Dante in his wildest moments could never have imagined a more realistic inferno than this scene.

The Zor is at its widest at this point north of the Dead Sea, near the crossing over to Jericho.

Waves of heat make the misshapen white marl hills seem to dance a witch's waltz. The glint of the sea and the glare of the bare rock blind the eye. The fantastic rock formations stretch like an evil bar before the green of the oasis of Jericho, visible beyond them on a higher level.

Above the gardens of Jericho soar the severe hills of the Wilderness of Judah, crowned by the towers of Jerusalem.

Such are the barriers to Palestine from the east.

The Jordan Valley has been much maligned. It has been considered uninhabitable, with several notable exceptions, because of intolerable heat, malignant malaria, wild beasts, and savage men. I have found that judgment to be incorrect, either for the present or the past of the Jordan Valley.

On the east side of the Jordan alone, the joint expedition of the American School of Oriental Research, Jerusalem, and the Smithsonian Institution, Washington, D. C., under my direction, has discovered more than 70 ancient sites, many of them having been founded more than 5,000 years ago, and some of them even earlier.

#### Jordan Valley "a Garden of God"

It would have been well if more attention had been paid to information about the Jordan Valley which is contained in the Bible.

"And Lot lifted up his eyes, and he beheld all the valley of the Jordan. And lo, all of it was irrigated . . . and it was like a garden of God" (Genesis 13: 10).

Now Lot may frequently have been wrong in the eyes of his shrewish wife, who apparently got her just deserts, but he was certainly right when it came to describing the Jordan Valley.

I consider the Jordan Valley to be one of the richest parts of all of Palestine and Trans-Jordan. It remains today potentially what it was once indubitably—a garden of God.

Exuberantly rich earth and abundantly copious water are the immediate and most apparent reasons for the fantastic history of the Jordan Valley. It is a great catchment basin for water, not only from the snows of Hermon

and seasonal rains, but from its eastern and western tributaries, which tap thousands of square miles.

It is amazing to see how the thirsty valley opens up wide to receive these streams. It fairly unfolds to be made fruitful by them. This is particularly noticeable on the west side.

For a distance of some 13 miles, starting from the Sea of Galilee, it is little more than 4 miles wide. Where the Nahr (River) Jalud descends through the Plain of Bethshean to the Jordan River, the Jordan Valley throws its arms about it, as if to say, "Welcome, my beloved." Here the valley is from 6 to 7 miles across.

Soon, however, the starved hills of Samaria press in severely to break the embrace. They practically trample upon the floor of the valley, which, perforce, pulls itself together and narrows down to mean and strait-laced proportions.

Farther south the Wadi Fari'a cleaves its way through the austere hills and forces them to retreat. Relieved of their presence, the Jordan Valley bounces out with an 8-mile-wide bustle. This gets wider as it grows longer, so that by the time the valley reaches the Jericho area it has achieved its maximum girth, amounting to 14 miles.

The streams on the east side of the Jordan Valley are larger, more numerous, and more valuable than those on the west side.

Between the Sea of Galilee and the Dead Sea there are, all told, on the east side of the Jordan, twelve perennial streams which cut their way through the eastern hills down to the Jordan. They water the valley into the greenness which Lot noted.

Their names sound strange to the unaccustomed ear, but water spells music and wealth in any language.

Between the Yarmuk and the Jabbok Rivers are also the unceasingly flowing streams of the Wadis el 'Arab, et Taiyibeh, Ziqlab, Jurm, Yabis, Kefrenji, and Rajib.

Beyond them, south of the Jabbok (Wadi Zerqa), are the Wadis Nimrin, Kufrein, and Rameh.

All of them hew their lines through the hills as if with a mighty ax. None of them, however, with perhaps the exception of the Yarmuk and the Jabbok, is a river in actual size as measured by continental standards.

#### The "City of Brotherly Love"

The Biblical names of most of these streams elude us, even as the Biblical names of most of the cities which have sprung up along their sides escape us.

The River Jabbok (Wadi Zerqa) rises near



Govt. of Palestine, Dept. of Antiquities

### Bronze Hand Is a Deadly Old Battle-ax Made in Hittite Style

Fourteen centuries before Christ the blade was abandoned at Bethshean. Ornamental fingers continue in grooves almost to the bit. Knuckles enfold the handle's socket, seen as a shadow on the left. The engraving is thought to be a rooster.

'Amman, the capital of Trans-Jordan.\* Rabbath Ammon was the city's full name of old, when it was the capital of the Kingdom of Ammon (page 736).

Mute witness there of spent glory is the ruin of a Roman theater, built when the town's name was changed for a brief period to Philadelphia, City of Brotherly Love.

The Jabbok flows north and then westward,

\* See "Visit to Three Arab Kingdoms: Transjordan, Iraq, and Hedjaz," by Junius B. Wood, NATIONAL GEOGRAPHIC MAGAZINE, May, 1923.

carving for itself a deep canyon. Finally it escapes from the hills and flows southwestward through its own little valley till it meets and joins the Jordan.

There, near the junction of the two rivers, stands a small mound called Tell Damieh, to be identified with the Biblical Adam. It was below Adam that the Israelites of the Exodus crossed the Jordan on their way to the Promised Land.

Here some years ago, a decrepit rope ferry plied its angular way across the swift current of the Jordan. It has now been replaced by a bridge.

Events alone, however, have scarred a mark at this point which neither men nor time can easily efface. As the Israelites, with the priests in advance, were about to cross the Jordan, an astounding miracle occurred, according to the Biblical account (Joshua 3: 16-17).

The Jordan was split in two, and the people passed over on dry land. Is this a poetic representation of an incident which can be rationally explained?

In this uneasy area of earthquakes, it is known that landslides have at times blocked the normal channel of the Jordan, forcing it to chart a new course (page 719).

Did the Israelites chance upon just such a landslide, enabling them to cross the river dryshod?

Once before, according to the ancient account, during their escape from Egypt, they had passed over on dry land between walls of the Red Sea.

Be that as it may, the first contact of the Israelites with the Jordan had in it the elements of a miracle, and the river's connection with their subsequent history remained unbelievably fantastic. From the very first it had fascinated them. To the very last it influenced their fortune and fate.

Outstanding among the sites of cities on the east side of the Jordan Valley was that of Succoth, about seven miles north of Adam, near the point where the Jabbok River reaches the Jordan Valley.

It is to be identified with the great artificial city mound of Tell Deir 'Alla. How happy Jacob must have been to see it, after leaving Penuel on the Jabbok! There he had obtained a blessing from the stranger who had wrestled with him during the night and forgiveness from Esau, who had become reconciled with him the next day.

Following the Jabbok downward, he and his people entered into a wide, fertile section of the Jordan Valley which in the Bible is known as the Emeq of Succoth.



Govt. of Palestine, Dept. of Antiquities

#### At Bethshean, November and December Occupy Segments of a Basilica's Greek Zodiac

Except for its mosaic floor, the Monastery of Our Lady Mary is in ruins. Byzantine Christians built it in the sixth century; they called the city Scythopolis (page 740). Philistines fastened Saul's body to the wall of Bethshean (I Samuel 31: 10).

In its midst stood a wonderful mound, already ancient in Jacob's time. Here was forage for his flocks, land for plowing, water for all. "So Esau returned that day on his way to Seir (Edom). And Jacob journeyed to Succoth, and built him a house, and made booths (*succoth*) for his cattle. Therefore the name of the place is called Succoth" (Genesis 33: 16-17).

Long before I got to Succoth, I could see it standing like a giant among its lesser fellows in the valley. What would this abandoned mass of houses and cities, risen high like a mighty anthill, be able to tell me? Which of its secrets could still be deciphered?

Soon its steeply sloping sides loomed up in front of me. Around its base gurgles a stream, diverted from the Jabbok River to irrigate some neighboring fields.

Climbing to the top of the mound, which rises about 60 feet above the level of the plain, I could not take a single step without treading on fragments of pottery. They were of all shapes and colors and ranged in time from approximately the 18th to the 6th centuries B.C. At adjacent sites, which may be accounted its suburbs, was pottery going back to the end of the fourth millennium B.C.

As I walked over the mound, it seemed to me that a veritable babel of sound burst out of its depths. I listened hard.

Was that an Israelite expression, and the other a Midianite phrase? Were those Habiru accents, and mingled with them the cadences of Canaanite speech? Did the deep gutturals belong to the still earlier dolmen dwellers or to the descendants of the prehistoric men who first peopled the valley? They all seemed to speak at once. Whose voices were these crying out of the ground, only to float away in a sea of silence?

Today, not a single soul lives on the ancient site of Succoth.

#### The Hills of Gilead

Farther north, the Wadi Yabis breaks out of its canyon in the hills of Gilead and flows across the east side of the valley to empty into the Jordan River. It has clung in modern form to its ancient name, which must have been the River Jabesh.

The men of Jabesh-Gilead once rescued the bodies of Saul and his sons from the city wall of Bethshean, where the Philistines had impaled them after defeating the Israelites in the battle of Mount Gilboa.



The faithful friends of Saul then brought the bodies for honorable burial to their city of Jabesh-Gilead, which was situated within view of Bethshean.

I have been able to identify Jabesh-Gilead with the joint sites of Tell Abu Kharaz and Tell el Meqbereh, situated at the point where the Wadi Yabis emerges from its eastern hills. I found pottery there belonging to the time of Saul, as well as earlier and later wares.

That night I was the guest of the Zeinati Arabs in their tent pitched opposite the twin sites of ancient Jabesh-Gilead.

I told my hosts its story. In their veins may still flow some of the blood of its ancient inhabitants. They cultivate the same lands; they lead much the same lives. The interest of my listeners was so keen, their questions so to the point, that soon I almost forgot to whom I was talking.

Were these the Arabs of Zeinati, or were these the Israelites of Jabesh-Gilead?

It was all I could do to refrain from turning to one of them and asking him how on that memorable night they had got past the Philistine guards on the city wall of Bethshean? Or had none been posted that evening?

I deem it likely that the brook Cherith, where Elijah hid himself from the wrath of Ahab, King of Israel, is to be identified with the eastern beginnings of the Wadi Yabis (I Kings 17: 2-7). Elijah was a Gileadite and may well have been an inhabitant of Jabesh-Gilead (I Kings 17: 1).

In what vivid terms is described the departure of Elijah from the world of laborious effort to the heavenly sphere of miraculous happenings!

"And they two (Elijah and Elisha) stood by the Jordan. And Elijah took his mantle . . . and smote the waters, and they were divided, . . . so that they two went over on dry land. . . . And it came to pass that there appeared a chariot of fire, and horses of fire, . . . and Elijah went up by a whirlwind into heaven . . ." (II Kings 2: 7-11).

#### Jericho and Armageddon

The anonymity which has cloaked almost all the ancient places of settlement on the west side of the Jordan did not extend to its two outstanding cities. They were Bethshean in the north and Jericho in the south.

The outstanding high mound of Bethshean, known today as Tell el Husn (the Fortress Hill), dominates the Jordan Valley at one of its widest and most fertile expanses. It guards the eastern end of the great highway that follows the length of the Valley of Jezreel and the Great Plain of Esdraelon. Its western

counterpart is Megiddo (Armageddon). This highway connected the Mediterranean coast, and thus ancient Egypt, with the Mesopotamian cultural sphere.

It is like turning the pages of a thoroughly documented and fascinating book of history to follow the course of the excavations which were conducted at Bethshean.

Beneath more modern accumulations were found Crusader remains.

Below them lay the ruins of a fort, mosque, and dwellings of some of the Arabs who completed their conquest of Palestine A.D. 640, eight years after the death of Mohammed.

The ancient name of Bethshean was reintroduced then. It replaced the comparatively new one of Scythopolis, by which it was known during the preceding Hellenistic, Roman, and Byzantine periods.

That name seems to hark back to the 7th century B.C., when the warlike Scythians, at home originally on the plains of southern Russia, swept southward as far as the boundaries of Egypt. They established themselves for a while at Bethshean.

Under the Arabic buildings were found the ruins of a beautiful Byzantine church.

Various splendid Christian buildings, with magnificent mosaic floors, had replaced earlier Hellenistic and Roman temples.

During the Roman period, the city flourished mightily. It became the chief city of the Decapolis, that league of ten cities with Greco-Roman culture, to which belonged, among others, Gadara and Pella.

In earlier centuries the Philistines and Israelites fought bitterly for possession of the vitally strategic point of Bethshean. The Israelites won out, but it is from the Philistines that Palestine acquired its name.

The deepest imprint upon Bethshean was left there by the Egyptians. They also controlled other parts of the country during the last half of the second millennium B.C., often with the aid of Egyptian mercenaries.

A whole series of Egyptian temples, inscriptions, and statues has been found at Bethshean, as well as Babylonian and Hittite objects (pages 738, 739, 743).

The excavations have shown that the site was first settled in the late Chalcolithic period, about 3,500 B.C. It was continuously inhabited after that almost down to our own day.

The present Arab village of Beisan is but a short distance from the ancient site.

Flip the pages and get a moving-picture impression of the actors crossing the stage of history at Bethshean. They include Canaanites, Egyptians, Hittites, Babylonians, Philistines, Israelites, Scythians, Persians, Greeks,

Romans, Byzantines, Arabs, and Crusaders.

And remember that the play has just begun!

Of the two cities, Bethshean and Jericho, the latter has become the more famous. History was at home there.

The story of civilization might well start with the words: "And in the beginning there was Jericho." It stood at the edge of the hills in the midst of fragrant gardens and verdant fields, irrigated into glowing greenness by the un-failing waters of the Wadi el Qelt.

Immediately below the rise on which it stood was the very strong spring now called Elisha's Fountain, which is also known as Ain es Sultan.

### The Fall of Jericho

I have of a December day sat and soaked up the sunshine in Jericho and then driven to Jerusalem an hour later, to shiver in the wintry blasts at large there.

Prominent in the annals of the Bible is the story of the fall of Jericho.

The news of the crossing of the Jordan had filled the inhabitants of Jericho with terror. "Now Jericho was straitly shut up because of the Beni Israel. None went out, and none came in" (Joshua 6: 1).

The strategy of the defenders was to sit tight and trust to the massive defenses of their great city wall to deny access to the attackers.

But the tactics of the invaders were of a different order. For six days they encircled the city, while the weak-hearted there grew faint with fear and internal dissension mounted.

Meanwhile Rahab sat secure in her house on top of the city wall. She had previously come to terms with the Israelite scouts, whom she had harbored and then helped escape.

The battle was really over before it had begun. The Beni Israel had but to batter at the gates and the great bastion would fall like an overripe fig.

Indeed, the following was the order of the battle for the seventh day:

The priests were to blow the trumpets and the people to shout great shouts and under the intoxication of the tumult to attack.

Jericho was bound to fall. The very earth was disturbed to its depths.

It trembled, and the firm wall of Jericho fell flat.

Its bricks had been too beautifully bonded



© John D. Winnow

### A Camel Herder in Jordan's Jungle

Member of the Beni Sakhr, a Trans-Jordan tribe, he has driven his herd to feast on winter's thornbushes. He wears a sheepskin coat and carries a cameleer's cane.

together to allow any leeway for waves of motion released by earthquake tremors not uncommon in that region.

The city was suddenly bared even of all semblance of defense (Joshua 6: 20-21).

So once again Jericho was destroyed, as it had been so often in its long history.

A veritable Babel's tower of towns had sprung up over the original knoll by the time of the last Canaanite city, which the traitorous Rahab helped betray.

Delving deeply into the mound of ancient Jericho, known today as Tell es Sultan, archeologists have found records reaching back many millennia.

In one sector, at the northeast corner, they dug through 80 feet of the debris of 18



Karen Hayward

### Salts Pumped from the Dead Sea Whiten Evaporating Pans Straddling the Jordan near Its Mouth

In the Dead Sea's buoyant brine drowning is difficult. Salinity is 23 to 25 percent, compared with ocean's 4 to 6. Palestine Potash, Ltd., employing Jews and Arabs in equal numbers, extracts a potassium salt for fertilizers and explosives. Wartime Britain relies on it heavily. Bromine is a valuable by-product. Magnesium, chlorine, sulphur, and other products exist here. Asphalt, rising from the depths, floats ashore.

settlements before sterile soil was reached. The strata of these settlements carry the history of man at Jericho from the 13th century B.C. back to the 6th millennium B.C. A gypsum head dating from about 5,000 B.C. was found in the excavations there.

The sightless quietness of the deeply impressed shell eyes, the ridged eyebrows, aquiline nose, prominent cheeks, lines of paint representing tattooing or hair, or both, and thin line of a mouth above a somewhat protruding lower lip combine to lend a quality of impersonal but strong reality to this primitive sculpture. It is like a death mask of someone who was vibrantly alive (page 723).

A remarkable vase was found at Jericho, belonging somewhere between the latter half of the 18th century and the 17th century B.C.

The potter turned on his wheel a graceful, carinated, trumpet-foot vase, typical of the period. He then fashioned it by hand into the likeness of one of his contemporaries and baked it into a monument to his memory, which has endured now for thousands of years.

The representation is highly stylized. It presents the likeness of a sharply intelligent, quizzically energetic Semite (page 731).

#### In the Reign of Herod

Jericho enjoyed a great renaissance during the long reign of Herod the Great, king of Judaea, who ruled from 37 to 4 B.C. He proved to be a champion of the Jews, a friend of the Romans, and an admirer of the Greeks. He was one of the few who resisted the lures of Cleopatra.

Josephus tells us that he merely "farmed" off her parts of Arabia, and those revenues that came to her from the region about Jericho.

He embarked on a vast public-works program and literally altered the face of Palestine. He changed Jerusalem into an imposing Greco-Roman metropolis and built a magnificent Temple there to Jehovah, parts of which are still visible.

In the Jordan Valley alone he built a string of fortresses and towns that stretched all the way from Jericho to Baniyas (page 723).

He greatly strengthened the fortresses of Masada and Machaerus on the west and east sides of the Dead Sea, respectively.

He adorned Jericho with a beautiful theater and a fine hippodrome, and he built a citadel which he named Cypros in honor of his mother, and a tower which he called Phasaelis after his brother.

Herod loved his relatives when they were dead.

It was much the same Jericho that Jesus



Brit. Mus. Dept. of Antiquities

#### A Pottery Coffin's Face Was Meant To Be as Solemn as Death

In Bethshean of the 12th century B.C., Aegean mercenaries modeled the case on a type used in their island homes. The occupant was not mummified, and the masked lid was not his portrait. Plaster streaks show museum repairs.

visited on his way to Jerusalem to celebrate the Passover festival there. A monastery has been perched on a mountaintop near Jericho, in the belief that it marks the spot where Jesus resisted the temptation of the Devil.

A splendid mosaic floor of a Byzantine synagogue has been discovered at Jericho.

During the flourishing fifth and sixth centuries after Christ, numerous synagogues and churches were built at various places in the Jordan Valley, as well as in the highlands east and west of it.





© John D. Whiting

#### After Prayer a Moslem Casts a Stone "Witness" on a Heap Built by Pious Wayfarers

Among many peoples the custom is ancient. Joshua's hosts erected such a testimonial when Jordan's parting waters let them cross (Joshua 4: 1-8). Moslems revere the distant conical peak as Aaron's tomb.

Opposite the fields of Jericho lay the storied Plains of Moab, at the southernmost end of the valley, on the east side of the Jordan. These plains form a particularly blessed reach of extremely fertile land below the pallisade walls of the high and abruptly rising mountains of Moab.

Four streams descend through deep furrows in the faces of these mountains. They irrigate the Plains of Moab into rich fertility. The area is full of ancient sites, some dating from about 3,500 B.C.

Among them are the Biblical sites of Beth Nimrah, Abel Shittim, Beth Haran, and Beth Jeshimoth, which can be identified with Tell Bleibil, Tell Hammam, Tell Iktanu, and Tell Adeimeh, respectively.

These were all fortified cities, built on isolated hills at the east end of the plain. They guarded the points where the perennial

streams emerged from the mountains of Moab. They were thus in a position to prevent any possible enemy from cutting off or diverting the life-sustaining flow of water.

Strike a line east from the north end of the Dead Sea and find your way up out of the crazy confusion of barren ravines which border the banks of the Jordan.

#### Where Moses Saw the Promised Land

Cross the Plains of Moab, approximately seven miles wide, and climb the steep tracks leading up the sides of ever higher-ranging hills to the broken edge of the Moabite plateau.

You will finally come to Mount Nebo, made memorable throughout all history by Moses and marked today by the ruins of a Byzantine church. From there he could see the Promised Land, but he was fated never to cross the Jordan River and enter into it.

"And Moses went up from the Plains of Moab unto Mount Nebo, which faces Jericho,

. . . . And the Lord said unto him, This is the Land. . . . Now I have caused thee to see it with thine eyes, but thou mayest not pass over into it. So Moses, the servant of God, died there in the land of Moab at the command of the Lord" (Deuteronomy 34: 1-5).\*

\* For additional articles on Palestine and the Jordan, see, in the NATIONAL GEOGRAPHIC MAGAZINE, "Canoeing Down the River Jordan," December, 1940, and "Bedouin Life in Bible Lands," January, 1937, both by John D. Whiting; "Bombs over Bible Lands," by Frederick Simpich and W. Robert Moore, August, 1941; "Change Comes to Bible Lands," by Frederick Simpich, December, 1938; "Changing Palestine," by Maj. Edward Keith-Rouch, April, 1934; "Flying over Egypt, Sinai, and Palestine," by Brig. Gen. P. R. C. Groves and Maj. J. R. McCrindle, September, 1926,

# Red Cross Girl Overseas

BY MARGARET COTTER

UPON the horizon the blue shadow that was the African Continent came into view. It was hazy—but then so was everything I had in mind about the place.

As a confirmed movie-goer of many years' standing, what could I expect but swarms of vicious animals and natives hiding in the bush just waiting for us to land so the attack could begin?

There was that, and, of course, a savage, powerful enemy, swollen with success, who would have to be beaten back by the blood and sweat of the thousands of young American soldiers who crowded this big troopship.

We were just completing a voyage of almost 25,000 zigzagging miles over submarine- and mine-infested waters (page 749).

Whatever my illusions about the place, I had none whatsoever about my job there. I knew that the fact that I was a girl with the American Red Cross, and not a boy toting a gun for the American Army, wouldn't help me at all when a German finger flipped a bomb release 35,000 feet overhead.

I'd have to duck with the boys, pray with them, and get by or get it, just as they would. I didn't expect, nor did I want, conditions to be any better for me than they were for the soldiers. I would eat their chow, live their life, share their chances and, most important, their troubles.

In those respects I got what I expected.

## American Women Land in Egypt

The actual landing, however, was a different story. A terrific, exultant roar burst from the throats of the massed thousands of troops who lined the sea wall toward which our landing barge was chugging, as they realized that the steel-helmeted, gas-masked human beings crowding the bow were females.

We 60 Red Cross girls had known that we should be welcomed, but we hadn't expected to create a sensation.

Amid shouts of "Welcome, Yanks!" "Jeepers! Look! *Girls!* American girls!" and so on, some boys rushed to help us out upon the sea wall and relieve us of our gear, while others simply stood by as if they were stunned.

We were hustled into trucks, staff cars, and jeeps, which immediately took off for our primary destination (page 750). Thence we should be dispatched to various places all up and down the fighting fronts. As we drew away from all the confusion and noise of the docking area, we waved our hurried good-byes

to the soldiers who had made the crossing with us. They were already forming in efficient-looking groups ready to move up. We wondered how many of them we should see again.

Night fell as we rode along. A brilliant moon rode with us. All at once the convoy, which had hung together as it crept along with dimmed lights over the lonely desert roads, came to a halt.

We wondered what was up. We were tired, keyed up and irritable, and wanted to get where we were going. But we forgot all this as we saw, off to the right, a scene which dwarfed our petty feelings.

## Seeing the Sphinx and the Pyramids

There, in immobile indifference, just as they have stood for nearly five thousand years, were the Sphinx and the Pyramids.\*

Time for seeing these famous monuments could certainly be spared. We dismounted and approached them (pages 752, 755).

As we stood there in the sand, under moonlight bright as that of a giant neon torch, I realized that for the first time since I had been with these girls we were all quiet at once. But for the barking of hungry dogs in the desert and the monotonous rhythm of crickets, it would have been completely still.

Those ancient people had built well. Their ideas on Eternity were expressed for me there. I felt that we were surreptitious midgets in the presence of monsters.

We did not attempt to climb those steep inclines of the Pyramids because, frankly, it looked impossible (page 754). In the light of day it still looked pretty tough, but I did manage to climb one with a bunch of soldiers, about six months later, when I had two whole days off duty in Cairo.

The Sphinx, with its enormous, inhuman face in profile to us, stared out across the desert. Its giant chin, in concession to puny man's destructive ability, rested on hundreds of interlocked sandbags (page 756). Actually, to me the face was like that of a giant bulldog. Looking at it, with the cheeks swelled and the thick-lipped mouth seeming to smile eerily, I wondered how any human ever had enough imagination to create such a thing: the head of a man, the body of a lion. No wonder it cast a spell. It was out of this world.

\* See "Daily Life in Ancient Egypt," by William C. Hayes, with 32 paintings by H. M. Herget. NATIONAL GEOGRAPHIC MAGAZINE, October, 1941.



U. S. Army Air Forces, Official

#### A Mirror and an Empty Wooden Crate Make a Desert Dressing Table

Army nurses and Red Cross workers had little time for beautifying. Their desert stations were far removed from laundries and beauty parlors; so the girls did their own laundry and washed each other's hair. For washbasins they used steel helmets (page 738).

So was I, for that matter, when an officer tapped me on the shoulder and said, "Excuse me, miss, but the convoy is ready to leave. After all, there's a war going on, you know."

He laughed as he helped me over the high back of the truck, and got to the point. "Look, toots," he said, "how about you and me coming down here sometime and giving the place a real tour?" Then I laughed. There's certainly nothing bashful about officers!

#### Cairo Was Blacked Out

Our motors started. Even they seemed quieter than usual, as if, like us girls, they were affected by those stone relics reposing in the eternal sand. The convoy moved toward Cairo.

Cairo was blacked out when we arrived. It was not until the next day that I saw what kind of place it really was (page 757). I certainly hadn't thought it would be such a modern city, though there are certain quarters

which seemingly are no different today from what they were in the days of King Tut. And the inhabitants of these sections must have been very much the same as those who lived and died there centuries ago.

The ancient and the modern mingle exotically. Walking with several of the other Red Cross girls through the city's crowded streets that afternoon, I saw new and vast hotels, brilliant shops, English and American officials driving about importantly in cars. There were women in black veils and some in brightly colored outfits, but all barefoot; determined natives holding false antiques in their lean and dirty fingers; taxi drivers who use their raucous horns far more often than they do their brakes; trolley cars grinding along their tracks with bells furiously ringing; tiny children crowding alongside the "Yobnkees" on the sidewalks and begging with their whining cry of "Bak-sheesh!" while turning handsprings; street magicians doing tricks in hope of having the



American Red Cross by Laimos

### When It's Coffeetime in Cairo

On nights when dances or movies weren't scheduled at the Cairo club, Red Cross girls held "coffee sessions." Hundreds of boys dropped in for coffee, cakes, and a pleasant chat. This club in Cairo's Grand Hotel was the largest in the Middle East and was honored by visits from Egypt's King Faruk.

"rich, nice Americans" throw them coins.\*

All this, and the uproar of thousands of soldiers of all nations, too. Trying to crowd into a few brief hours of leave enough enjoyment to last through weary weeks out in the blue less than an hour's flying time away, they jammed the sidewalks, filled the streets, and overflowed from *gharries*, which, drawn by Arab ponies, are the mainstay of the local transport system.

I had heard much about these famous Arabian ponies, but I was disappointed in most I saw in the streets. They seemed well fed, but lacked the quality of the so-called typical Arab stallions shown in pictures. As I stared at each animal passing us, a soldier near by remarked that I seemed interested in

horses. I laughingly admitted that before Adolf had kicked up his heels and brought us all into this war, I had spent much of my life on a horse.

The soldier, a tall, good-looking blond corporal, looked at me in delighted amazement. He hemmed and hawed, and finally, in a deep southern accent, stammered, "Gee, a horsewoman! Ah'm from Virginia myself, and you all know what that means. Ah was raised with horses. If you don't mind, it would sure make my leave complete if you'd go riding with me this afternoon."

Before the last word was uttered, my answer was a definite "Yes!" He yelled "Yippee!" and then turned and called to three other soldiers standing near by. "My buddies," he explained; then bashfully added, "Share and share alike!" So we all went.

An hour later I was telephoning from the Kafr Faruk Stables to our Red Cross headquarters, since I was on the alert to move

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "War Meets Peace in Egypt," by Grant Parr and G. E. Janssen, April, 1941; and "Old-New Battle Grounds of Egypt and Libya," by W. Robert Moore, December, 1940.



and had to keep in touch with them. This attended to, we approached the problem of making the stable keeper understand we knew how to ride and wanted horses. It was all done with gestures, for the old Arab spoke no English. He nodded at the corporal, finally, but he still looked at me with suspicion.

He seemed not to think much of the idea of a girl riding his fine horses. He thought even less of it when he saw me dashing a mare directly at a three-foot fence. We had tried to find out from him if the mare would jump, but to no avail; so I had decided to find out the hard way, by schooling her.

#### A Horsewoman in Her Glory

I tried her over a few small fences. She responded beautifully. With the corporal and his buddies encouraging me, I was in my glory; I'd been dreaming of the moment I could again get on a horse ever since I'd left home. After clearing all the small jumps, I was ready for action.

"Put 'em up to five feet," I cried.

The Arab smiled, but when the boys raised the rails and he came to understand what was going on, he waved his arms frantically, indicating he was strictly against any such action and would not be held responsible for the consequences. He covered his eyes with his hands as I headed the mare for the obstacle. He was ready for a crash, but we sailed over, clearing the fence with inches to spare. The soldiers shouted, and the old man, after peeping through his fingers to make sure it was all over, joined in the cheering (page 767).

I was aware of the old familiar thrill I had so often experienced at horse shows in peaceful days. Now I had the added thrill of realizing that though I had traveled halfway around the world to a land where I could not understand the language of human beings, I could still understand that of horses.

I was fascinated by every pony in the stable. They differ somewhat from our thoroughbreds, in that they are smaller and shorter-ribbed. They have long dish faces and tiny pointed ears that turn in questioningly. But as to instincts, they and our thoroughbreds are identical. After five minutes in the saddle I felt right at home.

I could have spent the day among these animals, and probably would have, but the next time I phoned headquarters they informed me that my orders had come through. There was no time to waste. I was to report immediately.

A short, friendly argument with the corporal, who wanted to do the financial honors,

and we had left the proprietor of the stable to gloat over the amount of money I had pressed into his hands. Greenhorn that I was, I had counted piasters as pennies, though actually they're four times as much. But what of that? I'd had a marvelous time, and who knew when I'd have a chance at horses again? Actually, it was to be a long time.

I was pleased when I learned of my assignment. I was to be attached to a heavy-bomber group at a forward base. Madge Smith, a tall, lanky girl from southern Illinois, was going with me. The rest of our group were, strangely enough, green with envy of our luck, though many of them were to stay in the comparative comfort of Cairo, Alexandria, and other cities.

The Red Cross girls we left behind were to establish large clubs where the soldiers could come while on leave. They would have to use their ingenuity in furnishing and completely interior-decorating the clubs, set up and operate snack bars where the boys, who had probably been living on C rations and GI food in the desert, could get anything from real American hamburgers to pie à la mode. They would also plan recreational programs to keep the soldier busy and happy until he returned to the front. This would include bingo games, table-tennis tournaments, horse-back riding, dances, and tours of interesting places in the Near East.

Although the girls would probably have comfortable quarters—possibly even hot water for baths—they would be working 10, 12, and sometimes 14 hours a day. However, they were looking forward to it. They had been warned of the long hours while they were in training in Washington, and had decided they could take it.

Madge and I had already learned that we were to live in tents out in the middle of some nowhere with an Arabic name, with no water handy and no conveniences whatsoever. Who called us the weaker sex?

#### She Took Along a Puppy for Luck

Before the sun was down that same evening, we were on our way to the airport.

We each had our 55 pounds of luggage and the extra "small object" we were allowed to carry. My choice under this latter privilege was a tiny, amorous, anonymous dachshund puppy I'd acquired at the very last minute (page 751).

Soon we were looking out the waist window of one of our future squadron's bombers, which was on its way back to base with some supplies. We hadn't been in the air five minutes



American Red Cross by Zalmes

**Red Cross Girls on the Alert, Ready to Abandon Ship if a Submarine Is Sighted**

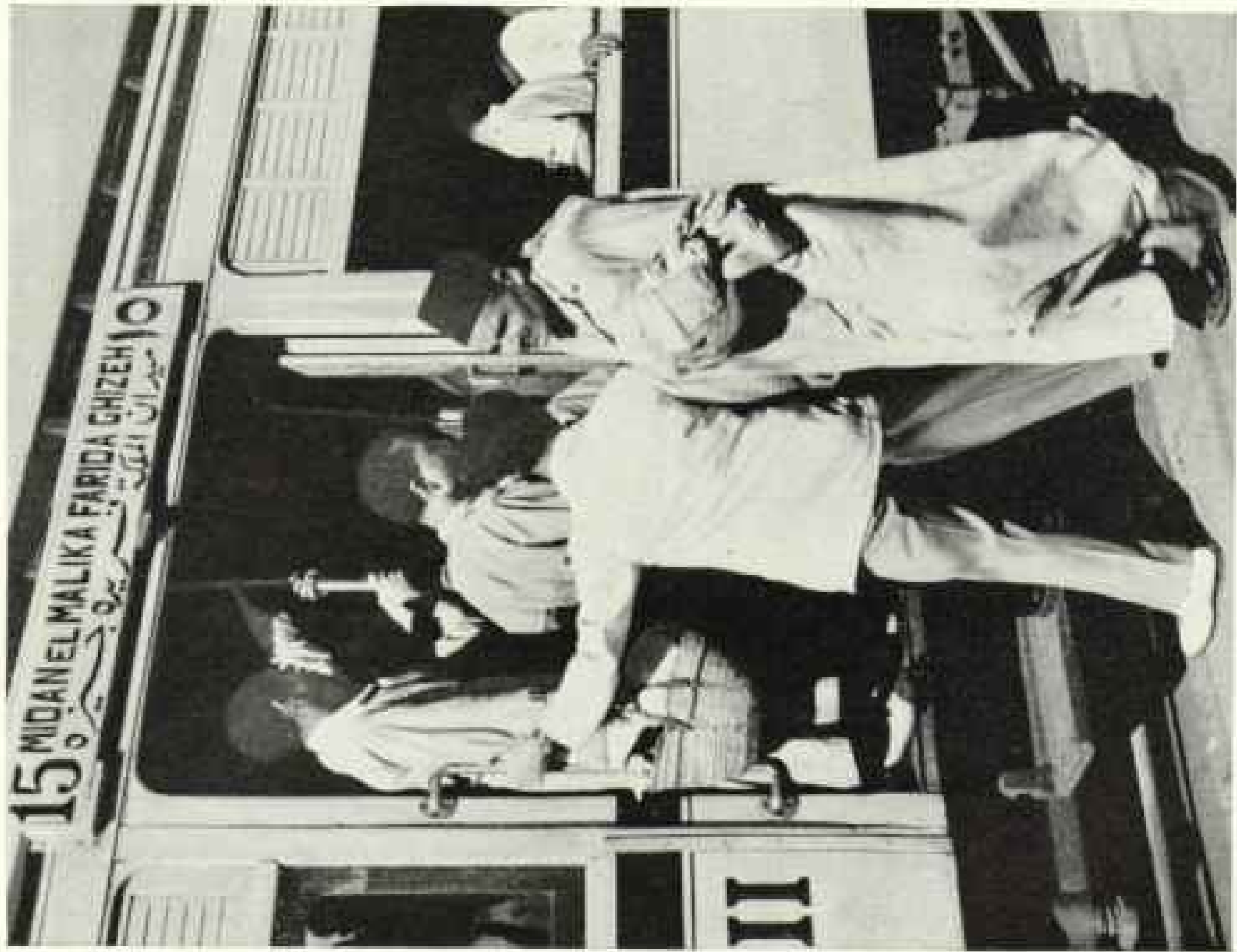
With musette bags packed and "Mae Wests" securely fastened, these girls were ready for any emergency. Traveling over many patches of enemy-infested waters on their long journey, alerts had become routine with them.



U. S. Army Air Photos, Official

**"Where Do We Go from Here, Boys?"**

When these Red Cross girls landed after almost 50 days of ocean travel, soldiers lined the sea wall, greeted them with wild cheers, and fought to carry their luggage (page 745). A New Zealander totes two checkered bags and a steel helmet. The group waits for jeeps, Army trucks, and buses to take them to Cairo.



Harvard town Writings

**Shoppers and Sight-seers Board "No. 15" for the Pyramids**

Cairo streetcars give riders a choice of first- or second-class passage, with separate compartments for women. If cars are full, local boys take "outside" standing room. They often make the hour-long trip to Giza village this way. There the famous No. 15 connects with another tram for the Pyramids.

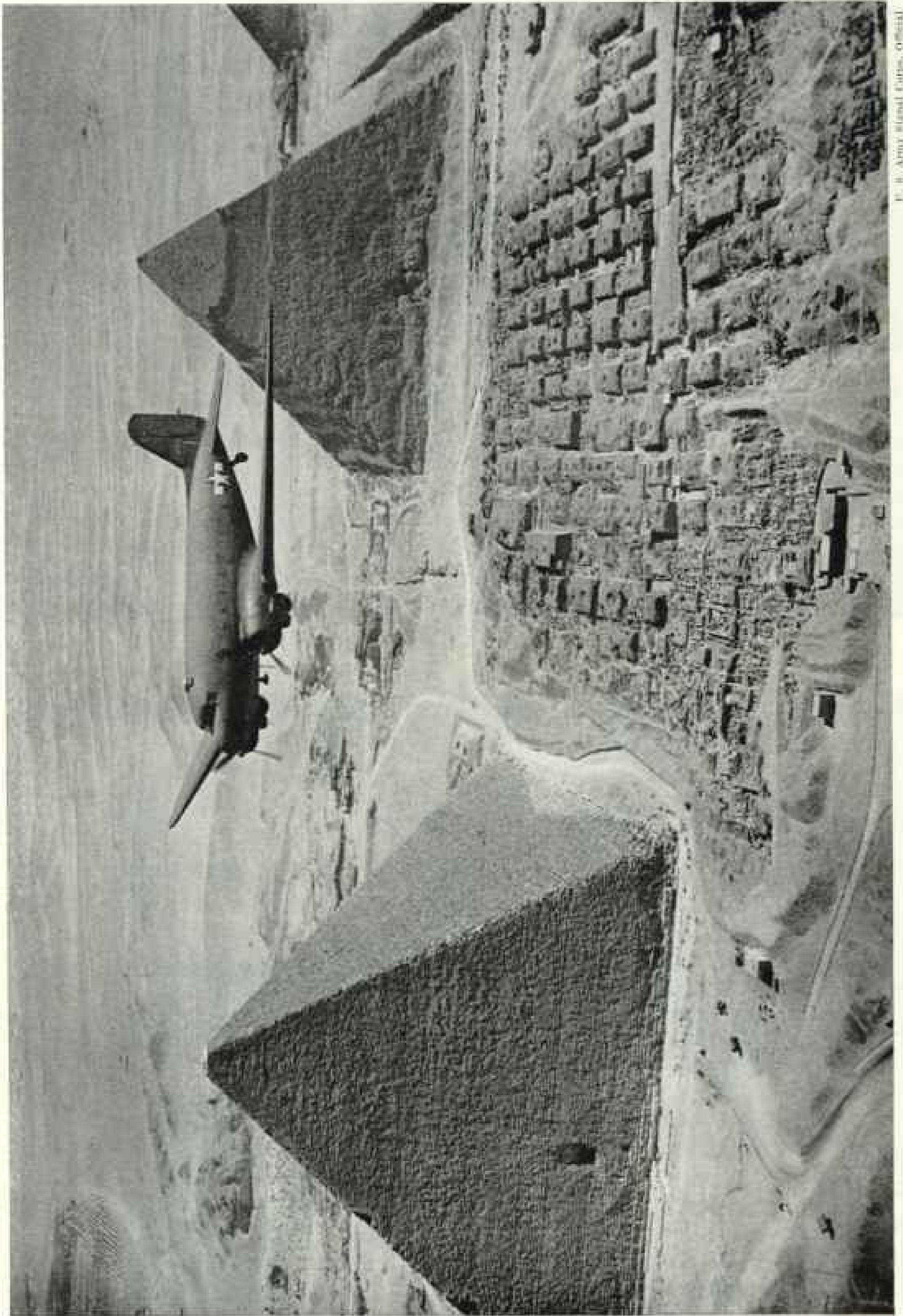


U. S. Army Air Force, official

**Water Is Scarce, But Bengasi's Pin-up Pup Gets His Bath**

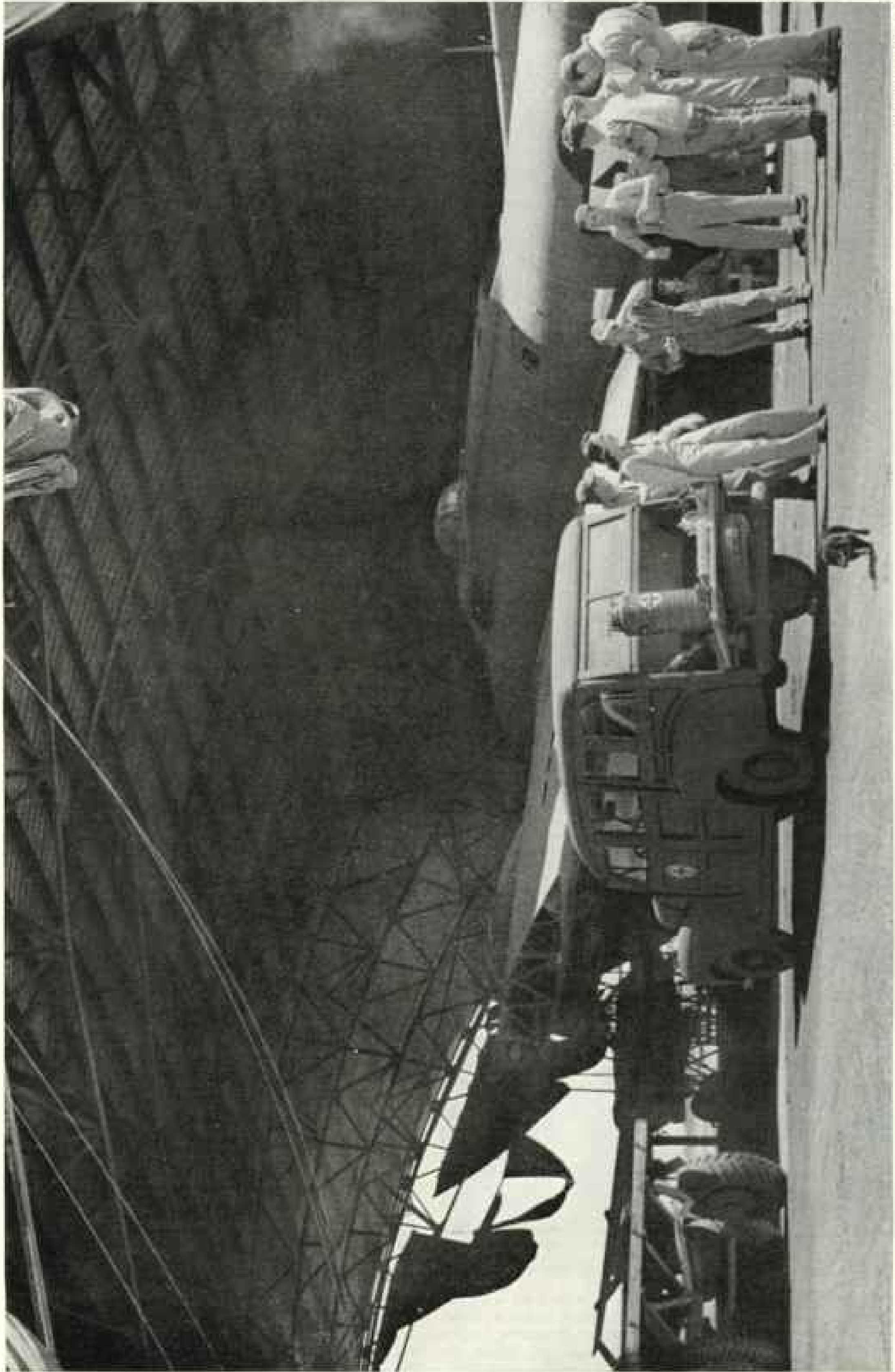
"Benji" was a nameless mascot until his mistress took up Red Cross club-keeping in wartime Libya (page 788). The dachshund pup took to ground and sky like a good soldier. His conduct was so good—he neither barked nor got astrick—that the boys devised for him an unofficial air medal.





U. S. Army Hand Color, Official

Loaded with Urgent War Materials, a U. S. Army Air Transport Command Sky Giant Roars over Egypt's Age-old Pyramids



U. S. Army Air Forces, Offical

**"Rolling Out the Barrel" Means Coffee, Doughnuts, and Welcome Back**

Flyers returning from bombing missions often found this makeshift Chalmobile from Bengal at the hangar. Red Cross girls, like homecoming pilots, waited for the "safe landing" signal before driving in from the edge of the landing field with their load of coffee and doughnuts.



U. S. Army Air Forces, Official

### A GI Joe Version of "The Helping Hand"

A trip to the Pyramids is a must for soldiers on leave in Cairo. Many are content to view the desert wonders from below; the more energetic climb the ancient stumbling blocks all the way to the top. Here a Red Cross girl, intent on making the trip up, gets an assist from two soldiers (p. 745).

when the pilot called back on the "intercom." He started out by telling me I was the most important item they'd picked up and asked if I'd like to come forward and "fly her." What a line these Yanks hand out! But I took him up on the offer before he could retract it. I wanted to try my hand at this flying business.

The pilot was delighted, but the copilot seemed a bit chagrined. Perhaps it was because he was given the job of holding the puppy while I settled back in his seat for the remainder of the trip.

That flight was magnificent. The Valley of the Nile flashed below, blocked out in geometrically perfect rectangles and squares of vivid and pastel green, with the serpentine river gracefully winding through it, bringing life to the dry, sun-baked earth as it has been doing through the ages.\* Then we were skimming over the open desert, with its razor-backed, wind-shaped dunes that looked like frozen waves of a great tan ocean stretching limitlessly to the horizon and beyond.

We flew over the scenes of tank battles, and burned-out tanks could be seen here and there, as lonely as if they littered the bottom of the sea. Occasionally, too, there was the wreckage of an airplane, sometimes apparently intact; but often glittering pieces were spread out over a great black area where one had exploded and burned.

I was glad to note the swastika markings on many of the planes; I didn't like to think of any happy boys like ours being in some of those wrecks when they hit away out there. But of course some of them had done just that.

Though our journey was several hundred miles, the plane had traveled so fast that we landed before it was fully dark. I had been so thrilled by the trip that I felt as if we'd just taken off.

As I should have expected after practically two whole days among overseas soldiers, the boys were out in force to "welcome me aboard"—though there was nothing at all about our environment to justify such a salty term.

A few dozen tents to one side of the airport, which had been captured from the Germans only a couple of weeks

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Land of Egypt," by Alfred Pearce Dennis, March, 1926, and "By Felucca Down the Nile," by Willard Price, April, 1940.



American Red Cross by Salinas

### Give a Sailor a Horse and He'll Head for the Pyramids

Red Cross girls and local guides escorted many off-duty Americans to this famous "pile of rocks." Some 2,300,000 huge stone blocks went into the building of the Great Pyramid. Originally 479 feet high, it is now 450. Cheops, like the other pyramids, was built to shelter Egypt's royal dead.

before, made up the residential district. Nowhere, in whatever direction I turned, was there a sign of anything growing, not even a thornbush. The wind, full of heat and reddish-brown dust, was blowing steadily, as I was to find it does nearly every evening in the desert.

The canvas of the tents, once almost green in color, was now the color of this dust, and so were the faces of the soldiers around us. They were grinning at the expression on my face as I looked around at what was to be our home until such time as we moved somewhere else—which might be even worse.

I looked at Madge and she looked at me, and we both looked a little green, I guess, because the pilot of the ship we'd come up in said, and I think he meant it, "We've got a flight back in a couple of days, if you think you want to take it." I laughed, then, and I know I meant *that!* I startled the little pooch, who was lying in my arms, and he stretched up to lick my face.

"Will somebody get our bags?" I asked. And then the rush began.

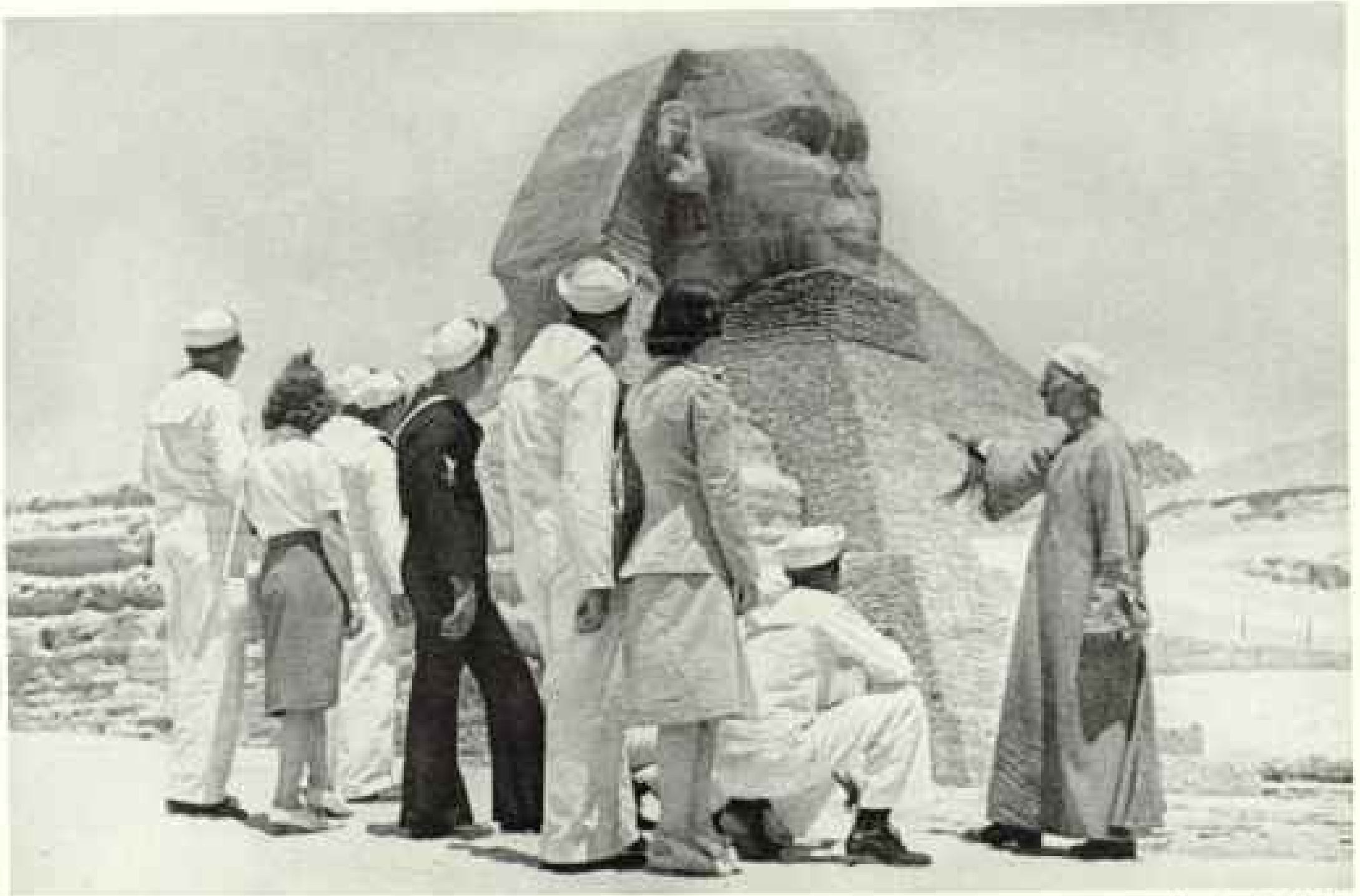
### No Place for Fastidious Belles

Our living conditions here were rather rugged. We had washbowl and pitcher plumbing, and chemical affairs for the "powder room." We slept under mosquito nets, on Army cots with no sheets or pillows.

The days were hot as blazes, with dead, still air, except for the cutting sandstorms, which often blew sharp in our faces, penetrating our tents and our clothing and dusting us with the same red tint we'd noticed on the soldiers when we'd arrived.

Our job here was not just to serve coffee and doughnuts to the combat men returning from missions and to the ground crews who keep 'em flying, or merely to dance with the GI's at an occasional record-playing spree. We served as a reminder of everything these soldiers had left at home.





American Red Cross

#### Abdul Tells 1944 History Makers about the Inscrutable Sphinx

When enemy bombs threatened the serene expression of this venerable landmark, the Egyptian Government piled hundreds of sandbags under the desert giant's chin (page 745).



Alfred T. Palmer

#### A "Donkey Engine" Hauls a Rubber-tired Two-wheeler Laden with Gasoline

In many parts of Egypt donkeys are still familiar beasts of burden. The leisurely animals serve as one-man taxis to the Pyramids, haul their owner's personal belongings and vendors' merchandise.



U. S. Army Air Forces, (Official)

### An Air View of Cairo Shows Bridges Linking Resort Island of Gezira with the Capital

No bombs fell on this city of contrasts, with its white domes and minarets, timeworn twisting streets, and modern thoroughfares, though war came close. Cairo's normal population of less than a million and a half swelled considerably during the war. Soldiers from African fronts spent their leave in the city. Restaurants and hotels bulged. Business boomed. Few shortages were felt. This view, looking up the Nile, shows the south end of Gezira and the northern tip of the island of Roda. Rooftops of the Egyptian State Railway Works (lower left) resemble huge keyboards on a giant xylophone.

We were receptacles for the outpourings of all their troubles, problems, joys and sorrows. We listened for hour upon hour to stories about their mothers and their sisters, their wives and children, and their sweethearts.

We looked at the collections of snapshots which every American soldier carries in his wallet, and which he will show upon the slightest provocation. We exclaimed over these photos, being very careful to show no partiality; it wasn't hard to do, because somehow we saw these people through their soldier's loving eyes.

What they wanted most of all was talk—no subject in particular. No one asked how the Dodgers were doing, or who had won the

Derby; they just wanted to hear some good old American slang.

One night, after the bombers had completed a tough mission, we were all gathered in one of the big hutments on the base where, to the tune of outdated records, we were attempting to community-sing away the blues of a few pilots and their crews.

This is the most important function of a Red Cross girl at such a base—to keep the boys from worrying unnecessarily about those who didn't come back, but who might come straggling in days later after having trudged cross-country from the scene of the crack-up.

We had just finished playing "Sweet Sue" for the umpteenth time, when I decided to

open my compact and powder my nose. As I did so, a roar went up from the crowd of boys. It startled me so I almost dropped my puff. They advanced toward me in a group, now silent. One stepped out from the rest.

"Please, if you don't mind," he said, "we'd like to see you do that again. It's been a year since we've seen a girl powder her nose—and gosh, we've missed it!"

They kept me doing it for fifteen minutes!

Another strange request came one day while I was sun-bathing outside my tent, wearing a pale-blue bathing suit—a unique sight in those parts, judging from the way a gang of GI's passing by halted and consulted with one another. After a moment a sergeant who was acting as spokesman for them all came up to me and said, "Look, sister, for heaven's sake don't do that! White skin is too scarce in this part of the world to roast."

#### Consolation for the Loss of a Brother

Then there is the other side of our job, too, as in the case of the lad who walked up to me one day and said, almost in a whisper, "Could I talk to you? I mean kinda personally?" His eyes were swollen, his hands shook, and he leaned against the wall as if he were too weary to stand without support.

"It's about my brother," he went on. "We were real pals—always been pretty close since we were kids. I heard today he'd been killed somewhere in Africa." His eyes filled with tears.

"I know I'm not very steady," he continued, "but I just can't seem to help it. We were always together—that is, before the war. And ever since, I've kept in touch with him all the time. I want to find out where he's buried, and all about it. Mom would feel better if she knew. Can you help me?"

I helped him, of course. After the details were attended to, I sat with him over a cup of coffee. He wanted to talk about his brother, and I listened. When he had talked himself out, he said, "You know, I've heard about guys spilling their troubles to Red Cross girls, and I thought it was a lot of bunk." He smiled ruefully. "But gee, here I am! And thanks . . ."

Between the soldiers' problems and our own we were kept busy. The few minutes we had to call our own we put in doing our laundry or washing each other's hair, using our steel helmets as basins. The desert affords no luxuries such as cleaning establishments or beauty parlors (page 746).

My puppy remained a wonderful, affectionate pal, though he grew in the dachshund's customary direction at an alarming rate. He

was still unchristened, since we had decided to name him after the place we were finally to call home, wherever it might be. For the present, he was everything from "Wiener" to "Hey, you!" The bomb squadrons were leap-frogging across the desert in chase of the enemy, and any day might be a moving day on extremely short notice.

It was not until we arrived at the Mediterranean that the pup's name was given to him. It was "Bengasi," and we called him "Benjy" for short (page 751).

In Bengasi we had our first glimpse of a war-torn city. This once-picturesque place now looked like the proverbial china shop after the bull had run through. It had been hit by American, British, Italian, and German bombs. Parts of collapsed buildings littered the streets. Old staircases, pieces of marble flooring and ceilings, and bits of furniture were strewn here and there. Along the shoreline, where once stood beautiful villas, there was now nothing but crumbled debris (p. 766).

#### New Ruins Among the Old

Slit trenches had been dug all up and down the beach which bordered the beautiful blue-and-green Mediterranean. And for miles around the city the ground was dotted with the wreckage of planes shot down in the combats which had raged over the ruining of it. The once-populous city was now almost empty of inhabitants, most of whom had fled the incessant bombings.

We took over one of the few buildings left standing (page 764). In it we intended to set up our Red Cross club. Even that was sadly battered and torn. Remains of the wall which had surrounded the garden lay in pieces along the roadside. Inches of dirt lay on the floor, and the ceilings were completely covered with cobwebs. The doors and windows had been blown out by bomb concussions. There was no water, no electricity, not a stick of furniture.

Obviously it had at one time been a handsome Italian villa, typical of the Italian style, low and rambling, tinted pale pink. Though the foundation was shallow and the construction materials were poor, all the external decorations were elegant. It had been used, we were told, as Graziani's headquarters while he was there. But that may have been one of those "George Washington slept here" stories, and we didn't much care one way or another; we had too much work to do.

Fortunately, the flooring throughout the entire building was of tile, and the staircase of white marble supported banisters of wrought iron; besides being decorative, they



U. S. Army Air Forces, Official

### Many a Prized Gift for Folks Back Home Came from This Cairo Bazaar

First price is often far above the last price in Near East bazaars. American soldiers, used to plainly marked merchandise in American stores, welcome advice of Red Cross girls when they go on shopping tours. Typical of Cairo bazaars, this one sells everything from Aladdin's lamp to women's dresses, antique furniture, and jewelry.





U. S. Army Air Forces, Official

### Coffee and Doughnuts for the "Grease Monkeys," Too

When a Red Cross Clubmobile rolls into a hangar, ground crew as well as flyers line up. Carrying hometown newspapers, magazines, and games, as well as refreshments, Clubmobiles now serve armed forces on every front. In Iran, Red Cross workers claim the only Trainmobile in the service. It operates along the main supply route—"the Burma Road to Russia." Watermobiles, one of the most recent carriers, took hot coffee and doughnuts to the boys awaiting invasion orders off the French coast.

were practical. We found that we could sweep up after the terrible dust storms which are common up there and have the place looking as shipshape as if it had been washed and scrubbed. But first we had to get to the bottom of the formidable accumulation of filth, which was crawling with cockroaches, fleas, flies, mosquitoes, and some strange varieties we'd never seen before.

For a week we did nothing but scrub, dust, paint, and whitewash. Then we started furnishing the place in our best beg-borrow-or-steal method. Although we managed to get a few conventional chairs, we fell back on bomb-fin protectors in most of the rooms.

When finally we hung out the big white flag with the Red Cross on it, draped over the one part of our garden wall left standing, we were proud, happy, and tired.

I think we put that sign up too soon, how-

ever. The very next day, while I was on my hands and knees, still scrubbing, I heard a car approaching. I was wearing GI pants and an old torn shirt, and had my hair piled up on top of my head. Madge, who had changed into her uniform, went to greet the guests. We assumed that they were some of the GI's from the area dropping in to say hello.

Suddenly, hearing voices and footsteps coming my way, I looked up, ready to say "Hi, guys!"—but the words stuck in my throat. Talk about rank! There were stars and eagles all over the place. Maj. Gen. Lewis H. Brereton, boss of the Ninth Air Force, was there, with Gen. U. G. Ent, Col. Louis Hobbs, aide to General Brereton, several assorted majors and lieutenant colonels, and, to top it off, Frank Gervasi, Collier's war correspondent!

I could have sunk through the floor, scrub brush, pail, and all.



U. S. Army Air Force. Official

### Red Cross Girls Find the Jeep a Handy Carryall

Here they haul supplies to the Bengasi club. These "desert speed carts" also were used to take news, stationery, and refreshments to troops in the forward areas. In Italy they delivered cargoes of cheer right to the foxholes where the boys, under heavy fire, crawled out one by one for their hot coffee and doughnuts. The windowless, bullet-pocked building in the background is directly across from the Bengasi club.

I shall be forever grateful to all those men. Not one batted an eyelash as I rose to my feet to greet them, literally dripping soap and water. Just as I was, they insisted that I join the party on a tour of the club. Who was I to argue with General Brereton? We toured the club!

#### A Scrub Lady Treated Like a Queen

The General wanted to see everything. We took him all through the place, showing him our recreation room, our library, and our lounge, the walls of which were covered with murals of home-town scenes of cities from coast to coast of the United States.

Then we showed him through our garden, where great masses of bougainvillea splashed their brilliant red and deep-purple hues over the tiresome rust-colored earth. We even showed him the dog pen we'd knocked together for Benjy. The General was pleased with

everything; ever after, we could depend on him for wonderful co-operation.

We gained another thing from this visit—a good-natured guy named Sgt. Paul Wilmer, General Ent's driver. He made the mistake of coming back later and offering to build another pen for Benjy. Before he knew what was going on, he had all three of us under his wing, the dog, Madge, and me. He set up our cots and mosquito bars, hung curtains, repaired furniture, built anything we needed. Madge even inveigled him into cleaning her uniforms for her, and I turned to him when Bengasi got worms. He dunked the uniforms in gasoline and gave the pup canned sauerkraut juice. Both worked swell.

We became so dependent on Paul that if anything was needed, or anything went wrong, we just yelped for him.

One night, not long after we arrived, Madge and I were sitting in the little kitchen drink-



U. S. Army Air Force, Official

#### "Plug 'Em and Pay" Is the Native Merchant's Advice

Desert camps had little fresh fruit on their menus. When the boys visited native bazaars, they bought eggs and fruit to supplement their Army chow. These boys are eager but cautious buyers and insist on plugging their watermelons before paying.

ing coffee, when the door flew open and Paul and a gang of GIs rushed in like the Marines hitting Guadalcanal. They were excited and out of breath, and were all trying to talk at once. We heard snatches of "Paratroopers! Here, hundreds of 'em! Just landed!" We began adding our voices to the general uproar, till Paul shut the whole bunch of us up and took the floor.

"The General says for you girls not to leave the building," he told us. "Several hundred German paratroopers have landed here, and it isn't safe for you to go anywhere. Now you both go on up to bed and don't worry about a thing. Sergeant Kremkeau and I have been posted here, and we'll stay on guard till morning." He patted his Tommy gun reassuringly. Meekly we withdrew.

As Madge and I went up to bed, our candle's light flickering through the blacked-out rooms, every shadow sent shivers down our spines. We were terrified. We had separate rooms, and as we parted for the night we agreed that if either of us heard anything at all we would announce it with a husky yell.

It was one of those still, sweltering nights during which it is almost torture to sleep under

a mosquito net; but, malaria being what it is, we took no chances. I climbed under my net and tried to fall asleep. After a while, I began feeling so *alone* that I decided I had to have Benjy with me. With the pup snuggled in my arms for protection, I waited for dawn.

#### A Terrifying Noise in the Night

Much later I heard a rattling noise. My first impulse was to get up and investigate; then I remembered the paratroopers and couldn't move. The noise stopped, but it started up again, and this time it sounded much closer to my cot. My imagination ran wild.

I could *see* a huge, ugly German soldier standing in the center of the room. I could feel him coming closer and hear the sound of his breath. I thought, "For the first time in my life I'm scared to death." It's a strange feeling to be that frightened. I was hot as blazes, yet I broke out in a cold sweat. I wanted to scream, knowing Paul would hear me and come running. I was sure Paul could handle any German. But no sound would come from my throat. I tried to nudge the dog, hoping he would bark, but he was sound asleep and paid no attention to me.



U. S. Army Air Forces Official

#### Jack Benny and His Troupe Sign Money Links on a Long "Short Snorter" Chain

Hang it around your neck. Put it in your wallet. But you can't spend a penny of it. This American serviceman in Cairo smilingly claims the longest "short snorter" chain on record. Made up of several kinds of paper money pasted together, it serves as a membership card in the club of "over the ocean" flyers. Jack Benny (right), Larry Adler, and Wini Shaw (left) stopped at the Bengasi Red Cross Club on their USO tour of the camps.

The rattling sounds continued until I could stand it no longer. I couldn't scream, so I got up to investigate. "If I'm going to die," I thought, "I might as well be on my feet as on this cot." I struck a match and saw nothing by its feeble glimmer, but the noise stopped the instant I moved!

Trembling, I crept toward the door. When I reached it, I broke into a run, screaming "Paul! Paul!" at the top of my lungs. Madge had burst out of her room and was only a pace behind me and an octave lower in pitch.

By the time we reached the sergeant I was so scared I was double-talking. But he got the general idea, grabbed up his gun and flashlight, and led the procession back to my room. Madge and I stood behind him as he followed the muzzle of his gun into the room. He flashed his light around the room, and almost simultaneously I heard that rattling noise again.

"That's it!" I yelled. "That's the noise I heard!" But, strangely, it seemed to be coming from the direction of the cupboard, a huge affair standing over in the corner. We could see around and over it as we advanced toward it. Paul motioned us back and suddenly

reached out with his free hand and yanked the door open. . . .

A rat almost as big as my dachshund pup jumped out, followed by three little ones no bigger than your thumb! A blessed event in my cupboard—and I had split the air with screams of "Paratroopers!" I don't blame Paul for the solid, disgusted look he turned on me, nor for the muttering about "These women!" that filtered back over his shoulder as he descended the stairs.

Madge and I got quite a kick out of letters from our mothers, warning us not to go out alone, not to eat native food, to be sure and see a doctor if we weren't feeling well; and so on.

In the first place, there is no such thing as being alone in this business. When we aren't with hundreds of soldiers, we're tripping over the curious natives. One morning I even discovered a little Arab boy gravely watching me take a bath! And I always had an audience when I brushed my teeth, a procedure which seemed to verge on the miraculous, judging by the expressions on the kids' faces.

As for seeing the doctor—well, the food situation was all in cans, and even if we got





U. S. ARMY AIR FORCE OFFICER

### Here Bomber Crews Found a Touch of the U. S. A.

American Red Cross workers set up Service Clubs on every front, in structures ranging from small Donut Dugouts to big city hotels. This one at Bengasi was a deserted, war-battered villa before the girls took over (page 758). Flyers returning from important bombing missions, such as the Ploesti raid, stopped here for a snack, a game of cards, or to write letters.

by that all right, a regular visit every couple of months, which invariably left our arms feeling like pincushions, was compulsory.

#### Heroic Dentistry in the Desert

I went to the dentist's "office" one day. It was located in a tent right off the airfield. As I sat in his chair, a camouflaged bomb-fun protector again, I eyed, with great timidity, the sturdy young soldier who pumped the driller. I am not the sort of person who follows the sensible rule of seeing a dentist twice a year, and as a result I give them plenty of work when I do go.

He asked me if I could take it, and I told him I could; so he dived right in and filled nine teeth, one after another! Needless to say, I was weak when he finished.

As I was about to crawl feebly out of his tent, he commented that it was remarkable how I seemed not to feel pain as much as the

men did. He said most GI's would have yelled bloody murder.

I didn't open my mouth to protest; I was afraid he'd fill another tooth. Besides, I sort of hoped the news of this exploit might filter back to Sgt. Paul Wilmer and redeem me to some extent. Paul still looked at me oddly every time we met, and often snorted "Paratrooper!" at me.

Whether a minute at Bengasi was to be filled with excitement or with fun seemed to be the only alternatives facing each as it came along. There were never any dull moments.

We held dances with the odds of boys to girls never falling below a thousand to one. Naturally no girl could take more than two steps before she was cut in on, but we all danced until we could hardly stand up, and the boys somehow managed to have a good time. That was all that counted.

The morning after one of these affairs, with



U. S. Army Air Forces, Official

### "Date Walking" Down a Shady Lane

Tired of desert sand, Red Cross girls and GI Joes chose this tree-lined road leading toward the Suez Canal because it was the greenest spot in the area. The feather-branched Australian casuarinas are particularly adapted to high temperatures and sandy soils.

no energy left in me, I limped downstairs in answer to repeated hammerings at the door. And whom should I find upon our doorstep but Jack Benny, Wini Shaw, Larry Adler, and Anna Lee! The stars were making a tour of the Near East entertaining the troops, and were to be our house guests during their stay in Bengasi.

The stars were regular guys. They experienced a terrible series of dust storms without complaining. They put on two shows a day very often, in addition to visiting the hospitals. Then they'd invariably come back to the club and chat with the GIs. Hounded for autographs, they always obliged smilingly. They were real morale builders, and just by being real people.

### First Air Raid

They went through our first air raid with us, too.

I was awakened in the middle of the night

by an explosion, the most terrific burst of sound I'd ever heard. The windows rattled, the walls shivered and shook, and I was so startled that I didn't quite remember my mosquito bar as I jumped out of bed, and it and I ended up in a tangled heap on the floor.

The second explosion was much closer, because this time our entire building seemed to rise from its foundations and then settle back down. I ripped through the clinging mesh in which I was enveloped and stumbled out into the hall, where I ran into Madge. Completely forgetting all we had learned in our training classes in the States regarding "what to do," we stayed out in the open, fascinated by the brilliance of the tracers and the ack-ack.

Their target was somewhere outside the city, and, except for the first few bombs, our position seemed comparatively safe. Yet every few moments we all but hit the ground as the raiders swung over us in making their



U. S. Army Air Forces, Official

### At a Curb Sitter's Session, Yanks Discuss Bengasi Bombings

Both Allied and enemy bombs blasted Libya's second largest city in fierce desert battles. Buildings on the right and the Moslem tower in the background are pitted by bomb splinters. The city had changed hands almost half a dozen times when it finally fell to the Allies in November, 1942. Here Red Cross girls who established the Bengasi Service Club had their first real glimpse of a war-damaged city (page 758).

runs, engines roaring wildly as they dived for speed. Over the target itself we saw one of them take a direct hit from an ack-ack shell—just a big flare-up of burning gasoline, a dull “whoom” a few seconds later, and then a lazy puff of smoke, white with moonlight. That was all.

Suddenly as it had started, the battle was over. The only sound left in the night was the eternal barking of hungry, and now frightened, dogs in the desert. We all felt let down, somehow. Finally, after a silence, Madge said, “I wonder how the boys made out?”

For the first time since it had all begun, I was afraid. We went inside, and over coffee and doughnuts sweated it out till dawn. The men, Sergeant Wilmer, Sergeant Kremkeau, Jack Benny, and Larry Adler, four Yanks together, used the time to thresh out the complete catalogue of the world's present and future problems. We women sat by and

tried to get a word in edgewise, but succeeded only in seconding remarks made by one of the boys—and that only from time to time! Then they bawled us out for talking too much and sent us to make more coffee. Finally we just settled down to nodding occasionally.

A lieutenant brought us the good news in the morning. There'd been only slight damage, and no casualties for us.

When he found we'd virtually enjoyed the raid, apart from our worry over the men at the airfield, he told us that we hadn't been frightened because it had been a new and strange experience, but that the next time we could count on being scared green. Believe me, we found he had something there!

### Waiting for a Mission's Return

It's pretty hard to attach any importance to dates, but August 1, 1943, will always be easy to remember.



AMERICAN RED CROSS

### The Author Takes an Arab Pony over the Top

The boys cheered, but the Arab stable keeper covered his eyes and waited for the crash (page 748). Winner of the Grand Open Jumping Championship in Madison Square Garden, Miss Cotter says: "These Egyptian horses are good, but most of them are siesta-conscious. They want to sleep all afternoon."

We watched the bombers leave that morning, as we always had, but with an indescribably different, poignant feeling.

We didn't know, of course, that they were headed for the Ploesti oil fields in Rumania, but we knew that this was to be an extraordinarily tough job, with the avowed purpose of shortening the war by six months, at least. For days previous the boys had been more quiet than usual, and at the same time, more on edge. Several of them had left letters to be transmitted, "just in case."

During the long afternoon of the raid we had few soldiers visiting the club. Most of them waited it out quietly in their tents. But one general passed the afternoon with us.

A general needs a little cheering up at a time like that more than anyone can imagine. Never once while General Brereton was there did we mention the mission. All the responsibility for the giant undertaking rested on his slight shoulders. He was quiet and hu-

morous, as always, but his white, drawn, worried face betrayed his anxiety. When the "Mission Successful" signal came through from General Ent, who went over the target in the lead plane with youthful Col. K. K. Compton, General Brereton leaped in the air like a youngster and yelled "Whoopie!"

Then he motioned us to follow him, and in several cars he had waiting outside all of us headed for the landing field to sweat 'em in.

Night fell before the first planes came into view. There were three of them, and they buzzed the field so low we were tempted to fall flat on our faces to keep from having our hair parted by a Liberator. When they come in like that—boy, it's good news!

But that was only the beginning. The rest of them straggled in minutes, and sometimes hours apart, with broken wings, flat tires, hacked fuselages, flapping bomb doors. I thought we were dreaming as we watched the pilots land those skeleton planes.



As we went out to greet the crew of one of the big ships, we noticed a hole in the fuselage big enough for a man to crawl through. Close up, the jagged edges of the metal around the hole and the shrapnel cuts all over the ship made a shocking reality of what these boys had flown through.

We forgot for the moment that we were Red Cross girls, here to "bring them in with a smile." We were too stunned to say even a word of greeting. The young major, Norman Appold, who had piloted this wreck through 2,500 tough miles, saved us the trouble. "Hi, there!" he called, nonchalantly crawling out the bomb bay. "Great to see you!"

#### Chicken Dinner for the Victors

Behind him, one of the gunners was more demonstrative. He threw his arms over our shoulders and said, "Hot damn! This takes the cake! Imagine finding girls waiting for you when you get back from the nearest thing to Dante's Inferno you'll ever get a chance to come back from!"

We sat down to a continuous chicken dinner for the returned and returning crews. They were weary to the bone, but didn't yet realize it. Most of them, stimulated by their hazardous experience, wanted to talk. Madge and I listened, poured more coffee, and listened again. The majority of them confided that they had not expected to get back at all and couldn't quite believe they'd made it.

Others of the boys were so quiet they seemed stunned. They were thinking of close friends who hadn't made the grade and wouldn't be drifting in to wave a gallant "Hi!" before sitting down to dinner. In spite of heavy losses, the raid was a really great victory.

No matter what happens, I'll feel that I've been fortunate in this war, because I can look back in memory to that huge, smoky tent, crowded with men in flying suits covered with the dust and grease and sweat and even the blood of that day. I shall always remember that once I sat with heroes.

#### Saying Good-bye Is Tough

The toughest thing about this business is saying good-bye. When the bomb group we'd worked with got its orders to make a long move, and Madge and I got word that we were not to go along, we were heartsick. But we did the best we could at not showing it.

It's a good thing those boys couldn't see what was in our eyes as they buzzed over us

and pulled up steeply, while we waved them off, with love, on their new mission.

To top it all off, only a few days later Madge and I split up when orders took her to "somewhere in Iran," and me to an airbase out in the Sinai desert! The desert airbase is where I'm writing this.\*

For five months I have been the only girl stationed at this post. Though we manage to dig up a few female guests occasionally, we are isolated most of the time by a recurrent plague disease in the area surrounding. To keep healthy, as we have succeeded in doing, we've had to stay "home" much of the time and make the best of things.

At first I had a considerable obstacle to overcome. With the news that the Red Cross was moving in, these soldiers, most of them with 21 and 22 months of desert life behind them, were overjoyed. When they discovered this Red Cross consisted of one female—count 'em!—their morale fell right back down to where it was before, as low as that of one who walks under a snake's belly wearing a high hat. They didn't show much interest in the ideas I had for making the base more pleasant.

That, however, was five months ago. Today we have one of the finest American Red Cross clubs in the Near East. It is strictly home-made by GI's, from furniture to curtains and decorations, ashtrays, flower vases, coffeepots and cups, dishes and trays and picnic baskets.

Every single thing in our club was made by the boys at this base.

We've done the best we could with what we've had; and what we've had a lot of is fun. Christmas Eve we trimmed our tree with old painted-over light bulbs and figures cut from discarded tin cans. We sprinkled soap flakes over it all for a very creditable snow effect. It looked so good most of us got more homesick than ever. Everyone is more inclined to be that way around the holidays.

We went to midnight Mass, after celebrating at the club and opening presents. All in all, we did very well for being out in the Sinai desert.

We get awfully tired of the sand and the sameness. Three years, two, even one year is a long time to be away from home. There are so many things the boys miss! They miss their trees, their lakes, the smell of grass when it's wet with dew in the morning. They miss girls—their girls—in crisp, civilian dresses; Coca-Colas; burning wood in the fireplace; Spot and Rover quarreling in the back yard. Most of all, they miss Mom over the kitchen stove.

They miss—America.

\* See "East of Suez to the Mount of the Decalogue," by Maynard Owen Williams, NATIONAL GEOGRAPHIC MAGAZINE, December, 1927.

# NATIONAL GEOGRAPHIC SOCIETY

GEOGRAPHIC ADMINISTRATION BUILDINGS  
SIXTEENTH AND M STREETS NORTHWEST, WASHINGTON 6, D. C.

GILBERT GROSVENOR, President  
ROBERT V. FLEMING, Treasurer  
HERBERT A. POOLE, Assistant Treasurer  
LYMAN J. BRIGGS, Chairman, Research Committee  
ALEXANDER WETMORE, Vice-Chairman, Research Committee

JOHN OLIVER LA GORCE, Vice-President  
GEORGE W. HUTCHISON, Secretary  
THOMAS W. MCKNEW, Senior Assistant Secretary  
VERNON H. DREWSTER, Assistant Secretary  
MELVIN M. PAYNE, Assistant Secretary

## EXECUTIVE STAFF OF THE NATIONAL GEOGRAPHIC MAGAZINE

**GILBERT GROSVENOR, EDITOR**

**JOHN OLIVER LA GORCE, Associate Editor**

J. R. HILDEBRAND  
Assistant Editor

MELVILLE BELL GROSVENOR  
Assistant Editor

JAMES M. DARLEY  
Chief Cartographer

NEWMAN BUMSTEAD  
Research Cartographer

CHARLES E. RIDDIFORD  
Cartographic Staff

WELLMAN CHAMBERLIN  
Cartographic Staff

FREDERICK SIMPICH  
Assistant Editor

McFALL KERBEY  
Chief of School Service

LEO A. BORAH  
Editorial Staff

LEONARD C. ROY  
Editorial Staff

WILLIAM H. NICHOLAS  
Editorial Staff

F. BARROWS COLTON  
Editorial Staff

FRANKLIN L. FISHER  
Chief Illustrations Division

MAYNARD OWEN WILLIAMS  
Chief Foreign Editorial Staff

W. ROBERT MOORE  
Foreign Editorial Staff

INEZ B. RYAN  
Research Assistant

EDWIN L. WISHERD  
Chief Photographic Laboratory

WALTER MEYERS EDWARDS  
Illustrations Division

## BOARD OF TRUSTEES

CHARLES EVANS HUGHES  
Formerly Chief Justice of the  
United States

WALTER S. GIFFORD  
President American Telephone and  
Telegraph Co.

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

LYMAN J. BRIGGS  
Director National Bureau of  
Standards

GEORGE R. PUTNAM  
Commissioner of Lighthouses,  
Retired

THEODORE W. NOYES  
Editor of The Evening Star

L. O. COLBERT  
Rear Admiral, Director U. S. Coast  
and Geodetic Survey

GEORGE W. HUTCHISON  
Secretary National Geographic  
Society

ROBERT V. FLEMING  
President and Chairman of the  
Board, Riggs National Bank

H. H. ARNOLD  
General, U. S. A., Commanding  
U. S. Army Air Force

LEROY A. LINCOLN  
President Metropolitan Life  
Insurance Company

EMORY S. LAND  
Vice Admiral U. S. Navy, Retired;  
Chairman U. S. Maritime Commission

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

ALEXANDER WETMORE  
Assistant Secretary, Smithsonian  
Institution

GILBERT GROSVENOR  
Editor of National Geographic  
Magazine

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

CHARLES F. KETTERING  
President General Motors  
Research Corporation

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

JUAN T. TRIPPE  
President Pan American Airways

ELISHA HANSON  
Lawyer and Naturalist

LLOYD B. WILSON  
President Chesapeake and  
Potomac Telephone Companies

ERNEST E. NORRIS  
President Southern  
Railway System

JOHN OLIVER LA GORCE  
Associate Editor of the National  
Geographic Magazine

## ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

To carry out the purposes for which it was founded fifty-six 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. Orril 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 forest 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.



YES, it is a Hamilton, darling—not exactly the model I had hoped to give you. But it keeps just as accurate time as it did 40 years ago when my grandfather carried it. (Gramps always used to say that the sun would never set until it looked at his Hamilton first!)

But I'm only lending it to you, Jim, just to let you know I haven't forgotten what it was you *really* wanted this Christmas.

Someday soon, when Hamilton again makes watches for the folks at home, we're going to put this old timer back with our other treasured heirlooms. Because on that day, dearest, the finest husband in the world will get the finest gift in the world—the watch he's been waiting for so long and patiently—a *brand new* Hamilton!

*All my love, Helen*

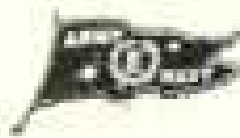
For more than 50 years a fine Hamilton Watch has been a traditional gift on Christmas, graduation, weddings, birthdays and anniversaries. But today few, if any, Hamiltons are available. The Hamilton Watch Company is fully engaged in building precision instruments for Uncle Sam. Someday soon, Hamilton will once again make fine civilian watches for men and women. Then you'll be glad you waited for a Hamilton! Hamilton Watch Co., Dept. GD-4, Lancaster, Penna.



**HAMILTON**

*The Watch of Railroad Accuracy*

**A WATCH WORTH WAITING FOR**



The Finest Christmas Gift of All is a Wer Bond!



## A CHRISTMAS THEY'LL NEVER FORGET!

You'll have a grand time Christmas, won't you? But every day that passes afterward will make the fun harder to remember . . .

. . . unless you capture those precious moments in memory-preserving movies that you can screen again and again whenever you wish.

After Victory, there'll be exciting new surprises for those who appreciate fine home movies . . . Filmo Cameras that are easier to use, more failure-proof . . . Filmo Projectors that give your films new clarity and brilliance.

Yes, great new things in personal motion picture making are being readied for you, due to Bell & Howell's war-accelerated

research in OPTI-ONICS—  
OPTICS, electronics, and  
mechanics.



Easy, automatic,  
quick cartridge loading!

Bell & Howell Company,  
Chicago; New York; Holly-  
wood; Washington, D. C.; London. *Est. 1907.*



With a B&H Filmosound Projector you open a whole new avenue of fine entertainment for your family and friends. For the Filmosound will project not only your own personal films, but also a wealth of Hollywood's finest feature and short sound films, available at moderate rentals from Filmosound Library.

## Bell & Howell

FOR 37 YEARS MAKERS OF THE WORLD'S FINEST EQUIPMENT  
FOR HOME AND PROFESSIONAL MOTION PICTURES





*Amazing new war vehicle travels in water  
..glides like a ghost over swamp or sand*



## *Army's Latest Weasel M-29C*

**Built by Studebaker and powered by  
famous Studebaker Champion engine**

HERE'S a brand-new example of the teamwork of the Office of Scientific Research and Development, the War Department and Studebaker engineers. . . It's the latest model of the Army's versatile track-laying vehicle known as the Weasel. . . This new M29C is just as much at home in water as it is on sand, mud, swamp or solid ground. . . It not only propels itself in deep water, fully loaded, but it also clambers up and down steep, slippery banks with amazing ease. . . This new Weasel M29C is built by Studebaker under contract with the Ordnance Department, Army Service Forces. It's powered by the famous Studebaker Champion engine. . . It adds another important unit of war production to an impressive Studebaker list that already includes Studebaker-built Wright Cyclone engines for the Boeing Flying Fortress and heavy-duty, multiple-drive Studebaker military trucks.

*Awarded To All*  *Studebaker Plants*

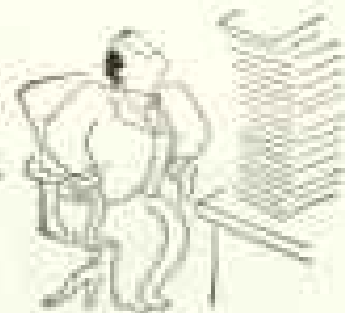


**Here's a Weasel designed for  
snow operation**

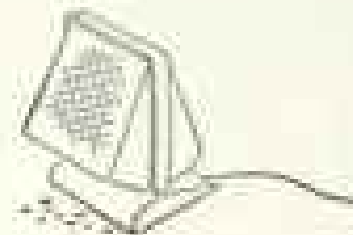
It's camouflaged like the crafty animal for which it's nicknamed. The M-29 pictured is almost invisible as it glides swiftly and stealthily over seemingly impassable winter terrain.

WHEN YOU HAVE TO BURN THE MIDNIGHT OIL and have a pile of "must"

dictation a foot high on your desk

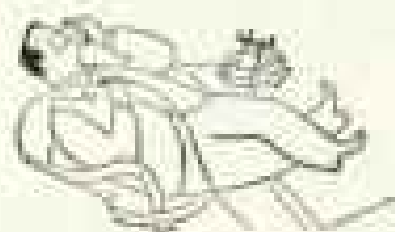


flip a switch and start talking to your trusty microphone



and when you make that important telephone call you record both

ends of it



for confirmation the next day ... and that

pile of paperwork disappears in less than half the time you

expected ... and you finish up with all your instructions for the

morning on record and your desk as clean as a hound's tooth!



You said it ... Mr. Sales Manager, that's

## **DictAPHONE**

### *Electronic Dictation*



The complete ease and convenience of Dictaphone Electronic Dictation will help you keep on top of your job. The microphone on your desk or in your hand becomes your Control Center for executive action. Developed in pre-war years... widely used by war executives... Dictaphone Electronic Dictation is now available for essential uses. Our new booklet tells you all about it. Write now for your free copy.



**NOTE:** Standard Dictaphone dictating machines, without electronic amplification and telephone recording, are currently being produced and offer outstanding value for general office dictation.

**DictAPHONE CORPORATION, 420 Lexington Avenue, New York 17, N. Y.**

The word **DictAPHONE** is the registered trade-mark of Dictaphone Corporation, makers of dictating machines and other sound recording and reproducing equipment bearing said trade-mark.



## THE ISLANDS— AND THE LANDS BEYOND

There are lovely Islands that long stood as outposts, lonely in a boundless ocean. Then, sixty-two years ago, Matson took up the task of drawing them closer to the Mainland — and forging the bonds of contact and understanding. Today Matson men and ships are busy on many seas at urgent tasks of war. But the day will come when it will be our duty once more to link that Mainland to this whole lovely region, with the most modern modes of travel at our command.

**Matson** KNOWS THE PACIFIC

MATSON LINES TO HAWAII AND THE SOUTH PACIFIC  
SAMOA • FIJI • NEW ZEALAND • AUSTRALIA



Official U. S. Coast Guard Photo

## Try to tell these guys it's all over!

No, this isn't Hollywood. This is the real thing. *This is it.*

You're in the open jaws of a big LST, watching sodden men struggle through heavy surf with what it takes to hold a hard-won beachhead.

The jungle still spits snipers' bullets. Not far away, fanatical Japanese are regrouping for a desperate counter-attack. Those stretchers going ashore empty will come back loaded.

*And this bitter, bloody pattern must be repeated many times before the Rising Sun finally sets in the far Pacific.*

If you have any idea that a German knockout practically ends the war, *tell it to one of these Marines!*

If you've figured on forgetting War Bonds from here on in, *remember the vast difference between lending your money and giving your life!*

SURELY, AS LONG AS MEN GO ON DYING, IT'S LITTLE ENOUGH FOR YOU TO GO ON BUYING.

Please buy *all* the Bonds you possibly can during the Sixth War Loan.



**NATIONAL DAIRY  
PRODUCTS CORPORATION**  
AND AFFILIATED COMPANIES



Give him

# \* Interwoven Socks



COPYRIGHT BY  
INTERWOVEN  
SOCKS  
COMPANY  
1944

If you can't always get just the Interwoven Socks you're looking for—please remember—Millions of pairs of INTERWOVEN SOCKS are going to the men in the Service . . . Any Interwoven Sock is a Safe Sock to buy.



\* REG. U.S. PAT. OFF.

# HEAT *that flows*

**TO EVERY NOOK AND CRANNY**



Is your bedroom colder than you like it on winter mornings? • Is your bathroom as warm as you would like it for the early morning shower or the evening tub? • Are your halls drafty and cold? • Chances are that your home suffers from one or more of these discomforts, which are impossible to cure with the present "on and off" control of heat supply. But cheer up! There is good news ahead. Moduflow, the amazing new control system developed by Minneapolis-Honeywell, will provide a continuous flow of modulated heat to every nook and cranny of the modern home. It is easy to install in your present automatic heating system, whether coal, gas or oil. And more good news! It is available *right now* for installation in a limited number of homes. • Before you build your postwar home, or remodel your present one, be sure to investigate Moduflow. Ask your heating dealer or mail the coupon today.

Keep them Winning—  
Buy MORE Bonds!



SEND FOR THIS BOOK

Minneapolis-Honeywell Reg. Co.  
2908 Fourth Avenue South  
Minneapolis 8, Minnesota

**FREE**

Please send my free copy of "Heating and Air Conditioning The Postwar Home"

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

# MODUFLOW

THE NEW HONEYWELL CONTROL SYSTEM  
DESIGNED FOR POSTWAR . . . AVAILABLE NOW

# AND WE'LL BE HOME AGAIN...

Off there, somewhere,  
A whippoorwill will call . . .

Back there, somewhere, the sun will drop like a penny  
into the pocket of night. And a breeze will freshen  
and cool and the dark will be filled with quiet . . .

And we'll smoke together again . . .

And Joe's hound will sigh and turn around and lie  
down in the soft dust, and we'll watch the lights  
come up in houses down below, and a door will slam  
and a dog bark, and a girl's voice call and then . . .

We'll be home again.

Back home where not just us but everyone will under-  
stand how and why this war was fought and won . . .

Back home where all of us will know we bought and  
paid for peace with something more than bonds and  
tears and blood and long years of sacrifice . . .

Back home where everyone must know this war will  
have no meaning . . . this victory will be hollow . . .  
this peace will not endure unless the power that won  
the war . . . the power that made our country great  
. . . the power of men and women working together  
to destroy can become the power to create!

Unless the power to rub cities out becomes the power  
to put new cities up.

Unless the power to take life becomes the power to  
give life. Unless the power to liberate men in foreign  
lands becomes the power to free ourselves . . . to give

to every man a boundless opportunity to dream . . .  
to work . . . to grow . . . to make his life, to make his  
America what he wants it to be!

That's what this war is being fought for . . .

That's what Victory will mean to us . . .

That's what we'll come home for!

*Here at Nash, when our war job is done, it will be our  
obligation to convert all the new strength, all the new  
power to produce, all the new ability and skill and  
knowledge that have come to us so quickly under the  
driving necessity of war to production for peace.*

*That means Nash will build more automobiles than we  
have ever built before . . . even finer automobiles than the  
great Nash cars that are today proving their outstanding  
quality and economy. It means automobiles low in price  
. . . economical to own as well as to drive. It means style  
and comfort and ease of handling. It means all those  
things that will make an automobile a more important,  
a more useful, a more intimate part of what you want  
to do--when peace comes.*

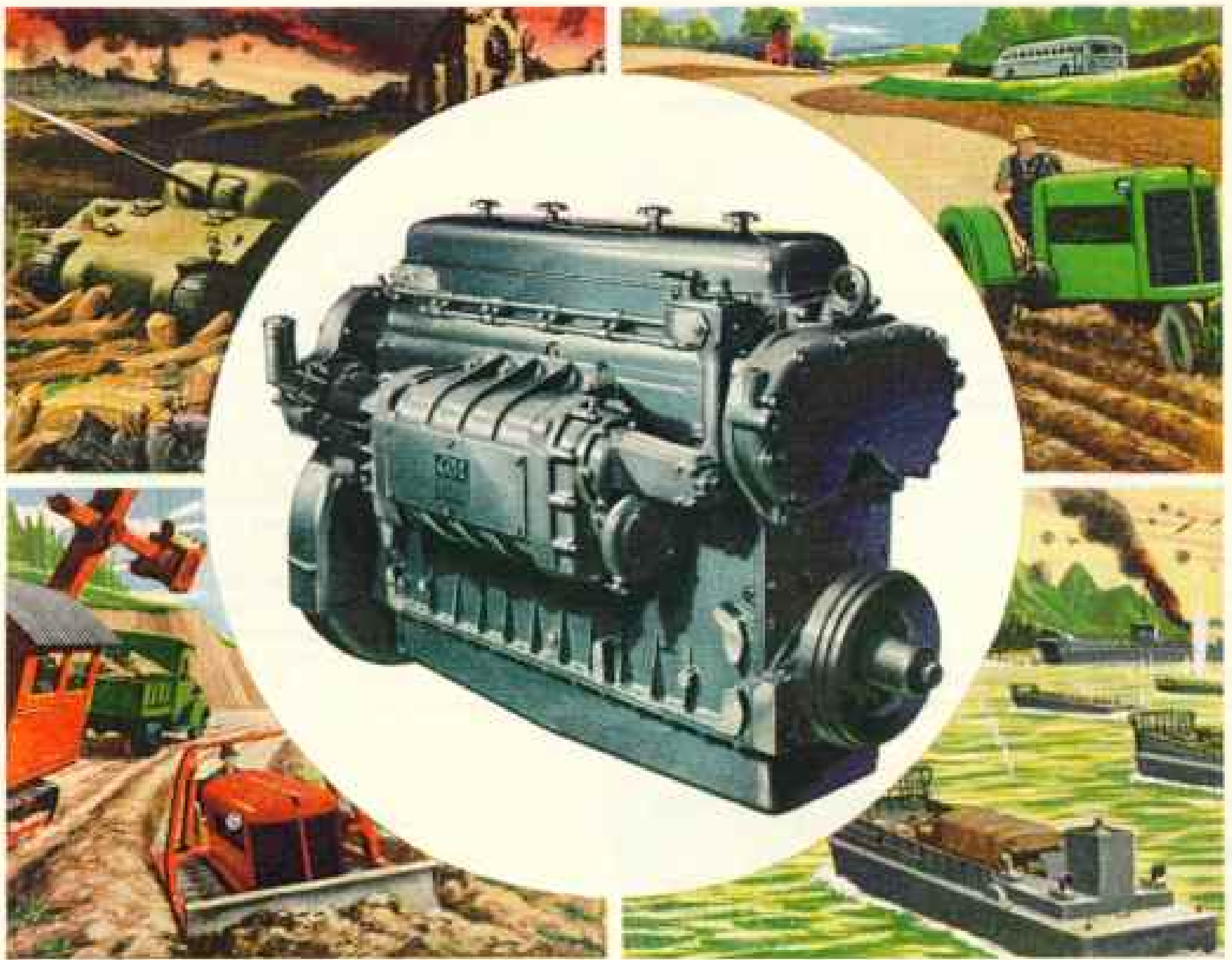
*This is our program. This will be our part in the build-  
ing of a greater, a happier nation. For we believe all of  
us owe to those who have fought to preserve it a strong, a  
vital, a growing America where every man and every  
woman will have the freedom and the opportunity to  
make their dreams come true.*

# NASH

NASH-KELVINATOR CORPORATION







## GM DIESELS SERVE WHEREVER AMERICA NEEDS POWER

America's fighting Engineers and Seabees really work miracles. Sand dunes are leveled. Jungles are cleared. Landing strips appear overnight. Staggering loads are moved over land and sea.

Helping them work these miracles are General Motors Diesel engines.

Because these engines are rugged and dependable, they get the toughest kinds of jobs to do.

Because they take so little fuel,

they save precious transport space.

Because they have been designed for simplest maintenance, they stay on the job and keep on the go.

War is a tough proving ground for engines. It shows their mettle, reveals their stamina. As they perform their wartime tasks, these GM Diesels are proving the service they will continue to render in the many civilian needs for dependable, economical power after the war.

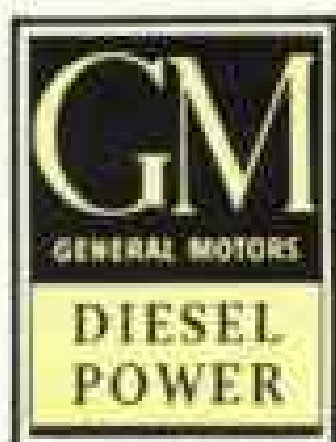
**KEEP AMERICA STRONG ★ BUY WAR BONDS**

**ENGINES** . . . 15 to 250 H. P. . . . DETROIT DIESEL ENGINE DIVISION, Detroit 23, Mich.

**ENGINES** . . . 150 to 2000 H. P. . . . CLEVELAND DIESEL ENGINE DIVISION, Cleveland 11, Ohio

**LOCOMOTIVES** . . . . . ELECTRO-MOTIVE DIVISION, La Grange, Ill.

  
*The Army-Navy "E" for efficiency in war production flies proudly over the GM Diesel plant in Detroit.*







*Boeing B-29 Superfortress in flight*

## Size alone wasn't enough

The Army wanted an airplane that would carry a *heavier bomb load . . . farther, faster and higher . . .* than any had before.

Size alone wasn't enough. There were already single, experimental models of massive airplanes; but they lacked the required speed, altitude and other characteristics.

There were also high-performance airplanes. But these were smaller, lacked maximum range and load-carrying ability.

The problem of combining both extremes in one airplane was put before America's aircraft industry. One company, Boeing, was in an

exceptional position to meet the Army's requirements, because of its background of pioneering work in developing such four-engine airplanes as the B-17 Flying Fortress, B-15 Bomber, the Stratoliner and the Pan American Clippers.

The Boeing design was accepted. And then, even before the first experimental model had been completed and tested, the Army committed the Boeing Superfortress to one of the greatest manufacturing programs ever placed behind any weapon of war!

Seldom has such engineering and production responsibility been

given to *any* organization. It meant that the new plane *had* to be right. It meant that Boeing had to work out the manufacturing plan of the B-29 at the same time it was completing the engineering design—and had to furnish full information about both to the many companies helping to build it.

• • •  
*When peace finally comes, Boeing principles of research, design, engineering and manufacture will again be applied to products for your use. True now, it will be equally true of peacetime products . . . if it's "Built by Boeing" it's bound to be good.*

# A LIFT TO THE TAXPAYERS, TOO



**I**N THIS WAR the railroads have done twice as big a transportation job as in the first World War.

But they are doing another job which may not be so well known, as is shown by these contrasting facts:

*In the last war, the operation of the railroads took money out of the United States Treasury.*

*In this one, the railroads are putting money into the Treasury.*

In the last war, when the Government took over the railroads, even though freight rates and passenger fares

were raised, Congress had to appropriate more than \$1,600,000,000 to meet deficits.

In this war, the railroads have been managed by their owners. A far bigger and better transportation job has been done. And, since Pearl Harbor, the railroads have turned into the United States Treasury the tremendous sum of \$3,250,000,000 in taxes—and today are paying federal taxes at the rate of nearly \$4,250,000 every 24 hours.



**ASSOCIATION OF  
AMERICAN RAILROADS**  
ALL UNITED FOR VICTORY

## EXCITING AS THE RACE IN "BEN HUR"!

THERE was an expectant hush. Then, out of the darkness of this June night in 1908, flashed a scene of breath-taking action.

A "spectacular" sign had been erected on the old Wonderland Building, to give Detroit its first glimpse of the Model "T" Ford.

"Watch the Fords go by!" the message read. And in the light and color of 2000 twinkling electric bulbs, a Ford touring car appeared to race along the Grosse Pointe shoreline. The wheels turned, scuffing up clouds of dust. The scenery shifted constantly. The veils of the women passengers streamed in the breeze. The

crowd in the square began to cheer. "It's exciting as the race in 'Ben Hur,'" said an onlooker. The newspapers thought so, too.

"Hour after hour," wrote one reporter, "the auto hurried, defied speed and natural laws alike, every instant seemingly on the verge of tipping into space down in the street below."

From that far-off day to this, people have continued to "watch the Fords go by". They have watched the total mount to 1 million in 1915--to 15 million in 1927--and on up to 30 million.

They have seen these Ford cars and trucks shrink distances and

help increase the productivity of the nation. They have seen them wipe out the traditional barriers between city and country, between mountain and plain, and help spread the advantages of American culture and opportunity.

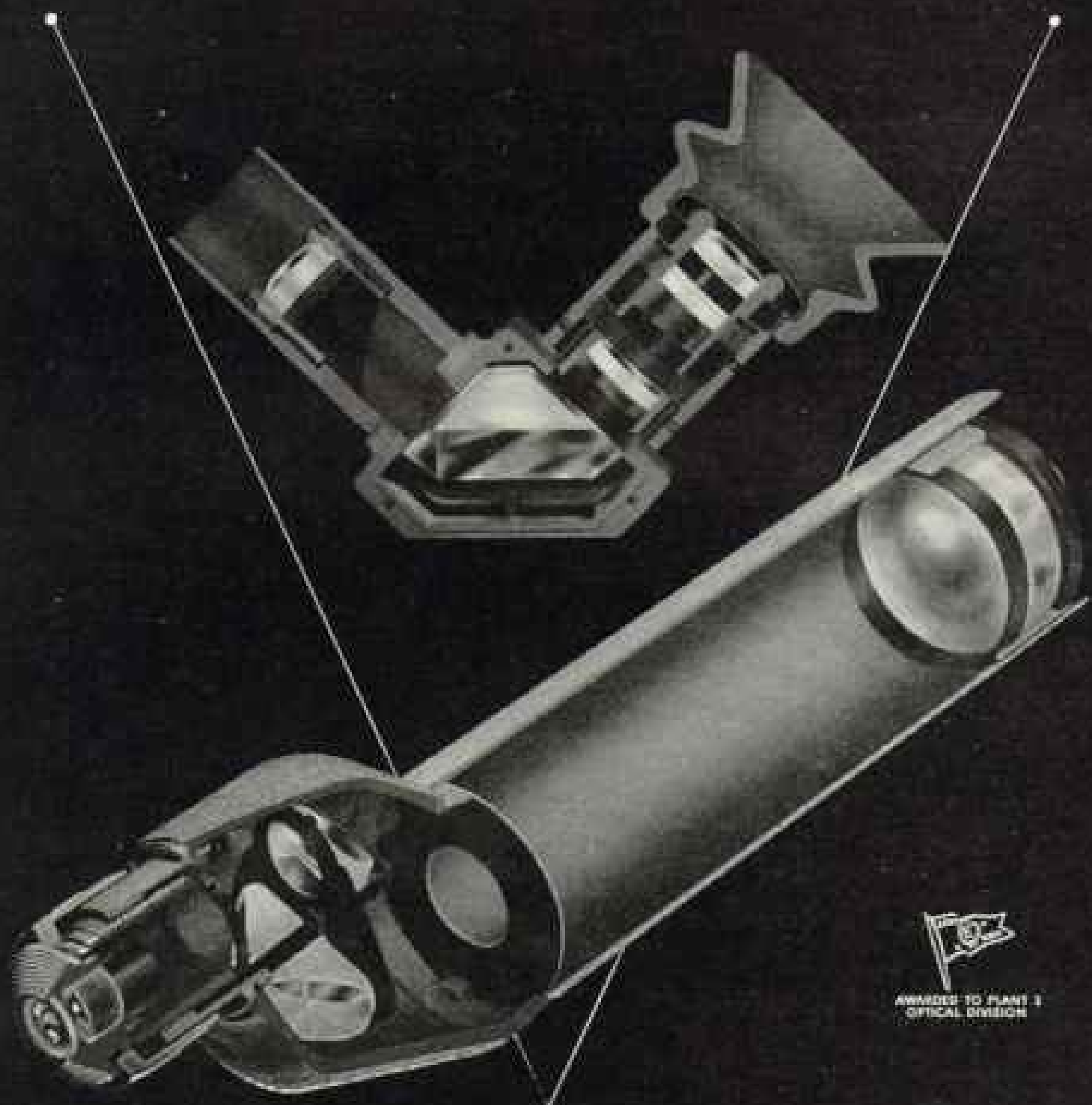
One day, there will be new Ford, Mercury and Lincoln cars. Like their predecessors, they will benefit by the energetic skills and resourceful engineering which are a Ford trade-mark. They will be exceptionally comfortable cars, reliable and economical... priced within reach of the greatest number. *Their styling will be so advanced that it will be a perfect match for their quality leadership.*

**FORD MOTOR COMPANY**



# Jewels of Today

ARGUS EYES FOR VICTORY



AWARDED TO PLANT 1  
OPTICAL DIVISION

MILITARY OPTICAL INSTRUMENT

# argus

Cameras and Optical Instruments



ARGUS, INCORPORATED . . . ANN ARBOR, MICHIGAN





## **STEEL—*and what it takes to haul it!***

**T**HE American steel industry, under the stimulus of war, turned out last year a tonnage never before attained — almost 90,000,000 tons.

For the production of 90,000,000 tons of steel, the railroads moved altogether to steel plants about six and a quarter million carloads of raw materials, such as iron ore, coal, limestone, "scrap," manganese, chromite and other special ores.

Two million cars were provided to haul the finished steel away.

**Altogether, the railroads moved more than 8,000,000 carloads of material to and from the steel mills!**

Yet that is only one of the major wartime jobs being done by the railroads. Any wonder then that traffic on the rails, at times, has been so heavy as to cause delay and inconvenience to passengers? The Pennsylvania Railroad, however, has found traveling Americans very cooperative—they realize the magnitude of the job railroads are doing.

*BUY UNITED STATES WAR BONDS AND STAMPS*



★ 49,338 entered the Armed Forces. ★ 382 have given their lives for their Country.

...“GOD BLESS DADDY”...



GOD BLESS THEM ALL!...

STROMBERG-CARLSON



© 1961 STROMBERG-CARLSON COMPANY, MINNETONKA, MINN.



## *Finger-tip Control* — **FROM FURROW TO HARVEST**

The numbered days between frosts are crowded with labors that make the crop. Power, successfully applied on the farm, is designed to out-race the seasons . . . to tend broader acres in fewer man-hours against the uncertainties of weather.

On more efficient tractors, and on the implements they pull in series, HYCON hydraulic systems can give ease—lessen fatigue through *Finger-Tip Control*—to the heavier jobs of farming *more acres faster*.

In diversified applications of power on the mechanized farm, HYCON units can take over many back-breaking, everyday chores. On many types of new equipment they can actuate lifting, steering, braking, and other operating devices . . . can provide the reins to control horsepower harnessed to lighten the work of man.

When industry turns to the building of new implements for modern agriculture, compact power units, engineered and patented by the makers of HYCON, will help to do many hydraulic jobs *better*.

LET'S ALL BACK THE ATTACK—BUY MORE WAR BONDS

**THE NEW YORK AIR BRAKE COMPANY**  
*Hydraulic Division*

420 LEXINGTON AVENUE, NEW YORK 17, N. Y.

### **HYCON** *Triumphs in Air Force Test*

In a grueling hydraulic test in the 3000-pound pressure range at Wright Field, the HYCON "Stratopower" pump stood up under the blistering heat of 160 degrees and the bitter cold of 65 degrees below zero for 550 continuous hours of operation. When no longer restricted by wartime needs, this revolutionary pump will do a great many hydraulic jobs *better*.

Out of the incredible demands of the war have come miracles of technological improvement to help rebuild a shattered world. More goods must be produced faster and cheaper. New machines will be created and old machines modernized.

Though our facilities are primarily devoted to production for the armed forces, there are still available for industry HYCON pumps and valves in the 3000-pound range. If you have a problem of actuation in your post-war plan, or the modernization of your present equipment, HYCON will help to solve it. Write for full information.

★ ★ ★ **HYCON** ★ ★ ★

REGISTERED TRADE MARK

*High-Pressure Hydraulic Systems*

Patented—Manufactured only by The New York Air Brake Company

COPYRIGHT 1944, THE NEW YORK AIR BRAKE CO.

# Luggage That Goes Everywhere Proudly



Travel for business or pleasure is notably enriched by the faithful companionship of Oshkosh Luggage . . . for more than a half century the luggage that distinguished people have taken to distinctive places.

In the better luggage shops and department stores throughout America you will be advised by merchants who know, to choose Oshkosh Luggage because "There is None Finer." You don't buy luggage often. Be sure that when you do, you buy luggage that doesn't grow old . . . but like all things of quality, simply mellows with age.

For the duration Oshkosh facilities are devoted largely to the production of luggage for our armed forces. Soon — all Oshkosh craftsmen will resume the building of luggage that travels everywhere — proudly.

**OSHKOSH  
TRUNKS & LUGGAGE  
OSHKOSH, WIS.**

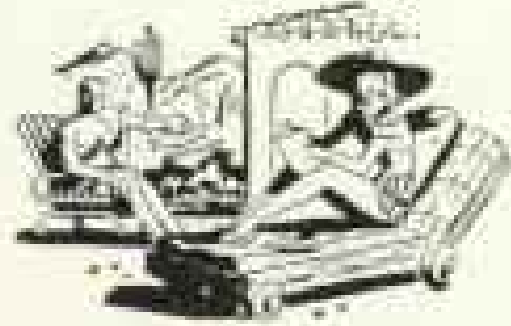
THE WALDORF ASTORIA, N.Y.  
—like the famous Savoy in London and the Ritz in Paris, the rendezvous of sophisticated travelers from everywhere,



*"The Chief"*  
The famous Oshkosh Set that will be available immediately after the war.

**OSHKOSH Luggage**  
THERE IS NONE FINER

*Sun* still shines here practically every day



War hasn't changed the things you like about Tucson. Skies are still blue, the air is dry, warm, invigorating. Nowhere else in the U. S. will you find this rare combination of climate and altitude (2400 ft.), the healthiest in all America.

For free booklet and information, write our 23-year, non-profit Tucson Sunshine Climate Club, 4404-C Rialto, Tucson, Arizona.

*P.S. Confirmed reservations for living accommodations are imperative!*

**TUCSON**

*Your place in the sun is* **TUCSON**

## MOVADO ASTRONIC

The new watertight 24-hour watch, made with Movado's characteristic precision and sturdiness. Day time hours are shown in black on a gilded circle — night hours in radiolite on black circle. The supply of these watches is limited.



**MOVADO**

Winners of 165 Observatory Awards  
Sold and Serviced by Leading Jewelers All Over the World  
Capt. 1944, Movado Watch Agency, Inc. 610 Fifth Ave., N. Y.

"Buy U. S. War Bonds—They Identify You"





*Forstner*  
SNAKE CHAIN

*Exquisite examples of the use of Forstner  
14 Karat Gold Snake Chain by several of  
America's foremost Jewelers and Goldsmiths*



*We will gladly furnish the names of the jewelers whose creations are here illustrated  
Forstner Chain Corporation, Department N-6, Irvington 11, New Jersey*

*Let's make it an*  
**EARLY AMERICAN**  
*Christmas*



*Men appreciate tradition in gifts! Satisfy their long-standing preference for Old Spice shaving essentials, distinguished by superlative quality, exhilarating scent and traditional American pottery packaging. Shaving Soap in pottery mug \$1.00, After-Shaving Lotion \$1.00,\* invisible Talcum 75¢.\* In set illustrated \$2.75.\* Other gift sets \$1.00 to \$5.00. Each a Shulton Original.*

*Your First Christmas Gift to Yourself and Your Country Is a War Bond.*

\*Trade Mark Reg. U. S. Pat. Off.      †Plus Tax  
**SHULTON, INC. • ROCKEFELLER CENTER • N.Y.C.**



**WHY NOT** help yourself to the year-round "flower-garden" climate at **SAN DIEGO**, the up and coming city in the Southern California of your dreams? Why not live on a land-locked harbor on the blue Pacific where supreme living conditions will combine with the greatest prospective after-war growth in the United States as population again swings westward?



For free literature, address San Diego-California Club, Rm. C-63, 499 W. Broadway, San Diego 1, California

**SAN \* DIEGO**  
**SOUTHERN CALIFORNIA**



*Men's Overnighter*

Here is a preview of postwar Winship Luggage—an 18" overnight bag made of finest top-grain cowhide. Outstanding in smartness and quality—an assurance of distinction among the highly placed anywhere. Matching the Winship 2-suiter for extended travel. Will be sold through one of the best stores in each city. Winship Co., Inc., Utica, N. Y.



**WINSHIP**  
 UTICA LUGGAGE  
*Traditional SINCE 1774*

"Buy U. S. War Bonds—They Identify You"



## The Lady had a Baby

MR. FLINTHEART TYCOON, about to complete his work in Seattle and anxious to get back east to his plant, calls: "Eliot 6800 . . . Drawing room on the Olympian for Tycoon to Chicago, please . . . No chance? A compartment, then . . . None for thirty days? Maybe a bedroom?" . . . Mr. Tycoon compromises with dignity and takes a lower berth.

On boarding the Olympian he found *the Lady*—who was to occupy the upper of his section—*had a baby*. It seems the Lady had been bidding good-bye to her Tokyo-bound husband, and the baby to his or her (Mr. Tycoon never knew which) Tokyo-bound father.

In the smoking room an hour out of Seattle, Mr. Tycoon, was heard telling a hard-boiled colonel—"First time I've ridden in an upper since I was a youngster beating my expense account. But confound it! What could a man do?"

Later the colonel was chuckling as he switched off his berth light . . . the Pullman conductor was chuckling with the steward over a late coffee . . . "Imagine! Mr. Tycoon says to me, 'Give my lower to the Lady with the baby.'"

★ ★ ★

Aboard transcontinental trains, such as the electrified Olympian, little happenings make big news. Mr. Tycoon, usually distinguished as "the prominent industrialist," was distinguished by his fellow travelers on this trip as "the man who gave up his lower to the Lady with the baby." It was a new experience, and Mr. Tycoon enjoyed it, thoroughly.

The incident illustrates the unselfish spirit that's kept train travel free of rationing. It's a spirit that augurs well for the future—holds promise for the Babies of the Ladies.

# The Milwaukee Road

SERVING THE SERVICES AND YOU

IN PURSUIT OF HAPPINESS . . .



FOR CINÉ EXCELLENCE LOOK FORWARD TO



. . . fine equipment adds to your pleasure

"Swell shot!" Here's glowing praise for the man behind the gun—and the camera! Just as the marksman esteems his gun, the Revere owner prizes his camera . . . for its range, accuracy . . . its smooth, dependable performance. The postwar Revere 8 mm. Camera and Projector will embody many advanced ideas for even greater happiness. Meanwhile, buy bonds . . . speed victory!

REVERE CAMERA COMPANY, CHICAGO 16, ILL.



In buying a watch, choose wisely . . . choose knowingly. For above everything else, a watch is a time-keeping instrument. Since 1791, correct time has been a tradition with Girard-Perregaux.

Write for booklet 7, "The Flight of Time" tells what's in a fine watch.

GIRARD-PERREGAUX  
9 Rockefeller Plaza, New York 20

**GIRARD-PERREGAUX**  
*Fine Watches since 1791*

"The Supreme Authority"

IS WORTH WAITING FOR

Be Sure  
You Get the  
**MERRIAM-Webster**

**WEBSTER'S  
NEW INTERNATIONAL  
DICTIONARY**  
*Second Edition*

**DEMAND** is heavy and paper rationed but better to wait for your copy of the MERRIAM-Webster than accept a substitute. Ask for the genuine Webster—the MERRIAM-Webster—identified by the circular trade-mark. Contains 3,350 pages, illustrations for 12,000 terms, and a total of 600,000 entries—122,000 more than any other dictionary. Order now from your bookseller or stationer. He will get your copy as soon as he can.

G. & C. MERRIAM CO., SPRINGFIELD 2, MASS.

"Buy U. S. War Bonds—They Identify You"



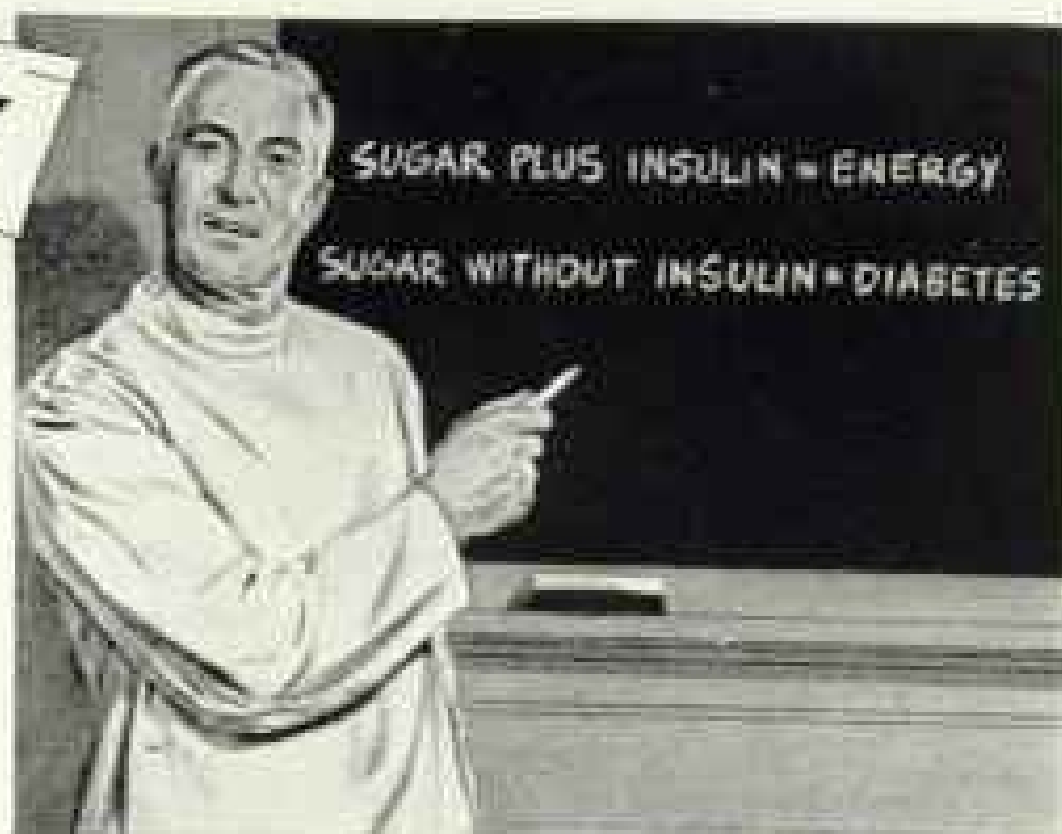
# The **a b c** of DIABETES

**What diabetes is.** Certain cells in your body—in a gland called the pancreas—produce a substance named *insulin*.

This enters your blood stream and enables your body to store sugar and convert it, as needed, into muscle energy.

Lacking insulin, sugar would simply accumulate in your body. You would become unquenchably thirsty for water to carry this excess sugar from your system—*unused, wasted*. You would be constantly hungry because of the calories lost, and would probably lose weight steadily.

You would have diabetes.



**How diabetes is treated.** Today, mainly as a result of a miraculous discovery in 1921, diabetics have a good chance of living as long as nondiabetics.

The discovery? That insulin can be extracted from the pancreas of certain animals, and that injections of it permit a diabetic to use the sugar and starches in his diet.

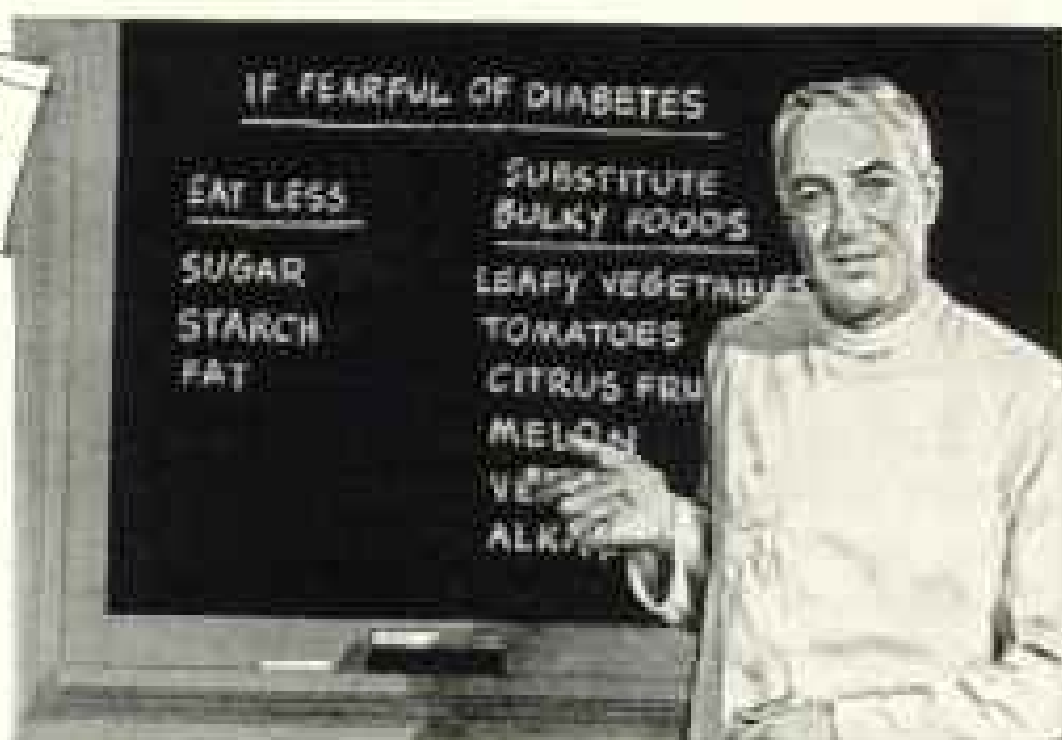
Many advances in insulin treatment have been made since its original discovery. Today most diabetics can live virtually normal lives, with proper diet and exercise and insulin—although not *all* diabetics require insulin.

**How to guard against diabetes.** Its most likely victims are:

1. *Middle-aged, overweight people*—Avoid overweight by limiting the intake of sugar, starch, and fat—and by getting plenty of healthful exercise.

2. *People who have diabetes "in the family"*—Predisposition to diabetes is hereditary. If anyone in your family has had diabetes, you should watch your diet and exercise and have periodic physical checkups with *urinalysis*.

Send for Metropolitan's free booklet—"Diabetes."



COPYRIGHT 1944—METROPOLITAN LIFE INSURANCE CO.

**Metropolitan Life Insurance Company**  
(A MUTUAL COMPANY)

*Frederick H. Eckert,*  
CHAIRMAN OF THE BOARD

*Larry A. Lincoln,*  
PRESIDENT

1 MADISON AVENUE, NEW YORK 10, N. Y.



Metropolitan Life Insurance Company  
1 Madison Avenue, New York 10, N. Y.

Please send me a copy of your booklet, 124-N, entitled "Diabetes."

Name \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_





## A leaf that can walk

**T**HE CEYLONESE walking leaf is a very remarkable insect.

Unlike his ferocious cousin, the praying mantis, he is a gentle leaf-eater and has no special equipment with which to defend himself against enemies.

But the walking leaf is usually in little danger of attack.

A tree dweller, his camouflage is one of the most extraordinary found among insects. It protects him in all stages of his existence.

His eggs look exactly like shriveled, spiny seeds. When the young walking leaves emerge, they are wingless, reddish, and glossy, nearly impossible to distinguish from buds at the ends of branches, where they usually feed.

The green body of a full-grown walking leaf is shaped and veined in precise replica of a leaf. The legs are flattened to appear like smaller leaves and are even stained yellow, with ragged edges, as if injured by nibbling insects.

Yet despite this elaborate disguise, the walking leaf has another habit which may serve as an additional precaution for safety. When a wind stirs the tree, he often wiggles himself back and forth in perfect imitation of the agitated leaves.

Now obviously, camouflage is of little use to a man in trying to protect himself from the many hazards of his everyday life. He has had to work out for himself other safeguards against danger.

But the wise man knows even the most efficient safety measures cannot make him secure.

So he takes an additional precaution to guarantee his financial safety in the event of mishaps which he cannot foresee or prevent. This precaution is insurance.

Perhaps you haven't thought about your insurance problems lately, or considered that war increases property values and in other ways changes protection needs. For example, the fire and theft insurance you arranged several years ago may no longer be adequate.

Despite gasoline rationing, motor accidents have increased. All kinds of transportation involve greater risks. Your accident insurance is more important than ever. It's a good time to check with your local Travelers man.

**MORAL:** Insure in The Travelers, All forms of insurance and surety bonds. The Travelers Insurance Company, The Travelers Indemnity Company, The Travelers Fire Insurance Company, Hartford, Connecticut.

# Have a "Coke" = Merry Christmas



## *...adding refreshment to holiday cheer*

The spirit of good will rules the Christmas season. It's a time to get together with friends and family... a time when all we mean by *home* in its graciousness and friendliness is at its peak. In such an atmosphere Coca-Cola belongs, ice-cold and sparkling with life. There's a whole story of hospitality in the three words *Have a "Coke"*;—three words that express a friendly spirit the whole year 'round. Yes, Coca-Cola and *the pause that refreshes* are everyday symbols of a way of living that takes friendliness for granted.

\* \* \*

*Our fighting men meet up with Coca-Cola many places overseas, where it's bottled on the spot. Coca-Cola has been a globe-trotter "since way back when".*



**"Coke" = Coca-Cola**  
It's natural for popular names to acquire friendly abbreviations. That's why you hear Coca-Cola called "Coke".

*An American Tradition*

**— HOME MOVIES  
ON CHRISTMAS NIGHT**



*"First, the ones we made when Bob was home on leave"*

THE EVENING BEGINS, and ends, with the movies they made when their boy was home on leave last Christmas. It's good to have him smiling out at them from the screen . . . wonderful to reflect, with a lift of the heart, that perhaps next Christmas he'll be home again.

Of course Ciné-Kodak Film is scarce; although you may be able to get a roll now and then. But happily, in any event, there are the reels of other years, ready and wait-

ing to make the holidays happier days.

*Have your Ciné-Kodak dealer  
check your projector . . .*

If you haven't been using your projector as often as usual during this busy year, it's a good idea to have your Ciné-Kodak dealer clean it, oil it, and thoroughly check it; then you can be sure it will be running smooth as silk Christmas night . . . Eastman Kodak Company, Rochester, N. Y.

*Life is a movie — **CINÉ-KODAK** gets it all*





## Ask the Man who has seen it in Action!

Men who have operated Ampro 16mm. sound projectors the world over will tell you almost unanimously that Ampro projectors have come through the gruelling tests of war with the highest record of performance.

This fact is important to you when you are selecting the 8mm. and 16mm. equipment for bringing into your home the vast libraries of educational and entertainment films.

Write today for the Ampro catalog of 8mm. silent and 16mm. silent and sound projectors.

*Buy War Bonds*

# AMPRO

Ampro Corporation  
Chicago 18, Illinois  
Precision Cine Equipment

## You will always be **THANKFUL**.

When you've chosen Rock of Ages granite for your family memorial, you'll always be thankful. It costs so little more to be sure!

The Rock of Ages trade-mark guarantees the lasting beauty of this dark Barre granite. Send for the illustrated book, "How to Choose a Memorial". Free. Dept. N-10.

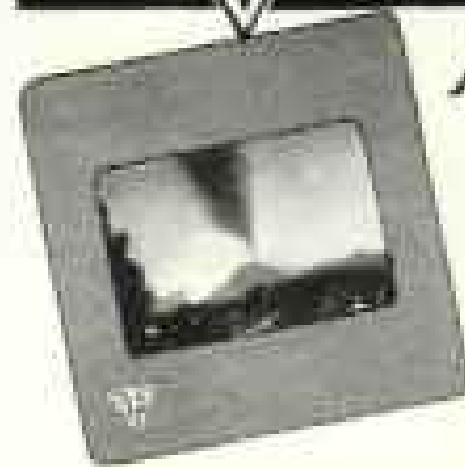
ROCK OF AGES CORPORATION  
Barre, Vermont

Ask your dealer  
for proof of per-  
formance... in  
any country



**ROCK OF AGES** BARRE-GRANITE  
MONUMENTS

## **COLOR SLIDES**



### Make Fine Christmas Gifts

20,000 subjects include: NATURE STUDY, ART, SCIENCES and TRAVEL SCENES. Shown here is one of the slides in the new set of 5 slides on the Mexican volcano El Parícutin. Ask your dealer for S.V.E. color slides. Write Dept. 126 for FREE circular.

**SOCIETY FOR VISUAL EDUCATION, INC.**  
140 E. OHIO STREET • CHICAGO 11, ILL.



## NEW TRIUMPH OVER DEAFNESS

New Maico hearing aid, just perfected, has NEW clearness, quietness, selectivity, power. Result of Maico's unmatched experience in providing 90% of precision hearing test instruments used by U.S. Army, Navy, airlines, ear specialists.

Write for free booklet, "Your Hearing—What Is It Like?" Tells of latest advances in analyzing and restoring individual hearing losses.

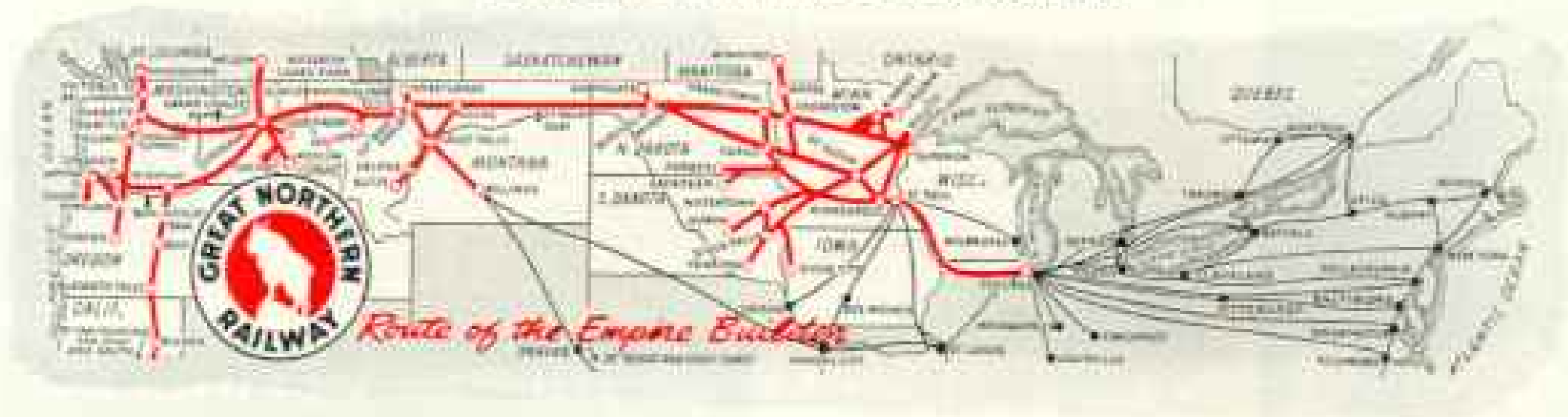
**MAICO CO., Inc.**

Dept. 7-B, 21 N. 3rd St., Minneapolis, 1, Minn.  
Let Maico bring back the sounds you're missing!

"Buy U. S. War Bonds—They Identify You"

# GREAT NORTHERN RAILWAY

BETWEEN GREAT LAKES AND PACIFIC



*Wenatchee Delicious apples live up to their name. They're big, juicy, and crisp. Many other varieties are grown in the valley.*



*Apples are washed, graded and then wrapped individually for packing in boxes for shipment.*



*Great Northern's big refrigerator cars hold nearly 800 boxes—about 80,000 apples.*

## MARKETS NOW FEATURING FAMOUS WENATCHEE APPLES

### Special Handling by Great Northern Assures Freshness

The red and yellow vanguard of a new and big Wenatchee apple crop is in America's markets—and better, in G. I. kitchens and canteens in America and overseas.

Wenatchee, in Washington's scenic Cascade country, is the "Apple Capital of the World." The amazingly fertile Wenatchee Valley produces one-sixth of the nation's annual apple crop, and a large variety of soft fruits.

Great Northern encouraged and aided founders of the valley's

apple industry, and has continued this policy through the years. Because apples require special handling, the railway maintains extensive yard facilities in Wenatchee, and provides fruit shippers a giant fleet of modern refrigerator cars.

Only choice Wenatchees go to market in original form. Other grades are converted into dried apples, juice, sauce, cider, confections, and a base for jams and jellies. Many carloads of apple by-products are transported by Great Northern.

The railway's efficient movement of Wenatchee's apple crops is one of the many things which make Great Northern great.



*Pre-cooling of refrigerator cars before loading is important. This requires thousands of tons of ice each shipping season. Heaters protect apples from midwinter temperatures.*

# Pioneers

## in Education



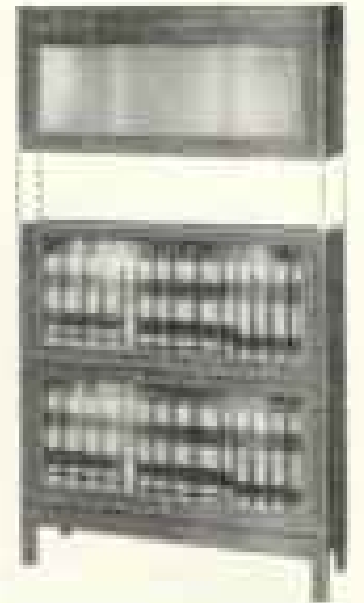
The first crude pre-historic picture writing . . . the first motion picture . . . were milestones in the progress of education. Today sound motion pictures — learning through a living experience — is advancing education to new high standards. Victor, pioneer in Visual Instruction for 34 years, designer and developer of the first 16mm motion picture cameras and projectors, is providing ideal equipment for this new method of teaching and training. Victor Equipment is easier to operate and maintain, more portable and has clearer sound and image.

**VICTOR**  
ANIMATOGRAPH CORP.  
Davenport, Iowa  
New York (18)  
McGraw Hill Bldg.  
Chicago (11)  
188 W. Randolph

# SECTIONAL BOOKCASE

**FITS ANY SIZE LIBRARY!**

Size is no problem with this case. Simply add as your library grows. In a variety of smart styles and finishes. The Globe-Wernicke Co., Norwood 12, Cincinnati, Ohio.



**Globe-Wernicke**  
SECTIONAL BOOKCASES

# HEISEY'S CRYSTAL

AT LEADING STORES



For an All-Out-West Vacation  
ARIZONA'S VALLEY of the SUN



Glowing desert and mystic mountains, flamboyant sunsets and unbelievable starlit nights, jingling spurs and lilting cowboy tunes—this is Arizona, beckoning you to solace, sunshine and satisfaction. Add a warm, friendly *Certified Climate*\*—and the locale is Phoenix in Arizona's famed Valley of the Sun. Plan a Phoenix pleasure-hunt when you can . . . but by all means, make reservations before you come.

\*"Certified" when the Valley of the Sun was chosen by the U. S. Army as one of America's finest aviation training centers because of its unexcelled weather.

For free, profusely illustrated booklet and cartograph map, write Valley of the Sun Club, 425 Chamber of Commerce Bldg., Phoenix.

**Phoenix Arizona**  
In the Valley of the Sun

# SHEPARD Home LIFT

THE AUTOMATIC ELECTRIC RESIDENCE ELEVATOR

Operates from Light Circuit

Safe—dependable. Moderate price—inexpensive to operate. Easily installed in new or old homes.

Not available now because of war work, but send for descriptive literature. Keep this desirable home convenience in mind.

Representatives in Principal Cities



**THE SHEPARD ELEVATOR CO.**

Builders of Finest Office and Hotel Elevators

2432 COLERAIN AVENUE

CINCINNATI 14, OHIO



# 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.

So Simple!  
Just turn end. Surplus hair trims out easily, gently

\$1. Made from finest surgical steel. Chromium plated.

Guaranteed to Satisfy or Money Back

HOLLIS CO., 11 Commerce St., Newark 2, N. J., Dept. 251 • Enclosed is \$1.00 for KLIPETTE. If I am not entirely satisfied, I may return it and my \$1.00 will be refunded.

Name \_\_\_\_\_ Address \_\_\_\_\_



"Talking It Over!" — painted by Rudolf Wettama

## Home

Home is a lot of little things—the way you want 'em. A certain chair, and the ticking of a clock, the smell of what's on the stove, your old hat, and good friends.

And among these is a pipeful of tobacco, and plenty of time to enjoy it.

Kaywoodie Pipes are part of this picture. When the work is done, when the slugging is over, when you've swat it out successfully, you'll have the finest pipe that money and experience and painstaking care can produce. Kaywoodie promises you that.

A Kaywoodie takes years to make, and is, we believe, the mild-

est, coolest, pleasantest form of smoking. This is due to the Kaywoodie Briar which comes from the countries surrounding the Mediterranean Sea (and only from there). You can't rush it, or mass-produce it, or short-cut it. After it has grown, it has to be seasoned and mellowed, aged and tempered, so it will draw the goodness from tobacco, and yield a cool, smooth, delicious smoke...a smoke free from trouble, with the distinctive "Kaywoodie Flavor!"

Yes, Kaywoodie is, and will be, one of the things worth while in your home.

Many Kaywoodies go direct to our fighting men — please be patient if your dealer temporarily can't supply you. Illustrated here is Flame Grain Kaywoodie, "Billiard" Shape, No. 515 — \$10.

**War Bonds  
come first**



Kaywoodie Company, New York and London  
630 Fifth Avenue, New York 20, N. Y.



# MAPS AND BOOKS

## ARE IDEAL FOR CHRISTMAS GIVING!

National Geographic Society 1944  
Dept. C-K, Washington 6, D. C.

Please send me the items indicated below:

■ All Maps except Enlarged World Map come on either paper or linen. *Indexes are available for Maps marked with asterisk*. All items sent postage prepaid.	How Many Copies Desired		
	Paper Maps	Linen Maps	Indexes
	50¢ each in U. S. & Poss. Elsewhere 75¢ each	\$1 each in U. S. & Poss. Elsewhere \$1.25 each	25¢ each in U. S. & Poss. Elsewhere 50¢ each
U.S.S.R. (Russia)*			
Southeast Asia*			
Germany & Approaches*			
Japan & Adjacent Regions of Asia & Pacific Ocean*			
The World*			
E. & W. Hemispheres			X
No. & So. Hemispheres*			
Pacific Ocean*			
(With 10 Island Insets.)			
Pacific Ocean and Bay of Bengal*			
Indian Ocean			X
Atlantic Ocean			X
United States*			
Europe and Near East* (Illustrated Sept. 1, 1939.)			
Europe & Mediterranean* (Illustrated Jan. 1, 1939.)			
Europe and Near East (Shows partition Poland 1945.)			X
Central Europe & Medit.*			
British Isles			X
Asia and Adjacent Areas*			
Canada*			
Africa*			
Mex., Cen. Am., & W. I.*			
South America*			
North America*			
Bible Lands*			
Classical Lands of Medit.*			
The Arctic Regions			X
The Antarctic Regions			X

X in Index column indicates Map Index is NOT available. Paper maps are folded for convenient filing. Linen maps come rolled. Postal regulations usually prohibit mailing linen maps outside Western Hemisphere.

Also.....copies of MapFile @ \$2.50 in U. S. & Poss.; elsewhere, \$2.75.

Also.....copies of Enlarged World Map\* @ \$2 in U. S. & Poss.; elsewhere, \$2.25. Sent rolled to U. S. & Poss. except Hawaiian Islands. Postal regulations necessitate folding the map for mailing to Hawaiian Islands and all places outside the U. S. & Possessions.

NAME OF BOOK	Price Each		Copies Desired
	In U. S. & Poss.	Elsewhere	
Book of Fishes	\$3.00	\$3.25	
Hunting Wild Life, etc.	5.00	5.50	
Our Insect Friends & Foes, etc.	2.50	2.75	
Wild Animals of North America	2.00	2.25	

I enclose remittance of \$..... payable in U. S. funds.

Name.....

Address.....

### Timely Ten-color Maps

WITH vital war and peace developments in the offing, can you think of any Christmas gift more appropriate or useful than The Society's *ten-color* maps? Map Indexes, available for all maps marked with an asterisk\* in the adjoining order blank, describe the area covered and make easy the location of every name on the corresponding map.

**Map File:** This handy 7 $\frac{3}{4}$  x 10 $\frac{1}{4}$ -inch file, bound like a book, preserves maps for instant use. Ten pockets can hold 20 *folded paper* maps of standard sizes or 10 *folded paper* maps with Indexes.

**Enlarged World Map:** A 67 $\frac{3}{4}$  x 45 $\frac{1}{4}$ -inch enlargement of our standard World Map (41 x 26 $\frac{1}{4}$  inches). Printed in *ten colors* on heavy paper, it is incomparable for large wall display. The standard World Map Index may be used with this enlargement.

### Superb Nature Books

**The Book of Fishes:** Every outdoor enthusiast will enjoy the thrilling experiences provided by this comprehensive *full-color* presentation of the important food and game fishes of North American inland and coastal waters. This magnificent book, edited by John Oliver La Gorce, contains 443 *color portraits*, 162 action photographs, 102 biographies, and 11 stimulating chapters. 572 pages. Light-blue cloth covers, 7 x 10 $\frac{1}{4}$  inches. \$5 in U. S. and Poss.

**Hunting Wild Life with Camera and Flashlight:** This *two-volume* work by the late George Shiras, 5d—whose flashlight photographs of wild animals in their natural habitats have won highest honors—is the monumental record of 65 years' visits to the woods and waters of North America. 950 fascinating pages, illustrated with 950 of the author's remarkable flashlight and daylight photographs. Blue cloth covers, 7 x 10 $\frac{1}{4}$  inches. \$5 *the set* in U. S. and Poss.

**Our Insect Friends and Foes and Spiders:** 500 insects and spiders in *natural colors*; 161 monochrome illustrations; stories of bee, ant, beetle, bug, fly, butterfly, moth, and spider life. 252 pages. Mulberry cloth covers, 7 x 10 inches. \$2.50 in U. S. and Poss.

**Wild Animals of North America:** 127 *full-color* portraits; fascinating text; many monochrome photographs and track sketches. 254 pages. Mulberry cloth covers, 7 x 10 inches. \$2 in U. S. and Poss.

**PRICES:** Please refer to coupon for separate prices in "U. S. & Poss." and "Elsewhere." Remittances should be payable in U. S. funds. All items sent postage prepaid.



# MACMILLAN RING-FREE MOTOR OIL

**BUY RING-FREE WHERE YOU SEE THIS SIGN**

*Ring-Free Motor Oil is guaranteed  
to remove carbon, reduce wear and  
give more miles per gallon of gasoline\**

\* According to a specific test which your Macmillan Ring-Free dealer will show you

**35¢ A QUART**

Sold throughout the Western Hemisphere

*Old State House, Boston (1776)*



MACMILLAN PETROLEUM CORPORATION - 50 West 50th Street, New York 20 - 624 South Michigan Avenue, Chicago 5 - 530 West 6th Street, Los Angeles 14 - Copyright 1944, Macmillan Petroleum Corporation



*Another big rush  
on Long Distance lines  
this Christmas...*

It was a big rush last year. It may be even bigger this Christmas.

So please help keep Long Distance lines clear for essential calls on December 24, 25 and 26.

War still needs the wires—even on holidays.

BELL TELEPHONE SYSTEM





Life



## FROM A PLASTIC BAG!

THE MAN ADRIFT here is drinking sea water. But it is sea water that he has made drinkable by chemicals and a filter contained in a VINYLITE plastic bag\*. The plastic—produced by CARBIDE AND CARBON CHEMICALS CORPORATION—has been made possible by the availability of synthetic organic chemicals, in which this Unit of UCC specializes.

But the story behind VINYLITE plastics is far more than just the history of another chemical development.

Rather, this unusual substance is indicative of the way man can learn—through years of uninterrupted research in the basic and applied sciences—to make better material than nature. It is one more confirmation of the continuing progress that is achieved by

coordinating research, development and engineering.

The importance of VINYLITE plastic in helping to solve such vital needs as fresh water at sea is typical, in terms of human progress, of the stature already attained by many of the 160 synthetic organic chemicals that CARBIDE AND CARBON CHEMICALS CORPORATION now has in commercial production.



*\*There are good reasons why a VINYLITE plastic is used in desalting bags. It can't mildew or rust. It is strong and tough, scuff-proof and shock-proof. It is chemical-resistant and sun-resistant. It is lightweight, transparent and flexible. It is non-flammable and cleanable . . . Engineers and executives interested in this material are invited to write for the booklet E-12 "Vinylite Plastic Sheet and Sheeting."*

BUY UNITED STATES WAR BONDS AND STAMPS

## UNION CARBIDE AND CARBON CORPORATION

30 East 42nd Street  New York 17, N. Y.

*Principal Units in the United States and their Products*

### ALLOYS AND METALS

Electro Metallurgical Company  
Haynes Stellite Company  
United States Vanadium Corporation

### CHEMICALS

Carbide and Carbon Chemicals Corporation

### ELECTRODES, CARBONS & BATTERIES

National Carbon Company, Inc.

### INDUSTRIAL GASES AND CARBIDE

The Linde Air Products Company  
The Oswald Railroad Service Company  
The Prest-O-Lite Company, Inc.

### PLASTICS

Bakelite Corporation  
Plastics Division of Carbide and Carbon Chemicals Corporation